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3. Bulletin of Akaki Tsereteli State University – 2014. – #2(4)
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26. Nano Studies – 2014. – #9

1. NATURAL SCIENCES

1.1 Mathematics

14.1.1.1. On a pricing model under conditions of uncertainty. /M. Salukvadze, V. Zhukovskiy/. Proceedings of A. Eliashvili Institute of Control Systems. – 2014. – #18. – pp. 125-129. – geo.; abs.: geo., eng., rus.

The pricing modeling problem is considered taking into consideration the expected excise, the level of which is previously unknown. In 1929 American scientist Harold Hotelling created pricing model in a duopoly which takes the spatial arrangement of firms into consideration. In the given work the model of Hotelling under uncertainty in case of two players - firms is considered. Conditions of Pareto-guaranteed balance are received and their construction is shown; internal minimum by Pareto is found; the balance situation according to Nash is constructed; the guaranteed profits of players are built. Ref. 5.

Auth.

14.1.1.2. Identification of one class of dynamic systems with variable parameters. /B. Shanshiashvili/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2014. – #18. – pp. 130-135. – eng.; abs.: geo., eng., rus.

The problem of parameter identification of linear dynamic systems with variable parameters is considered. The system of linear ordinary differential equations of a normal kind is considered as a structure of model structure; in addition, the elements of output matrix are variables. The problem of parameter identification is stated as, in a certain sense, an inverse problem of Cauchy's problem for linear ordinary equations. Under some restrictions on the system's parameters, and input and output variables the existence theorem of such interval, in which a continuous matrix of coefficients is identified, is formulated and proved. The parameter estimation algorithm is investigated by the example of the second-order system identification. Ref. 14.

Auth.

14.1.1.3. Determination of optimal proportions of drums and optimal amount of production upon restrictions on raw materials. /D. Sikharulidze/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2014. – #18. – pp. 147-151. – geo.; abs.: geo., eng., rus.

Two practical problems are considered in the paper. First of them is concerned with determination of optimal proportions of cylindrical containers/drums, required for liquid service, when shipping cost for one container in spite of dimension is constant. Container capacity should not exceed the predetermined value. This problem is reduced to the problem of geometric programming. The solution is obtained in an analytical form. The second problem concerns the determination of optimal production amount in the case of perishable raw material: several types of products, the shelf life of which nears expiration and their maximal utilization are desirable to avoid loss. Several specific types of product are manufactured. The sale price of each manufactured unit is predetermined, as well as the raw material stock for the planning period. This problem is reduced to the linear programming problem. The solution of given example is obtained using MATLAB. Tab. 1, Ref. 1.

Auth.

14.1.1.4. Using numerical methods for real-time calculations. /D. Tsintsadze, K. Omiadze/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2014. – #18. – pp. 180-184. – geo.; abs.: geo., eng., rus.

Computer simulator is a primary node in the modern control system; this includes the mathematical model of the dynamic object, and in the control loop - people. So, for perfecting performance calculations must be carried out in real time. The principles of computational mathematics suggest various methods for drawing mathematical schemes. In this case, a numerical method of calculations applied. The article describes how to move an object in space. Argumentation: numerical integration formulas, the table sequence instruction execution. The paper provides programs to calculate coordinates and plotting the motion of point made by BASIC. Tab. 1, Fig. 3, Ref. 4.

Auth.

14.1.1.5. The optimal selection of the shape, size and orientation of a building. /O. Kighuradze, G. Ketelauri/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2014. – #18. – pp. 105-110. – geo.; abs.: geo., eng., rus.

The shape, size and orientation must be chosen so as to maximize the climate's positive impact on the thermal balance of the building and to neutralize the negative environmental impacts. Dimensions of the building change upon optimization and by calculation the ratio of basic building's sides 52m/13m is changed to 31m/23m; also, given solar radiation, heat losses in the heating area and the heating capacity reduce by 31%. Tab. 3, Ref. 2.

Auth.

14.1.1.6. **Fundamental property of optimal betting odds.** /V. Khutsishvili/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2014. – #18. – pp. 136-141. – rus.; abs.: geo., eng., rus.

A new - H-model of transition from the betting odds to probabilities and back is substantiated; its advantages over the classical E-model are listed. Based on the H-model, the phenomenon of the favorite-longshot bias is explained. Ultimately, a fundamental property of optimal betting odds, providing the opportunity for a qualified transition from coefficients of events to their probabilities and vice versa, is identified. It is represented in the form of the axiom, which states that for the optimal coefficients the payout $e(p) = pk(p)$ is an increasing function of probability. Ref. 4.

Auth.

14.1.1.7. **Relation between the probabilities of events and bookmakers' odds.** /V. Khutsishvili/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2014. – #18. – pp. 142-146. – rus.; abs.: geo., eng., rus.

The theory of the transition from the betting odds of events to their probabilities and back is proposed based on the axiom stated in [1]. The theorem about the non-optimality (understated) of the odds on the popular classic double and no draw results is proved. The general scheme for calculating the optimal derivatives odds is also given. In particular, the process of mass production of the odds for virtual games type Liverpool – Federer is described. Links to Web pages, where the described schemes are implemented, are given. On one of these, from the odds, describing the chances of tennis players before the start of a match, the root probabilities' identification and the automatic calculation of the basic and all kinds of derivative in play odds is organized. Ref. 3.

Auth.

14.1.1.8. **On testing the hypothesis of equality of two Bernoulli regression functions.** /E. Nadaraia, P. Babilua, G. Sokhadze/. Bulletin of the Georgian National Academy of Sciences. – 2014. – vol. 8. – #1.– pp. 18-26. – eng.; abs: eng., geo.

The limiting distribution of an integral square deviation between two kernel type estimators of Bernoulli regression functions is established in the case of two independent samples. The criterion of testing is constructed for both simple and composite hypotheses of equality of two Bernoulli regression functions. The question of consistency is studied. The asymptotics of behavior of the power of test is investigated for some close alternatives. Ref. 7.

Auth.

14.1.1.9. **Problem of elasticity and plasticity for a plate with a shape of n-angle weakened by n-holes.** /Z. Abashidze/. Bulletin of the Georgian National Academy of Sciences. – 2014. – vol. 8. – #1.– pp. 27-31. – eng.; abs: eng., geo.

A homogeneous, isotropic plate with a shape of rectilinear n-angle weakened by n-cyclic symmetric holes is considered. The plate is in a stressed state; a region of plasticity contains only contours of holes and does not spread inside of the plate. A problem of elasticity and plasticity for this plate is reduced to a boundary problem of linear relationship for a unit circle with sectionally constant coefficients. The equation of unknown contours of holes is presented; the solution of this problem is obtained. Fig. 1, Ref. 6.

Auth.

14.1.1.10. **Clark's representation of Wiener functionals and hedging of the barrier option.** /O. Glonti, O. Purtukhia/. Bulletin of the Georgian National Academy of Sciences. – 2014. – vol. 8. – #1.– pp. 32-39. – eng.; abs: eng., geo.

Bachelier's model of financial market is the payoff of Knock-Out Barrier Option, the Clark's integral representation with explicit form of integrand is obtained. This functional represents the product of European Call Option payoff and indicator of some event. It is impossible to use directly the Clark-Ocone's formula because the indicator of event is Malliavin differentiable if and only if probability of this event is equal to zero or one. We use our integral representation of functionals of Wiener process, which slightly generalizes the Clark-Ocone's formula, and obtain the explicit form of integrand. This integrand is the optimal hedging strategy replicating the Knock-Out Barrier Option in case of Bachelier's model. Ref. 4

Auth.

14.1.1.11. **Non-local contact problem for two-dimensional linear elliptic equations.** /D. Gordeziani, I. Meladze/. Bulletin of the Georgian National Academy of Sciences. – 2014. – vol. 8. – #1.– pp. 40-46. – eng.; abs: eng., geo.

A non-local contact boundary problem for two-dimensional linear elliptic equations is stated and investigated. The uniqueness of the solution is proved. The iteration process is constructed, which allows one not only to prove the existence of a regular solution of the problem, but also to develop an approximate algorithm of its

solution. The solution of a non-local contact problem is reduced to the solution of classical boundary value problems, in particular to the solution of Dirichlet problems. Fig. 1, Ref. 22.

Auth.

14.1.1.12. New approach to global optimization based on PSO. /B. Meparishvili, Ts. Koroglishvili/. Automated Control Systems. – 2014. – #1(17). – pp. 17-22. – eng.; abs.: geo., eng., rus.

This paper is devoted to one of the global optimization algorithms, which especially focuses on evolutionary computation by discussing Particle Swarm Optimization (PSO). Swarm intelligence is an exciting new research field still in its infancy compared to other paradigms in artificial intelligence. Particle swarm optimization algorithms have gained popularity in recent years. PSO is a population-based method, a variant of evolutionary algorithms with moving towards the target rather than evolution, through the search space. The movements of the particles around in the search-space are guided by their own best known position in the search-space as well as the entire swarm's best known position. The improvement of positions is necessary condition to guide the movements of the swarm. The gradient of fitness or cost function, which must be optimized, is not known. The goal is to find a solution in the search-space, which would mean is the global optimum. The process is repeated and by doing so it is hoped, but not guaranteed, that a satisfactory solution will eventually be discovered. Ref. 10.

Auth.

1.2 Computer and information sciences

14.1.2.1. The comparative analysis of data processing in the LabView and MathCad environments. /I. Chkheidze, L. Tokadze/. Transactions of Technical University of Georgia. – 2014. – #4(494). – pp. 38-42. – geo.; res.: geo., eng., rus.

The article provides a comparative analysis of the data in the software environments MathCad and LabView to identify the advantages and disadvantages of each. One-dimensional (signals) and two-dimensional (image) objects were subjected to study. According to the analysis, both media MathCad and LabView are found to be the most visible and adapted for practical solutions, engineering and research applications based on computer technologies. The desirable implementation of algorithms in the -30°C program environment is simpler because of the given functions and modules, but the spectrum of solving engineering problems in the LabView environment is wider than in the MathCad environment. Fig. 5, Tab. 1, Ref. 3.

Auth.

14.1.2.2. Knowledge organization in intelligent information systems for solving unformalized problems of diagnosing. /V. Radzievski, M. Mikelaze, N. Jaliabova, D. Radzievski/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2014. – #18. – pp. 50-56. – geo.; abs.: geo., eng., rus.

The question of knowledge organization in intelligent information systems for solving non-formalized problems of diagnosing is considered. The method of diagnosing the state of complex systems that works with both quantitative and qualitative data is offered. The descriptions of classes of states resulting from the application of this method are high-informative predicates – a disjunction of conjunctions, each of which is characterized by the certainty factor. It allows using the production model with certainty factors for representation of heuristic knowledge which effectively works under conditions of fuzziness, uncertainty and incompleteness of data and knowledge. Tab. 1, Fig. 1, Ref. 8.

Auth.

14.1.2.3. Application of modern principles of transformation of information to solve various types of control problems of dynamic objects. /O. Labadze, N. Kavlashvili/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2014. – #18. – pp. 31-36. – geo.; abs.: geo., eng., rus.

The use of electromagnetic fields to solve various types of problems of dynamic control is discussed. These include: three-positional contactless indicator renderer of information that changes periodically; controllable varying in a wide range direct current source; control system of resettable brushless synchronous generator; combined and adjustable multi-channel receiver-transmitter antenna. Fig. 8, Ref. 8.

Auth.

14.1.2.4. Determining priorities of the tasks in real-time systems. /L. Petriashvili, T. Zhvania, M. Kiknadze/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2014. – #18. – pp. 239-243. – geo.; abs.: geo., eng., rus.

Real-time systems are used for the operation of various technical units or technological processes. Such systems are characterized by extremely acceptable time response to external events, during which the reaction may be executed by the control program of the unit. Determination of the real-time system priority tasks and planning thereof is important to the said systems. The tasks are periodic and independent. The paper deals with the prioritization of the real-time system tasks and their solution by means of a

mathematical model, which makes it possible to duly detect, correct an error in the ongoing processes in order to obtain the relevant result. Tab. 3, Fig. 4, Ref. 3.

Auth.

14.1.2.5. Development of a remote control mine clearing system. /D. Purtskvanidze/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2014. – #18. – pp. 176-179. – geo.; abs.: geo., eng., rus.

The paper describes a remote control mine clearing system, the application of which allows neutralization (explosion) of mines in the ground from the distance safe to lives. The system consists of a radio-controlled car, to which three heavy cylinders are attached. The car is equipped with a video eye, through which the image is transmitted to the control panel. The control of movement and turnarounds of the car is done from the control panel. The system design and transmitter–receiver equipment for system remote control is described. Fig. 3, Ref. 2.

Auth.

14.1.2.6. Cause-effect model of knowledge in intellectual systems of medical forecasting. /V. Radzievski/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2014. – #18. – pp. 252-257. – geo.; abs.: geo., eng., rus.

A problem of constructing a model of knowledge for intellectual systems is considered. It is shown that the application of a cause-effect network for such systems is the most suitable. A notion of the probabilistic cause-effect network is defined. Such networks are capable to represent knowledge about stochastic pathological processes in a sick organism. Pathological process as a Markov stochastic process is also considered. The method presenting determinate and probabilistic systems as common (determinate) and stochastic matrices, correspondingly, is proposed. The application of the matrix allows reducing a process of the construction of logical deductions, to vectors and matrix algebraic operations. Fig. 6, Ref. 6.

Auth.

14.1.2.7. Structure identification and modeling of nonlinear continuous dynamical systems. /B. Shanshiashvili, M. Salukvadze, V. Gabisonia/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2014. – #18. – pp. 13-17. – geo.; abs.: geo., eng., rus.

The problem of structure identification of nonlinear dynamical systems is considered on the set of continuous block-oriented models. The problem of structure identification is posed according to L. Zadeh classical definition of identification. The worked methods and algorithms are investigated by computer modelling. Ref. 17.

Auth.

14.1.2.8. Analysis of hand-written symbols and formation of comparison processes based on the mini-max principle. /O. Shonia, I. Kartvelishvili, L. Shonia/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2014. – #18. – pp. 244-246. – rus.; abs.: geo., eng., rus.

This work presents the formation process of a comparison method of original and unknown hand-written symbols based on the mini-max principle being the basic stage of the identification of hand-written symbols. The processes of comparison are describe stage by stage and each of them is characterized in accordance with their functions. Ref. 2.

Auth.

14.1.2.9. On a method of Georgian text compilation synthesis. /A. Tushishvili, M. Tushishvili/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2014. – #18. – pp. 210-212. – geo.; abs.: geo., eng., rus.

The present work shows that the intensive use of personal computers in all fields of human activities puts questions for improving methods of interaction with them. It is manifested in the intonation of Georgian text files stored in the computer memory (information databases, electronic books, newspapers, etc.) with their consequent visualization on the screen. Even a partial solution of such problem would greatly facilitate the communication with different types of dialog systems: emergency service, ambulance, patrol police, military activity, linguistic researches, and especially the service of blind people. Analyzed is one of the methods of the Georgian text compilation synthesis, i.e. the method of artificial speech implying the obtainment of continuous sounding based on the jointing of relatively short reference sound elements (phonemes, syllables). Ref. 7.

Auth.

14.1.2.10. Issues of development of control algorithm regulating frequency and tension in hydroelectric power stations. /T. Trokashvili/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2014. – #18. – pp. 37-42. – geo.; abs.: geo., eng., rus.

The issues of development of control algorithms regulating frequency and tension are considered. A structural scheme and the value of frequency regulators for internetwork sustainability are given. The scheme of wrong signal and its first derivative calculation are also considered. Fig. 7, Ref. 3.

Auth.

14.1.2.11. **Computer linguistics and language modeling.** /G. Chikoidze, L. Lortkipanidze, N. Javashvili/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2014. – #18. – pp. 43-49. – geo.; abs.: geo., eng., rus.

Language modelling is a fundamental component of the computer linguistics: on the one hand, it would not exist without computer; on the other hand, its development will lead to the perfection of the practical systems of computer linguistics, its approximation to human verbal activity. The key problem of modelling is presenting the content and its “trailing” to expression and vice versa. This describes dynamics of language, the characteristic without which language becomes senseless, which, for some reason, has not been given much attention up to now; consequently, modelling can be considered as one of the important steps of the development of linguistics. Fig. 2, Ref. 7.

Auth.

14.1.2.12. **Database of derivational affixes.** /N. Amirezashvili, L. Samsonadze, N. Javashvili/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2014. – #18. – pp. 194-203. – geo.; abs.: geo., eng., rus.

A computer database of derivational affixes is described. The goal of the database is to gather all the morphemes needed for derivation, as well as arranging them by certain rules and forming new words automatically from a long list of words provided with the appropriate information. Adding derivational affixes causes certain linguistic processes in the words. Some affixes are synonymous/homonymous, so solving this problem is very important for building computer-based models. Phonetic processes and root changing must be taken into account while constructing algorithms and further programming as well. In the database, there are combined native Georgian morphemes, also the valid morphemes entered from other languages. We believe that such database will facilitate discovery in the in the root or in the affixes proper the changes caused by phonetic or other linguistic processes. Tab. 1, Ref. 7.

Auth.

14.1.2.13. **On the improvements of DHCPV6 protocol.** /P. Karchava, G. Asanishvili/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2014. – #18. – pp. 234-238. – geo.; abs.: geo., eng., rus.

The existing addressing methods in the IPv6 network are discussed. An idea of one improvement of the DHCPv6 protocol is given. In the improved model, the number of packages necessary for the device to dynamically receive the address IPv6 and other necessary parameters of a configuration are decreased by half. In addition, there is no need to check whether this address IPv6 is occupied by some other device. It also becomes simpler to detect the next (neighbor) devices. Fig. 3, Ref. 4.

Auth.

14.1.2.14. **Project “Development of a Georgian language semantic search engine algorithm”.** /M. Khachidze, M. Archuadze, G. Besiashvili, M. Tsintsadze/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2014. – #18. – pp. 224-229. – geo.; abs.: geo., eng., rus.

The project is aimed at developing the algorithm to be used as a basis for semantic search engine for semantic search systems, specially focused on the Georgian language searching problems, and its testing. To achieve these goals, the following work will be performed: the new method for non-structured document labeling based on analytical heuristics method will be presented. This method is using the concept “pattern” for appropriate knowledge base formation. A semantic engine development algorithm based on the concept patterns objective ontology will be provided. The concept patterns objective ontology base will, along with machine learning, allow using the mentioned retrieval engine for structured, non-structured or semi-structured documents of an electronic storefront. Ref. 10.

Auth.

14.1.2.15. **On a new M-file for vector-valued optimization problem.** /N. Kilasonia/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2014. – #18. – pp. 152-154. – geo.; abs.: geo., eng., rus.

Computer realization for a new vector-valued optimization method is presented. The program has been written in MATLAB programming language. The presented M-file is not interactive (interactivity is implemented only at the initial stage upon data input from the keyboard) although it implies a step-by-step specification of the compromise solution by generating certain values by the algorithm. Taking into account the fact that some of the method’s blocks are similar to the certain blocks of other vector-valued optimization problem methods, the object-oriented programming was used and two new “user-defined” type classes were created. The classes can be used in future for creating new programs for vector-valued optimization. Ref. 5.

Auth.

14.1.2.16. Construction of management information systems of distributed business processes based on Petri nets and object-role modeling. /G. Gogichaishvili, G. Surguladze, N. Topuria, B. Urushadze/. Bulletin of the Georgian National Academy of Sciences. – 2014 . – vol. 8. – #1. – pp. 58-64. – eng.; abs: eng., geo.

A model of the service organs optimum number of client-server architecture based on Markovian processes and algorithmic schemes of its solution are worked out. On the ground of certain facts the Object Role Model (ORM) is created. A concept of the distributed databases creation for various financial structures based on service-oriented architecture is offered. The forms of web application on Ms Visual Studio.NET platform by NORMA software and Ms SQL Server package are realized. The issues of modeling for business processes of corporate systems, automatization of designing the database structures and the consumers' interfaces are considered. Tab. 1, Fig. 1, Ref. 12.

Auth.

14.1.2.17. State space method in digital control systems. /N. Narimanashvili, D. Narimanashvili, V. Tsverava/. Automated Control Systems. – 2014. – #1(17). – pp. 23-26. – eng.; abs.: geo., eng., rus.

A state space method is applied for analyzing digital control systems. The paper recommends methods to solve the equation of state of digital systems. These methods are easily realized by means of modern computer software. Ref. 4

Auth.

14.1.2.18. Design of an information system based on the object-role modeling and service-oriented architecture. /G. Surguladze, N. Topuria, K. Bakuria, M. Lomidze/. Automated Control Systems. – 2014. – #1(17). – pp. 32-45. – eng.; abs.: geo., eng., rus.

The work considers the issues of design and software implementation of a distributed information system of a university, and user interfaces based on the hybrid technology and service-oriented architecture. Proposed are the results of the processes of constructing database MsSQL Server via the serial automated conversion components "Facts /ORM /ERM /DDL", also the development of web-services user interfaces using Workflow and Windows Communication Foundation technologies. Fig. 11, Ref. 14.

Auth.

14.1.2.19. Threats coming from insiders to an organization and log management. /D.Gomelauri/. Automated Control Systems. – 2014. – #1(17). – pp. 52-55. – eng.; abs.: geo., eng., rus.

The article discusses issues related to the protection of computer networks from insiders. The article deals with a developed scheme of information security including the newest information security methods. The criticality of log management is also discussed. Fig. 1, Ref. 4.

Auth.

14.1.2.20. Three-factor authentication – increase of the confidence level. /D. Gomelauri, K. Odisharia, T. Kaishauri/. Automated Control Systems. – 2014. – #1(17). – pp. 55-58. – eng.; abs.: geo., eng., rus.

In the modern business environment information systems are actively applied. Therefore, information security becomes one of the key factors in an organization's business processes. In the development process of an organization its information system becomes complicated and destruction of integrity of information may cause catastrophic consequences for the business activity. The article describes a specific mechanism of information protection, such as the three-factor authentication for increasing confidence and information security levels. Ref. 3.

Auth.

14.1.2.21. Development of an automated normative-legal documents and business processes management system and protection. /O. Shonia, I. Kartvelishvili, L. Kolbaia/. Automated Control Systems. – 2014. – #1(17). – pp. 59-63. – eng.; abs.: geo., eng., rus.

The article presents the stages of construction and protection in public and private agencies of an automated normative-legal documents and integrated business processes management system. The structure of the automated normative-legal documents and business processes management system is presented schematically and is described by the functional purpose. The factors to be implemented carried out in order to create a safe cell infrastructure are given. Fig.1, Ref. 4.

Auth.

14.1.2.22. Modern information technologies in the management of marketing processes and production. /G. Surguladze, M. Okhanashvili, M. Kashibadze, M. Neparidze/. Automated Control Systems. – 2014. – #1(17). – pp. 64-71. – eng.; abs.: geo., eng., rus.

The basic criteria of success in production management is professional management - ensuring effective performance of the personnel, proper identification, projecting, realizing and improving business processes, effective leading of the organizational-administrative and economic activities. Under these conditions,

modern information technologies and the integrated information systems created on their basis become the irreplaceable tool in ensuring the achievement of strategic goals and sustainable development of companies and organizations. The present article discusses the theoretical aspects of managing marketing processes, as well as its model and software implementation issues using client-server architecture on the basis of Petri net workflow, WPF and WCF technologies. Fig. 3., Ref. 10.

Auth.

14.1.2.23. Application of IT and virtual marketing in firms. /O. Gabedava, S. Pochovyan, N. Gabedava/. Automated Control Systems. – 2014. – #1(17). – pp. 72-75. – eng.; abs.: geo., eng., rus.

The article discusses the issues of application of IT and virtual marketing in a modern firm. The application of IT significantly changes the nature of marketing activity of the firm. In this regard, a concept of virtual marketing has arisen, which gives the chance to firms to rebuild in a short period of time and with the minimum resources to reconstruct the firm and build a new structure of its development, as well as to create a client database. Fig. 2, Ref. 6.

Auth.

14.1.2.24. Analysis of Microsoft web-technologies and their development trends for information systems. /N. Kiviladze, G. Surguladze, M. Gulitashvili/. Automated Control Systems. – 2014. – #1(17). – pp. 84-89. – eng.; abs.: geo., eng., rus.

The article introduces a Microsoft Silverlight development platform. Modern Microsoft technologies and their business applications are discussed. Analyzed are the ASP.NET, Silverlight and other development packages, their advantages and disadvantages. The applications of the Silverlight technology versus other Microsoft technologies are compared and analyzed. To illustrate the Silverlight technology, the task management business application Issue Tracker is proposed, as well as the required development tools and the database structure. Fig. 3, Ref. 3.

Auth.

14.1.2.25. Practical aspects of tone correction in digital graphics. /E. Kamkamidze, T. Apkhadze, M. Janelidze/. Automated Control Systems. – 2014. – #1(17). – pp. 90-95. – eng.; abs.: geo., eng., rus.

Significant feature of any image is the tone. Photos, digital images, pictures printed digitally can be bright, dark or have a balanced coordination of areas of light and shadow. This work offers two means of tone correction of digital images, two commands of the Adobe Photoshop program - Adjustment and Histogram. Using appropriate examples and illustrations, the methods of their practical use and the results that experienced retoucher can reach using them properly are given. Fig. 6, Ref. 4.

Auth.

14.1.2.26. The specialized timer-controller. /B. Bendeliani, G. Dgebuadze, I. Metskhvarishvili/. Science and Technologies. – 2014. – #2(716). – pp. 9-12. – geo.; abs.: geo., eng., rus.

The developed timer-controller enables to define the time of termination of the ongoing technological process upon an unscheduled outage, for further continuation of an experiment by proper modification of the algorithm. Fig. 2, Ref. 3.

Auth.

14.1.2.27. On the learning pattern recognition system and the method of solving one of its tasks. /N. Tkemaladze, V. Jikhvashvili, G. Mamulashvili/. Science and Technologies. – 2014. – #2(716). – pp. 13-18. – geo.; abs.: geo., eng., rus.

A brief information about the learning pattern recognition system (LPRS) elaborated by the authors and realized on a personal computer is given. The system was used for recognizing different class objects. The method of solving one of the tasks of this system, i.e. the method of determination of artificial (formal) parameters by the three-fold usage of (v, b, k, r, λ) type configurations is also considered. Ref. 8.

Auth.

1.3. Physical sciences

14.1.3.1. Boiling – the special case of convective heat transfer. /I. Shekrladze, J. Rusishvili, E. Machavariani, G. Gigineisvili, D. Shekrladze, M. Meparishvili/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2014. – #18. – pp. 90-96. – geo.; abs.: geo., eng., rus.

The paper submitted to scientific conference devoted to 100th anniversary of the Academician Vakhtang Gomelauri considers the history of boiling heat transfer research in Georgia and some aspects of the fulfilled investigations. The fundamental significance of uncovering the controlling role of nucleation is emphasized. The international situation in this field of science is discussed. The obtained fundamental results still remain unrecognized on the international arena, although the crucial problem of boiling heat transfer enhancement is solved based just on these results (without reference to the basics in the publications). The sharp criticism and requirement for the general discussion, expressed by us on international arena, they have not yet led to any results. The hope is expressed that existing abnormal situation will be overcome in the future. Fig. 2, Ref. 15.

Auth.

14.1.3.2. Measurement, transformation and application of low-frequency signals. /T. Trokashvili, G. Urushadze, N. Shengelia/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2014. – #18. – pp. 171-175. – geo.; abs.: geo., eng., rus.

Low-frequency signal measurement by applying an impulse-forming circuit is considered. It is shown how to transform a pulsed signal into the corresponding permanent voltage. A scheme, according to which it is possible to increase sensitiveness, is given. The Chebishev active filter of the second row is used for transformation. Fig. 7, Ref. 3.

Auth.

14.1.3.3. Three-positional contactless dynamic indicator. /O. Labadze, P. Stavrianidi, M. Tsertsvadze/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2014. – #18. – pp. 167-170. – rus.; abs.: geo., eng., rus.

The paper discusses the practically implemented original method of contactless three-positional changes of the fixed state of a control system. The system operates only when there are pulse control signals. Between changes in the visual information, the system does not consume electrical energy because of absence of kinematic transmission between the rotating triangular prisms, and the plane display has a closed magnetic field of permanent magnets and magnetic circuits. The proposed method has a significant advantage in comparison with similar known dynamic indicators. Fig. 4, Ref. 2.

Auth.

14.1.3.4. Classical motion of a relativistic test particle in the static cylindrically symmetric metric. /M. Yavari/. Bulletin of the Georgian National Academy of Sciences. – 2014. – vol. 8. – #1. – pp. 51-57. – eng.; abs: eng., geo.

The paper considers the gravito-electric and gravito-magnetic fields in the threading formalism. The motion of a relativistic test particle in the static cylindrically symmetric metric is studied by applying the Hamilton-Jacobi method. In threading formalism the gravito-electromagnetic force in this spacetime is also calculated. Ref. 15.

Auth.

14.1.3.5. Method of determining the mass of liquid gas in a closed reservoir and its realization. /Z. Azmaiparashvili, N. Otkhozoria, M. Narchemashvili/. Automated Control Systems. – 2014. – #1(17). – pp. 96-99. – eng.; abs.: geo., eng., rus.

A system of measuring the mass of liquid gas and the algorithm of its performance are discussed. The system enables to measure the mass of liquid gassed by means of electromagnetic waves raised by the resonator put in a reservoir. The system has high precision of measuring and it is distinguished with its simple construction. The high precision of measuring is provided by the type of a resonator and the microprocessor in which three own frequencies of a resonator are shown and the algorithm of measuring the mass of liquid gas is realized. Fig. 22, Ref. 2.

Auth.

14.1.3.6. The alternative model of the controlled thermonuclear synthesis. /G. Beria/. Automated Control Systems. – 2014. – #1(17). – pp. 145-159. – eng.; abs.: geo., eng., rus.

The energy problems of Georgia are components of global problems. The energy crisis will threaten our civilization in several decades as a result of exhaustion of mineral resources. One of the radical ways out of this situation is the controlled thermonuclear synthesis (CTS). However, its implementation faces serious challenges, the overcoming of which is still problematic. The reason of this is so-called “scientific viruses” – dogmatized axiomatic errors. Their overcoming is possible by means of anomalous events and fundamental discoveries. An anomaly of such universal character is a rare atmospheric phenomenon – ball lightning, which includes in itself the yet unknown for science fundamental law of nature. Analysis of its properties

enabled to understand the nature of this phenomenon, to trace and get rid of the “virus”, following which a new, alternative way of the CTS implementation will be open. Fig. 3, Ref. 12.

Auth.

1.4. Chemical sciences

14.1.4.1. Thermodynamic analysis of interaction of B₂O₃ with carbon. /J. Bagdavadze, K. Ukleba, Z. Tsikaridze, F. Tavadze/. Bulletin of the Georgian National Academy of Sciences. – 2014. – vol. 8. – #1.– pp. 65-67. – eng.; abs: eng., geo.

The work presents full thermodynamic analysis (FTA) of the B-O-C system at atmospheric pressure and in vacuum for the reaction $2B_2O_3 + 7C = B_4C + 6CO$. The main results of FTA are plotted in graphs. A comparative analysis of the obtained results shows that carbon reduction of B₂O₃ occurs at much higher temperature at atmospheric pressure than similar processes conducted in vacuum. Fig. 2, Ref. 1.

Auth.

14.1.4.2. New formulas of spectral-line excitation profiles for coherent anti-stokes Raman scattering by molecules in solutions. /M. Zakaraya, G. Chonishvili/. Bulletin of the Georgian National Academy of Sciences. – 2014. – vol. 8. – #1.– pp. 72-77. – eng.; abs: eng., geo.

The inhomogeneity of the surrounding of scattering molecules significantly affects the intensity distribution in coherent anti-Stokes Raman scattering (CARS) spectra and excitation profiles. A theoretical expression is obtained that describes the excitation profile of an arbitrary relationship between the relaxation constant Γ of the vibronic levels of the excited electronic state and parameter σ , characterizing the inhomogeneity of the environment. The possible influence of inhomogeneity on the CARS spectral lines is also discussed in the paper. Ref. 9.

Auth.

14.1.4.3. Synthesis of some derivatives of N-(1-Adamantyl) Carbonyl-N'-Benzyliden-Ophenylenediamine. /Sh. Samsonia, D. Zurabishvili, T. Bukia, G. Buzaladze, M. Lomidze, E. Elizbarashvili, U. Kazmaier/. Bulletin of the Georgian National Academy of Science. – 2014. – vol. 8. – #1. – pp. 78-84. – eng.; abs: eng., geo.

N-(1-adamantyl)carbonyl-o-phenylenediamine and 4-methoxy-2-aminophenyl-N-(1- adamantyl) carboxamide are synthesized. Condensation reaction of the synthesized compounds with aldehydes of salicyl-, 5-bromo salicylic- and 3,5-dibromo salicylic is studied. As a result N-(1-adamantyl)carbonyl-N'-(2-hydroxybenzylidene)-, N-(1-adamantyl)carbonyl-N'-(2-hydroxy-5-bromobenzylidene)-, N-(1-adamantyl)carbonyl-N'-(2-hydroxy-3,5-dibromobenzylidene)-, 4-methoxy-N-(1-adamantyl)carbonyl-N'-(2-hydroxybenzylidene)-, 4-methoxy-N-(1-adamantyl)carbonyl-N'-(2-hydroxy-5-bromo benzylidene)-, 4-methoxy-N-(1-adamantyl)carbonyl-N'-(2-hydroxy-3,5-dibromobenzylidene)-ophenylenediamines are obtained. Structures of the compounds are confirmed by IR, UV and NMR spectra. Fig. 2, Ref. 13.

Auth.

14.1.4.4. Quantitative determination of sulfur in sodium and lithium tetrathioantimonate (V). /K. Rukhaia, M. Kikalishvili/. Proceedings of Georgian National Academy of Sciences. – Chemical Series. – 2014. – vol. 40. – #1. – pp. 9-11. – geo.; abs.: geo., eng., rus.

Studied was a method of quantitative determination of sulfur in sodium and lithium tetrathioantimonate (V) by means of iodometric titration. It is established that the mass concentration of sulfur in the suspension can be easily calculated based on the amount of the oxidizing titrant (I₂) consumed for the titration. A corresponding mathematical formula was derived to calculate the percentage of sulfur. Ref. 7.

Auth.

14.1.4.5. The use of chromatographic packed columns for determination of aromatic hydrocarbons in gasoline. /T. Kordzakhia, L. Eprikashvili, M. Zautashvili, N. Pirtskhalava, M. Dzagania/. Proceedings of Georgian National Academy of Sciences. – Chemical Series. – 2014. – vol. 40. – #1. – pp. 45-49. – rus.; abs.: geo., eng., rus.

A simplified method of identification of hydrocarbons in the fuel by gas chromatographic method has been developed. The use of capillary columns is very problematic and expensive, but the use of packed columns in the common analyses is more accessible and reasonable. Fig. 2, Tab. 2, Ref. 5.

Auth.

14.1.4.6. The quantum-chemical description of physico-chemical properties of the acyclic amino acids. /N. Shengelia, J. Kereselidze, Z. Pachulia/. Proceedings of Georgian National Academy of Sciences. – Chemical Series. – 2014. – vol. 40. – #1. – pp. 65-67. – rus.; abs.: geo., eng., rus.

The physico-chemical characteristics of the acyclic amino acids by the quantum-chemical method - density functional theory (DFT) are calculated. The regular and quantitative description of influence of side R-group on acidity and basicity properties of amino acids is made. For some amino acids the correlation between acidity and dipole moment of the hydroxyl group is found. A conclusion on the possible forecasting of acidity and basicity of amino acids. Fig. 1, Tab. 1, Ref. 5.

Auth.

14.1.4.7. **Cluster structure of atomic nucleus.** /M. Jibladze, T. Batsikadze/. Science and Technologies. – 2014. – #1(715). – pp. 11-40. – geo.; abs.: geo., eng., rus.

The article deals with the problem of structure and composition of various nuclei of chemical elements and the possibility of existence of their cluster structure is shown. It is found that upon building of nuclei the basic elements together with proton and neutron are the nuclei of helium, carbon and oxygen. It is also shown that the nuclei are generally built of carbon and oxygen clusters, while heavy-nuclei have a layered structure. The reasons, which limit number of stable and unstable elements, are also considered. It is shown that the leading role in forming nuclei has the proton-created coulomb forces rather than strong nuclear attraction forces. Fig. 30, Tab. 1, Ref. 13.

Auth.

14.1.4.8. **Structurally specific features of the coordination compounds of some metals with sulfanilamide preparations.** /E. Miminoshvili, L. Beridze/. Nano Studies. – 2014. – #9. – pp. 9-20. – rus.

The paper deals with a comparative characterization of the structures of studied sulfanilamide-containing compounds, revealing of the differences in the composition of their structural elements and of significant changes in the geometric parameters characterizing the structure. In the crystalline compounds we studied, sulfanilamides in the deprotonated state (the proton breaks from N–H, and the corresponding anion is formed) are external-spherical acidic anions and very rarely participate in the formation of coordination bonds. The explanation of the obtained results by a steric effect prompts that, if these compounds participate in complex formation, only trans-forms of polyhedrons are formed. In the described crystalline coordination compounds (M(II) = Mg, Mn, Co, Cu, Zn), sulfanilamides are external-spherical acidic anions, while in the compounds $[M(\text{Aet})(\text{OH}_2)_5](\text{Aet})^k\text{H}_2\text{O}$ (where M(II) = Sr and Ba, Aet⁻ – the etazol anion, k = 3 and 2) – one of two anions is coordinated to the metal, playing the part of bridge bidentate – cyclic ligand. According to the obtained data, the bath angle varied within the range of 55–100°, and the torsion angle – within the range of 55–70°. The exception was the compound $[\text{Ni}(\text{R})_2(\text{OH}_2)_2]$ (where R – sulfapyridazine anion), for which torsion angle equals to 7.2°. Fig. 7, Tab. 1, Ref. 22.

Auth.

1.5 Earth and related environmental sciences

14.1.5.1. **Effect of earthquakes on the biosphere and human health.** /E. Sakvarelidze, Z. Sharadze, K. Mirianashvili/. Modern aspects of medical rehabilitation, prevention and healthy lifestyle. Int. Symp. – Sairme. 9-13 Oct. – 2014. – pp. 136-140. – geo.; abs.: eng., geo.

It is known that before, during and after an earthquake, ultralow-frequency (0.001-10Hz) weak electromagnetic fields generated in the earthquake area can be registered in areas far from the epicenter. These fields superimpose the electromagnetic fields of Schumann resonance frequencies, causing in the biosphere changes of the low frequency electromagnetic situation. Values of the resonance frequency of Schumann and Alven may also be changed by propagation of the generated by earthquake acoustic-gravity waves (AGW). the AGW generated by earthquake and the associated propagation of disturbances in the Schumann and Alven resonators alter the background ultralow frequency electromagnetic situation of the biosphere and the related with this changing bio-effect. Ref. 4.

Auth.

14.1.5.2. **Sub-volcanic and extrusive bodies of Bolnisi area as non-traditional raw materials in production of glassware.** /G. Nadareishvili, M. Tkemaladze, E. Shapakidze/. Mining Journal. – 2014. – #2(33) – pp.10-17. – geo.; abs.: geo., eng., rus.

The geology of rhyolitic extrusives (Kochulo, Rachisubani) and sub-volcanic bodies of dacitic structure (Kvemo Bolnisi), and also of the Upper Cretaceous Age of a volcanic-sedimentary number of their structure in Bolnisi area (Kvemo of Kartli) and their localization in various types of structures, with the appendix of cards and cuts are considered. Also considered are the mineralogical-petrographic features of bodies and their material structure. The possibility of using these raw materials in the production of glassware is proposed. Three- and four-component glasses are synthesized from bodies of Kochulo and Kvemo-Bolnisi fields. Fig. 1, Tab. 4, Ref. 8.

Auth.

14.1.5.3. On the technology of bolting a hollow's slopes. /T. Phirtsckhalava/. Mining Journal. – 2014. – #2(33) – pp. 17-22. – rus.; abs.: geo., eng., rus.

The article shows that the use of ground anchors make it possible to find efficient design solutions in the construction of open underground facilities and safe arrangement of deep hollows with lessening the period of construction under conditions of restricted urban development. A classification of ground anchors, model construction and technological sequence of temporary ground anchor device, as well as the results of calculation of a tilted ground anchor by the Krantz method are given. Fig. 5, Tab. 1, Ref. 10.

Auth.

14.1.5.4. Determination of seismic load in calculating a hollow's slope stability. /N. Kukuladze, T. Pirtsckhalava/. Mining Journal. – 2014. – #2(33) – pp. 22-25. – geo.; abs.: geo., eng., rus.

The paper noted that the stability of slopes ground slipping is mainly observed during earthquakes of 5.5 to 8.8 magnitudes, when the distance to the epicenter is several hundreds of kilometers. The question is particularly relevant for the whole territory of Georgia where seismicity is estimated at 7-9. An algorithm for calculating the seismic load, which takes into account the impact of the earthquake dynamic stresses on the state of repose and the strength of its soil, is given. The F_h horizontal and F_v vertical inertia are acting in concert with the ground mass weight of the slope sliding triangle with due regard for the seismicity ratio determined on the basis of seismic data. With the use of pseudo-statistical method, the minimum value of the safety factor is calculated taking into account the static horizontal and vertical forces of shear resistance of the slope. Fig. 2, Tab. 1, Ref. 13.

Auth.

14.1.5.5. Improvement of design methods of manganese ore layers processing by using the economic-mathematical modeling. /E. Mataradze, T. Akhvlediani, N. Bochorishvili, G. Tabatadze/. Mining Journal. – 2014. – #2(33) – pp. 26-31. – geo.; abs.: geo., eng., rus.

The article considers the new trends recently developed in the area of production of manganese ore that seriously affect the Chiatura Mining-Enrichment company's production activities and competitiveness of its products. One of major solutions to these problems is to improve planning of mining activities and mining technologies by using modern computer simulation methods. The article deals with technological schemes for the extraction of manganese ore and tasks of developing economic-mathematical models for estimating cost-effectiveness of investment for exploitation of new fields of mine. Fig. 3, Ref. 7.

Auth.

14.1.5.6. Issues of selection of concentrate of flotation in copper cluster in ore field. /N. Jikia, R. Sturua, D. Talakhadze, Z. Arabidze, A. Abshilava, G. Gelovani/. Mining Journal. – 2014. – #2(33) – pp. 31-34. – geo.; abs.: geo., eng., rus.

The work deals with the processing technologies of a collective, copper-containing pyrite concentrate produced as a result of processing stored tails of copper ore, as well as the possibilities and advantages of processing the said concentrate in the alkaline medium using the Albion method. Based on the conducted studies, a scheme of selection of the collective concentrate is developed. According to the parameters of iron sulphide concentrate established by the Albion method, a small-grained iron mineral goethite is produced as a result of processing in the alkaline medium, from which gold extraction is possible by cyanidation. Fig. 2, Tab. 1, Ref. 1.

Auth.

14.1.5.7. Devices with control methods for continuous measurement of perturbing values in concentration processes. /M. Gamtsemlidze, R. Enageli, M. Tutberidze/. Mining Journal. – 2014. – #2(33). – pp. 35-38. – geo.; abs.: geo., eng., rus.

In the article the operation principles of original devices for measuring perturbing, particularly the operating parameters of concentration, are considered. The of the devices is that they can continuously measure concurrently two perturbing values at a time, in particular the pulp density and viscosity; consistency of minerals with magnetic properties and clay materials in the pulp. At the same time, by measuring the operating parameters, the physical properties of the concentration material can be determined. The regulation of control parameters for processes of flotation, jigging and separation in heavy medium cyclone due to the new control methods ensuring maximum output of conditioned concentrate based on changes of values of disturbing parameters is also discussed. Fig. 1, Ref. 7.

Auth.

14.1.5.8. Management of fire-caused emergencies under conditions of a combined ventilation system in two-way traffic tunnels /O. Lanchava, N. Bochorishvili, G. Nozadze, M. Jangidze, N. Arudashvili, S. Demetrashvili/. Mining Journal. – 2014. – #2(33) – pp. 43-47. – geo.; abs.: geo., eng., rus.

The paper deals with semi-transverse and transverse schemes of a system of ventilation for two-way traffic for single tunnel. At the same time, the expected phases of fire-caused emergencies are investigated. For conditions of Rikoti road tunnel an accumulation of deviations from the normal course of natural and anthropogenic processes is established. As a measure to prevent hazards in the tunnel, the establishment of a schedule for dangerous goods, which is of much importance in removing smoke and preventing ignition of toxic material and saving human lives in a transport tunnel. In developing proper ventilation system, of much importance is the establishment of functional properties for controlling an emergency both at the initial stage of fire, as well as during its progress. As it is well known, each emergency is characterized by own rate of development. An emergency situation, due to the presence of fire, is a rapidly developing phenomenon. According to its scale, the fire situation is object-based, the consequences of which do not go beyond the object and their liquidation is possible by means of the object-available strengths and resources. The conclusions and results given in this work might be useful to the tunnel's administration for adequate implementation of the measures aimed at saving human lives under emergencies. Fig. 2, Ref. 9.

Auth.

14.1.5.9. Effects of global climate change on agriculture. /G. Khomasuridze/. Agrarian-economic Science and Technologies. – 2015. – #1(26). – pp. 36-40. – geo.; abs.: geo., eng.

Effects of global climate change on agriculture and ecosystems' condition is infinitely large. Some scientists believe that an increased amount of carbon dioxide in the atmosphere and temperature increases will have positive effects on plants, but further increases in temperature and moisture deficiencies will affect agricultural crops. The climate change results are already noticeable on cereals and grapes, for example. Simulated experiments have made possible to predict negative effects of global warming that will cause many problems to mankind in the future. Ref. 7.

Auth.

14.1.5.10. Natural radioactivity of some springs in the territory of Tbilisi and Kartli artesian basins.

/N. Kekelidze, T. Jakhutashvili, E. Tulashvili, M. Chkhaidze, L. Mtsariashvili, Z. Berishvili, N. Khikhadze/. Proceedings of Georgian National Academy of Sciences. – Chemical Series. – 2014. – vol. 40. – #1. – pp. 79-86. – rus.; abs.: geo., eng., rus.

Investigation of content of radioactive gas radon – Rn-222 in water of some springs located in the territory of settlements in Tbilisi (9 springs) and Kartli (4 springs) artesian basins were carried out. Researches were conducted in the January-March period, 2013. The radon content measurements were carried out using a modern radon detector RAD7. It was established that in the territory of Tbilisi artesian basin the radon content in spring water varied from several units of Bq/L up to 100 Bq/L and more; in the territory of Kartli artesian basin size of changing is much less – in the range from units of Bq/L up to 13 Bq/L, that is attributed to the differences of soil-geological structures of these regions. A comparison with the available literary data has been carried out. Fig. 1, Tab.4, Ref. 17.

Auth.

1.6 Biological sciences

14.1.6.1. Formation of the phenolic compounds in the tissue culture of *Rhododendron caucasicum* Pall. /D. Bagratishvili, R. Jikia/. Bulletin of the Georgian National Academy of Sciences. – 2014. – vol. 8. – #1. – pp. 85-88. – eng.; abs: eng., geo.

Callus cultures are obtained from the leaf and stem of *Rhododendron caucasicum* Pall. growing at passages. The primary callus was formed in 10-15 days on Heller's modified nutrient medium. For selection of the best conditions of growth for the callus, different concentrations of some nutrient medium components were tested. It was found that 5 and 10mg/l of 2,4D supported tissue growth, while 0.5mg/l suppressed it. Kinetin suppressed growth in both 1 and 5mg/l concentrations. The yeast extract of 1000–2000 mg/l and 20mg/l of mioinositol increased the yield of biomass, while 100 mg/l of yeast extract and 2mg/l of mioinositol decreased it. Three phases of callus growth were identified: monotonous (up to 20 days), linear (20-40 days) and reduced (40-50 days). Besides, the stem callus outstripped the leaf tissue in growth. Preliminary analysis showed that the *Rhododendron* leaf and stem cultures maintain the ability to synthesize biologically active phenolic compounds typical of an intact plant. However, their amount and composition were considerably less in callus tissues, which is characteristic of most cultures. The content of phenolic compounds is 4-5% of dry weight. Besides, the main part (85-90%) consists of (+) catechine, (-) epicatechin and proanthocyanidines. Fig. 3, Ref. 9.

Auth.

14.1.6.2. the influence of smitin on fermentative activity of actomyosin in different area conditions.

/N. Gachechiladze, J. Gogorishvili, R. Kupatadze, K. Kuridze, T. Eristavi, M. Zaalishvili/. Bulletin of the Georgian National Academy of Sciences. – 2014. – vol. 8. – #1. – pp. 89-93. – eng.; abs: eng., geo.

The influence of smitin (C-titin) on Mg²⁺-activated ATPase activity of chicken smooth muscle (stomach) actomyosin in different area conditions (ionic strength, pH, different concentrations of smitin) was studied. It was shown that smitin, likewise titin, causes the increasing of Mg²⁺-activated ATPase activity of actomyosin. Mg²⁺-activated ATPase activity in the presence of smitin has maximal value in 30mM KCl and minimal - in 100mM KCl. Mg²⁺-activated ATPase activity of actomyosin in the presence of smitin reaches maximal value at pH 8 and at pH 9 it decreases. ATPase activity increases according to the growth of smitin concentration and is maximal when it makes up 40% of myosin by weight. Obtained results confirm that in smooth muscle smitin has the same effect on actomyosin ATPase activity as titin has on skeletal muscle ATPase activity. Smitin stipulates muscle elastic properties, on the one hand, and on the other hand it is the "scaffold" for the proteins participating in muscle contraction, forming the supermolecular complex with these proteins. Fig. 3, Ref. 20.

•**14.1.6.3. Susceptibility of salmonella strains to antibiotics and r-plasmids profiling.** /T. Gabisonia, M. Loladze, T. Katamadze, G. Melashvili, K. Didebulidze, N. Tamarashvili/. Bulletin of the Georgian National Academy of Sciences. – 2014. – vol. 8. – #1. – pp. 114-117. – eng.; abs: eng., geo.

At present, gram-negative bacteria start to take up leading position in common structure of zoonotic infections, displacing other infections to the sideline. This study was conducted to investigate the occurrence of Salmonella sp., to determine their susceptibility to antibiotics and plasmid profiling. In this research, the material for bacteriological investigation was taken out of tracheae of the chickens from two poultry farms. A total of 72 Salmonella sp. were isolated from samples, from which 48 strains were serotyped as *S. typhimurium* and 24 strains – as *S. enteritidis*. It has been established that isolated salmonella strains are characterized by high resistance to antibiotics of broad spectrum. Their antimicrobial susceptibility was tested to 9 antibiotics. All salmonella strains were found to be resistant to penicillin, ampicillin, erythromycin, whereas, they were susceptible to streptomycin, chloramphenicol and slightly susceptible to kanamycin and gentamicin. Plasmids determining resistance to streptomycin, chloramphenicol, tetracycline, gentamicin, carbenicillin, kanamycin and belonging to the incompatibility groups T, I, M, N were revealed by the methods of elimination and conjunction. Salmonella strains contain also plasmids of group IncPI having wide spectrum of hosts. Tab. 3, Ref. 4.

Auth.

•**14.1.6.4. New antiviral herbal remedies for herpes simplex and herpes zoster.** /M. Abutidze, N. Omiadze, J. Rodriguez-Lopez, T. Sadunishvili, S. Chazarra, G. Kvesitadze/. Annals of Agrarian Science. – 2014. – vol. 12. – #3. – pp. 15-17. – eng.; abs: eng., rus.

Antiviral paramedical herbal remedies in the form of ointment and tincture mix have been prepared on the basis of medicinal plants and natural products for only external application in cases of Herpes simplex and Herpes zoster diseases. Chemical composition and some properties of these antiviral natural herbal remedies have been studied. They do not contain synthetic additives such as colorants and flavors. All the natural components included in this remedies act together as preservatives, emulsifiers and solubilizers. They protect skin from harmful effect of UV-radiation. Tab. 1, Fig. 2, Ref. 9.

Auth.

•**14.1.6.5. Biological and physico-chemical properties of *X-phaseoli* specific phages.** /T. Sadunishvili, N. Sturua, M. Gamkrelidze, D. Gaganidze, N. Amashukeli/. Annals of Agrarian Science. – 2014. – vol. 12. – #3. – pp. 44-48. – eng.; abs: eng., rus.

Some biological and physical/chemical properties of the three lines of lytic bacteriophages specific for *Xanthomonas phaseoli* causing haricot brown spot in Georgia was studied. The bacteriophages belong to the Tailed phages, family *Myoviridae*. The adsorption time and latent period were short and nearly identical for the three phages. Influence of solution of blue vitriol and copper oxychloride to phages mixture was studied. Influence of high temperature on the phages and their mixture was investigated. It was found that tested bacteriophages belong to the high temperature resistant phages. Tab. 3, Ref. 18.

Auth.

•**14.1.6.6. Anthropogenetic model as a conceptual basis of the theory of medicine.** /G. Elkania, L. Dilenian, I. Gvinjilia, E. Matiashvili, Ts. Jaiani, A. Bagrii, L. Puchalska/. Social, Ecological & Clinical Pediatrics. – 2013 – #16-11-10. – pp. 97-104. – rus; abs.: geo., eng., rus.

From the standpoint of gravitational biology and anthropology is justified the value of determined biological qualities of the man – walking upright as a basic form of adaptation to living in the earth's gravity. The value of this factor in biology of human beings is manifested in the formation of a characteristic ontogenetic phasing of the growth process and the implementation of anti-gravity function of the basic body systems, as well as in the typical nosological profile of morbidity, which is definitely associated with these stages throughout postnatal development. From the standpoint of anthropogenetic approach it substantiates the possibility of a more complete picture of the human body life in all its range states - health - illness - pre-

existing disease - disease. Key words: gravitational biology, anthropology, ontogenesis, walking upright, antigravity function, speech, anthropophysiological approach, energy metabolism, health, illness. Fig. 6, Ref. 48.

Auth.

14.1.6.7. Expression of epidermal growth factor receptor and plasmatic levels of epidermal growth factor and melatonin in simple and complex endometrial hyperplasia. /N. Dznelashvili, D. Kasradze, A. Tavartkiladze/. Social, Ecological & Clinical Pediatrics. – 2013 – #16-11-10. – pp. 105-109. – geo.; abs.: geo., eng.

The goal of our research was to find the prognostic significance of the epidermal growth factor receptor (EGFR) expression in endometrium and plasmatic levels of epidermal growth factor (EGF) and Melatonin in simple and complex endometrial hyperplasia. Immuno histochemical study of morphological material (endometrial scrap) was conducted in order to reveal the EGFR expression (in 35 patients). Measurement of EGF blood plasma content was carried out using HPLC (High performance liquid chromatography) method. The study of melatonin concentration in patients' blood plasma was performed using ELISA method). The numeric data of the investigation were processed statistically using the SPSS-12 and IBM SPSS-20 programs. As it has been revealed, in endometrial hyperplasia (regardless of the different EGF blood plasma levels) with weak expression of EGFR melatonin levels are normal, which is predictively favorable, and vice versa, with strong expression melatonin levels are decreased (even with normal values of EGF blood plasma content). It is the case when every change towards the increase (especially significant or marked) of EGF blood plasma levels is particularly dangerous against the background of strong EGFR expression. Finally, melatonin - the universal anti-proliferation and antineoplastic hormone is far more responsive to EGFR endometrial expression than to plasmic levels of EGF. This directly indicates that in the given situation EGFR is more carcinogenic than EGF *per se*. That is, if merely EGF blood plasma content increased while endometrial EGFR expression was weak, this would be a predictively better variant than with strong EGFR expression in the endometrium and moderately increased EGF blood plasma content. Ref. 8.

Auth.

14.1.6.8. Investigation of proteins in the process of stabilization of wines. /N. Baghaturia, T. Nanitashvili, N. Begiashvili, T. Shilakadze, B. Baghaturia/. Agrarian-economic Science and Technologies. – 2014. – #3 (24). – pp. 52-57. – geo.; abs.: geo., eng.

The results of the study of protein compounds during processing and stabilization of wines using an electrophoresis method are given. Individual wine processing methods are found to act differently on the quantitative and qualitative properties of protein compounds. The values of isoelectric points of some protein fragments are found and their different roles in the promotion of wine turbidity are shown. Tab. 1. Ref. 7.

Auth.

14.1.6.9. Chemical components of overground parts of ononin arvensis from Georgian flora. /M. Sichinava, M. Sutiashvili, M. Alania, V. Mahiou-Leddet, E. Ollivier/. Proceedings of Georgian National Academy of Sciences. – Chemical Series. – 2014. – vol. 40. – #1. – pp. 68-70. – rus.; abs.: geo., eng., rus.

Chemical content of the overground parts of *Ononis arvensis* is studied. It is established that the plant contains triterpenoidal alcohol and flavonoids. Isolated and identified are triterpenoidal alcohol α -onocerin and isoflavones – daidzein, daidzin, formononetin and ononin. These compounds are for the first time isolated from the gown plant in Georgia. Tab.1, Ref. 16.

Auth.

14.1.6.10. Isolation and identification of selected flavonoids from the saperavi wine. /T. Mitaishvili, N. Zambakhidze, I. Targamadze, D. Chrikishvili, A. Shalashvili/. Proceedings of Georgian National Academy of Sciences. – Chemical Series. – 2014. – vol. 40. – #1. – pp. 74-78. – geo.; abs.: geo., eng., rus.

Summary fractions of phenol compounds – catechines, flavonols, antocyanins and phenolic acids were isolated from Saperavi wine made by Kachketian technology. The isolated summary fractions were divided into sub-fractions by chromatography on Sepadex LH-20 and poliamide columns, where from the individual flavonoids were isolated by paper and thin layer chromatography. The following flavonoids were identified in the Saperavi wine: *quercetin*, *quercetin-3-O-monoglucoside (isoquercitrin)* and *quercetin-3-O-rutinoside (rutin)*; *anthocyanins*: *malvidin-3-O-monoglucoside (oenin)* and *peonidin-3-O-monoglucoside (peonin)*. Tab.2, Ref. 14.

Auth.

14.1.6.11. Use of X-ray spectrometer for studying chemical contents and some aspects of ecological chemistry. /A.I. Chubinidze, N. Endeladze, N. Bregadze/. Proceedings of Georgian National Academy of Sciences. – Chemical Series. – 2014. – vol. 40. – #1. – pp. 87-89. – geo.; abs.: geo., eng., rus.

Using X-ray spectrometer (Skyray EDX Packet III. X-ray Fluorescence Spectrometer), chemical analysis of patterns sprinkled with contact and system (Corsuber) pesticides has been carried out. At that time, grain of grapes has been investigated. The data on 28 chemical elements are given. On the basis of the obtained

results, it is presumed that chemical fragments of a system (Corsuber) pesticide accumulate in the plant's fruit. Fig. 1, Tab.1, Ref. 5.

Auth.

14.1.6.12. Water as a material substrate of memory. /N. Aleksidze/. Science and Technologies. – 2014. – #2(716). – pp. 23-29. – geo.; abs.: geo., eng., rus.

The biological role of water and structures of water after various psycho-emotional influences are discussed. The structures of holy and drinkable water before and after Christian prayer are shown. Fig. 15, Ref. 2.

Auth.

14.1.6.13. The ways of improvement of the ecological properties of internal combustion engines. /R. Kavtaradze, M. Glonti, T. Natriashvili/. Science and Technologies. – 2014. – #2(716). – pp. 33-40. – geo.; abs.: geo., eng., rus.

The ways of simultaneous solution of the ecological and power problems of the automobile transport equipped with internal combustion engines, taking into account features of the engine thermo-dynamical cycle, operational conditions and social problems are considered. The use of natural gas as fuel for the automobile internal combustion engines is considered as the most acceptable and rational way of solution of the problem for the first half of the 21st century. The ways of conversion of modern diesels on natural gas and advantages of conversion of the diesel into double-fuel engine are analyzed and shown. In spite of the fact that the use of electroengines in automobiles becomes more and more popular, it is shown that the internal combustion engines will retain the dominant position in the automobile transport for a long time. Consequently, the elaboration of all the measures contributing to a decrease in the environmental pollution is of urgency. Tab. 1, Ref. 6.

Auth.

14.1.6.14. Estimation of water quality of the rivers (Vere, Digmula, Gldanula) on the territory of Tbilisi. /G. Zeikidze, S. Invia, L. Khurtsia, D. Mchedlishvili, M. Berishvili, L. Gogaladze, T. Gigauri, R. Gaprindashvili, N. Buachidze/. Science and Technologies. – 2014. – #2(716). – pp. 41-45. – geo.; abs.: geo., eng., rus.

The ecological condition of some Mtkvari River tributaries (Vere, Dighmula, Gldanula) is discussed. The observation points were selected on all these tributaries. A schedule of pollutant components and methods of their determination in the water were worked out. The quality of the rivers under study was estimated in a complex way. The physical-chemical features, hydrochemical parameters and microbiological parameters of the water were measured. Respectively, on the basis of the obtained data, a rather polluted section of the River Vere was fixed, which was confirmed with all chemical and microbiological analyses made. Fig. 2, Tab. 3, Ref. 4.

Auth.

14.1.6.15. The basic mudflow tributaries and their main parameters. /Z. Charbadze/. Science and Technologies. – 2014. – #2(716). – pp. 46-53. – geo.; abs.: geo., eng., rus.

The mudflow tributaries of the River Rioni in the Racha region are discussed. For lessening the mudflow activity, the major geometrical, hydrologic and hydraulic parameters were estimated, which is the prerequisite for successful implementation of anti-mudflow measures. Tab. 3, Ref. 11.

Auth.

2. ENGINEERING AND TECHNOLOGY

2.1 Civil engineering (construction)

14.2.1.1. Optimization of heating “intermittent” duty for a building. /O. Kiguradze, G. Ketelauri, S. Baramidze/. Transactions of Technical University of Georgia. – 2014. – #4(494). – pp. 14-19. – geo.; res.: geo., eng., rus.

The article deals with an artificial or emergency heating “intermittent” duty of a building, the energy consumption optimization in order to minimize the energy for heating, management of heating duty, the heat-balance equation; the thermo-physical properties of building materials and structures and their heat storage capacities. Fig. 1, Tab. 1, Ref. 3.

Auth.

14.2.1.2. Simulation modeling and management of the urban functional-spatial development. /M. Akhobadze, E. Kurtskhalia, T. Bakhtadze, N. Vardziashvili/. Transactions of Technical University of Georgia. – 2014. – #4(494). – pp. 49-55. – geo.; res.: geo., eng., rus.

A simulation model of the functional-spatial development of cities has been created on the basis of a macro-system modeling principle. The simulative model enables the creation of an expert system for evaluating an urban development plan. Fig. 3, Ref. 4.

Auth.

14.2.1.3. Review, analysis and synthesis of researches on creep and shrinkage of concrete. /G. Baliashvili, D. Jibladze, T. Rukhadze/. Mining Journal. – 2014. – #2(33) – pp.68-74. – geo.; abs.: geo., eng., rus.

In the article a review, analysis and synthesis of results of researches on creep and shrinkage of concrete are presented, also the research methods, the factors affecting the shrinkage and creep, their deformation mechanism, and prediction models. The main factors affecting the creep and shrinkage of concrete are as follows: the grade and amount of cement and aggregate used in the concrete mix, value of water-cement ratio, environmental relative humidity, theoretical thickness of the concrete element, age of concrete and loading time, concrete strength, availability of reinforcement, which lead to deformation of concrete structural elements, reduction of their carrying ability, in many cases their breakage and damage, increase expenses on construction maintenance unit and reduction of safe operating life. Therefore, the research of creep and shrinkage of concrete is a novel actual scientific- technological problem. Ref. 13.

Auth.

14.2.1.4. Studying natural hydrological complexes in the arid zones of the mountainous regions in East Georgia for the purpose of supply of urban areas with drinking water. /T. Tevzadze, G. Omsarashvili, D. Potskhveria/. Mining Journal. – 2014. – #2(33) – pp.75-78. – geo.; abs.: geo., eng., rus.

The article proposes an innovative method – the accumulation of underground waters in alluvial ground by means of the under-bed diaphragm and regulation of their delivery during the period of low water level with the purpose of water supply. Identification of complex hydrogeological systems will give the opportunity and real conditions to create new structures for supplying drinking water by using the mentioned energy saving technology. Such structures can be: Telavi ravine, Shroma ravine, Kisi ravine, Turdo ravine, Kardenakhi ravine, etc. – the sections situated on high hypsometric levels, where, based on the proposed technology, the precedents of a significant accumulation of water masses, water withdrawal and transportation via natural flow will be created. Fig. 1, Tab. 2, Ref. 5.

Auth.

14.2.1.5. Spatial planning and construction. /D. Egiashvili, A. Meskhishvili/. Agrarian-economic Science and Technologies. 2014. – #3 (24). – pp. 19-38. – geo.; abs.: geo., eng.

After gaining independence and recognition of private property, privatization of urban land began. The process of spatial planning in Georgia is slowly being developed, but is very far from the desired development and needs to be activated. The issue of building permits takes a reasonable period of time. The article further deals with the problems of spatial planning and construction in Georgia fuel to the lack of skilled spatial planners. Tab. 1.

Auth.

14.2.1.6. Prospects of involvement of Georgia into the world transport-logistic system. /G. Lagvilava/. Business-Engineering. 2014. – #4. – pp. 60-63. – geo.; abs.: geo., eng.

The article considers an issue of Georgia's participation in the Global World. The article states that Georgia should use its geographical location as much as possible. The country should serve the passenger and goods flow from Asia to Europe and vice versa effectively by the appropriate development of transport. The article reviews the possibilities of further development of rail and air transport in terms of greater involvement of Georgia in the global transport economy. Ref. 7.

Auth.

14.2.1.7. Some problems of mountain railway capacity. /T. Kupatadze, N. Kupatadze, B. Didebashvili, Z. Kupatadze, G. Guramishvili/. Science and Technologies. – 2014. – #1(715). – pp. 75-78. – geo.; abs.: geo., eng., rus.

The article is dedicated to problems of mountain railway capacity in terms of train traffic safety. In the dead ends arranged at separate *ზედნუბი* of mountain railways and long sleep crossings the train needs to be stopped, which impedes the train traffic capacity. The article raises the issue of developing and arranging special speed control mechanisms at the stages to be directly connected with representatives of traffic service, which will avoid the necessity of full stop when moving at the established speed. Fig. 2, Ref. 3.

Auth.

14.2.1.8. **Investigation of rock composition and relief effect on the slope stability considering the structures to be built and seismic loads.** /P. Menabdishvili/. Science and Technologies. – 2014. – #1(715). – pp. 91-97. – geo.; abs.: geo., eng., rus.

The proposed method of slope stability calculation makes it possible to evaluate the mode of deformation of a rockslide slope and its stability factor under conditions of any relief, steepness and rock composition, as well as to identify the stability field, slickenside, to select the optimum alternative of the foundation arrangement and to assess the he structures' landslide effectiveness. Fig. 2, Ref. 9.

Auth.

2.2. Electrical engineering, information engineering

14.2.2.1. **Application of virtual computers while training in network technology.** /M. Gegechkori, N. Narimanidze, M. Odiladze, V. Bakhtadze, M. Archuadze, T. Burchuladze/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2014. – #18. – pp. 216-219. – geo.; abs.: geo., eng., rus.

One of the possible ways to improve education–scientific process in both content and quality is the introduction of modern information technologies (IT). The advantage of using virtual computers involved in a network of educational institutions is substantiated. In particular, the ways of more effective and qualitative solution of training problems in the field of network technologies by using of VMware Workstation - the popular software product are considered. Ref. 7.

Auth.

14.2.2.2. **A source of great three-phase direct current controlled by opto-thyristors.** /L.Gvaramadze, O.Labadze, N.Kavlashvili, T.Saanishvili, G.Kiknadze/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2014. – #18. – pp. 161-166. – geo.; abs.: geo., eng., rus.

An assessment of the problem of generating large current over a wide dynamic range is given. A sub-class of this problem characteristic of some practical cases is selected: research and grading of primary plating and magneto-optical current transducer, power and energy, debugging and management of high-current relays, circuit breakers, the differential protection devices. The way of solving these problems in a simple and compact calibrator has high metrological characteristics. One of the principles of the compact high-current calibrator and examples of the implementation of individual nodes are considered. Also shown is a simple electronic circuit of the calibrator – one of the main control units of the opto-thyristor. Fig. 4, Ref. 2.

Auth.

14.2.2.3. **Analysis of defining the quantity of consecutively engaged pumps in a multistage hydro transporting pipeline and their location across the pipeline.** /L. Makharadze, A. Tavelishvili/. Mining Journal. – 2014. – #2(33) – pp. 51-58. – geo.; abs.: geo., eng., rus.

An analysis of defining the quantity of consecutively engaged ground pumps in a multistage hydro transporting pipeline and their location across the pipeline, which differs from the previous methods by foreseeing pressure changes during pumps' start-ups and stoppages in the pipeline, is given. The analysis-based recommendations, which guarantee that pressure change during transient behavior, will go smoothly, without abrupt pressure waves and without splitting (breakage) of the hydro mixture flow that might result from the change within significant pressure values in the whole pipeline with the corresponding undesirable outcomes. Fig. 1, Tab. 4, Ref. 8.

Auth.

14.2.2.4. **Questions of making an analytical instrument to control water purification with a coagulant.** /R. Semionov, V. Padiurashvili, T. Dzaganian, N. Iashvili/. Automated Control Systems. – 2014. – #1(17). – pp. 100-104. – eng.; abs.: geo., eng., rus.

The methods determining (measuring) the coagulant doses in the drinking water and the appropriate devices designated for measuring of the big doses of coagulant (or flocculent), i.e. for determining big changes in electro-conductivity of drinking water are known. The article presents a new method of determining the micro-concentration dose of coagulant in drinking water and the structure of the device. The principle of operation of the device is given. Fig.2 Ref. 6.

Auth.

14.2.2.5. **On the necessity of equipping apartments and multistorey apartment houses with gas alarms and monitoring systems.** /V. Padiurashvili, T. Dzaganian, Z. Azmaiparashvili, Z. Jokharidze, N. Iashvili/. Automated Control Systems. – 2014. – #1(17). – pp. 105-110. – eng.; abs.: geo., eng., rus.

The necessity of equipping the apartments with gas alarms is considered. The principles of operation of such devices and the types of applied adapters, as well as the possibility of equipping multistory apartment houses with monitoring systems are shown. Fig. 4, Ref. 7.

Auth.

14.2.2.6. Findings of investigation of self-excitable three-phase asynchronous generators. /A. Rikrikadze, A. Shermazanashvili/. Science and Technologies. – 2014. – #1(715). – pp. 63-69. – geo.; abs.: geo., eng., rus.

The findings of investigation of self-excitable three-phase one- and two-coil asynchronous generators are discussed. Their comparative and theoretical analyses are carried out. As a result of a multiplied experiment, two empiric formulas are obtained, which allow defining by the coil current rate the rate of current in the actuating coil. Two cases are considered: when a capacitors battery is switched on and switched off in the actuating coil circuit. Fig. 1, Ref. 2.

Auth.

14.2.2.7. Investigation and detection of powerful hydro generators rotor shape and electromagnetic state by new integrable sensors. /L. Gugulashvili, Z. Azmaiparashvili, I. Metskhvarishvili/. Science and Technologies. – 2014. – #2(716). – pp. 19-22. – geo.; abs.: geo., eng., rus.

The problems connection with enhanced trustworthiness and operating life of powerful hydro generators are discussed and it is shown that all it depends on their vibrational state. The equipment presently employed for studying the vibrational state of generators fails to distinguish rotor shapes and detect short-circuits winding. A new electromagnetic rotor shape detecting sensor can be easily included in a network of computer monitoring of the generator. Fig. 3, Ref. 4.

Auth.

14.2.2.8. Optimum reactive-power compensation in distribution networks based on co-financing. /P. Akhaladze/. Bulletin of Akaki Tsereteli State University. – 2014. – #2(4). – pp. 66-76. – geo.; abs.: geo., eng.

The article analyzes the optimal compensation of reactive load in the distribution networks by co-financing principle. Conducted calculations and analysis of the results of these calculations show that the principle of co-financing gives economic stimulus to the companies with low voltage networks to consider more actively within their networks the power of reactive load compensating plant and the site-selection task. Tab. 2, Fig. 1, Ref. 2.

Auth.

2.3 Mechanical engineering and applied mechanics

14.2.3.1. Electrization of clouds formed during aircrafts flight. /A. Apkhaidze, M. Mamsirashvili/. Air Transport. – 2014. – #1(9). – pp. 8-13. – rus.; abs.: geo., rus., eng.

The article considers an aircraft as generator of cloud's large electric charge. The produced charge is characterized of the relaxation time that equals existence of the cloud proper. Based on it, given the peculiarities of electric discharges in clouds, definite intervals of aircraft movement in clouds are proposed. Fig. 2, Ref. 6.

Auth.

14.2.3.2. Efficiency enhancement of ergatic systems. /S.Khoshtaria, K. Bareladze, Ts. Khoshtaria/. Air Transport. – 2014. – #1(9). – pp. 14-18. – rus.; abs.: geo., rus., eng.

The article describes analytical approaches to typical ergatic operations; formulas defining the probability of error-free performance of operations and the integral algorithm and the availability value are given. Ref. 2.

Auth.

14.2.3.3. Two-stage refrigeration cycle with one rotary compressor, regeneration economizer and refrigerant steam splash. /T. Megrelidze, T. Isakadze/. Transactions of Technical University of Georgia. – 2014. – #4(494). – pp. 28-33. – geo.; res.: geo., eng., rus.

An innovative refrigerator enables obtaining the refrigerant's boiling-point below 300C with only one compressor. As is generally known, for classic refrigeration cycles the obtaining of such refrigeration regimes is possible only with a two-stage cycle. In this case, the classic refrigeration cycle is replaced by the economizer refrigeration cycle. The Innovative refrigerator is noted for a simple design, low cost, economy and reliability. Fig. 5, Tab. 1, Ref. 7.

Auth.

14.2.3.4. The cascade-type thermoelectric refrigerator. /T. Megrelidze, T. Isakadze, G. Gugulashvili, G. Megrelidze/. Transactions of Technical University of Georgia. – 2014. – #4(494). – pp. 33-37. – geo.; res.: geo., eng., rus.

The cascade-type thermoelectric refrigerators are considered. It is shown that by cascade location of thermoelements the maximum efficiency of a thermoelectric-type refrigerator can be obtained, which is

expressed in the possibility of achieving the maximum difference between the temperatures of the hot and cold surfaces of the design, enhancement of the performance and refrigerating efficiency. Fig. 2, Tab. 1, Ref. 4.

Auth.

14.2.3.5. Hydrodynamics and heat transfer of turbulently overflowed rough surfaces. /T. Magrakvelidze, N. Bantsadze, A. Mikashavidze, Kh. Lomidze, N. Lekveishvili/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2014. – #18. – pp. 67-73. – geo.; abs.: geo., eng., rus.

Works dedicated to hydrodynamics and heat transfer of turbulently overflowed rough surfaces in channels and stirred tanks are analyzed. Focused are important results obtained by Georgian scientists. In particular, classical experiments of I. Nikuradze and very important results obtained by V. Gomelauri and his students. The results yet not published by authors are also presented. Fig. 7, Ref. 19.

Auth.

14.2.3.6. Investigation of liquid and solid fuel calorific value measurement equipment. /K. Chkhikvadze, O. Kiguradze, T. Chkhikvadze/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2014. – #18. – pp. 111-115. – geo.; abs.: geo., eng., rus.

The working principle of solid and liquid fuel calorific value measurement equipment – XRY-1C is considered in the work. For measuring fuel calorific value through relative method 99.24% purity exemplary substance – STU-1 is introduced, created on the basis of benzoic acid brand “STANCHEM”. Its calorific value is equal to 26437 j/g $\pm 0,78\%$. The experiment is performed on coal sample from Tkibuli-Shaori layer, during which the calibration of calorimeter was performed by exemplary substance – STU-1. The calorific value of experimental substance is equal to 20590 j/g with the standard error of 0.62%. Fig. 3, Ref. 1.

Auth.

14.2.3.7. Static analysis of a double-chamber tunnel built using cut-and-cover construction. /L. Japaridze/. Bulletin of the Georgian National Academy of Sciences. – 2014. – vol. 8. – #1. – pp. 47-50. – eng.; abs: eng., geo.

The worldwide shortage of life and transport spaces makes it necessary to utilize underground space of the cities by construction of tunnels and near surface facilities using the so-called cut-and-cover method. Calculation of such structures is a responsible task. Now there are lots of numerical computer programs that are used in designing the underground constructions. However, the numerical methods sometimes yield results that can vary significantly from those obtained by classical methods. Therefore, in some cases classical methods of forces and displacements are recommended to be used in the structural analysis of cut-and-cover tunnel structures. The concept is right not only for cut and cover, but for other types of tunnels and underground facilities. Tasks, which can be solved analytically, must be worked out by classical computer methods. The qualified specialists must use numerical methods in parallel with analytical methods, if possible. Such approach can be useful for facilitation of the work, testing the calculation results in order to avoid potential errors. It is often difficult to find the appropriate analytical apparatus for solving typical schemes of such structures. The analytical apparatus for static analysis of one or two-span frame of the tunnel structures using methods of forces and displacements is elaborated and presented in the paper. Fig. 1, Ref. 4.

Auth.

14.2.3.8. Results and analysis of theoretical, experimental and computer investigations of vacuum drives' frictional units. /N. Molodini, R. Molodini/. Mining Journal. – 2014. – #2(33). – pp. 47-50. – geo.; abs.: geo., eng., rus.

The article gives conclusions and recommendations received by studying designs of drive vacuum-drums of belt transporter and frictional units of their contact surfaces; analyzing the vacuum producing processes upon macro elastic hydrodynamic regime in the contact annular gap with the belt; by theoretical and experimental investigation and computer modeling of the liquid layer thickness and its drainage effect. Ref. 4.

Auth.

14.2.3.9. The technology of quarrying facing block stones by explosion and the role of acad. A. Dzidziguri in its propagation. /R. Mikhelson/. Mining Journal. – 2014. – #2(33). – pp. 58-63. – rus.; abs.: geo., eng., rus.

The essence, parameters and peculiarities of the technology of quarrying block stones by explosion developed G.Tsulukidze Mining institute during 1965-1985 are given. The basic stages of the work were implemented under conditions of strict prohibition of using the explosion energy that interfered with the propagation of the novel technology in the Soviet Union. Acad. A. Dzidziguri has a great role in the widening its application area; he succeeded in consolidation of the appropriate government institutions and research centers for reviewing the outdated provisions of the effective state standard. Fig. 2, Tab. 2, Ref. 8.

Auth.

14.2.3.10. The possibility and example of the tension originating upon reeling a silk thread on the spindle. /Z. Jokharidze/. Automated Control Systems. – 2014. – #1(17). – pp. 27-31. – eng.; abs.: geo., eng., rus.

This article presents solution to the problem of tension and shape originating upon reeling of silk thread on the spindle, which is achieved through the respective mathematical model and solution algorithm. Fig. 3, Ref. 3.

Auth.

14.2.3.11. Forming differential equations for additional motions of optimal brake lever control of a driving car. /G. Sharashenidze, V. Margvelashvili, G. Usanetashvili, S. Sharashenidze/. Science and Technologies. – 2014. – #1(715). – pp. 70-74. – geo.; abs.: geo., eng., rus.

The article, given the non-technological gap in the joints, provides the sequence of formation of the differential equation of motion to determine the output parameters of the transmission brake. In order to set up the dynamic equations, a transmission model is used. The types of additional motions are considered and general differential equations are formed. Fig. 1, Tab. 1, Ref. 5.

Auth.

14.2.3.12. Scientific-technical research of highly effective motor brake of internal combustion engines. /B. Kordzadze, R. Demetrashvili/. Science and Technologies. – 2014. – #2(716). – pp. 77-88. – geo.; abs.: geo., eng., rus.

The results of a scientific-technical research of the working process of a highly effective motor brake for internal combustion engines are presented. The motor brake made in R. Dvali institute of Machine Mechanics is of a simple design, light weight, economic and can be installed on serial automobiles. Fig. 9. Ref. 2.

Auth.

14.2.3.13. Development of optimal brake leverage transmission of an electric locomotive. /G. Sharashenidze, A. Sharvashidze, L. Tediashvili, S. Sharashenidze/. Science and Technologies. – 2014. – #2(716). – pp. 89-93. – geo.; abs.: geo., eng., rus.

The optimal brake leverage transmission for VL 10 type electric locomotive is developed. The optimal brake transmission provides for the reliable braking effect with less number of lever rods and joint connections. The value of the brake shoes pressing force is obtained in an analytical form, taking into account the brake cylinder pressing force and system transmission ratio. Fig. 2, Ref. 4.

Auth.

14.2.3.14. Definition of rail-car kinetic energy taking into account the asymmetric arrangement of bogies. /G. Sharashenidze, I. Zakutashvili, L. Tediashvili, S. Sharashenidze/. Science and Technologies. – 2014. – #2(716). – pp. 94-99. – geo.; abs.: geo., eng., rus.

The inequalities of rail-car wheels and rail that cannot affect the kinetic energy of rail-car motion are considered. The scheme of rail-car movement to calculate the kinetic energy of rail-car is constructed. An analytical expression for the kinetic energy of rail-car motion taking into account the kinetic energies of bogies is obtained. Fig. 2, Ref. 5.

Auth.

14.2.3.15. The effect of electrohydraulic discharge for high dispersive magnetic nanofluid synthesis. /V. Mikelashvili, J. Markhulia, Sh. Kekutia, R. Tatarashvili/. Nano Studies. – 2014. – #9. – pp. 87-92. – eng.

Experimental studies have shown the effectiveness of electrohydraulic processing on the high dispersive magnetite nanofluid synthesis. The concentration enhancement of magnetite nanoparticles was caused by an instant increase of pressure and effect of other physical phenomena, which accompanied the electrohydraulic effect. The effective use of this effect is closely related to the control of some physical parameters. The recorded hysteresis loops show that the particles are superparamagnetic at room temperature, which is characteristic of a soft ferromagnetic material such as magnetite. Fig. 4, Ref. 12.

Auth.

14.2.3.16. Non-stationary problem of beams' deformation at thermo-mechanical loading. /O. Kikvidze, G. Baisarova/. Bulletin of Akaki Tsereteli State University. – 2014. – #2(4). – pp. 77-82. – geo.; abs.: geo., eng.

The work presents a system of nonlinear differential equations of the thermo-mechanic non-stationary task. The temperature field is considered as two-dimensional and non-stationary. The beam deformation is described by means of nonlinear ordinary differential equations system, foreseeing deformation of thermoelastic line. Ref. 3.

2.4 Chemical engineering and technologies

14.2.4.1. Influence of alkaline metal oxides on the process of joint reduction of manganese and silicon. /Z. Simongulashvili, S. Nebieridze/. *Ceramics*. – 2014. – #1(31). – pp. 3-6. – rus.; abs: rus., geo., eng.

On the basis of the executed researches, a resource saving technology of tuff application in the silicomanganese production has been developed, mastered and introduced. The substitution of quartzite with tuffs of different origin, which together with silica contain alkaline metal oxides, allowed increasing the useful usage of manganese and silicon, improving technical and economic process indicators and reducing the cost of silicon manganese by 5-6%. Tab. 1, Ref. 5.

Auth.

14.2.4.2. Research of the gold-bearing lead and zinc ore dressing by physical methods. /Z. Sherazadishvili, M. Mchedlishvili, N. Shekriladze/. *Ceramics*. – 2014. – #1(31). – pp. 7-11. – geo.; abs: rus., geo., eng.

The process of concentration of the gold-bearing lead and zinc ore by physical methods in Georgia is researched. The test method for granulometric analysis of ore showed that the distribution of gold and base metals in fractions practically corresponds to the mass composition of the ore. Consequently, we have found that it is impossible to concentrate ore by a granulometric method. The process of ore concentrate by heavy suspensions is studied. It is stated that dressing of precious metals: gold, silver and base metals: copper, zinc and lead by this method is possible. Ore testing on the concentration table showed that ore is also amenable to gravity concentration. Tab. 4, Fig. 3, Ref. 5.

Auth.

14.2.4.3. Research of the element and phase composition of the gold-containing ore. /Z. Sherazadishvili, M. Mchedlishvili, N. Shekriladze/. *Ceramics*. – 2014. – #1(31). – pp. 12-15. – geo.; abs: rus., geo., eng.

Elemental and phase composition of gold-containing ore existing in Georgia is researched. It was determined that non-ferrous metals: copper, lead and zinc are mainly presented in the form of sulfides. It is estimated that gold, silver and non-ferrous metals removal from ore can be justified economically. Also we have investigated the forms of gold and silver in the ore. It is estimated that precious metals are in the free, splice and associated forms. The existence of precious metals in various forms should be considered when developing technological scheme of ore processing. Fig. 1, Tab. 3, Ref.4.

Auth.

14.2.4.4. Research of content of toxic elements in tomato paste at Georgian market. /N. Duchidze, M. Mchedlishvili/. *Ceramics*. – 2014. – #1(31). – pp. 28-31. – geo.; abs: rus., geo., eng.

The content of toxic elements in tomato paste produced by different countries and imported to Georgian market is examined. By the example of Marneuli Food Factory, the content of toxic elements content in tomato paste was found to depend on different factors, including the content of tomato and technological water. Besides, their getting into the tomato paste is also possible from the equipment used in the plant. It has been established that the products of all the firms that get on the market satisfy the requirements presented to them concerning the content of toxic elements, although some of them are approaching the maximum permissible norms. Tab.3, Ref. 4.

Auth.

14.2.4.5. The current carbo and aluminothermal processes on the base of geopolymer in the nitrogen environment. /Z. Kovziridze, N. Nizharadze, N. Darakhvelidze, G. Tabatadze, Z. Mestvirishvili/. *Ceramics*. – 2014. – #1(31). – pp. 32-36. – geo.; abs: rus., geo., eng.

The possibilities of production of cialon by carbo- and alumothermal method on the base of geopolymer (caolyne) and processes taking place in mixtures in nitrogen environment at 1400⁰ C were studied. The study was conducted by the methods of optical and X-ray analysis. Fig. 2, Tab.3, Ref. 16.

Auth.

14.2.4.6. Study of the influence of binders on physical-technical features of a highly refractory dolomite-serpentine clinker. /Z. Kovziridze, N. Nizharadze, M. Balakhashvili, M. Mshvildadze/. *Ceramics*. – 2014. – #1(31). – pp. 42-45. – geo.; abs: rus., geo., eng.

The study was conducted to study the influence of binders on the physical-technical features of a highly refractory dolomite-serpentine clinker. There have been used water-soluble binders: magnesium sulphate solution, technical lignosulphonate, methyl cellulose liquor, polyvinyl alcohol and water. It has been stated

that samples of dolomite-serpentine clinkers with methyl cellulose liquor as binder have the best physical-technical properties. Tab. 3, Fig. 2, Ref. 6.

Auth.

14.2.4.7. Producing manganese dioxide from carbonate manganese ores. /B. Purtseladze, T. Chkonia, E. Shoshiashvili, M. Avaliani, I. Chkhaidze, M. Svanidze, L. Svanidze, T. Lezhava/. Proceedings of Georgian National Academy of Sciences. – Chemical Series. – 2014. – vol. 40. – #1. – pp. 12-15. – geo.; abs.: geo., eng., rus.

A method to obtain manganese dioxide from Chiatura carbonate manganese ore is proposed. The process of leaching of ore is executed by means of nitric acid, after cleaning by ammonium at pH = 4-5. The technological scheme permits to obtain manganese concentrates Mn_2O_3 , the processing of which enables to produce manganese dioxide. Tab.3, Ref. 5.

Auth.

14.2.4.8. Simultaneous electrosynthesis of oxidizers - hydrogen peroxide, sodium perborate and sodium hypochlorite in the membrane electrochemical reactor. /P. Nikoleishvili, G. Tsurtsunia, V. Kveselava, G. Gorelishvili, M. Avaliani, R. Kurtanidze, D. Sharabidze/. Proceedings of Georgian National Academy of Sciences. – Chemical Series. – 2014. – vol. 40. – #1. – pp. 24-31. – geo.; abs.: geo., eng., rus.

An original electrochemical cell was developed for simultaneous generation of hydrogen peroxide (H_2O_2) at the carbon gas-diffusion electrodes (GDE) covered by "Black Pearls 2000" layer and/or sodium perborate ($NaBO_2 \cdot H_2O_2 \cdot 3H_2O$) in the cathode compartment, and sodium hypochlorite ($NaClO$) at the dimensionally stable anode (DSA) which was the meshed titanium plate, coated with mixed TiO_2 - RuO_2 oxide layers. The scheme for the extraction of sodium perborate from the reactor was designed. Operational conditions for the cell were selected at comparing of the work of the anion- (MA-40, AMI 7001S) and the cation-exchange (MK-40) membranes. The best results were obtained using AMI 7001S membrane. Current efficiency of H_2O_2 (and respectively of $NaBO_2 \cdot H_2O_2 \cdot 3H_2O$) in 3 hours of electrolysis comprises 68%, $NaClO$ – 72%. Consumption of specific power calculated on total mass of $NaBO_2 \cdot H_2O_2 \cdot 3H_2O$ and $NaClO$ comprises 1.8 kWh kg^{-1} and 3.6 kWh kg^{-1} , respectively. Tab.10, Ref. 14.

Auth.

14.2.4.9. Impact of mixed mobile ions on electroconductivity of borosilicate glasses doped with A_2B_6 and A_1B_7 compounds components. /R. Janelidze, Y. Blagidze, G. Mshvelidze, O. Gogolin, E. Tsitsishvili/. Proceedings of Georgian National Academy of Sciences. – Chemical Series. – 2014. – vol. 40. – #1. – pp. 35-40. – eng.; abs.: geo., eng., rus.

The results of measurements of dynamic (a.c.) electrical conductivity in borosilicate glasses doped with A_2B_6 ($CdSSe$, $CdSe$ and $CdTe$) and A_1B_7 (AgI , $CuBr$ and CuI) semiconductor compounds at a wide temperature range below the glass transition temperature T_g are given. The concentration of the mobile dopant ions is governed by specific heat treatment conditions of the glass samples leading to a creation of semiconductor nanocrystals. At temperatures higher than 150°C – 200°C the a.c. conductivity exhibits the Arrhenius behaviour and the mixed mobile ion effect in all the examined glasses. Fig. 7, Tab.1, Ref. 16.

Auth.

14.2.4.10. The possibility of producing synthetic diamond crystals with predetermined properties under conditions of spontaneous crystallization. /N. Loladze, E. Qutelia, M. Tserodze, N. Maisuradze, I. Dzidzishvili, S. Zaslavski/. Proceedings of Georgian National Academy of Sciences. – Chemical Series. – 2014. – vol. 40. – #1. – pp. 50-54. – rus.; abs.: geo., eng., rus.

The basic requirements of the physical-chemical and physical-mechanical properties of diamond crystals for their effective application in diamond tools are stated. Experimentally is shown that using the developed composition of the reaction mixtures at constant P – T conditions allows significant control over the nucleation density and thus increase the yield of crystals with preset forms and morphology. Fig. 3, Ref. 14.

Auth.

14.2.4.11. Influence of the thermal treatment on the chromatographic characteristics of diatomite. /K. Khachaturian, L. Makharadze/. Proceedings of Georgian National Academy of Sciences. – Chemical Series. – 2014. – vol. 40. – #1. – pp. 55-61. – rus.; abs.: geo., eng., rus.

Chromatographic investigations of the initial forms of diatomites (Kisatibi deposit), their thermally treated (at 500 and 1000°C) forms and coated with some stationary liquid phase (SLP) have been carried out. The optimal separation conditions have been established. It has been shown that the thermally treated diatomites coated with the optimal amount of SLP (Carbovax 400, PMS-200, Apieson L) might be used for the analysis of the mixtures containing C_6 - C_{10} n-paraffins and C_6 - C_9 aromatic hydrocarbons. Fig. 2, Tab. 5, Ref. 7.

Auth.

14.2.4.12. Removal of impurities from metallurgical silicon by crystal pulling from melt. /L. Gabrichidze, E. Khutsishvili, N. Kobulashvili, N. Khutsishvili, T. Gigitashvili, R. Kharati, G. Urushadze, I. Kupreishvili, N. Kekelidze/. Proceedings of Georgian National Academy of Sciences. – Chemical Series. – 2014. – vol. 40. – #1. – pp. 94-100. – geo.; abs.: geo., eng., rus.

The process of purification of metallurgical –grade silicon KP-1 with 98 Siwt % and 2% of unwanted Fe, Al, P, Ca, Cu, Mg, Mn, Ni, Ti impurities is considered. Because of small values of impurities segregation coefficient (10^{-4} - 10^{-6}) in Si for purifying of technical silicon we applied a method based on segregation of impurities at solidification - Czochralski crystal pulling from melt. By X-ray spectral microanalyzer and emissive spectral analysis the content of contaminating impurities before and after purification and purification efficiency have been established. It has been shown, that pulling speed has a big influence on the quality of purification. With pulling speed increase the purification efficiency grows. Technical silicon has been purified effectively up to ~99.99 wt %. Fig. 3, Tab.2, Ref. 19.

Auth.

14.2.4.13. Sulfur-containing zeolite supplements for anti-corrosive and biocide special concretes. /G. Tsintsikaladze, O. Lomtadze, M. Burjanadze, T. Sharashenidze, V. Gabunia, N. Shalvashvili, V. Tsitsishvili/. Proceedings of Georgian National Academy of Sciences. – Chemical Series. – 2014. – vol. 40. – #1. – pp. 104-108. – rus.; abs.: geo., eng., rus.

By using the method of fusing a new sulfur-zeolite material was obtained. The structure and adsorption properties of the material were studied by X-ray diffractometer and studying the adsorption properties of water vapor. Concrete samples were prepared by using sulfur-zeolite material and their resistance to different cultures of molds fungi was determined. Based on these results, the developed sulfur-zeolite material can be used as an additives for the cement to produce biocidal and anticorrosive concretes of special purpose. Fig. 2, Tab.2, Ref. 11.

Auth.

14.2.4.14. Some peculiarities of phase formation in Ti-Cr-C-Me system by SHS. /Z. Aslamazashvili, G. Oniashvili, G. Zakharov, G. Tavadze, G. Urushadze/. Science and Technologies. – 2014. – #1(715). – pp. 45-50. – geo.; abs.: geo., eng., rus.

Some peculiarities of phase formation in Ti-Cr-C-Me system by Self-propagating High-temperature Synthesis (SHS) are described. It is found that during synthesizing materials in Ti-Cr-C-X18H15 system three phases are formed: Titanium-Chromium Carbide, Chromium Carbide and metal alloy. By entering the molybdenum in chasm of the mentioned system hard composite materials with ring structure is obtained, which ensures an increase in the strength characteristics. Fig. 5, Tab. 2, Ref. 5.

Auth.

2.5 Materials Engineering

14.2.5.1. On the history of zinc in Georgia. /G. Tsirekidze, R. Chagunava/. Air Transport. – 2014. – #1(9). – pp. 73-84. – rus.; abs.: geo., rus., eng.

Written sources and archeological data evidencing that zinc alloys were used B.C. are considered. Aristotle's statement: "Mossinik's copper, is most white and shiny... that some kind of soil is mixed and dissolved in it" is cited. It is opined that the name of brass "messing" in many languages comes from the name of Mossinik tribe – pioneers in producing this alloy. According to Georgian writing sources, zinc alloys and metal zinc have been known in Georgian from the 11th-12th centuries. King Vakhtang VI is found to introduce the Arabian-Persian term "tutia", which has been used as a borrowed Georgian term of zinc for 3 centuries already. Ref. 22.

Auth.

14.2.5.2. Producing Ta-Al-B₄C ceramic materials under the impact of air-blast. /B. Godibadze, A. Peikrishvili, E. Chagelishvili, M. Tsiklauri, A. Dgebuadze/. Mining Journal. – 2014. – #2(33) – pp.63-68. – geo.; abs.: geo., eng., rus.

The main objective of this work was to study the possibility of compacting intermetallic Ta-Al-B₄C compounds by hot shock-wave compaction technology; to establish the possibility of formation of tantalum aluminates intermetallic compounds to near theoretical density with improved structure and good mechanical properties by combining self-propagating high temperature synthesis (HTS) and hot-shock wave compaction (HSWC) technologies. It was established, that for formation flawless composition materials by HSWC compaction temperature should not exceed temperature of SHS, 940°C. Investigated are the structural and mechanical properties of tantalum-aluminum-boron carbide intermetallic materials. Fig. 8, Tab. 8.

Auth.

14.2.5.3. Georgian enamel – the present and the future. /G. Gaprindashvili, S. Sanadze, M. Kekelidze/. Ceramics. – 2014. – #1(31). – pp. 37-41. – geo.; abs: rus, geo., eng.

The present state of artistic enamels and pigments for painting in Georgia is considered. At present in the Eparchy of Alaverdi a plant for production of these materials in a centralized way is under construction. Fig. 1, Ref. 9.

Auth.

14.2.5.4. Coating of duralumin surface by black, wear-resistant layer. /V. Gharibashvili, V. Metreveli, Z. Mirijanashvili, Z. Jabua, I. Kupreishvili/. Science and Technologies. – 2014. – #1(715). – pp. 79-83. – geo.; abs.: geo., eng., rus.

The blackening of the AlZn6MgCu aluminum alloy was carried out by the anodizing and colouring technique. The samples, which were hard anodized in sulfuric acid solution (<5°C) and coloured by black aniline dye were found to have the best protective properties against wear and fading. Fig. 3, Tab. 2, Ref. 8.

Auth.

14.2.5.5. Preparation of erbium monotelluride films, and their optical and electrical properties. /Z. Jabua, I. Tabatadze, A. Gigineishvili/. Science and Technologies. – 2014. – #1(715). – pp. 84-90. – geo.; abs.: geo., eng., rus.

For the first time a technology of preparation of thin crystalline ErTe films by vacuum-thermal evaporation from two independent sources of components was developed. Thin films had a cubic crystalline structure with lattice parameters $a=6,03\text{\AA}$. The absorption spectra of prepared films at 300 K were obtained. The resistance, Hall constant and thermoelectric power of the films were measured in the temperature range of 100-500 K as function of temperature. It is shown by the electro-physical properties ErTe films are a metal. Fig. 8, Ref. 9.

Auth.

14.2.5.6. Prospects of application of Georgian natural zeolites as building material admixtures /R. Skhvitaridze, V. Tsitsishvili, B. Keshelava, G. Tsintskaladze/. Science and Technologies. – 2014. – #1(715). – pp. 98-102. – geo.; abs.: geo., eng., rus.

There is examined the chemical composition of Georgian natural zeolites – analcime, phillipsite, mordenite, laumontite, clinoptilolite - established their identity and containment of zeolite phases. It is shown that the introduction of zeolites into the cement compositions as admixtures leads to the improvement of the cement quality. In this respect, zeolite - clinoptilolite was found the most effective. Fig. 1, Tab. 3, Ref. 5.

Auth.

14.2.5.7. Silk production development history in Georgia. /N. Chkhaidze, N. Makhviladze, L. Lursmanashvili, T. Chubinishvili/. Science and Technologies. – 2014. – #1(715). – pp. 120-126. – geo.; abs.: geo., eng., rus.

The history of silk production in Georgia from ancient times to the present day is given. Mulberry tree leaves have been used as natural feed of silkworms in the Caucasus from ancient times. Therefore, the secret of getting silk fibre has been known in Georgia from those times. In the oldest Georgian literary work "Martyrdom of Shushanik" (5th c. A.D.) the existence of silk in Georgia is evidenced. In the next centuries the silk production in Georgia became one of the main industries. The produced silk products were used both in the country as well as were exported. The raw silk thread production totalled 400 tonnes per annum in the 1960s and the rate was kept up to 90s. In the early 90s the silk production was ceased due to the known reasons of the collapse of the Soviet Union. The restoration of silk production in Georgia should become one of the priorities of Georgia's economy development. Tab. 1, Ref. 11.

Auth.

14.2.5.8. Electrophysical properties of thulium monosulfide thin films. /M. Teteloshvili, Z. Jabua, A. Gigineishvili/. Science and Technologies. – 2014. – #2(716). – pp. 61-64. – geo.; abs.: geo., eng., rus.

The dependence of electrophysical parameters of TmS thin films from on sizes of their constituent particles is considered. It is shown that the reduction of the sizes of particles below 55 nanometers leads to a dramatic concentration of electrons in the film, which, in turn, reduces the temperature coefficient of resistance. Fig. 5, Ref. 1.

Auth.

14.2.5.9. Stabilizers for filled PVC. /N. Kheladze, G. Chiradze/. Bulletin of Akaki Tsereteli State University. – 2014. – #2(4). – pp. 115-124. – geo.; abs.: geo., eng.

The paper presents a study of thermo-oxidative destruction of polyvinyl-chloride composites obtained using local mineral fillers (teshenite, basalt, white and pink eklari) and the ways of its increase. It is estimated that the maximum increase of thermal stability occurs at (3.0:3.0) ratio application of stearate Ca and PbSiO mixture of stabilizers. Tab. 2, Fig. 1, Ref. 3.

Auth.

2.6 Medical engineering

14.2.6.1. Object-oriented approach in the solution of problems of medical diagnostics. /N. Jaliabova/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2014. – #18. – pp. 247-251. – rus.; abs.: geo., eng., rus.

The concept of creation of the intellectual system structure of diagnostics by using the object-oriented approach is offered in the work. The use of the methodology of object-oriented structuring allows uniting the process of object decomposition and a method of representation as logical and physical, as well as static and dynamic models of the designed system. In the process of finding the solution to the problems of medical diagnostics, the often raised question is not whether this object belongs to a class, but to what degree it can be carried to this class. To do this, there is used the methods of fuzzy classification, based on the concept of class as a diffuse (fuzzy) set of objects for which the transition from non-membership of a given class to supplies gradually, and not jump wise. Ref. 2.

Auth.

14.2.6.2. Controlled local hyperthermia for therapy of malignancies. /Z. Kovziridze, G. Menteshashvili, P. Khorava, Kh. Bluashvili/. Ceramics. – 2014. – #1(31). – pp. 16-27. – geo.; abs: rus, geo., eng.

On the basis of an experimental material the anticancer mono-therapeutic effect of hyperthermia and its adjuvant action in poly chemotherapeutic treatment was presented by the use of a device created by us – “Lezi”. (Georgian Intellectual Property National Center SAKPATENTI. Deposit Certificate 5054. Work: “Control Local Hyperthermia and Magnetic Hyperthermia for Therapy of Malignancies”). As a result of the experiment, it was shown that in all animals (outbred albino mice, 3 months old) inhibition of cancer growth was fixed and intratumoral necrosis developed, while after 7-10 sessions tumors were ulcerated, which refers to the positive effect of the experiment. (Conclusion of pathology-anatomical Laboratory “PATGEO”, Tbilisi, Georgia). Fig. 12, Tab.2, Ref. 33.

Auth.

2.7 Environmental engineering

14.2.7.1. Modeling of the structure of Georgian power grid. /M. Gudiashvili, S. Lomidze/. Transactions of Technical University of Georgia. – 2014. – #4(494). – pp. 9-13. – geo.; res.: geo., eng., rus.

The development of the structure of the Georgian power grid is a multi-criteria task, which can be solved by building a mathematical model. According to the calculation, it is recommended to construct during the prospective period of 2015-20 years 85 MW capacity small hydro-power plants, 1610 MW capacity middle and large hydro-power plants with regulating reservoir, 1250 MW capacity wind farms and 230 MW capacity natural gas-fired heat power station. They will ensure meeting the country's demand of electricity, considering the country's economic, environmental and territorial distribution of power capacities. Tab. 2, Ref. 2.

Auth.

14.2.7.2. Definition of thermal equivalent of fuel calorific value measurement equipment. /K. Chkhikvadze/. Transactions of Technical University of Georgia. – 2014. – #4(494). – pp. 19-22. – geo.; res.: geo., eng., rus.

The working principle of solid and liquid fuel calorific value measurement equipment –XRY-1C. is discussed. The thermal equivalent of the calorimeter is defined, which is equal to 13947 j/K with the standard error of 0.08%. For calibration it is used exemplary substance – STU-1, created on the basis of benzoic acid brand STANCHEM, which purity, according to main substance, is 99.24% and calorific value is equal to 26.437 j/g $\pm 0.78\%$. Fig. 2, Ref. 2.

Auth.

14.2.7.3. Profile analysis of deviated wells based on directional survey data. /G. Gadjiev/. Transactions of Technical University of Georgia. – 2014. – #4(494). – pp. 23-27. – rus.; res.: geo., eng., rus.

The drift of survey data of directionally drilled wells, which is used to assess the well bore profile for the purpose of studying the effect of wellbore profile on technical parameters of exploitation of wells is analyzed. Indicators, such as the inclination angle from vertical α , azimuth angle φ , the well deviation angle from vertical l are also analyzed. The relationship between a_{max} and l is established. The model is obtained based on this relationship, and it has high correlation coefficient 0.80 and the lowest dispersion. Parameters of the maximum deviation angle and deviation angle at the zone of running in the hole the pump equipment are analyzed based on normal distribution law. Also changes in azimuth angle and intensity of well bore curvature in deviated wells are evaluated to ensure normal landing job of a pumping unit. Fig. 7, Ref. 9.

Auth.

14.2.7.4. 60-year experience in flight design and practical application of heat pump systems in Georgia. /N. Mirianashvili, O. Vezirishvili, K. Vezirishvili-Nozadze, T. Megrelidze, N. Gdzlishvili, V. Khatashvili, V. Bakhtadze/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2014. – #18. – pp. 116-120. – geo.; abs.: geo., eng., rus.

The paper analyzes the current level of use of heat pump installations in Georgia and presents the important results achieved in this area. On the basis of several years' theoretical and experimental studies, there are recommended refrigerants, the application of which is effective for heat pump in terms of the thermodynamics and for environmental reasons. The wide usage of heat pump for heating and cooling will enable the optimal development of the fuel and energy complex of Georgia and save fossil fuel consumption by 27-36%. All this will enable to improve the economic state of the country and increase the society's level of the well-being. Tab. 1, Fig. 2, Ref. 10.

Auth.

14.2.7.5. Problems of heating of public schools in Georgian regions and the ways of their solution. /Kh. Sichinava, G. Arabidze, T. Jishkariani/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2014. – #18. – pp. 97-104. – geo.; abs.: geo., eng., rus.

Firewood, that needs a considerable amount of financing, is used by Georgian regional schools for heating purposes. The article demonstrates that this type of heating is completely ineffective. To solve the problem, it is important to efficiently use the energy potential of firewood, to improve the combustion process and the technical condition of the public school buildings. Tab. 1, Fig. 4, Ref. 4.

Auth.

14.2.7.6. Hydropower as guarantee for power independence of Georgia. /R. Arveladze, T. Kereselidze/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2014. – #18. – pp. 83-89. – geo.; abs.: geo., eng., rus.

Georgia today does not have sufficient resources to meet the energy balance. Against the background of increasing demand for energy resources, such situation is hardly to change in the near or distant future. The role of hydroelectric power plants in meeting the country's power needs is extremely important, although, even under conditions of their complete utilization, the problem will still remain. The development of a cost-effective and environmentally acceptable energy potential of rivers should be done very rapidly. To ensure the complete satisfaction of future demand for electricity, the following activities should be carried out: the construction of a regulating power plant, enabling to arrange a hydroelectric complexes; the import of basic power instead of export of peak energy; the winter-spring energy exchange with concerned states; the introduction of wind, solar and own coal into the energy balance; the import of electricity or the construction of thermal power plants running on imported gas; in addition to the thermal power plants running on imported gas, the adoption and use of hydrogen would be reasonable, the resources of which in Georgia are practically unlimited. Tab. 2, Fig. 1, Ref. 6.

Auth.

14.2.7.7. Safe distances during blasting operations and storage of explosives. /A. Bezhanishvili, N. Kukuladze, N. Bochorichvili, M. Gogrichiani/. Mining Journal. – 2014. – #2(33) – pp.78-83. – geo.; abs.: geo., eng., rus.

The methods of calculation of safe distances for people, buildings and devices during blasting operations and storage of explosives are considered. In particular these concern: blasting works in an open locality and under water, special blasting works, upon tunneling, on the objects located on land surface, as well as in in coal seams dangerous in terms of rock burst; in mines dangerous by outburst and explosion of gas and dust. The design formula for calculating a safe seismic is given. Tab. 2, Ref. 1.

Auth.

14.2.7.8. On the effectiveness of some automobile fuel admixtures. /T. Natriashvili, V. Margvelashvili, R. Demetrashvili/. Science and Technologies. – 2014. – #1(715). – pp. 52-57. – geo.; abs.: geo., eng., rus.

The effect of admixtures intended for automobile fuels supplied by two different sources on the operation of the internal combustion engine is considered. Tests of the diesel- and petrol-run automobiles carried out on a special testing stand have shown that the technical and economic as well as ecological indices of the engines working on fuels with the considered admixtures actually do not differ from the indices of the engines working on the fuel without admixtures. Fig. 5.

Auth.

14.2.7.9. Choice of a compatibility criterion for lubricating materials. /S. Iashvili/. Science and Technologies. – 2014. – #1(715). – pp. 58-62. – geo.; abs.: geo., eng., rus.

The problems of choice and calculation of lubricating materials of friction units of machines are considered. It is shown that the proper operation and reliable exploitation of the heavily loaded details of friction are mainly dependent on the ability of lubricating materials to divide the ground surfaces of the lubricating layer and carry out the effective extraction of energy. The criterion of continuity of the lubricating layer - critical temperature of surface of friction, is determined. The calculation formulas for such temperatures upon application of both ordinary and modified lubricants are given. Fig. 1, Ref. 8.

Auth.

14.2.7.10. Application of powder metallurgy in mining industry. /E. Chagelishvili, A. Peikrishvili, T. Pirtskhalava, M. Tsiklauri, B. Godibadze, A. Dgebuadze/. Science and Technologies. – 2014. – #2(716). – pp. 71-76. – geo.; abs.: geo., eng., rus.

The results of research conducted by G.Tsulukidze Mining Institute, in accordance with the principles of the restructuring of the coal industry in Georgia are given. For the projected mine of Tkibuli-Shaori deposits it is recommended to apply the developed by the institute promising reinforcement technology of cutting tools. The formation of a transient zone between the cutting material and steel basis provides a decrease in stresses arising during the cutting process of rocks. On the other hand, the diamond inclusions provide an increase in hardness and cutting characteristics of cutting tools. The pressing scheme using Al-B4C explosives, which is intended for producing composite multilayer cylindrical containers for operation in an aggressive environment, is considered. Fig. 2, Ref. 9.

Auth.

2.8 Environmental biotechnology

14.2.8.1. Opportunities of fulvic acids allocation from the ground and their further use. /L. Tatiashvili, N. Tserodze, M. Stefanishvili, R. Uridia, I. Mikadze/. Proceedings of Georgian National Academy of Sciences. – Chemical Series. – 2014. – vol. 40. – #1. – pp. 90-93. – geo.; abs.: geo., eng., rus.

Works are carried out with the purpose of different types of fulvic acids allocation from the ground and peat. Optimal conditions are chosen for obtaining maximum yield from the compounds mentioned above. Extract consistency is researched and new cleaning methods are developed. This gives an opportunity to use liquid fertilizers rationally on the bases of fulvic acids. Fig. 2, Ref. 19.

Auth.

2.9 Industrial biotechnology

14.2.9.1. Microwave in environmental technologies of processing of mining, metallurgical and polymeric waste. /A. Chirakadze, Z. Buachidze, M. Wireman, W. Toscano, N. Kavlashvili, G. Kervalishvili, L. Gurchumelia, A. Gigineishvili, Z. Gasitashvili, T. Chichua, D. Bibiluri, L. Sharikadze/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2014. – #18. – pp. 157-160. – eng.; abs.: geo., eng., rus.

Recent discoveries by Georgian scientists and scientific institutions in the field of microwave enhanced processing of mining and metallurgical, polymeric, agricultural, municipal, medical, radioactive waste are described. These advances can form a scientific and technological basis for Georgia to move toward an increased economic and social development, environmental safety and security, establish a “Green Economics” and a Knowledge-Based Society and achieve sustainable development. Ref. 9.

Auth.

14.2.9.2. The effect of nanostructured silver on biologically active substances and microbiological processes of dry red wine. /N. Ebelashvili, L. Shublade, E. Salia, N. Gagelidze, N. Bibiluri/. Bulletin of the Georgian National Academy of Sciences. – 2014. – vol. 8. – #1. – pp. 94-101. – eng.; abs.: eng., geo.

In the present study we investigated the effect of various doses of nanostructured silver on the content of polyphenols, organic acids, main conditional indices, lactic acid bacteria and acetic acid bacteria in biotechnological processes of making dry red wines. Research material was prepared from the red grape variety “Saperavi”. Sulfur dioxide – Kadifit, 50 mg/l concentration and various doses of nanostructured silver (0.2; 0.3; 0.4; 0.5; 0.6; 0.7; 0.8 mg/l) were used during the first year of making red wine material for different biotechnological stages: 1) processing of destemmed grape pulp prior to alcoholic fermentation; 2) after malolactic fermentation; 3) at the second and 4) third racking off the lees. Malolactic fermentation of the wine material was conducted after termination of alcoholic fermentation and racking off the yeast lees using lacto bacteria of the strain “Extraflora” of *Oenococcus oeni* as starters. Content of catechins, phenolcarbonic acids, flavanols and organic acids was investigated by means of the HPLC analysis. The main conditional indices were determined using standard international methods. Efficiency of application of nanostructured silver in the wine samples infested with lactic acid bacteria and acetic acid bacteria was evaluated. Nanostructured silver was found in biotechnological processes of making dry red wines to have the effect similar to that of sulfur dioxide. The optimum doses of using nanostructured silver 0.4 mg/l - prior to alcoholic fermentation for the processing of grape pulp; 0.6 mg/l – in the processes of the second and third racking off the lees, for the oxidation of biologically active substances and inhibition of growth of lactic- and acetic acid bacteria were identified. Fig. 3, Tab. 4, Ref. 12.

Auth.

14.2.9.3. Higher basidial fungi isolated from different zones of Georgia – producers of lignocellulosic enzymes. /N. Tsiklauri, R. Khvedelidze, N. Zakariashvili, T. Aleksidze, M. Bakradze-Guruli, E. Kvesitadze/.

Bulletin of the Georgian National Academy of Sciences. – 2014. – vol. 8. – #1.– pp. 102-109. – eng.; abs: eng., geo.

Great interest in basidiomycetes for targeted technological treatment of agro-industrial plant substrates is conditioned by their ability to produce lignocellulosic enzymes. The samples of wood-degrading basidiomycetes were collected from different taxonomic niches of Georgia to study biochemistry and physiology of wood-degrading basidiomycetes. 36 strains were obtained as pure cultures and 29 ones were identified. Producers of lignocellulosic enzymes were revealed among the test fungi under solid-state and submerged cultivation conditions. *Pleurotus ostreatus* GV12, *Pleurotus ostreatus* GK10 and *Fomes*.sp. KA20 were found to be the best producers of cellulose enzymes using orange peel, wheat straw and wheat bran as substrates, and *Ganoderma* sp. GM 04 – the best producer of laccase during cultivation on orange peel waste. The influence of lignocellulose on accumulation of the enzymes laccase, xylanase and filter paper assay was studied. Tab. 3, Fig.3, Ref. 25.

Auth.

14.2.9.4. Chemical composition and functional role of oil extracted from seeds of Saperavi grape variety (*Vitis vinifera* L.). /T. Mchedluri, D. Margalitashvili, N. Aleksidze/. Bulletin of the Georgian National Academy of Sciences. – 2014. – vol. 8. – #1.– pp. 110-113. – eng.; abs: eng., geo.

Chemical composition of oil extracted from the seeds of Saperavi grape variety, in particular, the quantitative content of fatty acids, biogenic amines and amino acids and their influence on the physiological activity of white Wistar rats were investigated. Constituents of grape seed oil were separated using the method of high-pressure liquid chromatography (WATERS, USA) on Nova-Pak column C18 (100 mm, 83.2 mm) and determined on a fluorescent detector (at 270 nm). Effects of extracted solutions on emotional state of adult Wistar rats were tested in special experiments and evaluated using Irvin's scale. Saturated and unsaturated fatty acids (lauric, myristic, palmitic, stearic, oleic, linolenic and arachidonic acids), biogenic amines (serotonin, dopamine, noradrenaline, adrenaline) and amino acids (aspartic and glutamic acids, asparagine, phenylalanine, tyrosine, threonine, tryptophane, leucine, methionine, proline, alanine, glycine) were found to improve functional state of white rats and, as a result, to alleviate aggressive behaviour. Application of grape seed oil in medical practice for curative purposes seems to be very prospective. Tab. 3, Ref. 12.

Auth.

2.10 Nano-technology

14.2.10.1. Decoder of digital television signal K1879XБ1Я. /M. Surguladze/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2014. – #18. – pp. 220-223. – geo.; abs.: geo., eng., rus.

The application possibility of in the field of construction of multi-function HDTV receiver as well as many other electronic devices for control and encryption by the example of the decoder K1879XБ1Я (90 nanometric technology) is shown. Tab. 1, Fig. 1, Ref. 1.

Auth.

14.2.10.2. Artificial intelligence methods for developing nanosensorial systems of biochemical analysis of blood. /M. Khachidze, D. Khachidze, N. Khachidze/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2014. – #18. – pp. 42-46. – geo.; abs.: geo., eng., rus.

The application of the analytical heuristics method for developing nanosensorial systems of biochemical analysis of blood is discussed. The procedure for selecting nanosensors for sensorial system of blood biochemical analysis (for specific disease) is considered. Also considered is the performance of knowledge base filler "disease concepts" for system which supports the physician's decision. This system will give the physicians an opportunity to diagnose correctly on the basis of the automatic data analysis received from nanosensorial system. Ref. 6.

Auth.

14.2.10.3. Use of nanoreinforcement in concrete technology. /R. Skhvitaridze, B. Keshelava, I. Giorgadze, Sh. Verulava/. Science and Technologies. – 2014. – #2(716). – pp. 65-70. – geo.; abs.: geo., eng., rus.

An innovation is the execution of a three-dimensional dispersive reinforcement at a nanolevel, implying the self-reinforcement process with the inclusion into concrete of a zeolitic fiber and needle-shaped fiber nanosize crystals. As a result, the technology of producing monolithic concrete resistant to different impacts is developed. Fig. 7, Ref. 3.

Auth.

14.2.10.4. The innovative concrete nanotechnology in Georgia. /R. Skhvitaridze, B. Keshelava, I. Giorgadze, G. Tsintskaladze, Sh. Verulava/. Nano Studies. – 2014. – #9. – pp. 5-8. – eng.

The cement is produced by inclusion of zeolite tuff therein. Before inclusion into the cement, the mixture additive is subjected to thermal treatment at 100–700°C. The obtained data testified the positive influence of the active mineral additives on thermal treatment of cement and concrete strength. The active mineral additives thermally treated and saturated by sulfur dioxides at 700°C were studied by XRD. Interesting results were obtained by studying the physical-mechanical properties of cement based on Portland cement with thermally treated mineral additives. Upon inclusion of the thermally treated mineral additive – zeolite tuff $\text{Al}_2\text{O}_3 \cdot 2\text{SiO}_2$ – in the cement mixture, the additives and clinker minerals reacted at the nano-level to produce ettringite $3\text{CaO} \cdot \text{Al}_2\text{O}_3 \cdot 3\text{CaSO}_4 \cdot 32 \text{H}_2\text{O}$, and create preconditions for forming the clusters of natrolite and so-called zeoettringite, probably, with the chemical formula $\text{Na}_2\text{O} \cdot 2\text{Al}_2\text{O}_3 \cdot 3\text{SiO}_2 \cdot 6\text{CaO} \cdot 3\text{SO}_3 \cdot 34\text{H}_2\text{O}$, which increases activity, compressive and flexural strength of the concrete. Fig. 4, Ref. 3.

Auth.

14.2.10.5. Sensitivity and low-frequency noises of gas sensors made of a nanoscale composite material. /R. Hovhannisyan, H. Khondkaryan, M. Aleksanyan, F. Gasparyan, V. Arakelyan, V. Aroutiounian/. Nano Studies. – 2014. – #9. – pp. 21-28. – eng.

Thin film gas sensors based on nanocomposite $\text{In}_2\text{O}_3 \cdot \text{Ga}_2\text{O}_3 \cdot \text{SnO}_2(70:20:100)$ have been manufactured by the high-frequency magnetron sputtering method. The technological cycle of sensor fabrication processes is described. Sensitivity of the prepared sensors at the temperature of working body 250°C and low-frequency noises within the 1–300Hz range were investigated. The response of sensors to vapors of ethanol and acetone was investigated using resistive and noise methods. It is shown that the value of the sensitivity measured by the noise method exceeds the value of sensitivity measured by the resistive method. Sensors show appreciable sensitivity to the ethanol vapors already at working body temperature 150°C. Sensors can be used for the detection of low concentrations of ethanol vapors. The monotonous increase in the sensitivity of these sensors with increase in the ethanol and acetone vapors content allows applying nanosensors also for fast determination of gases concentration in air. Fig. 7, Tab.2, Ref. 12.

Auth.

14.2.10.6. Nanotimber - innovative construction material of the 21st century. /T. Khmelidze, D. Nikabadze, M. Nikoladze/. Nano Studies. – 2014. – #9. – pp. 29-32. – eng.

Since the ancient times, humans have used timber to make implements, combat equipment, living houses, fortification buildings, etc. Timber was, is and always will be the most wanted ecologically clean material in the construction industry. Despite all the good properties which timber has, like lightness, high strength to density ratio, texture, easiness to obtain, nice color gamma, etc., the timber and constructions made from it have some negative properties: burn-ability, low bio endurance, inclination to rotting, etc. These negative properties are lowering the carrying capacity of the timber. Mostly these are the reasons why man uses other materials to construct their buildings. Timber of the coniferous trees is more used in constructions than the timber of deciduous trees, because of its low technical indicators. The nanotechnologies, which give a chance of deep treatment of the timber to produce new construction materials, are discussed. The use of nanotimber resolves many problems. Fig. 12, Ref. 4.

Auth.

14.2.10.7. Rare, ultrasmall, and radioactive nanoparticles. /B. Kharisov, O. Kharissova/. Nano Studies. – 2014. – #9. – pp. 33-48. – eng.

When the nanotechnology area began to develop intensively as an independent field in the frontiers of physics, chemistry, materials chemistry and physics, medicine, biology, and other disciplines two decades ago, such terms as “nanoparticle”, “nanopowder”, “nanotube”, “nanoplate”, and other related shape-like terms had rapidly become very common. For instance, a simple search using SciFinder results hundreds thousands of articles with keywords “nanoparticle” or “nanotube”. At the same time, during the last years, efforts of researchers have led to reports of enormous number of the nanostructure types above and the discovery of more rare species, such as “nanodumbbells”, “nanoflowers”, “nanorices”, “nanolines”, “nanotowers”, “nanoshuttles”, “nanobowlings”, “nanowheels”, “nanofans”, “nanopencils”, “nanotrees”, “nanoarrows”, “nanonails”, “nanobottles”, or “nanovolcanoes”, among many others. The problem how to name a discovered rare nanoform is commonly resolved according to imagination of researchers. Since any novel nanoform/nanostructure could theoretically get useful, unexpected and unpredictable applications, each new achievement, reproducible or not, is welcome due to an extreme importance of nanotechnology at this moment and in future. Without a good understanding of the reasons for shape formation, approaches to the synthesis of nanostructures can be hard to carry out. According to the available literature, no any universal generalization of rare and common nanostructures is observed in available literature. Several existing classifications are related with dimensionality of the nanostructure itself and their components (for instance, 0D clusters and particles, 1D nanotubes and nanowires, 2D nanoplates and layers, 3D core/shell nanoparticles or self-assembled massives, intermediate dimensional nanostructures as fractals or dendrimers) or the classification based on the triad symmetry group-shell composition-structural formula of the shell (here nanostructures are divided in branches, classes, and subclasses determined by the symmetry

group of a shell and the sets of the quantum numbers of a structure). There is offered for discussion by the nanotechnological community a non-formal classification, which is not directly related with dimensionality and chemical composition of nanostructure-forming compound or composite and it is based mainly on the less-common nanostructures. The discussion is focused to the examination of less-common nanostructures (i.e., published mainly in the range of 1–100 reports) corresponding to the shapes above. Such structures possess unusual shapes and high surface area, which make them very useful for catalytic, medical, electronic and many other applications. In addition, certain attention is paid to the ultras-small nanoparticles (size <10nm) and those containing radioactive elements. Fig. 14, Tab.1, Ref. 7.

Auth.

14.2.10.8. **Recent advance in electrophoretic deposition for nanotechnological applications.** /G. Gunkaya, H. Kurama/. Nano Studies. – 2014. – #9. – pp. 49-64. – eng.

Nanotechnology is a multidisciplinary area of applied science and engineering that deals with the utilization of unique physical, chemical and biological properties of nanoscale substances in fundamentally new and useful ways. Although the researches on nanoscale is back to the centuries, the study of biological systems and the engineering of many materials such as colloidal dispersions, metallic quantum dots, and catalysts can be given as a common previous areas performed in nanometer regime, the application of nanotechnology for design and production industries is relatively new. Recent advance on the image, engineer and manipulate system in the nanometer scale leads to production and uses of nanoparticles or nanosurfaces hence it has becoming more and more important topic in the whole world. Several techniques can be concerning the manufacture of nanosized materials, however, in recent years, the electrophoretic deposition (EPD) has been recognized as a most growing and promising technique for the manufacturing of nanotechnology based coating materials due to the high versatility of its use with different materials and the cost-effectiveness of the process. The fundamental aspects of electrophoretic deposition, mechanism, affecting factors and applications in various areas including coatings, nanoscale assembly, micro patterned thin films, advance and fiber reinforced ceramics, glasses, laminated, graded or hybrid materials, etc. is overviewed. A special attention has also given to performed researches aimed to utilization of boron and boron compounds in EPD processes to increase the final product properties. Boron is a material, which can show high corrosion resistance, high hardness, high refractory properties and strong bonding properties with different substrates. Furthermore, the high ionization energies means that stability at low voltages make it a potential material for electrophoretic deposition. Fig. 9, Ref. 71.

Auth.

14.2.10.9. **Influence of production conditions on the structural state of boron crystals.** /D. Gabunia, O. Tsagareishvili, L. Chkhartishvili/. Nano Studies. – 2014. – #9. – pp. 65-70. – rus.

Nanoscale structure provides a unique opportunity to obtain materials with improved characteristics. In this respect, boron attracts an increasing attention. Taking into account the low specific weight and possibility to form nanoscale structure, boron-containing materials and coatings can be successfully used in the electronic, nuclear and aerospace engineering. They also can be utilized in medicine and for protection of the service personnel working with neutron sources. Basic data on the preparation of nanocrystalline (previously they were called as “ultra-dispersive”) boron powders and the results of their characterization have been summarized. This work deals with the nanocrystalline particles of boron and boron-based materials in dependence on the producing conditions: mechanical and high-voltage electric discharge grindings; chemical and electrical arc synthesis; heat treatment of amorphous boron. The prospect of using unique properties of boron in modern technology should encourage the design of novel boron-based nanocrystalline materials. Ref. 2.

Auth.

14.2.10.10. **Application of structural nanomaterials in petroleum industry.** /N. Nabhani/. Nano Studies. – 2014. – #9. – pp. 71-82. – eng.

Nanotechnology is a rapidly growing technology with considerable potential applications and benefits, to effect revolutionary changes in several aspects of the oil and gas industry. While tangible benefits realized in oil and gas industry, the area of construction to the oil industry has been slow to embrace the new technology. The construction sector might accommodate broad applications of nanotechnology and nanomaterials in several areas of the oil and gas industry, such as exploration, drilling, production and enhanced oil recovery. For example, lighter, stronger and more long lasting structure; low maintenance coating; better properties of cementitious material and steel alloys; construction related smart sensors for monitoring of the structural integrity. In short, there are numerous areas in which nanotechnology can contribute to more efficient, less expensive and more environmentally sound technologies. In this paper, a broad overview of potential application of various nanotechnology developments in the construction oil and gas field is discussed. The potential opportunities and challenges that face future trends of nanotechnology application in this field are also discussed. Fig. 1, Tab.2, Ref. 60.

Auth.

14.2.10.11. An alternative method for obtaining nanosize tubes, fibers, magnetic clusters. /L. Rukhadze, L. Chkhartishvili, O. Tsagareishvili/. Nano Studies. – 2014. – #9. – pp. 83-86. – eng.

Carbon nanotubes, nanofibers, and magnetic clusters doped with ferromagnetic metals are obtained by the thermal dissociation of organic hydrocarbons at low-oxygen partial pressure condition. Depending on amount or density of hydrocarbons, velocity of the pyrolysis product within a reactor and substrate surface conditions, carbon nanomaterials of various geometric forms and sizes can be obtained (e.g., it is possible the vertical growth of nanofibers with diameter from 20–30 μm and length from 20 μm up to several cm). Besides, the mentioned method includes the obtaining of pure metals in nanocrystalline form from minerals of ferromagnetic elements, and pure hydrogen from hydrocarbons, as well purification of the gaseous hydrogen. The cheap precursors, simply controllable technological process, as well as simple apparatus used make it possible to obtain diversity of low-cost carbon-based nanomaterials. Fig. 4, Ref. 2.

Auth.

14.2.10.12. The effect of electrohydraulic discharge for high dispersive magnetic nanofluid synthesis. /V. Mikelashvili, J. Markhulia, Sh. Kekutia, R. Tatarashvili/. Nano Studies. – 2014. – #9. – pp. 87-92. – eng.

Experimental studies have shown the effectiveness of electrohydraulic processing on the high dispersive magnetite nanofluid synthesis. The concentration enhancement of magnetite nanoparticles was caused by an instant increase of pressure and other physical phenomena influence, which accompanied during electrohydraulic effect. The effective use of this effect closely related to the control of some physical parameters. The recorded hysteresis loops shows that the particles are superparamagnetic at room temperature, which is characteristic of a soft ferromagnetic material such as magnetite. Fig. 4, Ref. 12.

Auth.

14.2.10.13. Nanosensor for thermoelectric single-photon detector. /A. Kuzanyan/. Nano Studies. – 2014. – #9. – pp. 93-102. – eng.

The results of computer simulation of kinetic processes in the thermoelectric detector sensor after photon absorption are presented. Different geometries of the thermoelectric single-photon detector with sensor size, which decreases from microns to nanometers, are considered. The time dependence of the electric potential appearing on the sensor is calculated. It is determined the optimal dimensions of the thermoelectric single-photon detector sensor and of the absorber to achieve gigahertz count rates for 100eV photons registration. Fig. 5, Tab.2, Ref. 31.

Auth.

14.2.10.14. English–German–Russian–Georgian electronic dictionary (glossary) in nanochemistry, nanophysics and nanotechnology. /Ts. Ramishvili, V. Tsitsishvili/. Nano Studies. – 2014. – #9. – pp. 103-106. – eng.

Nanoscience and nanotechnology are interdisciplinary branches that mandatorily require a creation of united term base. This is communication language for specialists of various branches (physicists, chemists, biologists, technicians, material scientists and others) who create nanoscience and nanotechnology. Besides, notions and terms corresponding to international standards will cause their uniform understanding and allow us to get rid of false, ambiguous interpretations. This language is created in advanced countries and we have to make it understandable for Georgians using adequate terms in our native language. Creation of Georgian electronic dictionary in nanochemistry, nanophysics and nanotechnology is timely. Nanoscience is being developed of a high rate, and the electronic format of dictionary provides possibility of its fast update. Electronic dictionary will have one subject and different linguistic directions, particularly in special, nanoscience (nanochemistry, nanophysics) and nanotechnology directions; multilingual, translational: English–German–Russian–Georgian, illustrated and with explanations in Georgian. This dictionary will be a mass consumer product. It will have a lexicographical, reference and especially educational value. Ref. 7.

Auth.

14.2.10.15. Modern theories of homeopathic nanopharmacology. /M. Chikava, T. Tsintsadze, Kh. Mishelashvili, N. Sulashvili/. Nano Studies. – 2014. – #9. – pp. 107-110. – eng.

The most efficient medications used in medicine affect the tissue receptors. Supposedly, there are special receptors in an organism, so called homeoreceptors, supporting the action of the homeopathic preparations. At present, the view of the homeopathy stimulating the immunobiological forces of a body is widely recognized. P.V. Simonov established that subminimal doses of substances cause retention evidenced by the clearly seen protective properties. The author called this action preventive. Hahnemann was the first to pay particular attention to the regular dilutions and put forward the idea of drug potentiation. Some authors give a hypothesis of water becoming coherent as a result of interaction between the water dipole and irradiation of a diluted molecule and acquiring the property to transfer the specific information to the cell receptor, like the laser does. The receptor molecules are forced to move between the bilipid layers and resonate with specific frequencies to cause a signal transfer. In recent years, they tried to explain the effects

of homeopathic drugs by using a famous Arndt–Schultz law. However, this law is not universal. If considering the literary data, the issue as to whether the given law is effective with high dilutions is unclear, as such dilutions contain no molecules of the initial substance. There is a theory linking the mechanism of action of homeopathic drugs to the effect of contamination. Free radicals are formed in a contaminated solution resulting in the pharmacological effect. Didier Grand George was one of the first to try to explain the mechanisms of action of a homeopathic drug by means of neurophysiology. In his opinion, the central nervous system functions with the scales of homeopathy. A nerve impulse causes the changes in the state of a cell membrane and liberation of the homeopathic doses of neurotransmitters in the synaptic gap. Ref. 3.
Auth.

14.2.10.16. Electrical, optical and structural properties of titaniumdioxide dielectric films formed by DC magnetron sputtering. /A. Bibilashvili, Z. Kushitashvili, G. Skhiladze/. Nano Studies. – 2014. – #9. – pp.111-114. – eng.

DC Magnetron sputtering technic has been used to receive thin titanium dioxide films onto p-type silicon substrate. The substrate temperature was kept at 250°C during deposition. By Spectroscopic Ellipsometer was calculated the thickness of TiO₂ and refractive index, which were respectively 85nm and 2.25. Good capacitance–voltage characteristics were observed with dielectric constant of 35 using Keithly Instruments Semiconductor Parameter Analyzer. The crystal structure was shown to be nanocrystalline by X-ray diffraction. Fig.3, Ref. 9.

Auth.

14.2.10.17. The magnetization due to activities of magnetic particles in magnetic fluids. /K.Kotetishvili, G.Chikhladze/. Nano Studies. – 2014. – #9. – pp.115-118. – eng.

The magnetization due to activities of magnetic particles in magnetic fluids is studied theoretically. Ref. 3.

Ed.

14.2.10.18. Structural features of the iron–oxygen nanoparticles formed when the rotation-corrosion dispergation method is applied. /O. Lavrynenko, Y. Bolbukh/. Nano Studies. – 2014. – #9. – pp.127-148. – eng.

The usage of the rotation-corrosion dispersion method permits to form the different nanosized iron oxyhydroxides and its oxides as well as iron–oxygen metastable forms. The structural features of such particles were studied applying X-ray diffraction, TEM and SEM images and Fourier transform infrared spectroscopy. While SEM and TEM images permit to show the morphology of the particles and X-ray diffraction points to the main phase and the product of their phase transformation, the FTIR study explains the way of the particles formation due to the analysis of the structural elements and admixtures containing in the main mineral phase. The structure of the iron–oxygen nanoparticles obtained when the RCD-method was applied differs from similar particles formed under other physical-chemical conditions, for example, under co-precipitation. Fig.15, Ref. 37.

Auth.

14.2.10.19. Radioactive waste management in Georgia. /G. Nabakhtiani, L. Chkhartishvili, A. Giginishvili, K. Gorgadze/. Nano Studies. – 2014. – #9. – pp.149-154. – eng.

Georgia takes active steps for establishment of Radioactive Waste Management System (RWMS) in the country. Generally speaking, RWMS should contain four major elements: legal basement, administrative structure, infrastructure for handling with radioactive waste, and financial system. Only some parts of above-mentioned elements are exist in Georgia now. RWMS should meet nine basic principles defined by the International Atomic Energy Agency (IAEA).Based on these it is possible to define more detailed principles. The following main routes for radioactive waste generation in Georgia can be considered: demolition of large facilities (such as nuclear reactor), renovation of the disposal site, generation of new waste due developing of industry and medical application of radioactive sources, and generation of secondary radioactive waste. Besides of all Disused Radioactive Sources (DSRS) and historical waste should be also considered. Whole process for handling with radioactive waste can be divided into three main phases: establishment of national system for radioactive waste management, predisposal activity, and disposing. The main task is establishment of Radioactive Waste Management Agency (RWMA), which on behalf of state will operate all radioactive waste management facilities. Functions of RWMA also cover handling with DSRS on all steps and decontamination activity. RWMA should meet all requirements set by IAEA.Tab.1, Ref. 5.

Auth.

14.2.10.20. Method of standard deviation for analysis of hydrogeodynamic parameter. /A. Gevorgyan, A. Khangaldyan, S. Mavrodiev, M. Adibekyan, G. Melikadze, A. Sborshchikovi, G. Kobzev, T. Jimsheladze/. Nano Studies. – 2014. – #9. – pp.155-162. – eng.

The method of standard deviation for analysis of hydrodynamic parameter is studied. For that purpose, the hydrogeodynamic parameters of several earthquakes in Armenia and Georgia following the earthquakes in

South Caucasus are investigated and for a comparative analysis the hydrogeodynamic parameter of the networks of Armenia and Georgia is used. The result of the monitoring of water level variation parameter indicated a direct connection between deformation processes to strong earthquakes. Fig. 9, Ref. 9.

Auth.

14.2.10.21. Mobility of Cr(VI) by *Spirulina platensis* and *Arthrobacter* species. /E. Gelagutashvili, E. Ginturi, A. Rcheulishvili/. Nano Studies. – 2014. – #9. – pp.163-166. – eng.

The uptake of Cr(VI) by *Arthrobacter* species (*Arthrobacter globiformis* 151B and *Arthrobacter oxidas* 61B) and *Spirulina platensis* were studied by the simultaneous application of dialysis and atomic absorption analysis. A significant difference between the binding constants for Cr(VI) – *Arthrobacter oxidas* and Cr(VI) – *Arthrobacter globiformis* is observed. The comparative Freundlich biosorption characteristics Cr(VI) *Arthrobacter* species of living and dry cells show that capacity in both cases is nearly the same. Dry cells have larger biosorption constant for both species than living cells. Fig. 2, Tab.1, Ref. 16.

Auth.

14.2.10.22. Disinfection of drinking water from the effects of anthropogenic and natural disasters by nanotechnology. /D. Eristavi, N. Bibiluri, Sh. Andguladze, A. Gogishvili, M. Gugeshidze, E. Matsaberidze, Z. Matsaberidze/. Nano Studies. – 2014. – #9. – pp.167-168. – rus.

Designing and manufacturing of colloidal silver device with the use of nanotechnologies is considered. By means of it the water solution of colloidal silver with various concentrations will be received and used for necessary purposes. Ref. 5.

Auth.

14.2.10.23. Modernization of the vacuum unit of type VU–1A to obtain multilayered periodic optical coatings. /Z. Berishvili, I. Kordzakhia, D. Zardiashvili, G. Abramishvili, I. Avaliani, D. Shalamberidze, I. Ivanidze/. Nano Studies. – 2014. – #9. – pp.169-176. – geo.

The study is devoted to the construction and modernization of the vacuum plant of type VU–1A and the creation of modern experimental and technological coating lines. As part of the work under the dome of the vacuum apparatus two sets of units of a planar magnetron sputtering were installed; on top of the dome vacuum unit the quadrupole mass spectrometer of type RGA200 has been installed; the gas system was designed, constructed and installed; electrical units were produced by continuous and pulsed voltage and connected to a magnetron sputtering by the high voltage switch (RFDC “Plasma Switch”). Geometric distribution of parts under the dome, obtained by means of 3D design, characterized as compact and enables a high capacity to form high-quality antireflective layers. On the upgraded vacuum plant of type VU–1A, the optimal technology for forming antireflective layers developed with a view to its use in research, in the manufacture of industrial designs and, in the future, in a small production. Fig.3, Ref. 4.

Auth.

14.2.10.24. Formation of titanium alloys 3D nanostructures. /K. Gorgadze, T. Berikashvili, G. Nabakhtiani, T. Berberashvili, Sh. Khizanishvili/. Nano Studies. – 2014. – #9. – pp.177-180. – eng.

Titanium alloys are characterized by high Shape Memory Effect (SME) and Super Elasticity (SE). They also have good thermoelastic properties. Focused on these properties Ti–Ni alloy can be assigned as a good material for using in medical application. Same time there are some problems such as extraction of “free” Nickel which could be cause of allergic reaction for medical patients, therefore creation of new materials having appropriate characteristics for human tissue and remaining high thermoelastic property, SME and SE is very essential. Especial attention should be paid to formation of nanostructures and alloy property defined by this structure. The given article summarizes great activity for experimental investigations conducted for different Titanium alloys to find good “replacement” for Nickel. Finally two Ti alloys were fixed Ti–33Nb–7Zr and Ti–26Nb–4Ta–7Zr, which have comparably good characteristics to be used for medical application. Fig. 4, Ref. 2.

Auth.

2.11 Other engineering sciences and technologies

14.2.11.1. Apipuri – bread enriched with amino acids, vitamins and minerals. /K. Chakhunashvili, Sh. Yusufov, N. Jobava, N. Badriashvili, N. Topuridze, G. Chakhunashvili, Z. Shakarashvili/. Social, Ecological & Clinical Pediatrics. – 2013. – #16-11-10. – pp. 82-84. – geo.; abs.: geo., eng.

Bread is has the biggest consumer base in Georgia. According to the studies, only 24.9% of bread samples were fortified enough to correspond to daily standard and decrease the chance of micronutrient deficiencies. Apipuri, however, is made by totally new technology which enriches bread with amino acids, vitamins and

minerals. Cheap and daily product, affordable for everyone “Apipuri” – will decrease the chance of disease developed because of micronutrient deficiencies. Tab. 1.

Auth.

14.2.11.2. Main aspects of Georgian National Food Policy. /T. Darsania, D. Zarnadze, Ir. Zarnadze, G. Chakhunashvili/. Social, Ecological & Clinical Pediatrics. – 2013. – #16-11-10. – pp. 94-96. – geo.; abs.: geo., eng.

By the end of 20th century and start of 21st century various worldwide activities improved health indexes, such as: in the US fatal outcomes during cardiovascular management decreased by 20%, In Finland 50% decrease of mortality by such diseases. The goal of the study was to study complexity of Georgian national food policy. The data analysis show: The study of daily ration showed: lack of products in daily ration such as meat, vegetables and fish. Ration for older people who are on pension is monotonous and is of low nutritional value; Majority of populations does not have fruit and meat in daily ration. All above said enables we to say that this work is of quite an importance and we can conclude that further studies should be performed for evaluating public healthcare. Ref. 16.

Auth.

3. MEDICAL AND HEALTH SCIENCES

3.1. Basic medicine

14.3.1.1. Galectins as new therapeutic targets for galactose-containing polysaccharides. /A. Klyosov/. Bulletin of the Georgian National Academy of Science.– 2014. – vol. 8. – #1.– pp. 5-17. – eng.; abs: eng., geo.

The Galectin protein family includes 15 members that are characterized by galactose binding domains and are widely expressed in diverse cell types. Galectins are found in multiple intracellular compartments and are secreted into the extracellular space. There has been an explosion in information on these fascinating proteins in pathological states, particularly inflammation, fibrosis, and cancer. This Review summarizes attempts to cover the key areas of galectin-dependent disease and discusses the approaches to developing galectin blockers for treatment. The time is right for major efforts to advance galectin-based therapies into multiple human diseases. Fig. 3, Tab.1 Ref. 67.

Auth.

14.3.1.2. Genetic aspects of male infertility. /V. Grabar/. Georgian Medical News. – 2014. – #4(229). – pp. 21-25. – rus.; abs.: geo., eng., rus.

We examined 118 men with infertility. Among them we identified phenotypic syndromes associated with infertility in 4 and chromosomal abnormalities in 16. Further molecular genetic study of 98 infertile men found that microdeletions in AZFc-locus had 3, pathological AR allele had 2, CFTR gene mutation had 4 of them. In 37 infertile men an increased DNA fragmentation index (>20%) was found. Fig. 4, Ref. 12.

Auth.

14.3.1.3. Effect of gene polymorphism of ppar-γ2 regulatory proteins on the metabolic syndrome in children with nonalcoholic fatty liver disease and obesity. /T. Kryuchko, I. Kaidashev, O. Pilipenko, V. Ostapenko, I. Kolenko/. Georgian Medical News. – 2014. – #4(229). – pp. 66-73. – rus.; abs.: geo., eng., rus.

The aim of this study was to investigate the influence of single nucleotide polymorphism Pro12Ala of PPARγ2 gene in phenotypical manifestations, carbohydrate and lipid metabolism, blood pressure (BP) and tumor necrosis factor alpha (TNF-α) in children with exogenous constitutional obesity (ECO) and nonalcoholic fatty liver disease (NAFLD). 67 children aged from 7 to 17 years were examined; among them 34 patients were diagnosed with NAFLD and 33 children with ECO. The algorithm of examination included assessment of anthropometric parameters, blood lipid profile, glucose indicators and immunoreactive insulin (IRI) on an empty stomach, the calculation of the HOMA-IR index, genetic methods of examination. The study of Pro12Ala polymorphism of PPARγ2 gene showed that patients with NAFLD demonstrated the highest percentage in the frequency of the “wild genotype” Pro/Pro (88.2%) and significantly lower prevalence rate in frequency of allele Ala (11.8%). The presence of the polymorphic allele Ala was associated with lower levels of IRI, HOMA-IR index, a significant reduction of virtually all components of lipid metabolism, systolic blood pressure and pro-inflammatory cytokine TNF-α. Children with genotype X/Ala have greater body weight and higher BMI as compared with homozygous carriers of Pro allele. The detected changes allow us to recommend the use of genetic screening to identify single nucleotide polymorphism Pro12Ala of PPARγ2 gene in obese children in order to determine the degree of risk of metabolic disorders development and implement the preventive measures in a timely manner. Tab. 2, Ref. 17.

Auth.

14.3.1.4. Carcinogenesis – a new point of view. /L. Gevorkyan, K. Gambashidze/. Georgian Medical News. – 2014. – #4(229). – pp. 73-80. – eng.; abs.: geo., eng., rus.

The presented article suggests a novel hypothesis of carcinogenesis, where the key moment for all types (biological, physical, chemical) of carcinogenesis has been discussed. For confirmation of the hypothesis thorough theoretical analysis of the mechanisms of malignant transformation of cells after influence of any type of carcinogens and results of experiments have been presented. The hypothesis highlights are formulated as follows: 1) Covalent bond disorders between S⁺-methionine and Fe³⁺ atoms in cytochrome; 2) Electron transport chain blockade with certain ligand after its penetration in cytochrome pocket with further formation of 6th coordination bond between ligand and Fe atom (in one case increase in mitochondrial pH precede-, and in other, it follows electron transport chain blockade in cytochromes); 3) Fe³⁺ reduction up to Fe²⁺ leading to blockade of aerobic glycolysis; 4) Decrease in enzyme (E₁-TDP, oxidases etc.) activity due to mitochondrial pH alterations; 5) Production of S-adenosylmethionine owing to lipoic acid amide leading to accumulation of homocysteine in cytoplasm with further penetration in cell nucleus producing DNA mutations; 6) Fe²⁺ wash-out from cytochrome and its deposition in ferritin. Fig. 4, Ref. 3.

Auth.

14.3.1.5. Experimental basis and comparison of clinical use of radio frequency energy argon plasma coagulation, adhesions preparation «intercoat» complex and rehabilitation after laparoscopic treatment of patients with polycystic ovary and tubal-peritoneal infertility. /N. Kozub, M. Sokol/. Georgian Medical News. – 2014. – #4(229). – pp. 80-88. – rus.; abs.: geo., eng., rus.

Aim of this study was to evaluate the efficiency of the use of radio wave energy and argon plasma surgery, use of «Intercoat» for the prevention of adhesions and use of rehabilitation complex (L-arginine, electrical stimulation of the fallopian tubes) in the treatment of patients with PCOS and tubal-peritoneal infertility. Experimental studies on 56 female rats of Wistar and clinical studies of 90 patients with PCOS and tubal-peritoneal infertility were undergone. Use of argon plasma coagulation for ovarian hemostasis characterized by the smallest damaging effect. Application adhesions barrier «Intercoat» prevents the development of adhesions II, III, IV degree. Use of argon plasma coagulation and ligature tuboplasty 2.1 times increases recovery of reproductive function in women with PCOS. Developed method of intraoperative and postoperative management reduces 2 times the number of patients who develop subsequent tubal pregnancy. Tab. 4, Fig. 2, Ref. 29.

Auth.

14.3.1.6. Preliminary phytochemical and biological evaluation of *Daphne glomerata* extracts. /B. Tabidze, G. Moshiasvili, N. Tabatadze, J. Aneli, V. Mshvildadze/. Georgian Medical News. – 2014. – #4(229). – pp. 88-91. – eng.; abs.: geo., eng., rus.

The article reports on the phytochemical and biological potentials of leaves and stems of *Daphne glomerata* Lam. (Fam. *Thymelaeaceae*). The study indicated that crude extracts from the leaves and stems of the plant have high biological activity. Cytotoxicity was assessed using resazurin on an automated 96-well Fluoroskan Ascent F1₁ plate reader (Labsystems) using excitation and emission wavelengths of 530 nm and 590 nm, respectively. High cytotoxic activity (<1,563 µg/ml) of both extracts toward lung carcinoma cell lines was elucidated. The specificity of extracts to WS-1 human fibroblast cell lines was observed. For the first time, the profiles of compounds with terpenic and phenolic nature were described in *Daphne glomerata* leaves and stems MeOH extracts by TLC and (HPLC-DAD-MS) techniques. Tab. 1, Fig. 2, Ref. 10.

Auth.

14.3.1.7. Analysis of *Perilla nankinensis* Decne essential oil using gas chromatography coupled with time-of-flight mass spectrometry. /N. Shashiashvili, M. Jokhadze, P. Tushurashvili, A. Bakuridze, D. Berashvili/. Georgian Medical News. – 2014. – #4(229). – pp. 92-96. – eng.; abs.: geo., eng., rus.

Perilla is the genus of herbaceous plants of *Lamiaceae* family. The essential oil of *Perilla* is believed to be essential part of the herb. It was claimed to have anti-inflammatory, anti-hyperlipidemia, antioxidative and antimicrobial activities. Apart from pharmaceutical and nutrition purposes, it is an edible plant frequently used as a fresh vegetable. It was also applied to produce perfume and cosmetics. Due to the importance of the essential oil from the *P. nankinensis* and the lack of detailed studies of them, our work aimed investigation of contents of essential compositions by GC- TOF/MS method. The materials of the study were the aerial parts of *P. nankinensis* collected at full flowering stage, Guria Region, Georgia. A qualitative analysis of the individual compounds in *P. nankinensis* essential oil performed by gas chromatography (GC) coupled with time-of-flight mass spectrometer (TOF/MS) for the identification of the resolved peaks. 28 components, which accounted for 77,7% of the oil, were identified. The main components of this essential oil were 1,3,6,10-Dodecatetraene, 3,7,11-trimethyl-, (Z,E)- (α-Farnesene) (34.3%), Caryophyllene oxide (10.2%), 1,6-Octadien-3-ol, 3,7-dimethyl- (linalool) (10.2%). Essential oil also contained humulene (3.9%), caryophyllene (1.9%), methyl salicylate (1.15%), 2-hexanoylfuran (1.0%), gernacrene (1.1%). Based on the results of our experimental data and literature reviews, *Perilla* essential oil can represent special interest and can be used

as an important natural substance for obtaining medicinal and preventive products with the several biological activities. Tab. 1, Fig. 2, Ref. 12.

Auth.

14.3.1.8. **Familial Mediterranean fever in Georgia.** /K. Pagava, B. Rauscher, I. Korinteli, D. Shonvadze, G. Kriegshauser, Ch. Oberkanins/. Georgian Medical News. – 2014. – #5(230). – pp. 79-82. – eng.; abs.: geo., eng., rus.

Familial Mediterranean Fever (FMF) is a hereditary autoinflammatory disorder caused by mutations in the MEFV gene. Carrier rates are known to be particularly high among Sephardic Jews, Turks, Armenians and Arab populations. Our literature survey regarding FMF and MEFV mutations in Georgia revealed a lack of existing studies. We applied multiplex PCR and reverse-hybridization teststrips (FMF StripAssay) to simultaneously analyze twelve common MEFV mutations in DNA samples from dried blood on filter cards, which had been obtained from 202 unselected newborns at various hospitals in Tbilisi, Georgia. We found 30 samples to be heterozygous and one to be compound heterozygous or carrier of a complex allele (two mutations in cis). The carrier rate of MEFV mutations (15.3%) was remarkable. The most frequently observed variants were E148Q (15x), M680I G/C (5x) and M694V (4x). Five other MEFV mutations were found at lower prevalence (V726A, A744S, R761H: 2x each; P369S, F479L: 1x each). Based on these new findings, the awareness for FMF and the availability of appropriate testing should be further promoted in Georgia. Tab. 1, Fig. 3, Ref. 22.

Auth.

14.3.1.9. **Role of the bacterial vaccine Solco-Urovac® in treatment and prevention of recurrent urinary tract infections of bacterial origin.** /D. Kochiashvili, A. Khuskivadze, G. Kochiashvili, G. Koberidze, V. Kvakhajidze/. Georgian Medical News. – 2014. – #6(231). – pp. 11-16. – eng.; abs.: geo., eng., rus.

Urinary Tract Infections (UTI) represent a serious medical problem with considerably high rate of morbidity. Recurrent episodes of urinary tract infection (rUTI) may commonly develop in the way of relapse or reinfection. For patients, rUTI is always associated with costs, discomfort and decreased quality of life. Standard treatment of rUTI is through antibiotics and usually such treatment is required repeatedly. Repeat course of antibiotics leads to increase of resistance of uropathogenic strains. According to the European Association of Urology, “the present state of microbial resistance development is alarming”. Our post-marketing trial was designed to demonstrate the substantial effect of the bacterial vaccine Solco-Urovac® both with independent administration and in conjunction with standard antibacterial medication within therapy and prevention of rUTI. Total of 115 patients (men and non-pregnant women) were enrolled in our open-label post-marketing trial. Each patient had more than one year history of rUTI and in the past had already taken appropriate course of standard therapy. The trial group included 50 patients: 32 men, 18 women (average age ± 32.5). 32 patients (men) of the trial group received vaccination with Solco-Urovac® together with the standard antibacterial medication. According to bacteriologic tests, in 62% cases infection was caused by *Escherichia coli*, and in 38% cases by *Morganella morganii*, *Proteus mirabilis*, *Klebsiella pneumoniae*, *Enterococcus faecalis*. 18 patients within the trial group were women with no recurrence episode at the start and during the trial period. Each woman was involved as the intercourse partner of the respective man within the trial group. The women received only vaccination with Solco-Urovac®. 65 patients of the control group had more than one year history of rUTI and had been treated earlier, too. Patients of the control group received appropriate antibacterial medication without Solco-Urovac®. After therapy and follow-up examination, results in the both groups were classified, also in consideration of the pathogen-specified subgroups, and then summarized and compared respectively. During the follow-up period no case of rUTI was noticed in women. In total, analysis of the medical records of 50 patients of the trial group demonstrated no case of rUTI in 46 patients during the follow-up period. Altogether, the rate of improvement of symptoms was as follows: the trial group – 92%, the control group – 74%. Through comparison with the past medical histories of patients, the higher rate of improvement and longer absence of rUTI episodes after treatment were certainly associated with the effect of Solco-Urovac®. The results of our post-marketing trial allow recommending Solco-Urovac® for appropriate reference within the Georgian National Guideline on Urologic Infections. Tab. 4, Ref. 9.

Auth.

14.3.1.10. **Polymorphism of gene IL-8 (A-251T) in patients with acute pancreatitis.** /V. Chantsev, V. Leonov/. Georgian Medical News. – 2014. – #6(231). – pp. 35-38. – rus.; abs.: geo., eng., rus.

The research aims to investigate the IL-8 A-251T (rs 4073) gene polymorphism in patients with acute pancreatitis. The frequency of allelic variants of cytokine gene in 100 patients was determined. Genotype A/T was found in 47.0% of cases (47 patients) of acute pancreatitis, T/T alleles – in 37% of cases (37 patients), A/A alleles in 16% of cases (16 patients). In 73.3% of non-operated patients with destructive forms of acute pancreatitis the reliable ($p < 0,05$) increase of heterozygous carriers of genotype A/T were detected. In patients with edematous form of acute pancreatitis frequency of A/T was detected in 42.2% of cases, in

control group frequency of A/T was detected in 46% of cases, the possible association between genotype A/T and the destruction of the pancreas was determined. Tab. 1, Ref. 12.

Auth.

14.3.1.11. The association of some genetic factors with pulmonary tuberculosis in Georgian and Azeri ethno groups. /R. Khukhunaishvili, S. Tskvitinidze, M. Nagervadze, L. Akhvlediani, M. Koridze/. Georgian Medical News. – 2014. – #6(231). – pp. 45-49. – eng.; abs.: geo., eng., rus.

Pulmonary Tuberculosis (TB) is still one of the major public health problems. Over the last half decade the significant problem is an increased ratio of drug-resistant TB cases. TB is as well the most significant infectious disease in the country of Georgia. Pulmonary tuberculosis is assessed as a complex infectious disease affected by both, environmental and genetic factors. Present study was undertaken to find out the correlation between pulmonary tuberculosis and erythrocyte blood groups antigens determinant alleles (ABO - *r, p, q*; *Rh D+*, *Rh D-* and *MN - p, q*) in two different, Georgian and Azeri, ethno groups. Immune-serological methods, direct reaction of universal monoclonal antibodies were used. Materials processed by biostatistician methods. The study had shown different correlation of pulmonary tuberculosis to erythrocyte blood groups determinant alleles in Georgian and Azeri ethno groups. In Georgian ethno group pulmonary TB correlates with ABO-*r* and *p*, Rh-D, +¹ and MN-*p* alleles, whether ABO-*q*, Rh-D,⁻¹ and MN-*p* in Azeri ethno group. Tab. 1, Ref. 12.

Auth.

14.3.1.12. The possible use of *V. parahaemolyticus* – specific bacteriophages for prevention and therapy of infections caused by *V. parahaemolyticus*. /A. Tskhvediani, T. Khukhunaishvili, T. Eliashvili, G. Tsertsvadze, N. Gachechiladze, M. Tediashvili/. Georgian Medical News. – 2014. – #6(231). – pp. 82-88. – eng.; abs.: geo., eng., rus.

Vibrio parahaemolyticus is the most common halophilic *Vibrio* species causing serious gastroenteritis in humans. The main source of infection is consumption of undercooked or raw seafood or exposure to contaminated water. The monitoring conducted in 2006-2008 demonstrated that warm, subtropical climate and low- to moderate salinity of water in the Black Sea coastal zone provides a favorable environment for growth and spread of *V. parahaemolyticus* bacteria. Antibiotics are commonly applied for control *V. parahaemolyticus* infections in humans. However, with the growing problem with bacterial antibiotic-resistance search for alternative biological anti-infectives, such as bacteriophages, becomes more actual. The aim of the presented work was characterization of *V. parahaemolyticus*– specific bacteriophages in relation with their possible use for treatment and prevention of food and waterborne gastroenteritis in humans infected with *V. parahaemolyticus*. 69 bacteriophages specific to *V. parahaemolyticus* were isolated from different water sources and 5 of them were characterized according to their virion morphology, host-range, temperature and pH dependence. Stability of phages in different media and solutions, also susceptibility to action of a number of protolithic enzymes was studied as well. Obtained results showed that studied bacteriophages can be used for preparation of phage mixture as a potential therapeutic preparation against *V. parahaemolyticus* associated infections. Tab. 3, Fig. 3, Ref. 13.

Auth.

14.3.1.13. Chemical composition and microstructural peculiarities of overground and underground vegetative organs of field restharrow (*Ononis arvensis* L.). /M. Sichinava, K. Mchedlidze, M. Churadze, M. Alania, J. Aneli/. Georgian Medical News. – 2014. – #6(231). – pp. 88-94. – rus.; abs.: geo., eng., rus.

The paper presents the results of the study of anatomy and chemical composition of Field Restharrow (*Ononis arvensis* L.). The existence of triterpene alcohol α -onocerin and isoflavons in the overground organs of the plant is established by chemical analysis. Oxycumarines – scopoletin and scopolin are isolated and identified. Morphological characterization of the whole plant is given. Anatomy of the vegetative organs of the species is examined. Among the main microstructural characteristics multilayer integumentary tissues, active periderm and sclerenchyma cells were specified in roots; and complex radial rays and structural units of wood, located radially, were observed in the central cylinder. Shoots are characterized with intensive pubescence. Mechanical tissues of different structures exist in the parenchime of crust and central cylinder of shoots. Vessels with spiral and spiro-annular thickened walls are located in the libriforms of wood. Leaves of *Ononis arvensis* are bifacial, mesophile is of dorsiventral structure; central conductive bunch is complex-collateral. Basal cells of upper and lower epidermis belong to of bent-walled type, where paracytal and anisocytal cells of stomatal apparatus are scattered chaotically. Fig. 4, Ref. 10.

Auth.

14.3.1.14. Clinical-electroneuromyographic and immunologic aspects of myasthenia gravis with anti-musk antibodies. /N. Kviravelia, R. Shakarishvili/. Georgian Medical News. – 2014. – #7-8(232-233). – pp. 42-47. – rus.; abs.: geo., eng., rus.

Myasthenia gravis (MG) is a neuromuscular autoimmune disorder caused by autoaggression directed to different antigenic goals of peripheral neuromotor apparatus. Approximately 80% of patients have detectable serum antibodies against acetylcholine receptors (ACHR). About 10-15% of the MG patients do not have

ACHR – antibodies. This form is called seronegative (SN) MG. IN 35% of SN patients antibodies against muscle – specific tyrosine kinase (MUSK) is clearly observed. According to modern data, SN MG patients are resistant against traditional pathogenetic therapy of MG. In order to develop the strategy of timely and adequate treatment of SN MUSK positive MG, we decided to build up differential diagnostic criterions for this form of MG. For this purpose we analyzed clinical – electroneuromyographic (ENMG), immunologic and pharmacological data of 9 SN MUSK positive MG patients. The specific clinical patterns for SN positive MG were not revealed. The analogical clinic – ENMG and pharmacological signs were observed in seropositive MG. Accordingly, antibodies do not determine the peculiarity of this disease. Therefore, the revelation of the antibodies has not only diagnostic value; it also defines the expediency of pathogenetic therapy of MG. Ref. 21.

Auth.

14.3.1.15. Mortality and its predictors among highly active antiretroviral therapy naive HIV-infected individuals: data from prospective cohort study in Ukraine. /D. Zhyvytsa/. Georgian Medical News. – 2014. – #7-8(232-233). – pp. 69-74. – eng.; abs.: geo., eng., rus.

There is little information from Ukraine about the effect of highly active antiretroviral therapy (HAART) on survival of HIV-infected patients. Our objective was to identify predictors of mortality in HIV-infected patients initiating HAART at the Zaporizhzhya AIDS Center, Ukraine. Prospective cohort study of HIV-infected patients from January 2005 to December 2008 in a ZaporizhzhyaAIDSCenter, and were tracked for 60 months after start HAART. Unvaried and multivariate analysis and constructed Kaplan-Meier curves to assess predictors. To identify predictors of mortality were used to build a regression Cox proportional hazards model. Two hundred and seventy two patients were studied (mean age 34 years, 42% female, median CD4 count 120 cell/ μ L). In 60 months of HAART 36 patients died. The probability of survival was 87%. In the univariate analysis, mortality was strongly associated with male gender (HR 6,28; 95% CI 2,22-17,78), IDU route of HIV transmission (HR 2,90; 95% CI 1,32-6,36), WHO clinical stage 4 (HR 3,45 95% CI 1,7-7,0). Mortality was also strongly associated with anemia (HR 2,24 95% CI 1,02-4,92) and HBsAgseropositivity (HR 6,26 95% CI 3,01-13,02). In the multivariate analysis independent factors associated with mortality were WHO clinical stage 4 (HR 2,66 95% CI 1,26-5,58) and HBsAgseropositivity (HR 4,35 95% CI 2,05-9,23). HAART significantly increased probability of survival and reduced the risk of death for HIV-infected patients in Ukraine. Simple clinical and laboratory data independently predict mortality and allow for risk stratification in HIV-infected patients in Ukraine. Tab. 2, Ref. 21.

Auth.

14.3.1.16. The role of nitric oxide in the pathogenesis and severity of psoriasis. /M. Matoshvili, A. Katsitadze, T. Sanikidze, D. Tophuria, A. Richetta, S. D'Epiro/. Georgian Medical News. – 2014. – #9(234). – pp. 61-64. – eng.; abs.: geo., eng., rus.

The aim of our study was to investigate the possible role of nitrogen reactive species in pathogenesis of psoriasis. A total of 187 individuals were included in this study, out of these 84 were patients suffering from psoriasis and 103 were healthy subjects, served as a control. Patients with psoriasis were graded according to the Psoriasis Area Severity Index (PASI), presenting at the time of blood collection. After obtaining prior consent, about 2 ml of random blood was collected for estimation blood free nitric oxide (NO) content by Electron Paramagnetic Resonance (EPR) Spectroscopic method. For detection of NO in blood the spin-trap (diethylditiocarbamate (DETC) (Sigma) was used. In blood samples of patients with psoriasis nitrosilated hemoglobin (HbNO) complexes and alterations of free spin-trapped NO EPR signal intensity and were detected. Free NO content in blood decreased with the increasing severity of the psoriasis. It may be concluded that under oxidative stress conditions during psoriasis the decrease level of free nitric oxide in the patient's blood may contribute to a violation of the vasomotor activity of subcutaneous capillaries, impairment of skin blood supply, development of hypoxia, exacerbation of oxidative stress, alteration of immune balance, spreading of skin infection and exacerbation of the severity of psoriasis. Use of NO-containing creams will contribute to a partial recovery of disturbed functions and remission of the disease. Tab. 1, Ref. 16.

Auth.

14.3.1.17. Outcomes of treatment of chemotherapy drugs of different manufacturers tuberculosis of patients with multiple drug resistance. /N. Tabriz, B. Ospanova, J. Nurtazina, J. Mutayhan, K. Tabriz/. Georgian Medical News. – 2014. – #9(234). – pp. 64-70. – rus.; abs.: geo., eng., rus.

The article is devoted to studying the effectiveness of treatment of tuberculosis (TB) patients with multidrug-resistant TB drugs 2 number of different manufacturers. To assess the effectiveness of treatment of second-line drugs were taken to study two groups of patients: Group 1 - 164 patients who received anti-TB drugs from the Global Fund and Group 2 174 patients who received anti-TB drugs for the national program. Comparative evaluation showed high efficiency second-line drugs from the Global Fund, as evidenced by the high level of 95,8 % abacillation in a short time in this patient group. Tab. 6, Ref. 10.

Auth.

14.3.1.18. Various purposes of using immunomodulators in modern cardiology, children and adolescents. /G. Chakhunashvili, N. Jobava/. Pediatric Cardiology. – 2014. – #8. – pp.11-17. – geo.; abs.: geo., eng.

Continuous adaptive changes are the basis of survival for human organism. The work discussed and points out the importance of immunomodulators during treating, managing, preventing cardiologic problems in children and adolescent. Tab. 1, Ref. 4.

Auth.

14.3.1.19. Osteogenesis imperfecta. /M. Chalisuri, M. Chipashvili/. Pediatric Cardiology. – 2014. – #8. – pp. 77. – geo.; abs.: geo., eng.

This is a congenital disease of connective tissue, which is characterized by frequent fractures, deformation of skeletal system and functional restrictions. The article includes interesting details for clinicians and not only. Ref. 1.

Auth.

14.3.1.20. The development of desomorphine extraction methods from biological liquids. /L. Adeishvili-Andguladze, M. Jokhadze, R. Makharadze, T. Kirvalidze, K. Bukhnikashvili/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 7-9. – geo.; abs.: geo., eng.

The results of chemical-toxicological analysis are greatly dependent of the methods of isolation and an incorrect approach could lead to the loss of a substance of interest. That is why we consider the development of Desomorphine isolation method as a relevant topic. The goal of this study was the development of the method of isolation Desomorphine from biological liquids. Two methods, liquid-liquid extraction and solid phase extraction (SPE) were developed. We have experimentally studied the effect of Desomorphine extraction on the isolation and concluded that the best extragent for Desomorphine is a chlorophorm-isopropanol (9 : 1) mixture with pH-9. And for the SPE we have used the Vacuum manifold - Supelco, with silicagel C-18 solid phase and dichlormethaneisopropanol- ammonia (72 : 20 : 2) mixture as a solvent. Tab. 1, Ref. 6.

Auth.

14.3.1.21. A rare case of the outer trans-hepatic fistula of the appendix. /L. Akhmeteli, L. Saginashvili/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 18-19. – geo.; abs.: geo., eng.

Appendicular fistula is a rare type of the intestinal fistula. At the same time, it represents a rare complication of the acute appendicitis. The appendicular fistula could develop in the case of the non-treated appendicitis, when there is a spontaneous opening of the inflamed appendix in the surrounding organs or the wall of the abdomen. In most of the cases, it is very difficult to establish the connection between the fistula and the appendix. The article presents the rare case of the external transhepatic fistula of the appendix, in which the final diagnosis was made just intraoperatively. The patient was 34 years old male, admitted to our clinic after 4 month from ultrasound guided transcutaneous liver abscess drainage, when even after the disappearance of the abscess cavity, the prolonged excretion of the stinky discharge was observed. According to fistulography, the contrast injected via the drainage passed to the colon, but the colonoscopy couldn't reveal the inner hole of the fistula in the colon. During the surgery, it was found that the reason of the stated pathology is the disintegrated appendix, which adhered to the visceral surface of the liver. After analyzing the stated case, it became obvious that on one hand it was due to atypical location of appendix and on another hand, not diagnosed appendicitis resulted periappendicular abscess, which due to its location was infiltrated and drained into liver. After the liver abscess drainage, the trans-hepatic fistula of the appendix was formed. Ref. 5.

Auth.

14.3.1.22. New aspects of tolerance to nitrates. /N. Gongadze, N. Gorgaslidze, T. Makharadze, M. Mirziashvili, D. Abulashvili/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 43-44. – eng.; abs.: geo., eng.

In last years it has been suggested the development of tolerance and endothelial dysfunction in long-term nitrate therapy, that implicates the diminution of anti-ischemic and vasodilating effects of this group of drugs. Some authors indicate that such tolerance to nitrates is associated with reduction of their antiplatelet activity and with decreasing production of vasodilating prostaglandin-prostacyclin, while other investigators indicate about preserved cardio protective effect of nitrates despite the hemodynamic alteration produced by this group of drugs. Nitrates tolerance includes increased level of plasma renin activity and angiotensin II, elevation of aldosterone and vasopressin as well as catecholamines. It is also very important the generation of superoxide ion and peroxynitrite formation in vasculature along with tolerance to nitrates leads to. In addition, in the development of tolerance to nitrates reduction of CGRP production is also involved. In last decade it was established the participation of ATP-sensitive K⁺ channels in nitrates tolerance, which inhibition may cause the desensitization to nitrates and the loss of their anti-ischemic effect. Ref. 14.

14.3.1.23. Progesterone - regulator of immune response in Jurkat cells. /A. Gokhelashvili, L. Jashi, N. Gogebashvili, T. Mchedlishvili, N. Intskirveli, T. Sanikidze/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 44-46. – geo.; abs.: geo., eng.

Progesterone is important hormone for the maintenance of pregnancy. During physiological pregnancy level of progesterone in blood is 4-6 times higher than in the blood of nonpregnant women. The aim of our study was determination of the role of progesterone in the regulation of immune response of T lymphocytes. It was established that the PHA-activated Jurkat cells intensify IL-2 and decrease IL-10 secretion. Under influence of progesterone on intact Jurkat cells and IL-10-IL-2-expression levels did not change significantly compared to the control level. Influence of progesterone on PHA-activated Jurkat cells induces intensification of IL-2 expression and didn't change intensity of IL-10 expression statistically significantly in comparison with the initial parameters. Therefore it was found that under influence of progesterone on intact Jurkat cells IL-2/IL-10 cytokines balance does not change, whereas in the PHA-activated Jurkat cytokines profile inclined toward cytoprotective (IL-2/IL-10 ratio was reduced from 2.56 to 1.53). Our study results confirm that progesterone plays an important role in the regulation of the immune homeostasis in the mother's body and maintenance of the pregnancy. Tab. 1, Ref. 9.

Auth.

14.3.1.24. Study of Beshumi clay for using it as excipient in soft pharmaceutical products. /N. Gumberidze, A. Gaprindashvili, T. Masiukovich, N. Alavidze, A. Bakuridze/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 46-48. – geo.; abs.: geo., eng.

Nowadays the world pharmaceutical market is represented by the synthetic as well as the natural medicinal products. In the modern world there is going on the active search of the biologically active compounds. Unfortunately, such tendency is not observed towards the excipients. At the same time, it should be noted that in some pharmaceutical products their amount is larger than that of the active ingredient, e.g. in soft pharmaceutical products the average amount of excipients varies between 75-99%. For the purpose to use as the excipient in soft pharmaceutical products great attention deserves the mineral raw materials, especially – clays. The aim of our research was to study Beshumi clay for its use as an excipient in soft pharmaceutical products. On the basis of the conducted experimental studies, the following can be concluded: by using a modern instrumental method, it is found that Beshumi clay contains in large amounts sulphur and zinc, which are biologically valuable components for the treatment of various skin diseases; Beshumi clay has the optimal physical-chemical and technological characteristics and can be used as the base in soft pharmaceutical products; Teimurovi paste prepared on the base of Beshumi clay meets the requirements of the pharmacopoeia; as a result of the bio-pharmaceutical research in comparative aspect, it is ascertained, that the Teimurovi paste made of Beshumi clay after a short period of time releases larger amounts of the biologically active compounds than the one made of Askana clay. Tab. 2, Ref. 5.

Auth.

14.3.1.25. Peculiarities of treatment and outcome of patients with cerebral stroke in multiprofile hospitals. /I. Verulashvili, D. Kakabadze, M. Akubardia/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 59-61. – geo.; abs.: geo., eng.

A comparative analysis of therapeutic results of patients with an acute stage of cerebral stroke treated in 2010-2011 both in a TSM University Hospital (158 patients; mean age 56.3±7.5) and in an emergency neurological clinic (169 patients; mean age 53.83±6.1) was carried out. The obtained data prove the fact that a medical aid to cerebral stroke patients, rendered in a hospital with stroke unit, has apparent advantages: therapy is accompanied by a good regress of a neurologic deficit (correspondingly 76% to 28%) and somatic complications (correspondingly 7% to 2.5%). Lethality (correspondingly 3.2 to 5.8 lethal events per 100 patients), disability and self-care incapability of a patient are greatly decreased at the end of the third month of the disease onset in patients treated in stroke unit. An advantage of stroke units is that specialized care can be given to a broad spectrum of patients regardless of the interval after stroke or severity of neurological impairments. Ref. 4.

Auth.

14.3.1.26. Caroli disease – the rare surgical pathology (case report). /G. Tomadze, M. Mizandari, A. Megreladze, G. Azmaiparashvili, G. Danelia/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 72-75. – geo.; abs.: geo., eng.

Caroli disease is a rare inherited disorder characterized by dilatation of the intrahepatic bile ducts. There are two types of Caroli disease, the most common being the simple, where the bile ducts are widened by ectasia. The second, more complex, cause is commonly known as Caroli Syndrome. This complex form is also linked with portal hypertension and congenital hepatic fibrosis. Caroli disease is also associated with liver failure and polycystic kidney disease. The disease affects about 1 in 1,000,000 people, with more reported cases of Caroli syndrome than of Caroli disease. The cause appears to be genetic; Females are

more prone to Caroli disease than males. The first symptoms typically include fever, intermittent abdominal pain, and hepatomegaly. Occasionally jaundice occurs. Patients with Caroli disease are 100 times more at risk for cholangiocarcinoma than the general population. Morbidity is common and is caused by complications of cholangitis, sepsis, choledocholithiasis, and cholangiocarcinoma. Portal hypertension may be present, resulting in other conditions including splenomegaly, hematemesis and melena. The treatment depends on clinical features and the location of the biliary abnormality. When the disease is localized to one hepatic lobe, hepatectomy relieves symptoms and appears to remove the risk of malignancy. Antibiotics are used to treat the inflammation of the bile duct, and ursodeoxycholic acid - for hepatolithiasis. In diffuse cases of Caroli disease, treatment options include conservative or endoscopic therapy, internal biliary bypass procedures and liver transplantation in carefully selected cases. The aim of the article is to present our clinical case of Caroli disease, which was diagnosed and managed using noninvasive and mini-invasive methods of diagnosis and treatments. 67 years old male admitted in our clinic complaining abdominal pain in epigastric area, jaundice. Lab results revealed elevation of AST, ALT, Bilirubin. Ultrasound revealed enlarged liver with cystic structures in it. Echinococcosis was excluded via serology. CT and MRI diagnosed Caroli disease (showed enlarged intrahepatic bile ducts due to ectasia and tubular dilation of the bile ducts). Cysts were drained using ultrasound control. Passability of CBD was restored using balloon dilatator. Presented case is interesting because of its rarity showing usage of non-invasive or mini-invasive methods in the diagnose and management of the disease. Fig. 3, Ref. 29.

Auth.

14.3.1.27. Cervical epithelium reaction in reproductive age females under hypothyroidism. /Z. Topuria, M. Beruchashvili, L. Gogiasvili, Z. Tsagareli, M. Dgebuadze/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 75-77. – eng.; abs.: geo., eng.

The purpose of the investigation was to examine the morphological manifestations of hypothyreosis in the reproductive age women cervical mucosa. With clinically verified hypothyreosis in 1524 cases, 538 patients had a different variants of endocervical pathology, accounting for two major research groups: I - (n = 259) operated by colloidal goiter treated by L-thyroxin during last 3 years, II - (n = 279) with similar diagnosis, without replacement therapy within last 3 years. Therapeutic and diagnostic scrapings from cervix, as well as parallel samples of the operative removal thyroid gland (TG), after staining with hematoxylin and eosin and picrofuchsin by van Gieson were studied morphologically. The different variants of the cervical mucosa reaction from simple hyperplasia in treated group to adenomyosis with stratification of epithelium, and the tendency of sclerosis and atrophy in the group not receiving L-thyroxin were revealed. In all compared cases Spearman correlation coefficient had high level of relevance (0,00003). We believe that the cervix changes are the consequence of the decrease of sensitivity to estrogen under the low level of T3 and T4 and increase TSH in plasma. Molecular atypia of endocervical cells clearly demonstrates cross-combination of two leading hormonal systems. Ref. 8.

Auth.

14.3.1.28. Pharmacological load tests. /A. Isakadze/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 78-80. – geo.; abs.: geo., eng.

With the aim of diagnosing heart ischemic disease, conducting of physical tests has the decisive role. If due to the various reasons the implementation of physical tests is unavailable, the tests with pharmacological load are conducted. The load with Dipyridamol causes the dilatation of unaltered coronary arteries and the inter coronary stealing phenomenon is developed. Load with adenosine dilates coronaries and increases segments perfusion provided by it. Uneven blood supply provokes ischemia. Load with synthetic catecholamine Dobutamin also provokes ischemia, 10-36% of patients develop arrhythmias during tests. The use of special (GenESA) system is essential at the time of load with agonist of b-adrenoreceptors Arbutamin. Tab. 1, Ref. 21.

Auth.

14.3.1.29. Role of epigenetic factors and cancer. /K. Kankava, T. Tkemaladze/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 82-87. – geo.; abs.: geo., eng.

Epigenetics has gained increasing popularity in modern science. The hereditary factors, independent from DNA-sequences are being studied in normal cells and in various pathologic disorders. Due to cancer being an acute and largely not defeated problem in medicine nowadays, the detailed analysis of epigenetic factor involvement in cancerous processes and seeking of new ways for early identification and treatment of cancer is being performed. DNA-methylation and histone modification are best studied epigenetic modifications. Influence of these factors has already been identified as a trigger or aggressiveness-determining factor for some types of cancer. Epigenetic effect, in contrast to change in DNA-sequence, is reversible and, because of this, tumors, conditioned by these factors should be more manageable. This review provides an insight into the identified mechanisms of action for epigenetic factors in cancer cells, ways of intervention and future perspectives for development of this field. Ref. 57.

Auth.

14.3.1.30. Thymus cell specificity of gnotobionts in regard to age. /B. Kochlamazashvili, L. Gogiashvili, Z. Tsagareli, K. Jandieri/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 94-96. – geo.; abs.: geo., eng.

Immunomorphologic study with morphometry of cytoarchitecture of thymus of regular (conventional) and germfree (gnotobionts) rats of different age have been carried out. The results of the investigation revealed undeveloped lymphoid tissue of gnotobiont's thymus in comparison with thymus of conventional rats despite of proportional decrease of antigenic load. Lymphopoietic potential of thymus of gnotobionts in accordance with the microbial status of the body is limited, irrespective to the age. Concerning to the age-related changes, must be said, that aging of gnotobiont and conventional rats, basically have identical orientation, and hence, they depend not on environmental influence, but genetically determined peculiarities of internal regulative mechanisms, which take place during the ontogenesis. Tab.1, Ref.5.

Auth.

14.3.1.31. Research of polyphenol compounds in *Populus tremula* buds. /J. Kuchukhidze, M. Jokhadze, T. Murtazashvili/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 102-103. – geo.; abs.: geo., eng.

A qualitative-quantitative analysis of flavonoids of the buds of popular *Populus tremula* growing in Georgia through liquid chromatographic method was carried out. As a result of the experiment, the optimal conditions of the chromatography: the gradient mode of the moving phase, the stationary phase and the detection wavelength in the ultraviolet region were estimated; It was found that the leaves of *Populus tremula* contained the following flavonoids and phenolic acids (mg/g): chrisine (8.73), pinocembrine (7.52), pinostrobin (7.38), galangine (4.26), apigenin (3.15), caffeic acid (3.72), salicylic acid (3.39), benzoic acid (3.1), cinnamic acid (2.89), ferulic acid (1.54). Thus, Georgian *Populus tremula* is rich in flavonoid units and represents an interesting object for further and deeper scientific study. Tab.1, Fig. 1, Ref. 8.

Auth.

14.3.1.32. Morphological and microstructural features of the purple flower garlic (*Allium rotundum* L.). /M. Maisashvili, J. Kuchukhidze, D. Chincharadze, L. Zardiashvili, A. Bozhadze/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 111-113. – geo.; abs.: geo., eng.

Allium rotundum L. (*Alliaceae*) is broadly distributed throughout the whole territory of Georgia. It is easily cultivated and can supply a raw material base on an industrial scale. We precisely isolated and characterized the main active principles, steroidal saponin and saponin, phenolic compounds such as flavonoids and coumarins, carotenoids and amino acids. Saponins have different pharmacological activity: antimicrobial, antifungal, antioxidant and cytotoxic. For the raw material of *Allium* a methodological description of its microscopic features was elaborated: for the leaf, the stem, the flower and the bulb. The knowledge of their features is crucial for the determination of the raw materials authenticity. Fig. 2, Ref. 8.

Auth.

14.3.1.33. Rare case of hyper-adhesive mechanical ileus of intestine (case report). /A. Megreladze, G. Tomadze, G. Azmaiparashvili, A. Gvazava, M. Goletiani/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 115-117. – geo.; abs.: geo., eng.

Nowadays at least 20% of the patients, who apply to general surgery services complaining from acute abdomen, are due to intestinal obstructions. The rate of developing intraabdominal adhesion after an abdominal operation is between 67% and 93%. This ratio is higher in gynecologic and pelvic operations. The intestinal obstruction rate in the patients who had intraabdominal operation is between 0.3 and 10.7%. Adhesions are thought to be the cause of around 30-41% of all intestinal obstruction. For small-bowel obstruction, the proportion rises to 65-75%. We present a very rare case of small bowel obstruction with extremely strong hyperadhesive process, which made impossible to eliminate all adhesions and split bowels. 24 years old male was admitted in the clinic with ileus. Year ago he was operated because of peptic ulcer perforation and peritonitis. Three months after operation he was reoperated because of mechanical ileus due to adhesions and 10 days after – reoperation again for ileus. Small bowel looked like "turtle-shell" what made impossible to identify borders between bowels. Ileostomy had been performed. In postoperative period during eight months the patient received hormone therapy, antiadhesive treatment and finally last reconstructive operation - entero-enteroanastomosis. Discharged on 7th postoperative day. This is a seldom seen case, which shows very rare hyperadhesive ileus, when sinechiolysis was impossible and patient was operated in 2 stages. Ref. 10.

Auth.

14.3.1.34. Review of the chemical toxicological methods of analysis of some antipsychotic drugs of second generation. /K. Sivsivadze, T. Murtazashvili, M. Jokhadze, R. Makharadze, N. Imnadze/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 128-131. – geo.; abs.: geo., eng.

In recent years the pharmaceutical market has been enriched with a number of new antipsychotic drugs. In the list of such agents are risperidon, olanzapine and clozapine. The number of its medical and nonmedical utilization significantly increased; respectively raised the quantity of intoxications caused by the antipsychotic drugs. Many scientists of various countries are working to elaborate the methods of qualitative and quantitative analysis for determination of risperidon, olanzapine and clozapine in drugs or in biological material. The main subject of the research is individual and simultaneous determination of above-mentioned agents and validation of these methods. The bibliography shows variety of these methods– spectral, electrochemical and chromatographic. Antipsychotic polypharmacy is well established in schizophrenia therapy. Due to importance of this subject it is essential to deep study of the bibliographic data. Development and amelioration of the chemical-pharmaceutical methods of analysis of above-mentioned agents are still open for scientific discussions. The present review serves to elaborate the respective background to establish the new, sensitive and reproductive methods of analysis in the narcological - toxicological practice of Georgia. Fig. 1, Ref. 15.

Auth.

14.3.1.35. **Cardiotonic steroids in salt-sensitive arterial hypertension in Georgia.** /G. Simonia, I. Andronikashvili, I. Pantsulaia, N. Kantaria, N. Basishvili/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 131-133. – geo.; abs.: geo., eng.

The overall goal of our study was to elucidate the role of endogenous ouabain (EO) and marinobufagenin (MBG) in the development of salt-sensitivity and salt-sensitive hypertension in Georgian patients. The objectives of the study were typing of normotensive and hypertensive subjects by salt-sensitivity test, and detection of circulating levels of EO and MBG in salt-resistant and salt-sensitive normotensive subjects during low and high salt diet; Salt sensitivity (when difference between MAP exceeded 3 mm Hg) was detected in 12 (54,5%) of normotensive subjects and in 32 (64%) of hypertensive patients. In salt-sensitive hypertensives plasma levels of both MBG and EO significantly exceeded those of salt-resistant patients. *Conclusions:* High incidence of salt-sensitivity and prevalence of salt-sensitive hypertension associated with high sodium intake has been detected in Georgian normotensive and hypertensive subjects. Development of salt-sensitivity and salt-sensitive hypertension might be due to increased production of marinobufagenin and endogenous digoxin – so called cardiotonic steroids. Tab. 1, Ref. 7.

Auth.

14.3.1.36. **Aspects of zinc deficiency worldwide and in Georgia.** /Sh. Tukvadze, R. Kverenchkhiladze, R. Kvanchakhadze/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 133-134. – geo.; abs.: geo., eng.

Zinc deficiency is one of the most prevalent risk factors for nutrient-related diseases. Young children as well as pregnant women are at highest risk of zinc deficiency. Populations in the developing countries consume limited animal products (excellent source of many trace elements) and plants or cereal meals high in inhibitors and are generally at increased risk of deficiency. FAO national food balance data and WHO, 2004 estimate that zinc deficiency affects one third of the world population (about 2 billion people). Currently national prevalence estimates of zinc deficiency based on direct measures are lacking for most countries. The most popular method for assessing the risk of population zinc deficiency includes assessment of dietary intakes of zinc. Each year the Food and Agriculture Organization (FAO) of the United Nations publishes national food balance sheets (FBS) which currently provide data on 95 food commodities available for human consumption in 176 countries. This can be used as an ecological indicator of the risk of inadequate zinc intake in population. Using these assumptions, it appears that nearly 47.3% of population in Georgia is at risk of zinc deficiency. Tab. 1, Ref. 5.

Auth.

3.2 Clinical medicine

14.3.2.1. **Influence of laser and some drugs on the intima of the aorta and erythrocytes in experimental atherosclerosis.** /T. Tavkhelidze/. Modern Issues of Medicine and Management. – 2014. – #1. – pp. 13-23. – geo.; abs.: geo., eng., rus.

Researches of many authors have shown that in the development of atherosclerotic process in walls of arteries, the important role plays the condition of their capillaries (so-called vaza vazorum) and rheological properties of blood. Last is defined, somewhat, by reds blood cell. Normal reds blood cell (normocytes) has the form of a biconcave disk. Such reds blood cell gives to blood peculiar rheological qualities. Such reds blood cell have an optimum electric charge, so-called a zeta-potential because of what reds blood cell push away each other and do not stick together. They also make a start and from vessel walls. Normocytes have ability of deformation because of what can easily climb through in the capillaries which gleam have cross-section section less than their diameter, that in the conditions of norm an everyday occurrence. At

infringement of an exchange of lipoproteins of low density, the quantity of normocytes decreases. Instead of them there are the modified reds blood cell which majority abilities to be deformed do not possess, and their membranes have lowered a zeta-potential. The modified, not possessing abilities be deformed cannot to climb through reds blood cell in the capillaries which gleam have cross-section section less than their diameter, and fall of the zeta-potential of membranes of red blood cages cause aggregation of reds blood cell because of what fluidity of blood worsens, its viscosity increases, that also leads to blood-groove deterioration microcirculation channels of a wall of an artery (vaza vazorum). All it causes metabolism deterioration in a vessel wall that along with other factors, promotes accumulation of lipidic inclusions and occurrence of atheromas. Studying of morphological changes in an aorta and morph-functional changes of reds blood cell in dynamics of an experimental atherosclerosis and at influences of various possibilities was the purpose of our research. For this purpose, we against an experimental atherosclerosis used preparations (aspirin, trental), and also the low-intensity helium-neon red laser. Researches have shown, that, both aspirin and trental, and an irradiation of blood helium - the neon laser, and especially their complex application causes situation improvement in an aorta intim. Tab. 4, Fig. 5, Ref. 12.

Auth.

14.3.2.2. Pancreatoduodenectomy as classic and pylorus-preserving variant: Single center experience. /M. Kiladze, A. Antadze, G. Chiqobava, G. Kherodinashvili, M. Chubinidze/. Georgian Medical News. – 2014. – #4(229). – pp. 7-10. – eng.; abs.: geo., eng., rus.

The experience of pancreatoduodenectomy for pancreatic head and ampullary tumors is presented and discussed. Out of 7 cases of pancreatoduodenectomy 3 were performed as classic Whipple procedure and 4 as modified pylorus-preserving variant (PPPD). Two cases of mild pancreatic and biliary leak were observed and one patient developed abdominal wall dehiscence after the surgical site infection. There was no operative mortality and overall postoperative morbidity rate was 42.8%. It is concluded that “end-to-end” pancreaticojejunostomy with stent placement and the PPPD variant are the most optimal and preferred operative procedures in the pancreatoduodenectomy cases. Ref. 26.

Auth.

14.3.2.3. The effectiveness of orthopedic treatment using immunomodulator polyoxidonium in patients with type II diabetes. /E. Mamporia/. Modern Issues of Medicine and Management. – 2014. – #1. – pp. 31-37. – geo.; abs.: geo., eng., rus.

The immunomodulator Polyoxidonium is proposed for use in orthopaedic dentistry, by which the correction and stabilization of local and general immunity is done, which improves the clinical and morphological picture of the oral cavity. The orthopaedic treatment efficiency increases by using of Polyoxidonium.

Auth.

14.3.2.4. Calcium hydroxyapatite, biological active regenerations made on its basis and the role of them in therapeutic dentistry. /Kh. Tvildiani/. Modern Issues of Medicine and Management. – 2014. – #1. – pp. 38-43. – geo.; abs.: geo., eng., rus.

The resorption of pathological areas in bone tissue and stimulation of the osteogenesis of these areas within a short period of time, as a result of periodontitis and parodontiti still remain a topical problem and the subject of discussion in therapeutic dentistry. During the clinic research and experiments, as well as analysis of long-term results, it became clear that the use of calcium hydroxyapatite and osteoplastic stuff, made on its basis, have a major advantage over the methods of traditional medicine. As studies have shown, the use of bio-regenerations for teeth preparation and working on them are much more useful. Ref. 5.

Auth.

14.3.2.5. Risk assessment of adhesion of microbes dentures with bases made of polypropylene and acrylic plastics. /M. Jervalidze, I. Taboridze, L. Aladashvili/. Modern Issues of Medicine and Management. – 2014. – #1. – pp. 44-51. – geo.; abs.: geo., eng., rus.

Under observation were 55 patients – the contingent of the dental clinic “Leader-Dent” aged 45 to 55 with bases made of polypropylene. The control group consisted of 50 patients of the same age with the bases of acrylic plastic. Biopsy specimens were taken in a month after using dentures. A comparative analysis of microbial oral cavity in the patients with removable dentures made on the basis of polypropylene and acrylic plastics showed that adhesion of oral bacteria depended on the base material; dentures with the bases of acrylic plastics had a high risk of microbe colonization compared with the dentures with the bases made of polypropylene: *F. periodonticum* (RR = 2,25, 95% CI: 1,81-2,80); *A. Israelii* (RR = 2,22, 95% CI: 1,79-2,76); *P. gingivalis* (RR = 2.12, 95% CI: 1,73-2,60); *S. salivarius* (RR = 1,76, 95% CI: 1,19-2,62); *S. epidermidis* (RR = 1,74, 95% CI: 1,20-2,51); *lactobacilus* SPP. (RR = 1,57, 95% CI: 1,06-2,30); *S. piogenus* (RR = 1,56, 95% CI: 1,05-2,30). The use denture bases of polypropylene provide a significantly lower level of colonization with microorganisms than the acrylic plastic. Tab. 2, Ref. 10

Auth.

14.3.2.6. Topical diagnostics of traumatic condylar injuries and alloplastic reconstruction of temporomandibular joint heads. /Z. Gvenetadze, T. Danelia, G. Nemsadze, G. Gvenetadze/. Georgian Medical News. – 2014. – #4(229). – pp. 10-15. – eng.; abs.: geo., eng., rus.

Condylar fractures have an important place in facial traumatic injuries. Classification of condylar fractures according to clinical-anatomic picture is common in clinical practice. According to this classification there are: 1) fractures of mandibular joint head, aka intraarticular fractures, 2) condylar neck fractures or high extra articular fractures, 3) condylar base fractures. Radiographic imaging plays important role in diagnosing condylar fractures along with knowledge of clinical symptoms. We used computer tomography imaging in our clinical practice. Three-dimensional imaging of computer tomography gives exact information about location of condylar fractures, impact of fractured fragments, and displacement of condylar head from articular fossa. This method is mostly important for the cases which are hard to diagnose (fractures of mandibular joint head, aka intraarticular fractures). For this group of patients surgical treatment is necessary with the method of arthroplasty. We have observed 5 patients with bilateral, fragmented, high condylar fractures. In all cases the surgery was performed on both sides with bone cement and titanium mini-plates. Long-term effects of the treatment included observation from 6 months to 2 years. In all cases anatomic and functional results were good. Shape of the mandible is restored, opening of mouth 3-3.5 cm, absence of malocclusion. Fig. 13, Ref. 6.

Auth.

14.3.2.7. Early activation of heart-operated patients as a tool for optimization of cardio-surgery treatment (review). /M. Nachkepia, V. Akhaladze, A. Kopaliani, K. Beselia, V. Simonidze/. Georgian Medical News. – 2014. – #4(229). – pp. 15-20. – rus.; abs.: geo., eng., rus.

Lately foreign countries have widely introduced the tactic of early activation of cardio-surgery patients. The necessary components of this methodical approach are early finishing of post-operation artificial respiration and extubation of trachea, shortening of time spending in intensive therapy to 1 day and discharge from the hospital in 5 days. As a result of reducing the hospitalization period, the treatment costs are significantly reduced. The goal of this research is to analyze the methods of anesthesia that allow early extubation and activation after cardio-surgery interventions. The data of protocols of anesthesia and post-operation periods for 270 patients were studied. It was concluded that the applied methods of anesthesia ensure adequate protection from the operation stress and allow reducing the time of post-operation artificial respiration and early activation of patients without reducing the level of their safety. It was also proved that the application of any type of anaesthetics does not affect the rate of post-operation activation. The conducted research proves the advisability of wide introduction of the proposed tactics. Tab. 2, Ref. 28.

Auth.

14.3.2.8. Autoimmune mechanisms toward type I collagen during parodontitis. /L. Jashi, N. Gogebashvili/. Georgian Medical News. – 2014. – #4(229). – pp. 26-28. – rus.; abs.: geo., eng., rus.

The article presents original data about autoimmune mechanisms according to the severity of the process during the chronic generalized parodontitis. The medical examination of 179 patients with different forms of parodontitis demonstrated that during parodontitis the synthesis and re-synthesis of type I collagen is negatively affected and as a result, type I collagen concentration in the blood serum raises. In addition, the selection of antigen reactive lymphocytes increases toward type I collagen, which in turn boosts their quantity in blood and also stimulates the creation of auto-antibodies toward type I collagen. This is reflected by the increased quantity of auto-antibodies in the blood serum. The intensity of these processes amplifies as the parodontitis inflammation becomes more severe. These results demonstrate that the autoimmune process develops toward type I collagen during parodontitis and its intensity reflects the severity of the pathological processes in parodontitis. Ref. 9.

Auth.

14.3.2.9. Prevention of complications developed as result of prosthesis with fixed dentures in hypertensive patients. /S. Gordienko/. Georgian Medical News. – 2014. – #4(229). – pp. 29-32. – rus.; abs.: geo., eng., rus.

The author, on the basis of clinical and laboratory methods, justifies that the use of locally made dental cream "Solcoseryl-Denta" helps in persons suffering from arterial hypertension increase the speed of recovery of normal epithelial layer of the cells of the mucous membranes of the oral cavity, and, consequently, prevents the development of complications in prosthesis. Tab. 3, Ref. 11.

Auth.

14.3.2.10. Correction of endothelial dysfunction in patients with essential hypertension and type 2 diabetes. /A. Shalimova/. Georgian Medical News. – 2014. – #4(229). – pp. 33-40. – rus.; abs.: geo., eng., rus.

Presence of comorbidity in patients – that is essential hypertension and type 2 diabetes is associated with early progression of target organs affection and cardiovascular complications. Hyperinsulinemia and insulin resistance are some of the factors that determine the frequency of cardiovascular complications in type 2 diabetes. According to some authors, endothelial dysfunction is a link between insulin resistance and cardiovascular diseases. To investigate severity of endothelial dysfunction in patients with essential hypertension and type 2 diabetes and its correction by using a complex treatment α -lipoic acid we have examined 84 patients with essential hypertension stage II and type 2 diabetes in a moderate condition before and after 6 months treatment. The patients were divided into two groups: the first one consisted of the patients who received only basic therapy, and the other one consisted of those patients who in addition to basic therapy received also α -lipoic acid in tablets at a dose of 600 mg/day. After the investigation it was discovered that changes in the vascular wall in patients with essential hypertension and type 2 diabetes are characterized by increase of intima-media thickness and pulse wave velocity in the carotid arteries and abdominal aorta, decrease of endothelium-dependent vasodilation degree and increase of the levels of proinflammatory cytokines. Under the influence of the mentioned complex therapy in these patients it was found some improvement of metabolic homeostasis and correction of endothelial dysfunction. The effect on the structural and functional state of great vessels and proinflammatory cytokines, gained due to additional prescription of α -lipoic acid to the patients with essential hypertension and type 2 diabetes, was more considerable than the one which was shown in the group of patients who received only standard therapy. Tab. 7, Ref. 38.

Auth.

14.3.2.11. 12Ala polymorphism of receptor gene, which activates proliferation by peroxisome γ 2, determines severity of bronchial asthma course associated with coronary heart disease. /O. Byelan, O. Shlykova, T. Mamontova, L. Vesnina, I. Kaidashev/. Georgian Medical News. – 2014. – #4(229). – pp. 40-47. – rus.; abs.: geo., eng., rus.

The aim of the research was to detect the role of PPAR- γ 2 gene Pro12Ala polymorphism in the development of bronchial asthma (BA) in combination with coronary heart disease (CHD). BA patients in combination with coronary artery disease were examined in terms of anthropometric measurements, lung function, cycle ergometry, ECG, blood pressure, and endothelium-independent vasodilatation. The alleles of PPAR- γ 2 genopolymorphic region were determined; the high-sensitivity C-reactive protein (hs-CRP) and the adhesion molecules sVCAM-1 and sICAM-1 in the blood were detected; the biochemical blood analysis was performed. It was found that patients with Ala allele in homo- and heterozygous state, as opposed to patients with Pro allele in homozygous variant, reveal a significantly higher incidence of first grade arterial hypertension and mild persistent BA; lower rates of heart rate were recorded; significantly higher levels of parameters characterizing the systemic inflammation (white blood cell count and hsCRP) and lower rates of adhesion molecules of sICAM-1 level, total cholesterol, total and indirect bilirubin were detected. Ala allele carriers in homo- and heterozygous state in patients with BA in combination with CHD is associated with the risk of overweight, mild persistent asthma and angina I FC. Thus, the carrier state of 12Ala allele of PPAR- γ 2 gene Pro12Ala polymorphism may be associated with a higher risk of developing BA against the background of CHD. Tab. 3, Ref. 13.

Auth.

14.3.2.12. Quality of life of patients with chronic hepatitis C at different degrees of expression of mixed cryoglobulinemia. /Y. Ryabokon/. Georgian Medical News. – 2014. – #4(229). – pp. 48-52. – rus.; abs.: geo., eng., rus.

The article investigates the quality of life of 305 patients with chronic hepatitis C. It was revealed that in the absence of mixed cryoglobulinemia but in the presence of its biochemical signs the effect of physical conditions and emotional state on role functioning don't differ from those of the healthy people. However indicators of social functioning, self-rating of mental health and the general state of health are decreased. Increase of the quantitative maintenance of the mixed cryoglobulins in blood serum of patients with chronic hepatitis C leads to clinical manifestations of the HCV-related cryoglobulinemia syndrome accompanied by the decrease of self-assessment of health by patients due to the deterioration of influence of a physical conditions and emotional state on role functioning. Tab. 2, Ref. 18.

Auth.

14.3.2.13. Optimization of long-term hypolipidemia treatment of patients with myocardial infarction in combination with non-alcoholic steatohepatitis. /I. Skrypnyk, T. Dubrovinskaya, E. Ohanisyany/. Georgian Medical News. – 2014. – #4(229). – pp. 53-58. – rus.; abs.: geo., eng., rus.

In a comparative aspect, the dynamics of indices of lipidogram, functional state of liver and level of C-reactive of protein have been analyzed in 79 patients with myocardial infarction in combination with non-alcoholic steatohepatitis, who received a 9-months treatment by rosuvastatin of 20 mg, atorvastatin of 80 mg, as well as rosuvastatin of 10 mg, atorvastatin of 40 mg in combination with ursodeoxycholic acid (UDCA). The obtained results show the equivalent of hypolipidemia effectiveness of all investigated courses

of statinotherapy with the benefit of rosuvastatin of 20 mg in increase of level of HDL cholesterol and combined statinotherapy with UDCA in decrease of level of triglycerides. It was confirmed the significant advantages of combined statinotherapy with UDCA as for the influence on functional state of liver and CRP level, and advantages of rosuvastatin of 10 mg in combination with UDCA. Thus, the combination of rosuvastatin of 10 mg with UDCA should be preferable in the treatment of patients with myocardial infarction in combination with non-alcoholic steatohepatitis from the positions of the effectiveness and safety. Besides, taking into account positive correlation between the CRP level in blood and activity of transaminases in the dynamics of observation it can be concluded that high activity of transaminases is the prognostic marker of the severity and procession of polymorbid pathology – myocardial infarction in combination with non-alcoholic steatohepatitis. Tab. 1, Ref. 17.

Auth.

14.3.2.14. Early repolarization as a risk factor of atrial fibrillation. /Z. Matoshvili, Sh. Petriashvili, A. Archvadze, I. Azaladze/. Georgian Medical News. – 2014. – #4(229). – pp. 59-61. – eng.; abs.: geo., eng., rus.

Early repolarization pattern is a common ECG pattern characterized by J-point and ST segment elevation in 2 or more contiguous leads. There are some opinions that early repolarization may be associated with some kind of arrhythmias (including life-threatening arrhythmias) Aim of this study was to declare correlation between early repolarization and atrial fibrillation. In this study participated patients (19-68 years old) with early repolarization and without exclusion criteria. Monitoring was made by helping 24h ambulatory ECG monitoring. Variables are expressed as mean \pm SD, The analysis was performed using Student's t test, statistical tests were two-tailed, and a p value < 0.05 was considered statistically significant. We compared rate of atrial fibrillation in patients with early repolarization to rate of atrial fibrillation in general population; The comparison of this two data shows that rate of atrial fibrillation in patients with early repolarization is significant higher than rate of atrial fibrillation in general population (7,3 fold higher; 14,6% Vs 2%). So, early repolarization may be considered as independent risk factor of atrial fibrillation. This is principally new and very important information. Tab. 1, Ref. 15.

Auth.

14.3.2.15. Influence of risk-factors in infants on the peculiarities of cognitive development. /M. Bezrukikh, E. Parcalis, E. Loginova/. Georgian Medical News. – 2014. – #5(230). – pp. 7-17. – rus.; abs.: geo., eng., rus.

The importance of risk-factors during the early development of children on the development of cognitive difficulties in pre-schoolers and school children are reviewed. The effectiveness of comprehensive diagnostic of main reasons of disorders of cognitive development is shown. The importance of complex medical, pedagogical, psycho-physiological and neuropsychological treatment of cognitive disabilities in children is demonstrated as well. Fig. 3, Ref. 32.

Auth.

14.3.2.16. Some features of development and course of bronchial asthma in children in Azerbaijan. /H. Gabulov/. Georgian Medical News. – 2014. – #5(230). – pp. 17-24. – rus.; abs.: geo., eng., rus.

According to the international «ISAAC» program, we studied the peculiarities of bronchial asthma in children at the age of 13-14 years in various climatic and geographic regions of Azerbaijan. At the first stage of investigation, 14693 eighth-class pupils of high school from four different regions were surveyed: region I (n=4979) – an industrial city, placed in a semi-desert area; region II (n=3010) – rural areas, located in a semi-desert climatic zone; region III (n=3133) – areas, located in a subtropical climatic zone; region IV (n=3571) – an ecologically clean mountainous region, located along southern slopes of the Greater Caucasian ridge. At the second stage of the investigation allergological, clinical-functional examinations were carried out in children with symptoms of allergic diseases. It was established that prevalence of BA was reliably more frequent in the industrial city (4,6%) than in other three, especially rural areas. In subtropical climatic area 2,8%, in rural semi-desert area – 2,5%, in mountainous region – 1,8% of examined children were suffering from BA. Study of the clinical course of diseases in children with allergic diseases and their allergic status revealed that structure and expressiveness of sensitization to domestic, pollen, fungous and food allergens depends on residing area. Tab. 4, Ref. 11.

Auth.

14.3.2.17. Clinical analysis of 102 cases of Epstein-Barr virus infections in Chinese children. /F. Jiao, X. Yan, K. Yan, Y. Chen, K. Liu/. Georgian Medical News. – 2014. – #5(230). – pp. 35-38. – eng.; abs.: geo., eng., rus.

The purpose of this study is to investigate the clinical manifestations and disease severity, to evaluate the recent trend of clinical manifestations and differences in the clinical and laboratory findings of EBV-associated IM (infectious mononucleosis) according to the age of children. We retrospectively collected cases on hospitalized patients a majority of 7 years old with characteristic symptoms of IM and serologically

diagnosed EBV-associated IM at Shaanxi Provincial Peoples University Hospital in Xi'an from Apr, 2012 to Oct, 2013. All their medical records were reviewed and analyzed. For each patient, clinical, laboratory data and outcome were collected retrospectively and compared to previous studies to evaluate the differences between the clinical and laboratory findings of patients of different ages. The clinical manifestations in children with EB virus infection varied. There were 60 (58.8%) cases of children with infectious mononucleosis, 26 (25.49%) cases of Epstein-barr virus infection, 16 cases of the atypical EB virus infection, accounting for 15.67%. 78% children were under 7 years of age, 12% were 7 to 14 years of age. There are differences in the symptoms and signs among the different age groups. The clinical manifestations in children with EB virus infection involved multiple systems and produced harm is heavier and should be paid attention to during the treatment. The disease continues to occur mostly in children under 10 years of age. When compared to previous Chinese studies about 15 years ago, the age distribution was similar and the incidence of hepato-splenomegaly was lower in our study. Ref. 13.

Auth.

14.3.2.18. Fuzzy approaches in pediatrics. /T. Kiseliova, K. Pagava/. Georgian Medical News. – 2014. – #5(230). – pp. 38-46. – eng.; abs.: geo., eng., rus.

In this paper we present a review of applications of fuzzy methods in children and adolescence health care. Based on the several examples, available from journal papers, conference proceedings and book chapters we have concentrate us on problems in the pediatrics that have been or can be solved with the help of fuzzy methodology. The paper is organized as follows. In section I we consider the general considerations about fuzzy logic and medicine. Section II considers the basics of fuzzy sets and fuzzy logic, the main methodological approaches for medical practical applications. Section III describes problems and the way of their solving using fuzzy approaches in pediatrics. Conclusions summarize the review in Section IV. Fig. 4, Ref. 39.

Auth.

14.3.2.19. Tactics of surgical treatment at traumatic injuries of maxillo-zygomatic-orbital complex and the lower edge of the orbit. /Z. Gvenetadze, G. Lagvilava, G. Toradze, I. Devidze, G. Gvenetadze/. Georgian Medical News. – 2014. – #6(231). – pp. 7-11. – eng.; abs.: geo., eng., rus.

The maxilla-facial traumatic injuries, zygomatic – orbital complex and orbit lower edge injuries are characterized by dislocation of bone fragments, causing not only the anatomo-functional disorders but well-expressed deformity/ abnormality of the patient. 28 patients with traumatic fractures of zygomatic – alveolar complex and orbit lower edge have been studied and got surgical treatment by the authors. At admission to the hospitals, all the patients were the subjects to a classic comprehensive / complex examination including a Spiral Computed Tomography, with 3D reconstruction (three-dimensional) (in 3 projections). All the patients underwent surgical treatment under endotracheal anesthesia that included osteosynthesis of zygomatic bone body and arch and plasty of orbit lower edge. Osteosynthesis of zygomatic bone body and arch was conducted with titanium plates and screws (hanging zygomatic arch by steel wires), restoration of bony wall was carried out by prosthesis of titanium (net) plate made individually (auto-graft, taken from calvaria bone was used for restoration of orbit lower edge defect in 2 cases). According to the study materials no complications of transplanted grafts like purulency, removal reaction, or dislocation were observed. The obtained data have proved over again, that endoprosthesis made of medical titanium are effective for treatment of the patients with middle third facial traumatic injuries. Fig. 9, Ref. 9.

Auth.

14.3.2.20. Laparoscopic surgery of Hiatal hernia and gastro-esophageal reflux disease. /D. Elgandashvili, M. Kiladze/. Georgian Medical News. – 2014. – #6(231). – pp. 17-20. – eng.; abs.: geo., eng., rus.

About 10% (per cent) of world population have Hiatal hernia and gastro-esophageal reflux diseases of different forms. From this amount of people 1/5 need required surgical treatment. The goal of the thesis is to show the results and effectiveness of laparoscopic surgical treatment of this disease. In 2005-2013. at out clinics (Thoracoabdominal clinic and Caraps Medline) had been performed 145 laparoscopic funduplications. Were used as Nissen Method with its modifications (Floppy Nissen, Classic Nissen and Nissen Rosset), as well as „Toupet“ and „Dor“ methods of fundoplication. From 145 cases were 84 – female, 61 – male. Age ranged from 24 to 76. From performed 145 operations in 97 cases was done Floppy Nissen Fundoplication, 23 cases – Nissen-Rosset modification, 5 cases – Classic Nissen. Toupet method Partial Fundoplication was done in 17 cases and anterior Fundopexia - Dor method – was done in 3 cases. Using various methods of laparoscopic fundoplication, due to the analysis of our results, the perfect positive result was achieved in 93.2% (per cent). Tab. 2, Ref. 10.

Auth.

14.3.2.21. The severity of menopausal symptoms and cardiovascular risk in women. /A. Isayeva, M. Vovchenko/. Georgian Medical News. – 2014. – #6(231). – pp. 21-26. – rus.; abs.: geo., eng., rus.

Menopause is a crucial time in the life of any women. Perhaps the severity of menopausal symptoms defines further state of female health. The aim of the study is to assess changes of cardiovascular system during perimenopause and the connection between this changes and severity of menopausal symptoms. The data of 155 premenopausal women without coronary heart disease were analyzed. To assess women hormonal state follicle stimulating hormone was measured. The severity of menopausal symptoms was evaluated with the help of Kupperman questionnaire form in Uvarova modification. All women were divided into two groups according to follicle stimulating hormone. Women with follicle stimulating hormone higher 30 MU/l were classified as postmenopausal. It was shown that groups of pre – and post-menopausal women significantly differ in age, progesterone, follicle stimulating hormone level, and SCORE. The severity of menopausal symptoms was the same in studied groups. Regression analysis revealed that severity of menopausal symptoms depended on systolic blood pressure, follicle stimulating hormone level, progesterone level. The link between cardiovascular risk (SCORE) and follicle stimulating hormone, NO₂, ApoA1, and severity of menopausal symptoms was found. Tab. 3, Fig. 1, Ref. 20.

Auth.

14.3.2.22. State of integral remodeling parameters of target organs in patients with essential hypertension and obesity. /M. Kochueva, V. Sukhonos, A. Shalimova, V. Psareva, N. Kirichenko/. Georgian Medical News. – 2014. – #6(231). – pp. 26-30. – eng.; abs.: geo., eng., rus.

Arterial hypertension combined with obesity is a very common form of comorbid disease in most countries all over the world. The combination of these diseases is characterized by mutual burdening of remodelling processes in important target organs, what greatly increases the risk of cardiovascular complications and death. The mechanisms of injury progression to vital organs in essential hypertension (EH) and obesity have some common features. The most important risk factors of target organs damage are hemodynamic and neurohumoral: inflammatory, effectors of the renin- angiotensin-aldosterone system, insulin resistance and others. Polyethiologic remodelling, lack of knowledge concerning violations in structural and functional status of important target organs and mechanisms of the interactions of their progression with this comorbidity require further study of these issues. The objective of the study was the comparative study of the state of integral indicators of structural and functional state of the heart, blood vessels and liver in patients with EH second stage with normal body weight and with concomitant obesity I and II degrees. This study found that the presence of obesity I and II in patients with EH stage II is associated with the concentric type of left ventricular hypertrophy, saved by its ejection fraction and impaired diastolic filling processes. For the patients with EH in the early stages of obesity the following characteristics are quite typical: considerable increase of intima media thickness in the carotid arteries, increasing the stiffness in the main arteries and liver parenchyma, impaired of the functional state of endothelial. Tab. 2, Ref. 20.

Auth.

14.3.2.23. Apelin activity in patients with essential hypertension accompanied prediabetes and type 2 diabetes mellitus. /G. Demydenko/. Georgian Medical News. – 2014. – #6(231). – pp. 30-34. – rus.; abs.: geo., eng., rus.

Apelin's activity corresponding to pronunciation of carbohydrate disorders was studied in 136 patients with essential hypertension. General clinical and laboratory investigations were used. In 40 (34,46%) patients with essential hypertension comorbid type 2 diabetes was revealed, in 37 (31,92%) patients – pre diabetes. Significant increasing of apelin levels were estimated in the whole group of hypertensive patients with marked expression in patients with comorbid type 2 diabetes. Significant correlations of apelin with components of carbohydrate pool dedicate that apelin takes part in the development of gluco-metabolic disorders in essential hypertension. Tab 1, Fig 1, Ref. 10.

Auth.

14.3.2.24. Features of the humoral immune response in patients with chronic hepatitis C, spontaneous clearance of hepatitis C virus and false-positive reactions of anti-HCV. /N. Zhandarova/. Georgian Medical News. – 2014. – #6(231). – pp. 38-41. – rus.; abs.: geo., eng., rus.

Among the patients residing in the territory of Ukraine false-positive reaction of anti-HCV was determined in 5.4% of anti-HCVpositive patients with low frequency of antibodies and low reactivity of sera to a structural viral protein or nonstructural viral proteins (by SIA or RIBA). Cases of spontaneous clearance of hepatitis C virus (HCV) were detected in 16.1% of anti-HCV positive patients and based on the detection of antibodies to the core-protein and one or several of nonstructural viral proteins on condition negativation of RNA-HCV twice with an interval of 6-12 months. Chronic hepatitis C with the presence of specific RNA-HCV in blood serum was confirmed in 83.9% of patients. The group of examinees with spontaneous clearance of HCV was characterized by low humoral immune response compared to chronic persistent infection. Tab. 2, Fig. 2, Ref. 7.

Auth.

14.3.2.25. Monocyte chemo attractant protein-1 in patients with chronic heart failure of different functional class with type 2 diabetes. /P. Kravchun, A. Narizhna, N. Ryndina/. Georgian Medical News. – 2014. – #6(231). – pp. 42-45. – eng.; abs.: geo., eng., rus.

The aim of the study was to assess the dynamics of monocyte chemo attractant protein-1 in patients with chronic heart failure of different functional classes depending on the presence or absence of concomitant type 2 diabetes. 95 patients with chronic heart failure II - III FC were examined due to coronary heart disease who were treated at the cardiological department of the Kharkiv City Clinical Hospital № 27 (mean age 65,13±8,66 years). The first group included 52 patients with CHF with type 2 diabetes, the second - 43 CHF patients without type 2 diabetes. Research was excluded patients with acute coronary syndrome, acute myocardial infarction. 71 patients of patients had II NYHA FC, 24 patients - III FC. Among the patients of first group 40 patients were diagnosed in CHF FC II, 12 - III FC. In II group 31 patients were with CHF class II, 12 patients – with III FC. Concentration of proinflammatory cytokine interleukin-1 β and fibrosis factor monocyte chemoattractant protein-1 were determined by ELISA (enzyme-linked immunosorbent assay). In patients with chronic heart failure in presence or absence of type 2 diabetes increase in the profibrotic parameter monocyte chemoattractant protein-1 and proinflammatory cytokine interleukin-1 β were increasing in parallel with NYHA FC increasing. Presence of type 2 diabetes negatively affects the work of cytokines and markers of fibrosis, as evidenced by higher levels of interleukin-1 β and monocyte chemoattractant protein-1, compared with patients without diabetes in the presence of the same NYHA FC of chronic heart failure. Tab. 2, Ref. 9.

Auth.

14.3.2.26. The analysis of changes in bioelectrical activity of the muscles of the upper extremities in patients with traumatic deformation of the cervical spine. /A. Barysh, Y. Doluda, N. Isaeva/. Georgian Medical News. – 2014. – #6(231). – pp. 49-54. – rus.; abs.: geo., eng., rus.

The analysis of changes in bioelectrical activity of the muscles of the upper extremities was conducted with the help of electromyography in 37 patients with traumatic deformation of the cervical spine in order to identify its dependence on the nature of the initial damage, the amount of deformation and the terms of its existence. It was revealed that in the instrumental evaluation of patients with uncomplicated traumatic deformation of the cervical spine in 33.3 % of cases determined subclinical signs of neurological disorders in the form of changes in the bioelectric activity of the muscles of the upper extremities, most often in the DF and CF types. Frequency of manifestation of peripheral neurologic symptoms is possible with all types of traumatic deformation equally. Violation of bioelectric activity of the muscles of the upper extremities may occur at any value of the angular deformation in the sagittal plane and at different terms of its existence. Tab. 3, Fig. 3, Ref. 14.

Auth.

14.3.2.27. The vitamin D sufficiency in children with recurrent bronchitis. /A. Vertegel, L. Ovcharenko/. Georgian Medical News. – 2014. – #6(231). – pp. 55-59. – rus.; abs.: geo., eng., rus.

Currently in the world there is no consensus on the provision of sufficient vitamin D and its optimum serum levels of both healthy children and patients with various pathological conditions. The objective: investigation of vitamin D sufficiency in children with recurrent bronchitis (RB), living in Zaporozhye, by examining of 25(OH)D and parathormone serum level. The study involved 120 children aged 4 to 10 years, divided into 2 groups (60 children each): 1) children, occasionally ill with acute respiratory infections, 2) children with RB. Investigation of serum 25(OH)D was conducted between November and February. Decrease of vitamin D₃ below 30 ng/ml in serum was observed in 85% (p<0,05) patients with RB (insufficiency), below 20 ng/ml – in 15% (deficit). The children aged 4-10 years with RB, who living in Zaporozhye, have decrease of serum 25(OH)D that characterizes their vitamin D₃ supply as insufficient. Tab. 3, Ref. 29.

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14.3.2.28. Etiology as a predictor of morbidity after Convulsive Status Epilepticus in children. /T. Shatirishvili, N. Tatishvili, G. Lomidze, T. Kipiani/. Georgian Medical News. – 2014. – #6(231). – pp. 60-63. – eng.; abs.: geo., eng., rus.

CSE is the most common childhood neurological emergency in developed countries, which can lead to neuro cognitive sequel and death with different hazards and outcome. The majority of authors 'agreed that etiology is the main determinant of morbidity, but different studies reported different etiology groups as predictors of the poor outcome. Present study was conducted to evaluate predictive value of etiology in post CSE morbidity. Prospective, hospital-based study was performed in Tbilisi. Patients, aged from one month to 18 years with CSE, admitted to the emergency department of M. Iashvili Children's Central Hospital from March 2007 to March 2012 were included. The short-term outcome of CSE was evaluated after 30 days from admission and it was classified into three categories: unchanged neurologic status, neurological consequences (new neurologic deficit compared to the condition before CSE), and lethal outcome. 48 children aged one month- 18 years were analyzed. In our study acute symptomatic, remote symptomatic and progressive encephalopathy were associated with higher morbidity. Progressive encephalopathy is the most

frequent etiology group which led to develop new neurological sequel after CSE and long duration of CSE. According to our data we conclude that children with idiopathic or febrile CSE have a favorable outcome. While acute symptomatic etiology group mostly was associated and statistical significant association were found with progressive encephalopathy and development morbidity after CSE. According to our data we conclude that children with idiopathic or febrile CSE have a favorable outcome. While progressive encephalopathy lead to develop morbidity after CSE. Fig. 1, Ref. 8.

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14.3.2.29. Effect of treatment of Convulsive Status Epilepticus on outcome in children. /T. Shatirishvili, N. Tatishvili, G. Lomidze, T. Kipiani/. Georgian Medical News. – 2014. – #6(231). – pp. 63-67. – eng.; abs.: geo., eng., rus.

Convulsive Status Epilepticus (CSE) is most common neurological emergency in childhood. Condition has been defined as a convulsion lasting at least 30 min or recurrent convulsions occurring over a 30-min period without recovery of consciousness. It is generally accepted that early intervention for terminating seizures is beneficial for outcome. The aim of our study was to evaluate influences of pre-hospital and hospital treatment strategies on the outcome of CSE. Our prospective, hospital-based study was performed in Tbilisi and included 48 Patients with CSE, admitted to the emergency department of M. Iashvili Children's Central Hospital from March 2007 to March 2012. The cases were reviewed according to pre-hospital and hospital treatment strategies and outcome. "North Central London Epilepsy Network for Children & Young People" Guideline -"The Management of Convulsive Status Epilepticus" was adapted for the Georgian reality. Our study identified statistically significant increase of incidence of artificial ventilation in patients receiving more than one dose of BZD in pre hospital as in hospital setting; additionally we found a statistically strong relationship between timely initiation of treatment and appropriate pre-hospital treatment with a short duration of CSE. From our data the number of doses of benzodiazepine and a long period before admission are the main determinants of seizure prolongation. Lack of standardized pre hospital treatment of pediatric CSE had statistically significant negative influence on outcome of CSE. Fig. 2, Ref. 9.

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14.3.2.30. Isolation of dentin tissue by using a new liner biodontine at management of simulated experimental caries. /M. Ustiashvili, M. Mamaladze, L. Sanodze, G. Labuchidze/. Georgian Medical News. – 2014. – #6(231). – pp. 67-72. – eng.; abs.: geo., eng., rus.

The aim of our study was the use of different types of isolation systems in the treatment of experimentally simulated dental caries that will allow to present additional comparative characteristic for morphological responses of the pulp. For realization of this purpose, 3 systems have been selected: Ultra Blend (Ultradent), Biodentine (Septodont) and adhesive system Prime&Bond NT (Dentsply). The study was conducted at the laboratory of Alexander Natishvili Institute of Morphology. For this experiment, 12 male, 6 months of age rabbits were selected. There were created 3 experimental groups, each of which included 4 rabbits. Restoration of the teeth in experimental rabbits with Biodentine revealed sufficient physical properties enabling the operator most comfortably conduct his/her clinical activities: kneading, bringing into caries cavity, condensing and filling dental defect. Isolation of dentin by Biodentine doesn't contradict and/or reduce application of adhesive systems, which is also important for teeth restorations. Biodentine has optimal working time (final curing 10-12 minutes) enabling the operator to conduct maximal formation of material at the bottom of caries cavity. Fig. 5, Ref. 34.

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14.3.2.31. The morphological features of the uterine body adenocarcinoma. /N. Japaridze, L. Chakvetadze, I. Jikia/. Georgian Medical News. – 2014. – #6(231). – pp. 72-77. – rus.; abs.: geo., eng., rus.

The authors studied the morphological features of uterine adenocarcinoma using immunohistochemical methods. The endometrial tissue was studied resulting from surgery – hysterectomy with oophorectomy in 103 patients aged 45-76 years with a clinical diagnosis of endometrial cancer. To exclude false-positive and false-negative results, we carry out same investigation on 12 patients with morphological diagnosis easy-glandular hyperplasia of the endometrium. The results showed that the endometrioid adenocarcinomas exhibit the high and moderate expression of estrogen and progesterone receptors and low rate of the proliferation marker Ki-67. For serous-papillary and enocarcinoma of the uterine body the negative ER-PR-receptor over expression phenotype and proliferation marker Ki-67 super expression are characteristic. The results showed that in a simple-glandular endometrial hyperplasia is determined a moderate expression of estrogen and progesterone receptors, as for the Ki-67 proliferation marker an expression was found only in the single arrears with an average of 5-8% of findings Based at this study it may be concluded that the use of immunohistochemical studies particularly a detection of negative estrogen and progesterone receptor phenotype and high expression of the proliferation marker Ki-67 is an additional differential diagnostic criterion for the diagnosis of serous papillary adenocarcinoma of the uterine body that will ensure adequate therapeutic approach to patients suffering from this disorder. Given the fact that serous papillary carcinoma of the endometrium is the most common neoplasm of the rarer forms of endometrial cancer with an

extremely peculiar aggressive course a surgical treatment as in ovarian cancer is recommended for this pathology, including a hysterectomy with bilateral oophorectomy, lymphadenectomy, omentectomy, cytological examination of the abdomen and biopsy of suspicious areas of the abdominal cavity, with adjuvant treatment including chemotherapy and radiation therapy. The absence of estrogen and progesterone receptors on serous-papillary adenocarcinoma of the uterine body justifies the inadvisability of hormone therapy in these patients. Since the patients with serous-papillary adenocarcinoma of the uterine body need a larger volume surgical treatment the patients with endometrioid adenocarcinoma of the uterine body. We consider that this morphological type of uterine cancer should be diagnosed preoperatively. Fig. 2, Ref. 10.

Auth.

14.3.2.32. Influence of radiation on survivability, behavior and neurochemical correlates of rats. /M. Nikolaishvili, G. Iordanishvili, K. Chichinadze, G. Jikia, S. Zenaishvili/. Georgian Medical News. – 2014. – #6(231). – pp. 77-82. – rus.; abs.: geo., eng., rus.

The aim of the work was to study the dependence of individual radio sensitivity of white and black rats on radiation. The rats under study were derived from a cross between black and white rats and called Ratus-Georgia. Comparative radio sensitivity of white (Wistar) and black rats was studied at a total exposure with sublethal and lethal doses (5, 7 and 9 Gy). Cumulative survival functions of rats, a spectrum of changes in some ethological parameters and content of serotonin and catecholamines in their brain structures were given as criteria of radiosensitivity. Survival rate of black and white rats is connected with changes in the composition and distribution of biogenic amines in the various brain structures, as well as with a decrease of locomotor and orienting-exploratory activity, on the one hand, and with increase of emotionality, stereotyped activity, and passive defensive behavior of the rats, on another. Regression coefficients of dependence of survival functions on irradiation doses of black rats were rather higher than those of white rats after irradiation with doses in 5, 7 and 9 Gy. A change in the intensity of mortality with changes in radiation dose per unit depends on the synthesis of serotonin and on the number of sulfhydryl groups, deficiency of which is one of the important factors for white rats. Results of the study allow us to suppose that changes in the radiation sensitivity of rats after irradiation with sublethal and lethal doses are caused by consequences of radiation damage and by activation of the serotonergic system at the process of restitution after radiation injury. On the other hand, a higher radiation sensitivity of white rats in comparison with that of black rats is caused by low content of serotonin, thiols, melanin and other biologically active substances which are endogenous radio protectors defining individual radio resistance. Tab. 3, Fig. 1, Ref. 13.

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14.3.2.33. Current issues, problems and prospects of tension-free hernioplasty (review). /M. Gogoladze, T. Chkhikvadze, M. Kiladze, D. Jikia/. Georgian Medical News. – 2014. – #7-8(232-233). – pp. 7-12. – rus.; abs.: geo., eng., rus.

The present study discusses modern methods of the tension free hernioplastics, the complications associated with them and technical difficulties, up-to-date views and the perspectives of the issue development in terms of avoiding infectious complications, positioning of implants and their fixation. Hernia is one of the widespread surgical pathologies as it is found in 4% of the population and its share among the inpatient surgical diseases is about 18-30%. Consequently annually up to 20-21 mln hernioplasties are carried out worldwide. Despite of many years of experience in the field of hernia surgical treatment there still exist many unsolved problems such as safe closure of defects of abdominal cavity wall. Up to 200 methods of hernioplastics, various implantations and application of synthetic materials refer to lack of the optimal surgical strategy. In modern herniology priorities are given to tension free plastics. The merge of the synthetic implants and "tension free hernioplastics concepts enabled sharp reduction of the side effects list, making it possible to perform successful surgeries in that contingent whose treatment by the method of tissue-plasty was related with high risk of lethality. Large-scale introduction of tension free hernioplastics caused intensification of the associated problems such as migration, dissection and shortening of the net. Ref. 14.

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14.3.2.34. Urinary IL-33 and galectin-3 increase in patients with interstitial cystitis/bladder pain syndrome (review). /G. Kochiashvili, D. Kochiashvili/. Georgian Medical News. – 2014. – #7-8(232-233). – pp. 12-15. – eng.; abs.: geo., eng., rus.

Interstitial cystitis/bladder pain syndrome (IC/BPS) is an enigmatic chronic disorder characterized by vague bladder pain of variable severity accompanied by urinary symptoms. The pathogenesis and etiology of IC/BPS remain incompletely defined. However, there is an emerging consensus about the central role of epithelial dysfunction, bladder sensory nerve up-regulation, and mast cell activation in the genesis of IC/BPS. Accumulating evidences have suggested that tissue damage is recognized at the cell level via receptor-mediated detection of intracellular proteins (so-called alarmins) released by the necrotic cells. Among these proteins IL-33, galectin-3 (Gal-3) and advanced glycation end products (AGE), may have an

important role because they can be participated as cellular components that stimulate the immune system. We determined IL-33, Gal-3, and AGE in 24-hour urine specimens from patients with IC/BPS and healthy subjects. Study participants included 43 woman with IC/BPS and 29 female volunteers. Urinary IL-33, EGF and Gal-3 levels were measured using an enzyme-linked immunosorbent assay, whereas the content of AGE was quantified by natural AGE-specific fluorescence (Ex. 370 nm, Em. 440 nm). Urinary IL-33, and Gal-3 levels were normalized by urinary creatinine (Cr) levels and compared among subgroups. We have found that the levels of IL-33 and Gal-3 were significantly increased in IC/BPS. The level of the IL-33 in the urine of healthy women was equal to 0.32, while the level of IL-33 in IC/BPS patients increases up to 0.58 ($p < 0.05$). Further, the amounts of urine Gal-3 were also elevated in IC/BPS compared to healthy subjects (0.16 versus 0.07; $p > 0.01$) and AGE-specific fluorescence in urine was increased up to 140% in IC/BPS patients. These data suggest on the participation of IL-33, Gal-3 and AGE in the pathogenesis of IC/BPS. Tab. 1, Fig. 1, Ref. 9.

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14.3.2.35. The prevalence of dental caries among adult population of different regions of Georgia. /L. Tsitaishvili, M. Margvelashvili, M. Kalandadze, V. Margvelashvili/. Georgian Medical News. – 2014. – #7-8(232-233). – pp. 21-28. – eng.; abs.: geo., eng., rus.

The aim of the study was to determine the prevalence and intensity of dental caries in adult population of Georgia according to their regional distribution. The survey was carried out by pathfinder survey, based on cluster-stratified method derived by WHO. 2370 adults including 1289 women and 1081 men distributed in 4 age groups: I - 20-34 years, II - 35-44, III - 45-64, IV - 65+ years, the residents of the city, town and village in 9 regions of Georgia and the capital Tbilisi were examined. The assessment of dental status and oral hygiene was based on WHO's recommendation. (WHO 1997 'Oral Health Assessment Form') Examination was done under good natural light using a mouth mirror and an explorer. Questionnaires comprised questions for revealing the following risk-factors: social status and family income, existence of common diseases, people's attitude towards oral hygiene (tooth brushing, using dental floss) accessibility and acceptability of dental service, sugar consumption rate, tobacco use, consumption of dairy products. The study revealed the high prevalence of dental caries in Georgia's adult population (96-100%) Caries intensity and severity was seen as the highest in Mtskheta-Mtianeti - 13.26 ± 5.97 , Guria - 12.79 ± 8.92 , Samtskhe-Javakheti - 12.62 ± 8.44 , Shida Qartli - 12.03 ± 7.22 and Achara - 12.23 ± 7.89 regions, relatively lower in Tbilisi - 11.64 ± 7.8 ; Qvemo Qartli - 10.96 ± 7.07 ; Imereti - 10.79 ± 7.63 Samegrelo - 10.54 ± 7.95 and in Kakheti - 9.86 ± 7.02 . By the mean number of caries decayed teeth Mckheta-Mtianeti - 4.26 ± 3.51 , Samckhe-Javakheti - 3.52 ± 3.51 and Imereti - 3.05 ± 3.1 were distinguished. The mean number of caries missing teeth was noted to be highest in Guria - 5.49 ± 7.42 , Samckhe-Javakheti - 5.31 ± 6.97 and Achara - 5.32 ± 6.73 . Mckheta-Mtianeti - 2.62 ± 3.05 , Shida Qartli - 2.39 ± 2.8 and Tbilisi - 2.28 ± 2.09 were the leading regions by the mean number of filled teeth, the lowest value of filled teeth variable was seen in Imereti - 0.67 ± 1.39 . In behavioral factors (unsatisfactory oral hygiene and less acceptability of dental service due to low medical educational background) play substantial role in occurrence and prevalence of dental caries among adult population of Georgia in all regions, though the financial problem seems to be a considerable contributor in caries prevalence. Reliable statistical data obtained in the study allowed to conclude that in spite of small differences in prevalence in different regions of Georgia dental caries is very widespread throughout the country (96-100%). It represents a major problem in Georgia and needs serious attention and preventive measures to be carried out to enhance peoples' referral to dental service and improve medical educational background of the population. Tab. 2, Ref. 17.

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14.3.2.36. Anatomical and morphological peculiarities of maxillary first molars in Georgian population. /N. Chipashvili, E. Beshkenadze/. Georgian Medical News. – 2014. – #7-8(232-233). – pp. 28-33. – rus.; abs.: geo., eng., rus.

Maxillary first molars due to the complexity of the root canal morphology are the object of constant interest. The present work investigates anatomical and morphological peculiarities of maxillary first molars in the Georgian population. A study on 440 maxillary first molars was conducted. The subjects were divided into three groups. The first group consisted of 156 extracted maxillary first molars (ex vivo study). The second group consisted of 243 endodontically treated teeth (in vivo study). The third – control group. Cone beam computed tomography (CBCT) was used to investigate 41 teeth. The investigation showed that inconsistencies exist in the results of ex vivo and in vivo studies. In vivo study showed less 4 canals, than ex vivo study. That's why for the credibility of the results we examined the results of ex vivo study. The results showed (ex-vivo study) that 70.5% of the examined teeth had high probability of 4 canals existence. The occurrence of MB-2 canals of the maxillary first molar of Georgian population was in full accordance with the results of other authors. Tab. 2, Ref. 18.

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14.3.2.37. Comprehensive evaluation of new diagnostic criteria for progression of essential hypertension stage II. /I. Plesh, L. Haidych, S. Riaboy/. Georgian Medical News. – 2014. – #7-8(232-233). – pp. 47-51. – rus.; abs.: geo., eng., rus.

The aim of the study was to improve the diagnosis of essential hypertension (EH) stage II in patients with different circadian blood pressure profile through a comprehensive analysis of various parts of hemodynamics. The diagnostic capabilities of compression-decompression test by using of original method angio-tensio-rheo-baro-graphy (ATRBG), which is based on volume-impedance dependence of forearm tissue's hyperemia, peculiarities of the changes of microcirculation of the nail bed and central venous pressure (CVP) have been studied in 92 patients with EH stage II depending on the circadian rhythm of blood pressure. The results of using ATRBG may indicate that the arterial hypertension is combined with venous one in the majority of patients with EH stage II. We have discovered the inverse relationship between the increasing of CVP level and the decreasing of density of functional capillaries in the patients with low (non-dipper) and negative (night-picker) circadian index of arterial pressure that can be proposed as new diagnostic criteria of progression of EH. Tab. 1, Fig. 2, Ref. 7.

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14.3.2.38. The role of TLR-2, TLR-3, TLR-4 genes polymorphism of grippe. /G. Dubinskaya, N. Pryimenko, I. Kaidashev, V. Pohilko, K. Chub/. Georgian Medical News. – 2014. – #7-8(232-233). – pp. 51-55. – rus.; abs.: geo., eng., rus.

Distribution and prognostic value of Arg753Gln TLR-2, Leu412Phe TLR-3, Asp299Gly TLR-4 genes polymorphism in case of grippe have been studied in the present article. The examination has comprised 112 patients with grippe including 63 cases with uncomplicated course and 49 cases with grippe-associated pneumonia. The population control group has included 90 scarcely healthy persons to study Arg753Gln TLR-2 gene polymorphism and 80 ones to study Leu412Phe TLR-3 gene polymorphism. The conducted researches results have shown reliably higher frequency of heterozygous genotype Asp/Gly TLR-4 in patients with grippe (12,69%) and grippe-associated pneumonia (14,28%) compared with population control (3,33%). The frequency of homozygous genotype Phe/Phe TLR-3 in patients with grippe-associated pneumonia (18,37%) has exceeded the indices of patients with uncomplicated grippe (4,76%, $p=0,02$) and healthy persons (5,00%, $p=0,03$). Mutant genotypes combinations TLR-2, TLR-3, TLR-4 have been determined barely in patients with grippe and grippe-associated pneumonia with the frequency 11,11%-14,28%. It has been established that there is the increased risk of grippe development for persons with Asp/Gly TLR-4 genotype and TLR-2, TLR-3, TLR-4 mutant genotypes combinations; there is the increased risk of grippe-associated pneumonia for patients with mutant homozygous genotype Phe/Phe TLR-3. Tab. 2, Ref. 14.

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14.3.2.39. Role of montelukast in treatment of mild and severe forms of asthma. /E. Ekaladze, I. Pkhakadze, N. Alavidze, K. Jugeli/. Georgian Medical News. – 2014. – #7-8(232-233). – pp. 56-60. – eng.; abs.: geo., eng., rus.

The aim of the study was to evaluate the effect of Montelukast - leukotriene inhibitor in longitudinal treatment of mild and severe forms of asthma. The research was conducted at LTD Kutaisi Nazarishvili Regional center of Family Medicine. Retrospect analysis of 187 patients histories were carried out. Patients histories were grouped according to the severity of the disease, method of treatment (monotherapy with inhaled glyocorticoid and inhaled glyocorticoid combined with leucotriene inhibitor) in different age groups. The results of measurements of lung function - especially spirometry (FEV1 - Forced Expiratory Volume1 sec and PEF- Peak Expiratory Flow) were studied. Descriptive statistics methods were used to characterize each variable. Our results indicate on positive role of montelukast – leukotrien inhibitor in the treatment of severe and mild forms of asthma. Tab. 4, Ref. 11.

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14.3.2.40. Alterations of redox-status during psoriasis. /M. Matoshvili, A. Katsitadze, T. Sanikidze, D. Tophuria, A. Richetta, S. D'Epiro/. Georgian Medical News. – 2014. – #7-8(232-233). – pp. 60-64. – eng.; abs.: geo., eng., rus.

The skin is constantly exposed to oxidative stress induced by reactive oxygen species (ROS) that are generated both from endogenous neutrophils and external pro-oxidant stimuli. The present study was planned to investigate the possible involvement of free radical oxidation in psoriatic patients. Study was carried out in the Department of Dermatology and Venereology in Tbilisi State Medical University. A total of 60 individuals were included in this study, out of these 40 were patients suffering from psoriasis and 20 were healthy subjects (a control). Psoriasis patients were further graded according to the Psoriasis Area Severity Index (PASI); in patients' blood redox-status superoxide (O_2^-) and lipoperoxide (LOO \cdot) free radicals, free Mn^{2+} -ions and (ceruloplasmin/ Fe^{3+} -transferrin) system antioxidant activity were estimated by Electron Paramagnetic Resonance (EPR) method and activity of catalase (CAT) and superoxide dismutase (SOD) were determined by spectrophotometry. In the blood of patients with psoriasis, the EPR signal intensities of

oxidized form ceruloplasmin (Cp) increased and ferrum-transport protein, Fe³⁺-transferrin (Fe³⁺-Tr) decreased in comparison to the same parameters of healthy persons. Activity of blood catalase increased and activity of blood SOD decreased with increasing severity of psoriasis. EPR signals of low-molecular Mn²⁺-containing complexes and lipoperoxide (LOO[·]) free radicals were detected. The obtained data indicate the alteration of blood redox-balance during psoriasis; the intensity of impairment of redox balance correlates with severity of psoriasis. Tab. 2, Ref. 9.

14.3.2.41. **Influence of ippotherapy on primary constipation.** /M. Sherozia, Kh. Saganelidze, G. Beradze/. Georgian Medical News. – 2014. – #7-8(232-233). – pp. 78-81. – rus.; abs.: geo., eng., rus.

Effective treatment of primary constipation remains one of problematic issues. The disease may be represented individually in the form of functional constipation, and in most of cases it is observed in the form of irritable bowel syndrome or it is conjugated with other functional disorders of bowels. Treatment with combined preparations and means of pluripotential orientation are more and more acknowledged. Ippotherapy is distinguished with its complex action. Aim of the research was to determine influence of the given natural method on dynamics of primary constipation. The research had been held among eleven patients, nine of whom were women and two men. In five cases functional constipation was diagnosed, in six cases - irritable bowel syndrome. Seven patients have been treated with ippotherapy from the very beginning and four of them underwent this treatment after one month of pharmacotherapy. Ippotherapy lasted within five weeks. On a general basis three sessions were held in a week, and after pharmacotherapy – two sessions. Before the beginning of the course of treatment and after its completion patients filled in questionnaires of self-appraisal. Subjective estimation of the dynamics of symptoms was handled in accordance with the method of nonparametric statistics – appraisal criteria had been calculated. All of the examined people have mentioned improvement of health condition after ippotherapy; nine of them have mentioned significant improvement. According to the accurate statistics result of the impact of ippotherapy on all four manifestations of constipation – intervals between defecations have been reduced to the norm, contractions during defecation have reduced, and excrements were of normal consistence and configuration, the sense of fatigue has disappeared. In the case of irritated bowel syndrome according to accurate statistics the episodes with abdominal pains and abdominal swelling have reduced. Ippotherapy was less effective in treatment of postprandial distress syndrome and practically ineffective in case of heartburn. It is important to note that in no cases of ippotherapy no complication of any syndrome or occurrence of new symptoms was revealed. In the process of treatment no procedural discomfort had been observed. Received data confirm manifested positive influence of ippotherapy on the course of functional disorders of bowels, which in case of availability should be considered at the determination of the strategy of management of the given disease. Ref. 11.

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14.3.2.42. **Prevention of peritoneal desiccation in acute adhesive intestinal obstruction.** /B. Slonetsky, O. Dovzhenko, I. Verbitskiy, M. Maksimenko, V. Kocubenko/. Georgian Medical News. – 2014. – #7-8(232-233). – pp. 103-107. – rus.; abs.: geo., eng., rus.

The research study was carried out on 30 white Wistar rats, which were divided into three groups. In the first group the effect of carboxyperitoneum on visceral peritoneum during a two hour period at a pressure of 9-10 mm Hg and after 20 minutes its further fractional replacement during 10 seconds was examined. In the second group, the study was carried out after modeling 12-hours acute adhesive intestinal obstruction. To the third group at the beginning was given a single injection of fourcomponent mixture (carboxyperitoneum gel carboxymethylcellulose novocaine and antibiotic) into the abdominal cavity. In the first group under the condition of tension carboxyperitoneum after a day of use there were signs of desiccations of visceral peritoneum. The increase of lipid peroxidation products and decrease of antioxidant enzymes were also observed. In the second group of animals these processes were exacerbated by acute adhesive intestinal obstruction. In the third group intraabdominal use of four components disperse mixture reduced the negative organic and functional changes in visceral peritoneum and improved its protective properties. Tab. 2, Fig. 1, Ref. 10.

Auth.

14.3.2.43. **Correlating the length of internal carotid artery stenosis to the technique of endarterectomy and anesthesia used.** /J. Partsakhashvili, N. Rtveliashvili, O. Philishvili, R. Kurdadze, J. Ukkat/. Georgian Medical News. – 2014. – #9(234). – pp. 7-11. – eng.; abs.: geo., eng., rus.

A consensus correlating the length of the internal carotid artery stenosis (short vs. long) to the preferred Endarterectomy (Conventional Vs. Eversion) and type of anesthesia (General Vs. cervical blockade) implemented has not yet been met. In a collaboration study between two hospitals in Germany and Georgia, 215 patients were analyzed and stratified into 3 groups according to length of stenosis, surgical technique and type of anesthesia used. In this series, for eversion endarterectomy with cervical blockade, non-neurological complications commenced at 1.78%. For conventional endarterectomy performed under general

anesthesia, patients with a short stenosis had no postoperative complications whatsoever, whereas the incidence rate for various neurological deficits was 2.7% for long stenosis. In case of short stenosis of the internal carotid artery, eversion endarterectomy with cervical block seems to be an optimal choice. Whereas for long stenosis, conventional endarterectomy under general anesthesia is a more suitable option. Tab. 1, Ref. 26.

Auth.

14.3.2.44. **Improvement of surgical treatment of echinococcosis.** /D. Kalieva, E. Turgunov, M. Tusupbekova, N. Abatov, Z. Saduova/. Georgian Medical News. – 2014. – #9(234). – pp. 11-19. – rus.; abs.: geo., eng., rus.

A hydatid disease is a serious public health problem in Kazakhstan. Surgical treatment is the main treatment of hepatic echinococcosis. Considering high rate of recurrence of the disease the search for new methods of surgical treatment remains relevant. The aim of the study was to improve the efficiency and safety of surgical treatment of hepatic echinococcosis; to develop a new physical method for cleaning residual cyst cavity. Experimental and clinical investigation of IED effects on hydatid cyst embryonic element was studied. In order to monitor the effectiveness of developed method the morphological study of histological material was done. It is experimentally proved that the optimal mode of impact of IED on germinal elements of hydatid cysts at which their complete destruction, is the exposure 120 seconds by 200 ml of liquid or 0,6 seconds per 1 ml volume. The method of cleaning of residual cavity with IED was developed. By this method for the years 2007-2013, 25 patients were operated on, of which there were 13 (52,0%) men, 12 (48,0%) women. The mean age was $37,8 \pm 0,8$. Single cysts observed in 16 (64.0 %) cases, multiple in 9 (36.0%). Primary cysts were observed in 20 (80.0%) cases, recurrent 5 (20.0%). Size up to 10 cm cyst verified in 8 (32.0%) cases, from 10cm to 20 cm in 15 (60.0 %) cases, 20 cm or more - 2 (8.0%). To localize the left lobe of the liver was struck in 24.0% of cases, the right to 76.0%. The cysts were located in the right lobe of the liver in 76,0%, left lobe in 24,0%. Echinococectomy was performed in 22 (53.0%) patients, resection-2 (12.0%), pericystectomy-1 (6.0%). Average estimated blood loss was 320.6 ml. Blood transfusion was performed in only 1 (4.0%) patients. Postoperative complications in the form of left-hand reactive pleuritis were marked in 3 (12.0%) cases. Average period of hospitalization amounted to $12,8 \pm 2,2$ bed-days. Echinococectomy supplemented by cleaning of the residual cavity impulse electric discharge may be an alternative to radical methods of surgical treatment of hepatic echinococcosis, due to the fact that IED has a destructive effect against Echinococcus germinal elements, simple to use, safe. Tab. 1, Fig. 13, Ref. 12.

Auth.

14.3.2.45. **Investigation of functional activity human dental pulp stem cells at acute and chronic pulpitis.** /M. Ustiashvili, D. Kordzaia, M. Mamaladze, M. Jangavadze, L. Sanodze/. Georgian Medical News. – 2014. – #9(234). – pp. 19-24. – eng.; abs.: geo., eng., rus.

It is already recognized that together with the other connective tissues organ-specific progenic stem cells are also found in postnatal dental pulp. This group of undifferentiated cells is only 1% of total cell population of the pulp. The aim of the study was the identification of stem cells in human dental pulp, detection of their localization and assessment of functional activity during inflammation process and/or at norm. The obtained results showed that at acute pulpitis the pulp stroma is hypocellular in comparison with the norm but cells proliferative activity is low. CD 133 and NCAM (CD 56) positive stem cells were found in perivascularl space of the pulp stroma and in Hohle layer. At process prolongation and transition to the chronic phase pulp stroma is hypercellular, the cells with large, rounded or oval-shaped nuclei with clear chromatin appear together with fibroblasts. They are distributed as about entire thickness of the stroma as especially Hohle layer. In such cells higher proliferative activity (Ki67 expression) was observed. The cells in the mentioned proliferation phase are intensively marked by CD133, the rate of which is high in Hohle layer and along it. A large number of NCAM (CD 56) positive cells appear in pulp stroma. Conclusions. During pulpitis an involvement of stem cells into the process of reparative dentinogenesis should be conducted stepwise. In acute cases of the disease, stem cell perivascularl mobilization and proliferation and its migration to Hohle layer occur in response to irritation /stimulation. Chronification of the process leads not only to the migration of stem cells to the periphery of the pulp but also s their «maturation» (increase of NCAM expression in the stem cells), which causes an increase the number of dentin producing active odontoblasts and initiation of reparative dentinogenesis. Fig. 2, Ref. 13.

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14.3.2.46. **The prevalence of periodontal diseases among adult population in Georgia.** /L. Tsitaishvili, M. Margvelashvili, M. Kalandadze, V. Margvelashvili/. Georgian Medical News. – 2014. – #9(234). – pp. 25-32. – eng.; abs.: geo., eng., rus.

The present research was conducted to estimate the prevalence of periodontal diseases in the adult population of Georgia, to study the peculiarity of their distribution within population in different regions of the country. The survey was carried out based on cluster- stratified method derived by WHO. 2370 adults including 1289 women and 1081 men distributed in 4 age groups: I - 20-34, II - 35-44, III - 45-64, IV - 65+ the

residents of the city, town and village in 9 regions of Georgia and the capital Tbilisi were examined. The assessment of periodontal status and oral hygiene was based on WHO's recommendation. (WHO 1997 'Oral Health Assessment Form') Examination was done under good natural light using a mouth mirror and a periodontal index (CPI) probe for measurements of periodontal pockets depth. Questionnaires comprised questions for revealing the following risk factors: social status and family income, existence of common diseases, people's attitude towards oral hygiene (tooth brushing, using dental floss, mouth rinsing) acceptability of dental service, sugar consumption rate, tobacco use, consumption of dairy products. The reliable statistical data received from the study relieved high prevalence of periodontal diseases in all regions: in Achara - 71.7, Mtskheta-Mtianeti - 70.8%, Imereti - 64.9%, Kvemo Kartli - 61.6%, Tbilisi - 61.8% and Shida Kartli - 60.5%, Guria - 55.9%, Samtskhe-Javakheti - 56.0%, Kakheti - 59.1%, Samegrelo - 55.2%. Despite the variability of risk factors high prevalence of inflammatory periodontal diseases in regions of Georgia was related to more extent to the low educational medical background, less dental acceptability due to not very positive attitude towards dental service and oral hygiene skills though financial problems also played substantial role. The study confirmed that periodontal diseases represent an actual problem in Georgia and need caring out serious preventive measures to enhance peoples' referral to dental service and improve medical educational background of the population. Tab. 6, Ref. 34.

Auth.

14.3.2.47. Clinical efficacy of autologous mesenchyme multipotential stem cells transplantation in the liver cirrhosis and portal hypertension treatment. /B. Agaev, R. Agaev, A. Popandopoulo, R. Jafari/. Georgian Medical News. – 2014. – #9(234). – pp. 39-45. – rus.; abs.: geo., eng., rus.

In 14 patients with cirrhosis and portal hypertension autologous mesenchyme multipotential stem cells (AMMSC) transplantation was performed in portal vein (I group, n=7) and common trunk of the hepatic artery (II group, n=6). Duration of pathological processes since diagnosis is 1-8 years (3,7±2,4 years). The initial severity was evaluated by a set of child-Pugh score: Class A – 6 (42.9%), Class B – 8 (57.1%). Cell cultures indentation and characteristics consistent with International Society of cell technology guidance (ISCT) since 2006. The treatment results and patients survival were determined in period 2 month – 5 years according Kaplan-Meier survival curve analysis. Morphology of liver biopsies also was performed. It was shown that AMMSC transplantation generally positively effects on the morpho-functional dynamics and basic hepatic syndromes. Arterial perivascular zone is the most optimal for transplantation in terms of migration, engraftment and differentiation of cells in comparison with portal field, as evidenced by the transition of some patients from class B to class A by child-Pugh score. Tab. 1, Fig. 1, Ref. 12.

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14.3.2.48. Changes of focal and brainstem neurologic signs in patients with traumatic brain injury and their dependence on the -675 4g/5g polymorphism in the PAI-1 gene. /O. Potapov, O. Kmyta/. Georgian Medical News. – 2014. – #9(234). – pp. 45-51. – rus.; abs.: geo., eng., rus.

Regressive course of neurological signs and symptoms is an important factor of evaluating the clinical course and treatment efficacy of traumatic brain injury. This article presents changes evaluation of focal and brainstem symptoms in 200 patients with traumatic brain injury, and determines the association between these changes and the -675 4G/5G polymorphism in the PAI-1 gene. We have found a connection between 4G/4G and 4G/5G genotypes for the studied polymorphism and the changes of focal and brainstem symptoms in patients with traumatic brain injury. Thus, we have demonstrated that the clinical course of traumatic brain injury is influenced by the -675 4G/5G polymorphism in the PAI-1 gene. Tab. 4, Ref. 13.

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14.3.2.49. Evaluation of peripheric blood in patients with different forms of hypothyreosis and iron deficient anemia. /Z. Tauesheva, D. Tayzhanova, Z. Guseinova, A. Toleuova, Zh. Beysenbekova/. Georgian Medical News. – 2014. – #9(234). – pp. 51-55. – rus.; abs.: geo., eng., rus.

The aim of the research was to estimate peripheric blood in patients with iron deficiency anemia and different forms of hypothyreosis. 192 patients with diagnosis of iron deficiency anemia and different forms of hypothyreosis were investigated. Among investigated patients 34 (22.9%) were men and 158 (87.5%) – women. The patients' age varied from 21 to 77 years old. Patients were divided into 3 groups: group I – patients with subclinical hypothyreosis; group I A – patients with isolated subclinical hypothyreosis; group I B – patients with subclinical hypothyreosis in combination with iron deficiency condition. Group II A – patients with isolated primary hypothyreosis; group II B – patients with primary hypothyreosis in combination with iron deficiency. According to the results the different degree of blood formation disturbances were detected in the study groups: tissue iron deficiency; light, moderate and heavy degrees of anemia, and the etiology of risk factors of anemic syndrome in the study groups were determined. It was found that the insufficiency of thyroid hormones determined the insufficiency of the formed elements of blood. The iron deficient anemia with deficit of iron- containing enzymes in tissue led to decreased secretion of thyroid hormone from the thyroid gland and hypothyreosis. Fig. 1, Ref. 10.

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14.3.2.50. Magistral and intravenous blood flow in type 2 diabetes mellitus patients with kidney lesions. /D. Amirkhanova, L. Turgunova, E. Laryushina, A. Alina/. Georgian Medical News. – 2014. – #9(234). – pp. 56-60. – rus.; abs.: geo., eng., rus.

The study was conducted to investigate the main and intravenous blood flow in type 2 diabetes mellitus patients with kidney lesions. Renal blood flow was estimated by Doppler ultrasonography at the level of the magistral and intravenous arteries with assessment of speed and resistive indexes in 20 patients with pre-clinical stage of diabetic nephropathy, 45 with chronic pyelonephritis and diabetes mellitus. The control group consisted of 20 healthy individuals. Increase of intrarenous blood flow, against the background of increased vascular resistance in the magistral trunk and segmental renal artery was indicated in diabetic nephropathy. Decline of the main intrarenous blood flow to the level of the interlobar arteries on the background of increased renal vascular resistance was marked in patients with chronic pyelonephritis and type 2 diabetes mellitus. Renal hemodynamics disorders in patients with various kidney lesions and with type 2 diabetes mellitus were established. Tab. 2, Ref. 7.

Auth.

14.3.2.51. Clinical pathogenetic role of neurohumoral regulation in the build up of vegetative dysfunction in patients with purulent meningitis. /D. Zadiraka, E. Ryabokon/. Georgian Medical News. – 2014. – #9(234). – pp. 79-84. – rus.; abs.: geo., eng., rus.

The article presents information obtained during the examination of 60 patients with purulent meningitis. It is shown that in patients with purulent meningitis in the acute period of the disease objective clinical signs of autonomic dysfunction detected only 23.3% of the predominance general intoxication and cerebral syndromes, accompanied by a decrease in the power spectra of all studied heart rate variability in the presence of autonomic dysfunction aside vagotonia in together with elevated levels of adrenocorticotrophic hormone and low serum growth hormone levels. Starting from the 2 week of illness clinical signs of autonomic dysfunction detected in 95.0% of patients with purulent meningitis of recourse against the backdrop general intoxication manifestations and cerebral syndromes and combined with a progressive decrease in the power spectrum of humoral influences and quantitative content of growth hormone in the blood serum. In the recovery period of purulent meningitis in most patients (72.7%) persistence of symptoms of autonomic dysfunction is combined with low power core spectra of heart rate variability, parasimpatikotonia and endocrine imbalance. Tab. 2, Ref. 25.

Auth.

14.3.2.52. The effectiveness of combined treatment of the children with congenital radial and ulna club hand. /I. Harbuzniak/. Georgian Medical News. – 2014. – #9(234). – pp. 94-99. – rus.; abs.: geo., eng., rus.

The purpose of the investigation is the analysis of the treatment results of the children with congenital club hand. The study was based on the treatment results of 35 patients with congenital club hand. All of them have anomaly of the hand. The patients are divided into 2 groups. The first group includes 13 patients who had surgical treatment: centralization or radialization of the wrist, distraction lengthening of the forearm and the correction of the ulna. The second group includes 22 patients who had the combination surgery of the forearm and the hand. The best functional treatment results have the patients of the second group who had the combination surgery of the forearm and the hand. Tab. 5, Fig. 6, Ref. 14.

Auth.

14.3.2.53. Immediate and long-term effects of posthypoxic myocardial ischemia in newborns. /S. Kabiyeva, A. Sandybayev, N. Abildina, B. Koshkarbayeva, Y. Korneeva/. Georgian Medical News. – 2014. – #9(234). – pp. 100-105. – rus.; abs.: geo., eng., rus.

The aim of the research was to study heart adaptation to hypoxia in infants in the early neonatal period and the dynamics of their development catamnesis of 294 infants who underwent hypoxia in the perinatal period was examined. Strain index is used as a prognostic criterion of cardiovascular disorders, which characterizes the activity index of independent contour and coefficient of myoglobin. Intensity of cardiovascular disorders in infants in the early neonatal period depended on the length and severity of hypoxia. Follow-up data revealed various outcomes posthypoxic myocardial ischemia. In most cases, there is a benign outcome in recovery, but in 37% of cases developed posthypoxic cardiomyopathy. Long-term consequences of posthypoxic myocardial more pronounced in severe cardiomyopathy in 16.7% posthypoxic cardiomyopathy transformed into dilated cardiomyopathy, accompanied by life-threatening arrhythmias and heart failure. The immediate forecast and remote consequence of posthypoxic myocardial ischemia depends on the degree of hypoxic myocardial injury, timely adjuvant therapy. Tab. 2, Ref. 42.

Auth.

14.3.2.54. Assessing the impact of risk factors and polymorphisms GST genes on the development of bronchopulmonary dysplasia in premature infants. /E. Kovalova, V. Pohilko, Z. Rossokha, N.

Horovenko, Y. Goncharova/. Georgian Medical News. – 2014. – #9(234). – pp. 105-112. – rus.; abs.: geo., eng., rus.

An increasing incidence of bronchopulmonary dysplasia (BPD) in premature infants has been reported in recent years. In the present study we analyzed the risk factors for BPD. It was revealed that the most significant factors are the low gestational age and birth weight, as well as prolonged use of mechanical ventilation and late neonatal infection. Polymorphism of studied genes and various combinations of polymorphic variants did not affect the risk of BPD developing. The influence of genetic polymorphisms on the duration of mechanical ventilation, the occurrence of late neonatal infection. For proper evaluation of the contribution of genetic polymorphism is necessary to conduct a preliminary analysis of all possible clinical and laboratory parameters to identify strong independent predictors and then analyze the indirect effects of genetic factors. Further research and development of new approaches to ventilation mode in preterm infants, based on the genetic polymorphism, will create a set of preventive measures and reduce the incidence of BPD. Tab 2, Fig. 1, Ref. 16.

Auth.

14.3.2.55. **Infants' complementary feeding and factors influencing its timing.** /N. Kavlashvili, M. Kherkheulidze, E. Kandelaki, I. Chkhaidze/. Georgian Medical News. – 2014. – #9(234). – pp. 112-116. – eng.; abs.: geo., eng., rus.

The aim of our study was to detect factors that influence timing and adequacy of complementary feeding (CF) practices in Georgian families. The study was conducted at M. Iashvili Central Children's Hospital Child Developmental Center in 2013-2014 year. The data was collected from 389 mothers of infants' age ranging from six months to one year. Results of the study show that CF was started in time only in 30.2%, In 18.1% it was CF was introduced too early (<4 month), in 27.3 early (4-6 month) and in 11% - late. 13.4% of children haven't started CF at all. Most of mothers received information about CF and semi-solid and solid food used for CF from pediatricians and family-doctors. Timing of complementary feeding was related to maternal age, young mothers started CF too early, early or late. In urban areas early CF was significantly high (51.1%) than in rural (29.7%) areas ($P<0,05$). Proportionally employed mothers and students also started CF earlier (51.4%) than housewives (33%) ($P<0.01$). Mothers who had 2 and more child introduced CF timely compared to those who had the first child ($P<0.01$). Our research study showed that educated women started complementary feeding of their infants at appropriate ages as compared to those who were uneducated ($P<0.001$) among women who introduced CF in time most were educated (91%). The data from the study shows that many infants are beginning complementary feeding earlier than WHO recommends (6 month). Findings from our study revealed that maternal knowledge, age, education level was directly related with timing of CF. Promotion of strong community based education and support to ensure optimal infant and young child feeding is recommended. Tab. 2, Fig. 3, Ref. 19.

Auth.

14.3.2.56. **Unknown bile ductuli accompanying hepatic vein tributaries (experimental study).** /D. Kordzaia, M. Jangavadze/. Georgian Medical News. – 2014. – #9(234). – pp. 121-129. – eng.; abs.: geo., eng., rus.

Studying Ductular reaction (DR) at early stages after common bile duct ligation (CBDL) in rats we revealed some ductular profiles (DPs) of unusual location - accompanying different caliber tributaries of hepatic veins (THV) including central and sub-lobular venules. We investigated the essence and genesis of these atypically located ductuli. 28 Wistar Rat livers were studied histologically and immuno-histochemically in norm and after 6, 12 and 24 hours of CBDL. Biliary system of part of the animals was preliminary injected by Indian Ink. After CBDL the number of DPs including the ones accompanying large and small THV was increased. The diameters of DPs found immediately at central and sublobular veins were varying from 5 to 15 μm and of DPs located in the adventitia of the large THV are varying from 10 to 30 μm . The cell of these DPs were CK19, CK7 and OV6 positive, but Ki-67 negative, what confirms their belonging to cholangiocytes but denies their proliferative genesis. In the sites of crossing of different size portal tracts (PT) and THV with integration of their connective tissue sheaths were revealed some biliary ducts/ductules dislocated from PT towards the THV and situated within their adventitia. The Indian Ink injected via CBD was found in both - portal and perivenous DPs as well as in bile canaliculi, what confirms their inter-continuity. The biliary ductules dislocated from PT toward THV may accompany hepatic venous pathways reversely up to central venules. These finest ductuli having spare function are likely to communicate with bile canaliculi. Tab. 2, Fig. 4, Ref. 34.

Auth.

14.3.2.57. **Local treatment of purulent-necrotic complications of diabetic foot syndrome.** /V. Feoktistov, K. Shakeyev, S. Akhmetova, M. Zhanassova, M. Berkut/. Georgian Medical News. – 2014. – #10(235). – pp. 7-11. – rus.; abs.: geo., eng., rus.

Diabetic foot syndrome is the most frequent and severe complication of diabetes. At present, problem has not been fully resolved, which may lead to the development of more effective ways of correction of purulent

complications. The study investigates the efficacy of Hydrogel bandage (Miramistin) combined with physiotherapeutic methods in the treatment of purulent-necrotic lesions of foot. Eighty-three patients with purulent-necrotic lesions of foot were treated at the Clinic of Surgical Diseases №1. The proposed method of treatment demonstrated a greater efficacy than currently available treatments: better cleaning of wounds, reduction of the severity of intoxication and pain, decrease of the duration of inpatient treatment from 28-30 days to 18-19. Hydrogel bandage (Miramistin) is the most efficient drug in prevention and treatment of purulent and infectious complications. Tab. 1, Fig. 4, Ref. 10.

Auth.

14.3.2.58. Expression of epidermal growth factor receptor and concentrations of epidermal growth factor and melatonin in endometrial carcinoma. /N. Dznelashvili, D. Kasradze, A. Tavartkiladze/. Georgian Medical News. – 2014. – #10(235). – pp. 17-24. – rus.; abs.: geo., eng., rus.

The aim of the research was to study the Epidermal Growth Factor Receptor (EGFR) expression, measure Epidermal Growth Factor (EGF) and melatonin concentrations in patients with endometrial carcinomas. In order to reveal EGFR expression, immunohistochemical examination of morphologic material (tumor of the uterine body, histopathological diagnosis: endometrial carcinoma) from 21 patients was performed. The EGF blood plasma levels were measured using the method of high performance liquid chromatography (HPLC). The blood serum levels of melatonin were measured by the method of immunofluorescence analysis ELISA (IBL International reagent). The resultant numerical data were processed statistically using the computer program SPSS-12-ANOVA. A statistical analysis was also performed using the system IBM SPSS Statistics, version 20. The investigation revealed: 1. In endometrial adenocarcinomas (high-grade, low-grade) the expression of EGFR is detected in 100%. 2. In endometrial adenocarcinomas a relatively weak positive correlation between EGFR expression and melatonin blood serum levels is observed. With that, there is a negative correlation between the blood levels of EGF and melatonin. 3. The average index of EGF blood plasma level in simple endometrial hyperplasia (atypia-free) is significantly lower than that of the patients with endometrial adenocarcinoma, while in complex endometrial hyperplasia (atypia-free) the average index of EGF blood plasma level is slightly lower than in endometrial carcinoma. With low-grade endometrial carcinomas, the average index of EGF blood plasma level is higher compared to that of the patients with high-grade endometrial adenocarcinomas. 4. The average level of blood plasma melatonin in patients with simple/complex endometrial hyperplasia (atypia-free) is significantly higher than in high-grade endometrial adenocarcinoma. 5. In endometrial adenocarcinoma (high-grade, low-grade), a drastic increase in average levels of blood plasma EGF is observed with a correspondingly sharp lowering in average blood serum melatonin levels. 6. Under about equal conditions (strong expression of EGFR in the tumorous tissue and sharp/extremely sharp decrease in the levels of anti-proliferative/anti-neoplastic melatonin in blood serum) high values of proliferative EGF content in blood plasma are indicative of poor diagnosis. Tab. 1, Ref. 29.

Auth.

14.3.2.59. Periodontal disease in children with diabetes mellitus type 1. /S. Tuleutaeva, Z. Ashirbekova, D. Manapova, S. Almurat, V. Kharchenko/. Georgian Medical News. – 2014. – #10(235). – pp. 25-29. – rus.; abs.: geo., eng., rus.

The aim of the article was to study the occurrence of periodontal diseases in children with type I diabetes mellitus. The examination of 78 children revealed periodontal diseases in 40 children with type I diabetes. OHI-S, CPITN, PMA indices were determined. Pathological changes in periodontal tissues were revealed in 100% of cases. The following were identified: gingival hemorrhage (100%), over- and under-gingival dental tartar (100%), inflammation of gingival papilla (87.5%) marginal (80%) and alveolar gingiva (55%). Spread of periodontal disease among children with I type diabetes is characterized as high and is equal to 100%. Degree of periodontal sickness is evaluated as average and is $M=2.28$; $SD=0.47$ according to CPITN index. Treatment and preventive measures should be carried out taking into account major somatic disease. Tab. 1, Fig. 2, Ref. 4.

Auth.

14.3.2.60. Efficiency of interlamellar refractive tunnel keratoplasty in myopia and astigmatism correction. /Y. Shusterov/. Georgian Medical News. – 2014. – #10(235). – pp. 29-36. – rus.; abs.: geo., eng., rus.

Correction of high degree myopia, anisometropia and astigmatism continues to remain one of actual problems of ophthalmology. The purpose of the present work - the analysis of results of application of refractive interlamellar tunnel keratoplasty variants. We develop 6 updated tunnel keratoplasty. In total in clinic 310 operations from which in 158 cases as a transfer material used a donor cornea, in 63 cases – brephocornea (a fruit cornea) and in 89 cases – hydrogel synthetic implant, modified in low-temperature to gas-discharge plasma are spent. From the specified number of operative interventions, on 86 eyes of operation tunnel keratoplasty have been spent at those patients by whom earlier it has been given up in carrying out eximerlaser corrections, in connection with presence of a "thin", "flat" and "convex" cornea.

Maximum refractive effect fell first two weeks after operation. Definitive stabilization of a refraction occurred on 2-3 month, thus regress of the reached effect made an order of 10-12 %. It is reached refractive effect from 5.5 to 20.0 D. Under correction in some cases made to 3.5 D that spoke very high myopia (more than 20.0 D) degrees. It has been noticed, that refractive effect of operations with ecsplants was above (on the average on 10 %), than at use of a donor cornea, at identical cross-section section of used transfer materials. It spoke that the synthetic material, unlike a donor cornea, kept the form. In all patients a substantial increase in visual acuities was found, and in 75 % it was equal or exceeded visual acuity before operation with the greatest possible correction. Thus, clinical approbation has proved that the variants of tunnel keratoplasty are effective ways of high myopia, anisometropia and astigmatism correction. Updating in gaseous plasma is presented as a perspective way of improvement of biocompatibility of synthetic materials. Fig. 3, Ref. 28.

Auth.

14.3.2.61. Effect of estrogen receptor gene ESR1 polymorphism on development of premenstrual syndrome. /L. Pakhareno/. Georgian Medical News. – 2014. – #10(235). – pp. 37-41. – eng.; abs.: geo., eng., rus.

To identify risks of development of any disease is a priority of modern medicine. The aim of this study was to investigate the frequency of polymorphic variants of A-351G gene estrogen receptor ESR1 in patients with various forms of PMS. Molecular genetic analysis of ESR1 gene polymorphism in 50 women with PMS (25 women of them had edematous form of disease, 25 - neuropsychical, 25 – mild, 25 - severe form) was carried out. 25 women without diagnosis of PMS were examined as controls. The study A-351G polymorphism estrogen gene ESR1 showed no statistically significant differences in the frequency of distribution of genotypes and alleles between women with PMS and without this pathology. However, the frequency of GG genotype in women with severe PMS was significantly higher in 8.0 times compared with healthy women ($\chi^2=4.87$, $p=0.03$) and in women with edematous form of PMS – in 7.0 times ($\chi^2=3.72$, $p=0.05$). Thus, a polymorphic variant of A-351G gene ESR1 estrogen can be considered as a marker of PMS. Pathological variant GG genotype was significantly associated with the presence of edematous and severe forms of the disease. Tab. 3, Fig. 1, Ref. 12.

Auth.

14.3.2.62. A rarely seen case among retroperitoneal mass lesions: paraganglioma. /Ç. Yildirim, Ö. Yüksel, A. Ürkmez, N. Özbay, A. Verit/. Georgian Medical News. – 2014. – #10(235). – pp. 41-44. – eng.; abs.: geo., eng., rus.

Pheochromocytomas are rarely seen catecholamine-secreting neuroendocrine tumors. Diagnosis, treatment, and prognosis of this rarely seen condition have been discussed. In this study, a retroperitoneal paraganglioma with a diameter of 27 mm was detected in a 29-years old nephrectomized male patient. In our case, in reevaluations performed after definitive establishment of the diagnosis, any abnormal radiological signs suggesting a metastatic lesion were not detected. During the postoperative period the patient was referred to the clinics of endocrinology, and oncology for medical follow-up. In the differential diagnosis of retroperitoneal mass lesions, pheochromocytoma/paraganglioma should not be forgotten. Besides, for malignant tumors chemoradiotherapy, and for benign functional tumors medical treatment should be applied. Fig. 2, Ref. 9.

Auth.

14.3.2.63. Peculiarities of cytokine status in patients with vitiligo and stress in anamnesis. /N.V. Tsiskarishvili, A. Katsitadze, N.I. Tsiskarishvili, L. Chitanava/. Georgian Medical News. – 2014. – #10(235). – pp. 45-48. – rus.; abs.: geo., eng., rus.

The aim of our study was to investigate the content of some proinflammatory cytokines (IL-2, IL-6) in the serum of patients with vitiligo and stress in anamnesis. Cytokine levels in serum were measured in 50 patients with vitiligo (20 men and 30 women aged from 18 to 65 years old.) All the patients were divided according to anamnesis (27 patients with stress in anamnesis and 23 patients, where the onset of the disease was not preceded by stress). Patients of both groups were similar in terms of shape (according to T. Fitzpatrick classification) and in terms of the dermatosis stages. Concomitant autoimmune or inflammatory diseases of the skin in our vitiligo patients were not observed. The cytokines in the blood serum of vitiligo patients were determined by ELISA using the corresponding monoclonal antibodies. Student's t-test was used for evaluation of statistical significance of received results ($p<0.05$ was considered as a statistically significant). Content of IL-2 in the serum of patients with vitiligo, in which stress was not preceded dermatosis, was significantly higher than that in healthy individuals (25.5 ± 7.6 vs. 10.5 ± 3.6 pg/ml, $p<0.05$). But the same parameter in patients with stress in anamnesis was significantly lower than those in healthy individuals (3.5 ± 1.5 vs 10.5 ± 3.6 pg/l, $p<0.05$). Changes in the content of IL-6 in the serum of vitiligo patients was a similar to changes in IL-2 content, and the most significant this indicator was in patients with generalized and progressive stage of the disease. Data on increased concentrations of IL-6 agree with the majority of studies conducted earlier. For a complete analysis of our results on the reduction of the cytokines

(IL-2, IL-6) content in patients with a stress in anamnesis, that will allow to identify the most effective ways to treat patients with this pathology (including their cytokine status), further research is necessary. Tab.2, Ref. 10.

Auth.

14.3.2.64. Modern tendencies in co-morbid conditions. /K. Ischeykin, M. Potyazhenko, N. Lyulka, N. Sokolyuk, G. Khaymenova/. Georgian Medical News. – 2014. – #10(235). – pp. 49-53. – rus.; abs.: geo., eng., rus.

The present manuscript reviews frequency of the concomitance of Ischemic Heart Disease (IHD) with Chronic Obstructive Pulmonary Disease (COPD). The conclusion has been drawn, that quite a large group of patients (25.9%) suffers from pulmonary pathology concomitant with disorders of cardio-coronary system. 97 patients (84 male and 13 female) with concomitant IHD and COPD (steady cardiac angina FK II st.) have been admitted with acute pulmonary condition, and examined at the Department of Pulmonology at N.V. Sklifosovskiy Regional Teaching Hospital in Poltava. The patients were divided into 2 groups: patients in Group I (n=51) were receiving the basic therapy, according to the case management protocol for this type of disorders (β 2-agonists, anticholinergic drugs, methylxantines, inhaler glucocorticoids, phosphodiesterase-4 inhibitors). Patients in the Group II (n=46), in addition to the basic protocol treatment were prescribed 4.2% L-Arginine (Tivortin) venous infusion therapy (100 ml QD for 6 days) with consequent change onto PO administration of 5-10 ml of the solution TID for 4 weeks. As a result, positive dynamics of regressing of clinical signs of COPD was apparent in both Groups after 10-12 days of the treatment. Clinical parameters, pulmonary, cardiac and endurance functions in patients of the Group II, who in addition to the basic treatment, were receiving L-Arginine were much better improved ($p > 0.05$) than in Group I. The conducted study has allowed us to draw a conclusion, that including L-Arginine in the treatment protocol of COPD with concomitant IHD improves cardiohaemodynamics and allows for the better efficacy of respiratory pathology therapy. Addition of L-Arginine (Tivortin, «Yuriya-Farm», Kiev) to the complex therapy of COPD with concomitant IHD results in statistically significant improvement of clinical and instrumental test results, due to the drug's antihypoxic, antiagregational, membrane-stabilizing, antioxydant and vasodilating effect. Tab. 2, Ref. 8.

Auth.

14.3.2.65. Role of redox- and hormonal metabolism in the mechanisms of skin aging. /K. Berianidze, A. Katsitadze, N. Jalaghania, T. Sanikidze/. Georgian Medical News. – 2014. – #10(235). – pp. 54-57. – rus.; abs.: geo., eng., rus.

The aim of the study was to investigate the role of redox balance in the pathogenesis of skin aging in menopausal women. 30 menopausal women aged 40 to 55 years and 30 reproductive women aged 25 to 35 years were studied. Qualitative assessment of the skin (moisture, fat, elasticity) was performed; in the venous blood hormonal metabolism indicators: estradiole - E, testosterone - T, follicle stimulating hormone - FSH and redox parameters - oxygen and lipid free radical content (EPR method), antioxidant enzymes (catalase, superoxide dismutase (SOD) and glutathionreducrase (GR)) activity (spectroscopic method) were studied. According results of the study, in menopausal women statistically significant loss of skin elasticity and increase the number of pores was revealed in comparison to the reproductive women. These changes occur against the background of statistically significant increase of the blood testosterone and FSH content; estradiol in women menopausal period has tendency to decrease. Redox indicators of blood did not differ statistically significant in women of reproductive and menopausal period, although there was a tendency to increase the activity of catalase and GR in menopausal women period, indicating on the intensification of oxidative processes in this age group. Statistically significant negative correlation between blood estradiole content and SOD's activity ($r = -0.413$, $p = 0.0017$) and positive correlation between blood estradiole content and GR activity ($r = 0.565$, $p = 0.002$) was revealed. Decrease in the estradiol concentration and disbalance in redox-system in the women's blood correlats with the rate of pigmented spots growth and decrease of the skin moisture. It is concluded that in mechanisms of skin aging of menopausal women estrogen-depending alterations in redox-balance places important role. Tab. 3, Ref. 14.

Auth.

14.3.2.66. Pain as the main rheumatic problem ways of managing acute pain and syndromes associated with it. /G. Chakhunashvili, D. Rekhviashvili, K. Matcharashvili, N. Jobava, K. Chakhunashvili, D. Chakhunashvili/. Pediatric Cardiology. – 2014. – #8. – pp. 35-50. – geo.; abs.: geo., eng.

Good knowledge of cardio-rheumatology also involves knowledge of managing pain, most importantly pain in the knees. The wide spectrum of pain types needs according knowledge of general principle of how to manage various diseases in cardio rheumatologic field. Tab. 6, Ref. 43.

Auth.

14.3.2.67. Anthropologic hemodynamic principle for diagnosing cardiac failure. /G. Belkania, L. Dilenian, I. Gvinjilia, E. Mathiashvili, S. Jaiani, A. Bagrii, L. Pukhalskaia/ *Pediatric Cardiology*. – 2014. – #8. – pp.61-67. – rus.; abs.: geo., eng.

The main principle is to identify blood flow in lying and standing positions. This gives a wider diagnosing range. Fig. 4, Ref. 17.

Auth.

14.3.2.68. Tubulopathies and richets-like diseases in children. /G. Chitaia, D. Kvirvelia, M. Tsanova, B. Zenaishvili, T. Abuladze, T. Gachechiladze/. *Pediatric Cardiology*. – 2014. – #8. – pp. 78-81.– geo.; abs.: geo., eng.

Pathologies with renal tubular dysfunction refer to rare diseases, diagnoses of which are complicated because of the late onset of symptoms as well as their challenging interpretation. The early diagnosis of the syndromes with renal tubular dysfunction could prevent hard, even life threatening complications of the diseases. Polyuria, polydipsia, dehydration, growth retardation, seizures, arrhythmias, persistent metabolic acidosis, hypokalemia, hypocalcemia, hypophosphatemia are the symptoms the generalists and pediatricians should be careful about. In this report we reviewed the most frequently confronted types of tubulopathies such as Fanconi's syndrome, hereditary hypophosphatemic rickets, vitamin D resistant rickets, hypomagnesemia. Tab. 4, Ref. 30.

Auth.

14.3.2.69. Phimosis in children. /I. Burdjanadze, D. Kvirvelia, G. Chitaia/. *Pediatric Cardiology*. – 2014. – #8. – pp. 81-83. – geo.; abs.: geo., eng.

The definition of phimosis given; the significance of foreskin and smegma, phimosis in age categories as well as the causes of pathologic phimosis and its management are considered. Fig. 6, Ref. 3.

Auth.

14.3.2.70. Kinesiotherapy in little children. /I. Dolidze/. *Pediatric Cardiology*. – 2014. – #8. – pp. 92-94. – geo.; abs.: geo., eng.

Scientific research states that since the birth kinesiotherapy is proven to be beneficial. Children who underwent the therapy easily learnt how to sit, crawl, stand and walk. It is also found to positively affect mental development of the child. The article discusses various benefits and aspects of kineziotherapy. Ref. 11.

Auth.

14.3.2.71. Use of plasma rays at purulent-septic complications in critical care medicine. /B. Tsutskiridze, S. Jaiani, N. Kvitsiani, D. Chakhunashvili, G. Chakhunashvili, G. Tsutskiridze/. *Critical Care & Catastrophe Medicine. Materials of Int. Symp.* – 2014. – #13-14. – pp. 46-48. – eng.; abs.: eng., geo.

One of the leading problems in the modern medicine, regarding critical care conditions, is prevention and treatment of purulent-septic complications, including nonhealing bedsores. Estimating the results of various realizations of concepts for preventing the mentioned pathology developed after damaged extremities, taking into account the experience acquired over past decades, it can be suggested that the leading prophylactic principle was and still remains to be the primary surgical treatment (1, 5, and 8). It also needs to be mentioned that presently, a lot of other various ways and methods are being used for preventing and treating purulent-septic pathologies. But the results of the treatment, in regards of maintaining high level efficiency against purulent-septic and other complications, still require further improvements (3, 7, and 9). The use of high temperature impact methods has shown its effectiveness and is known for a long time. However, each of these methods, together with positive properties, has their own drawbacks (6). Over the past years, the use of plasma rays for treating purulent-septic complications and Decubital received wider importance. This method is thought to be a significant breakthrough in physical methods of impact on biological tissues, providing fast hemostasis, coagulation, sealing and reliable sterilization of damaged wounds (2, 4). Ref. 9.

Auth.

14.3.2.72. Hyperfibrinogenemia and its role during inflammation. /N. Muradashvili, T. Jariashvili, S. Tyagi, D. Lominadze/. *Critical Care & Catastrophe Medicine. Materials of Int. Symp.* – 2014. – #13-14. – pp. 49-56. – eng.; abs.: eng., geo.

Fibrinogen (Fg) is one of the biomarkers of inflammation and a high risk factor for many vascular disorders. It is involved in various physiological processes such as blood coagulation, platelet thrombogenesis, erythrocyte aggregation, and cell-cell interactions. High level of Fg in blood exacerbates circulatory complications during inflammatory diseases such as hypertension, diabetes, stroke, traumatic brain injury and other cardiovascular or cerebrovascular disorders. Enhanced blood content of Fg alters vascular reactivity and compromises endothelial cell layer integrity resulting in leakage of plasma substances from blood stream to interstitium. The purpose of this review is to demonstrate and discuss the effects of Fg causing a cerebrovascular leakage of blood plasma proteins and to offer possible mechanisms for this effect,

which could enhance microcirculatory complications during inflammatory cerebrovascular disorders accompanied by an increased blood content of Fg. Fig. 1, Ref. 25.

Auth.

14.3.2.73. New opportunities for correction of water and electrolyte homeostasis disorders in critical conditions. /O. Galushko/. Critical Care & Catastrophe Medicine. Materials of Int. Symp. – 2014. – #13-14. – pp. 57-64. – eng.; abs.: eng., geo.

Water-electrolyte imbalance occurs in 66.78% of patients in critical condition. We examined 60 patients who were treated in the General ICU of the Municipal Institution "Kyiv Regional Clinical Hospital", aged between 18 and 60 years. Patients were divided into two groups: 1st group included patients with severe concomitant injury and 2nd-3rd degree traumatic shock (n=30), in which a standard intensive therapy (IT) has been supplemented with Rheosorbilact at dose of 8-10 ml/kg of body weight, with a parallel correction of detectable hypomagnesemia and hypophosphatemia; 2nd group included patients with concomitant injury and 2nd-3rd degree traumatic shock (n=30) that undergone the standard intensive therapy. Application of polyionic multicomponent, sorbitol-based solutions leads to rapid stabilization of hemodynamic parameters, it is not accompanied by disruption of homeostasis, and promotes the elimination of acid-base imbalance. Treatment with solutions based on sorbitol is well tolerated and is not accompanied by the development of complications associated with the use of colloidal solutions or classical crystalloid. Tab.3, Ref. 15.

Auth.

14.3.2.74. Calcium homeostasis in diabetic patients with critical conditions. /A. Kistauri, M. Jibladze, An. Kistauri, D.Gabunia/. Critical Care & Catastrophe Medicine. Materials of Int. Symp. – 2014. – #13-14. – pp. 65-68. – eng.; abs.: eng., geo.

68% of diabetic patients present impaired calcium homeostasis, regardless of type of diabetes, age and sex. Mainly hypocalcemia is present. Diabetes mellitus is characterized by the deficit of calcium retention, as a result of activation of renal calciuretic function. Management of critical clinical condition caused by diabetic ketoacidosis requires thorough monitoring of calcemia and calciuria and its dynamic correction. Fig. 3, Tab.2, Ref. 5.

Auth.

14.3.2.75. Brain electrical activity manifestation in Orthodox Christian patients during praying. /M. Metreveli, Z. Kheladze, Zv. Kheladze/. Critical Care & Catastrophe Medicine. Materials of Int. Symp. – 2014. – #13-14. – pp. 69-71. – eng.; abs.: eng., geo.

That in praying people (monks, priests) depression of α rhythm is revealed well (regeneration is performed fast); B rhythm does not disappear 20%. In pagans (29%) - amplitude of α rhythm was highest, in 28% - densed, high amplitude waves egzaltatic and disorganized, in 21% depression of α rhythm is revealed badly, in 27% - β disappeared. Also it was found that in 39 patients slow waves were revealed, in 41 - some spiky pattern appeared, in 17 - fast waveform disrhythmia. The research found that Orthodox praying influences the bioelectrical activity of the cortex and has correlation with vegeto nervous system. Tab.2, Ref. 4.

Auth.

14.3.2.76. Life science's nanotechnological approach in pathogenesis of post-aggressive reactions of human organism and critical conditions. /M. Danielov/. Critical Care & Catastrophe Medicine. Materials of Int. Symp. – 2014. – #13-14. – pp. 72-81. – eng.; abs.: eng., geo.

There is no real new medicine in treatment of patients not only in critical conditions, but we can observe overall stagnation in new drug development (we are not talking about number of new drugs on the market, but about their real efficacy). Such stagnation is based on luck of new technology in life science industries. There are several objective reasons for this, but the facts speak for themselves. Presented technological approach allows assembling specific compositions of biologically active substances composing [NANO-COMPLEXES™] of nano-quantities (10^{-9}) of naturally existing in Human Organism bioactive substances. These bioactive substances are *stabilized and incorporated* into a specially developed NuCell-Direct™ delivery system by means of nanotechnological process. Bioactive NANO-COMPLEXES™ targeting pathogenetical factor of specific disease / dysfunction / pathology, allows: enhancing adaptation mechanisms to the post-aggressive reaction of the organism and critical conditions, restoring self-healing processes of the organism; repairing the genetically determined chain of biological information transfer. All the above-mentioned advances can be achieved by moving from the singular biologically active substance [singular drugs] to the technology allowing assembling from endogenous bioactive substances targeted to the pathogeneses multicomponent bioactive systems [NANO-COMPLEXES™]. Fig. 6.

Auth.

14.3.2.77. Dopamine quantity study in critical patients. /N. Barnabishvili, E. Ivanidze, Z. Kheladze, Zv. Kheladze/. Critical Care & Catastrophe Medicine. Materials of Int. Symp. – 2014. – #13-14. – pp. 82-87. – eng.; abs.: eng., geo.

Dopamine is a neurotransmitter that is produced in the human and animal brain. Dopamine plays an important role in ensuring the cognitive function. Dopaminergic transmissions are necessary to switch attention from cognitive to other actions. The goal of the study was to define the quantity of dopamine in critical patients. The studies have revealed that dopamine concentration in critical patients is higher. Especially high concentration of dopamine in the blood was received from those patients who were on dopamine infusion. The concentration was also high in their liquor. The concentration of dopamine was high in children notwithstanding their health state that is in conformity with the references' data. Tab.5, Ref. 5.

Auth.

14.3.2.78. Analysis of critical pneumonia multicenter studies under the auspices of the European Society of Intensive Care Medicine conducted in Critical Medicine Institute of Georgia. /Z. Kheladze, Zv. Kheladze, N. Ramishvili, T. Qurcikidze/. Critical Care & Catastrophe Medicine. Materials of Int. Symp. – 2014. – #13-14. – pp. 88-91. – eng.; abs.: eng., geo.

European Society of Intensive Care Medicine and Yasser Sakr – Jena University conducted multicenter study of Severe Acute Respiratory Infection – SARI in 2013, the leading critical medicine clinics from different countries participated in this study too. Fig. 4, Ref. 1.

Auth.

14.3.2.79. Characteristics of surgical treatment of “diabetic foot” in elder age patients in critical condition. /S. Didia, A. Kistauri, S. Jaiani, R. Eliger, J. Petashvili, L. Ajamova/. Critical Care & Catastrophe Medicine. Materials of Int. Symp. – 2014. – #13-14. – pp. 92-95. – eng.; abs.: eng., geo.

Analysis of 65 elder patients in critical condition cleared out that quality of treatment of patients with diabetic foot is being developing, during surgery operation, done is stages. In this view of point, at the first stage they remove life-threatening, point of intoxication, leaving stump open. Next stage, formation of stump is done after liquidation of endotoxic shock. Fig. 1, Tab. 2.

Auth.

14.3.2.80. Remote control systems for Critical Care Medicine – reality and perspectives. /Zv. Kheladze, Z. Kheladze, I. Strelnikov, I. Nasri/. Critical Care & Catastrophe Medicine. Materials of Int. Symp. – 2014. – #13-14. – pp. 96-99. – eng.; abs.: eng., geo.

Information about management of treatment process form far distance was announced several years ago by Critical Care Medicine Institute (Z. khelade, Zv. kheladze and other 2011, 2012, 2013). The system consists of video cameras and since the united to it personal computers that are connected to the internet. By the system can be conducted permanent control on patient treatment process. Fig. 1, Ref. 5.

Auth.

14.3.2.81. Study of personality characteristics in critical patients. /N. Ramishvili, N. Taboridze, S. Makharashvili, T. Kajaia, Z. Kheladze, Zv. Kheladze, T.K. Kaavanger, S. Shivananda/. Critical Care & Catastrophe Medicine. Materials of Int. Symp. – 2014. – #13-14. – pp. 100-104. – eng.; abs.: eng., geo.

Most of the patients in first group turned out to be pragmatic. The most rare destiny number in second group was 4. (This person has analytic mind and original thinking. Usually this the number of genius people with independent character). The most common destiny digit was 7 (This person has supreme love, he is philosophical and mystic. The main aim of this person's life is religion, universal love and kindness). Fig. 6, Ref. 1.

Auth.

14.3.2.82. Bone marrow electro stimulation shall become a standard treatment for critical patients. /Z. Kheladze, Zv. Kheladze, E. Kartsivadze, N. Kajaia/. Critical Care & Catastrophe Medicine. Materials of Int. Symp. – 2014. – #13-14. – pp. 105-110. – eng.; abs.: eng., geo.

Is analyzed the results of bone marrow electro stimulation use in Critical Care Medicine Institute, namely is significantly reduced the liquidation period of critical condition, patients death mortality rate and cost of treatment, also is observed complication reduce while treating. The results indicate on the necessity of bone marrow processing by electrical impulses in the standard care of Critical Care Medicine. Fig. 5, Tab.2, Ref. 1.

Auth.

14.3.2.83. Peculiarities of Surgical treatment of intracerebral hemorrhage. /T. Kerdzevadze, G. Gegia, Q. Kerdzevadze, T. Abramov, Zv. Kheladze/. Critical Care & Catastrophe Medicine. Materials of Int. Symp. – 2014. – #13-14. – pp. 111-112. – eng.; abs.: eng., geo.

Surgical treatment of patients that have intracerebral hematoma is better to be conducted after lasting 24 hour form disease outbreak. Operation is better to be made by using traditional “open” method and patients have to be under hypotension and sedation regime as goal. Ref. 2.

Auth.

14.3.2.84. **EEG changes in critical patients.** /M. Khaburdzania, Z. Kheladze, Zv. Kheladze, N. Kajaia, D. Kazaishvili/. Critical Care & Catastrophe Medicine. Materials of Int. Symp. – 2014. – #13-14. – pp. 115-118. – eng.; abs.: eng., geo.

Coma is the most common disorder of the consciousness caused by a severe damage of the brain which is reported in 3-4% of patients at resuscitation and intensive therapy departments. In spite of wide capability of modern methods of visualization EEG still holds the leading position in estimation of brain functional state as well as in diagnostic confirmation of a vegetative state, the terminal state and the death of brain. Despite the vast data accumulated in scientific literature about EEG in coma it is not fully defined and studies in this direction are being continued all over the world. In the presented study we made an effort to estimate the EEG patterns of coma of different etiology in Georgian population. By registration of bioelectric brain activity a localization of motor and sensorial sphere pathological process, changeability of behavioral reactions, and the level of consciousness is defined. EEG allows us to evaluate thalamus-cortical disorders of patients in coma state which is impossible clinically. According to EEG patterns the process and result of the disease or brain death can be stated. Fig. 3, Ref. 8.

Auth.

14.3.2.85. **Memory and intelligence assessment in critical patients.** /Z. Kheladze, G. Chkhartishvili, E. Bibiluri, Zv. Kheladze/. Critical Care & Catastrophe Medicine. Materials of Int. Symp. – 2014. – #13-14. – pp. 119-123. – eng.; abs.: eng., geo.

100 critical patients have been researched, 60 men, 40 women. The patients were divided into the groups of higher education and secondary education. The research was carried out in a dynamic process, during the critical condition and after the liquidation of critical condition. 30 employees of clinic were in control group. The study shows that memory changes during critical condition have are obvious for short-term memory. Memory changes are more obvious for patients with secondary education and after liquidation of critical condition both short-term and long-term memories are improved. Intellectual abilities are also lowered during critical conditions and the level of lowering depends on the education of patient. Fig. 5, Tab. 4, Ref. 2.

Auth.

14.3.2.86. **Influence of music on EEG of critical patients.** /N. Nikabadze, Z. Kheladze, Zv. Kheladze, D. Kalandia/. Critical Care & Catastrophe Medicine. Materials of Int. Symp. – 2014. – #13-14. – pp. 124-127. – eng.; abs.: eng., geo.

Electroactivity of brain is better outlined when the same music are being listened by patients that are in unconscious condition and by the working personal with these changes are better presented in right hemisphere. Fig. 2, Ref. 3.

Auth.

14.3.2.87. **Lymphoma in emergency surgery (case report).** /G. Azmaiparashvili, G. Tomadze, A. Megreladze/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 9-11 – geo.; abs.: geo., eng.

Lymphoma of stomach, small and large bowel is rare disease in emergency surgery. We described two cases of stomach, small and large bowel lymphomas. Clinically and intraoperatively they look very much like as stomach cancer. In case of complicated lymphoma with bleeding operative treatment is advisable in addition to endoscopic biopsy and histology of specimen. Immunohistochemical staining is widely used in the diagnosis of lymphoma. In case of histology confirming of, final diagnosis is made after imunohistochemical assessment and consultation of oncologist is mandatory to select adequate treatment: chemotherapy, and/or radiotherapy and/or immunotherapy, and/or bone marrow transplantation. Two presenting cases are interesting because of its rarity in emergency surgery. Fig. 1, Ref. 5.

Auth.

14.3.2.88. **Treatment/management of juvenile strokes.** /G. Arveladze, N. Geladze, T. Sanikidze, N. Khachapuridze, N. Kapanadze, S. Bakhtadze/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 11-18. – geo.; abs.: geo., eng.

Over the past 10 years, significant increase in the rate of cerebro-vascular pathologies and among them juvenile 6 strokes has been observed. According to the scientists working on this problem, the results of pediatric strokes are always difficult, both for the patient and parents. According to G. Aicardi (2009) the main reasons for development of arterial occlusion and strokes at juvenile age are as follows: heart diseases, vascular dysplasias, inflammatory vascular diseases, destructions of connective tissue, hematologic diseases, metabolic disturbances, infectious diseases, tumors, trauma, toxic disturbances, etc. The most frequent causes of pediatric stroke are metabolic mitochondrial diseases. Main biochemical indicators of mitochondrial pathology are lactic acidosis, elevated levels of lactic and pyruvic acids in blood and liquor, which are also acidic. According to the above, the aim of our study was to identify lactic acidosis and mitochondrial insufficiency, detection of disorders in cell energy metabolism and acid base balance for a variety of neurological syndromes and diseases in children and adolescents to develop the algorithms for

specific treatment. Clinical observations and paraclinical studies in 11 patients (children from 0 to 3 year) with acute disorder of cerebral blood circulation revealed hypoglycemia, significant increase lactate and pyruvate in blood, mitochondrial deficiency (reduction ph MTT test parameters rate), as well as imbalances of the blood redox system, which revealed in decrease of the antioxidant enzymes (Superoxide Dismutase, Catalase) activity. These disorders are associated with ischemia and oxidative stress and are manifested especially during with MELAS syndrome. Revealed lactic acidosis and mitochondrial insufficiency help us to make a correct diagnosis and develop the algorithms for specific treatment. Detection MELAS syndrome in one case indicated to need of evaluation of mitochondrial activity in this group. Ref. 32.

Auth.

14.3.2.89. Role of redox-system of blood in the mechanisms of skin aging in menopausal women. /K. Berianidze, A. Katsitadze, I. Datunashvili, M. Matoshvili/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 27-29. – geo.; abs.: geo., eng.

The aim of the study was investigation of the role of redox balance in the pathogenesis of the skin aging in menopausal women. Menopausal women of age 40-55 years (15 women) were studied. Qualitative assessment of the skin (moisture, fat, elasticity) was performed in the venous blood hormonal metabolism indicators (estradiol (E), testosterone (T), follicle stimulating hormone (FSH)) and redox parameters (oxygen and lipid free radical content (EPR method), antioxidant enzymes (catalase, superoxide dismutase (SOD) and glutathionreductase (GR)) activity (spectroscopic method)) were studied. Statistically significant negative correlation between blood estradiol content and SOD's activity ($r = - 0.413$, $p=0.0017$) and positive correlation between blood estradiol content and GR activity ($r = 0.565$, $p = 0.002$) was revealed. Decrease in the estradiol concentration therefore, disbalance in antioxidant system in the women's blood correlates with the rate of growth of pigmented spots decrease of the skin moisture. It is concluded that in mechanisms of skin aging of menopausal women estrogen-depending alterations in redox-balance places important role. Tab. 2, Ref. 7.

Auth.

14.3.2.90. Role of redox-imbalance in the pathogenesis of hypertension in menopausal women. /M. Buleishvili, I. Ratiani, N. Lobzhanidze, T. Sanikidze/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 29-31. – geo.; abs.: geo., eng.

The aim of the research was determination role of redox imbalance in the pathogenesis of hypertension in menopausal women. The menopausal women with (30 women) and without hypertension (30 women) were investigated. Exclusion criteria from the study were cystic ovariectomy, viral hepatitis, kidney disease, tobacco use, frequent consumption of coffee, alcohol and other addictions. Genetic predispose to the hypertension (data of anamnesis) and body mass index were defined in women; blood content (by ELISA method), redox - balance (pro - (lipoperoxides (LOO) content) and antioxidant (catalase, superoxide dismutase (SOD) and glutathione reductase (GR) activity) were investigated. The study revealed a statistically significant negative correlation between severity of the hypertension and blood estradiol content ($r = -0.4531$, $p = 0.016$). In the blood of postmenopausal women with hypertension lipoperoxide (LOO)EPR signal revealed, blood catalase activity increased by 50%, GR activity decreased by 38%, while the SOD activity didn't significantly changed in comparison to the control parameters (in menopausal women without hypertension). It was concluded that the redox imbalance plays important role in pathogenesis of hypertension in menopausal women. Tab. 2, Ref. 11.

Auth.

14.3.2.91. The sleep apnea in neonates and children and the treatment strategy. /N. Geladze, N. Khachapuridze, S. Bakhtadze, N. Kapanadze/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 32-38. – geo.; abs.: geo., eng.

The normal sleep with sufficient duration and architecture provides the complete implementation of various functions of brain including cognitive. The contribution of sleep in the plasticity of brain, in neural ontogenesis, in the synthesis of CNS proteins, in consolidation of memory and fulfilling of immune function is enormous. Mildly expressed sleep disorders can be revealed in 19.8% of children, moderately and severe forms - in 13.8%. The most frequent forms of sleep disturbances are microarousals at night (18.1%), problems in falling asleep (9.7%), daytime drowsiness (9.1%). In this paper, we have reviewed sleep apnea - one of the most frequent and severe forms of sleep disorder in neonates and children, which passes with respiratory disturbances. The prolonged (lasting for months or years) obstructive sleep apnea results in several physiological impairments including growth retardation, cognitive and behavioral problems (aggression, inattentiveness, hyperactivity, low academic achievement), which in turn cause the worsening of quality of life, also developing of enuresis, the cardiorespiratory insufficiency (cor pulmonalis, hypertension) and even seizures. The primary neonatal sleep apnea is one of the most frequent and sometimes life-threatening conditions. It often can be accompanied with autonomic disorders like bradycardia, cyanosis or pallor, rarely can occur epileptic seizures and psychomotor retardation of different severity. Sometimes the outcome can be fatal. Thus, it is clear that timely recognition and adequate diagnostic and treatment approaches are crucial. This process includes the detailed interviewing of mother

or other caregiver. The correct management is important not only for physical development of child but also for normal cognitive functioning. Tab. 2, Ref. 58.

Auth.

14.3.2.92. Clinical outcome of cerebral venous thrombosis. /I. Verulashvili, M. Beraia, A. Jvarsheishvili/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 61-63. – eng.; abs.: geo., eng.

Cerebral venous thrombosis (CVT) 35-50 years ago was considered as a rare disease with a poor outcome: mortality rate was ranging from 30% to 50%. This concept has been revised during the last decade. The goal of the study was to evaluate the clinical outcome in 55 consecutive patients with CVT admitted over a 7-year period [2005-2011] and to determine predictors of death and dependence. We included all consecutive patients admitted over a 7-year period [2005-2011] at neurology and neurosurgery units of Tbilisi State Medical University's hospital and Research Institute of Clinical Medicine, which met criteria for CVT. The studied population consisted of 55 patients (42 women and 13 men), with a medium age of 43 years (range: 26-68). In our study, despite inclusion of patients from the intensive care department, mortality at the acute stage was only of 7.3%, which is similar or lower than in most previous studies. The decreased mortality rates over the last 30 years are the consequence of the development of brain MRI (allowing an early diagnosis of benign cases of CVT, which may have remained undiagnosed before the era of MRI) and early anticoagulation therapy. Ref. 8.

Auth.

14.3.2.93. Diagnostic significance of procalcitonin in children with urinary tract infections of different level severity. /B. Zenaishvili, G. Chitaia, N. Manjavidze/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 67-69. – geo.; abs.: geo., eng.

Renal involvement has always been the main diagnostic objective in children with febrile urinary tract infections. If more studies confirm the correlation between procalcitonin, renal involvement during urinary infections and scar formation, we will finally have a noninvasive tool that can identify children at risk of complications and in need of a close follow-up as early as their first episode of febrile urinary tract infection. This parameter is correlated with the severity of renal involvement at the time of diagnosis of febrile UTI and also with the risk of permanent scarring. Therefore, PCT measurements could be a valuable tool for the treatment of children with febrile UTIs. Serum PCT levels may be a sensitive and specific measure for early diagnosis of acute pyelonephritis and determination of the severity of renal parenchymal involvement. Tab. 3, Ref. 21.

Auth.

14.3.2.94. Possibilities of correction of lipid profile during essential hypertension and diabetes type 2 patients. /R. Tabukashvili, V. Kapetivadze, K. Tchaava, N. Gegeshidze, Z. Maglapheridze/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 70-71. – geo.; abs.: geo., eng.

Objective: Studying efficiency and safety of Prestarium in treatment of the patients with essential hypertension and diabetes type 2. Methods: 55 patients (55±3.5 year old) with essential hypertension (systolic pressure >140 mmHg, diastolic pressure >90mmHg) and diabetes type 2 were studied. Control of efficiency and safety of Prestarium included main clinical methods, hemodynamic levels, indicators of lipid profile and HbA1c. RESULTS: After 3 month normalization of systolic pressure by 21%, diastolic pressure by 17.1%, and considerable improvement of lipid profile were found. Conclusion: Prestarium is an effective medicine in treatment of patients with essential hypertension and diabetes type 2; at the same time, it improves lipid profile. Tab. 2, Ref. 6.

Auth.

14.3.2.95. Using cupral threads in the complex treatment of periodontal disease. /M. Iverieli, N. Abashidze, Kh. Gogishvili, L. Jashi, N. Gogebashvili/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 77-78. – geo.; abs.: geo., eng.

Aim of our research was evaluation of the cupral threads efficiency in the treatment of periodontal disease. For this purpose 35-55 year-old 42 patient were observed – 22 (52%±0,09%) woman and 20 (48%±0,09%) men. The efficiency of provided research was evaluated by clinical indices - hygiene (HI), gingival (GHI) and periodontal indices; on the basis of received results we conclude that cupral threads are very effective to use. In addition to efficiency, the placement of the thread in the periodontal pocket is technically very easy and cost-effective. Thus. we recommend the usage of cupral threads in the treatment of periodontal disease. Ref. 3.

Auth.

14.3.2.96. Relationship between motor skills and body mass index (BMI) in 3-to-6 year-old children.

/E. Kandelaki, N. Kavlashvili, M. Kherkheulidze, I. Chkhaidze/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 80-82. – geo.; abs.: geo., eng.

Purpose of this study was to investigate the relationships between movement skills and body mass index (BMI) of the 3-to-6 year-old children. We used observational study design to answer the study questions. Five Movement Skills of 340 children were assessed: balance on feet, horizontal jump, overhand throw, drawing the figure and cube test) .BMI was calculated from the height(m) and weight (kg) [weight/ height²] for each participant. Raw scores of the participants' fundamental movement skills were correlated with BMI in all subjects. Similarly, significant negative correlations were found between the raw scores of the gross motor skills and BMI in overweight and obese children; whereas correlations were not found between fine motor skills and BMI. The hypothesis of a motor deficit in obese children is rather interesting and must therefore be addressed further, especially in fine motor skills. Tab. 2, Ref. 9.

Auth.

14.3.2.97. Spitz Nevus-dermatoscopic characteristics and diagnosis of pathomorphology. /A.

Katsitadze, N. Kiladze, T. Sulaia, N. Korsantia, Z. Bendeliani, A. Chirinashvili/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 87-88. – geo.; abs.: geo., eng.

In recent decades, the use of dermatoscopy in clinical practice has led to significant changes in the diagnostic of melanocytic neoplasmas of the skin. Dermatoscopy makes possible to evaluate a number of morphological structures, gives the valuable information for their assessment, and makes the differentiation more reliable. The aim of our investigation was to study the specific dermatoscopic criteria for Spitz nevus and their correlation with dermatopathologic data. In all examined cases we described the characteristic peculiarities of dermatoscopic pattern and found a satisfactory conformity between dermatoscopic and histological data, which proves that dermatoscopy is a reliable and trustworthy method of diagnostics. Ref. 4.

Auth.

14.3.2.98. Comparison of stabilization of dental appliances for the edentulous mandible for the functional moulds obtained by means of different techniques. /S. Kraveishvili, N. Shonia, N. Sakvarelidze/.

Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 96-98. – geo.; abs.: geo., eng.

Degree of fixation of the dental appliances depends on the anatomic-physiological characteristics of the denture fixation area. Hence, improvement of making of the techniques for making moulds of the edentulous mandible still is the significant issue. Goal of our research was comparison of individual moulding spoons for two different techniques in prothetic dentistry and determining significance of them for the purpose of improvement of the final outcomes. The study showed that the application of anatomic retention with formation of the edges of individual moulding spoons significantly improves stabilization of the prostheses and number of adjustments in the process of prostheses fitting. Tab. 1, Ref. 5.

Auth.

14.3.2.99. Plastic surgery in the head and neck reconstruction of oncologic patients. /I. Kuzanov, K.

Mardaleishvili, A. Kuzanov, Z. Dabrundashvili, G. Kuzanov, G. Ioseliani, M. Machavariani, V. Javakhishvili, G. Baratashvili/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 98-101. – geo.; abs.: geo., eng.

After excision of extensive tumors, reconstruction of lost tissue without use of a microsurgical technique does not allow restoring in full function and esthetics of the face. Often biomechanics of food intake is broken. In individual cases, the nasal and oral cavities are open, which leads to the swallowing, speech and breathing function disorders. Such patients often become associal and are compelled to hide not only from a society, but also from the members of own family. The development of microsurgery and the use of flap surgery gave us the possibility to cover such big and compound defects with healthy, not irradiated tissues. Free and rotated flaps can stimulate reparation and revascularization process in reconstructed regions and can less the period of rehabilitation of patients with head and neck cancer. Since 1985, under the guidance of K. Mardaleishvili and I. Kuzanov, two teams (oncologic and plastic surgeons) started collaboration in the treatment of oncologic patients with the head and neck tumors. We performed more 47 one stage and delayed reconstructions with the use of free or rotated flaps. Thus, the teamwork of oncologic and plastic surgeons and plastic surgeons allows achieving good functional and aesthetic results in the treatment of oncologic patients with the head and neck tumors. Fig. 15, Ref. 11.

Auth.

14.3.2.100. Treatment of choledocal cysts. /N. Lomidze, Z. Manizhashvili/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 107-109. – geo.; abs.: geo., eng.

Cystic dilatations of the extra hepatic biliary tree are one of the rarest congenital malformations of the biliary tract. 60% of cases are diagnosed during 3 month to 10 years of age. Biliary cysts are four times more often found in females than in males. Since 2001, 3 patients with choledochal cyst type I (according to Todani

classification) have diagnosed and treated at the University Central Clinic (age of female patients were 8,16,17 years). All the patients had similar history. Symptoms included pain, jaundice and tumor in the right upper quadrant. Total bilirubin was elevated in all cases. Ultrasound, CT and MRI revealed significant enlargement of choledochal cysts. Diagnoses of choledochal cyst type I (according to Todani classification) were confirmed in all cases. Surgical treatment involved resection of choledochal cyst, cholecystectomy, formation of hepato-jejuno anastomosis and enteroentero anastomosis with Roux-en Y method. Early and late complications after surgical treatment were not observed. Surgical excision of the cyst with the formation of a rouxen-Y anastomosis to the biliary duct is recommended rather than formation of cystoenteroanastomosis. Ref. 15.

Auth.

•**14.3.2.101. Delayed diagnosis of genital tuberculosis (case report).** /G. Lortkipanidze, L. Vashakidze, M. Nonikashvili, T. Mamaladze/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 109-111. – geo.; abs.: geo., eng.

Georgia is a high tuberculosis (TB) burden country. In addition to pulmonary TB, extra-pulmonary TB cases are also presented in the country, genital TB being one of the types. Diagnosis of genital TB is challenging due to lack of specific symptoms and signs and low yield of instrumental investigations in identifying the causing agent. A female patient (medical record No. 392) was diagnosed to have an ovarian cancer after undergoing MRI, CT and micro-laparotomy. Three courses of chemotherapy in combination with total surgery including hysterectomy, adnexal and omentum resection were conducted. The morphological study of the resection materials identified diagnosis of TB salpingo-oophoritis. During the differential diagnosis of female genital diseases, tuberculosis should be considered as a potential cause and consultation with a TB specialist with relevant investigations should take place. Ref. 5.

Auth.

•**14.3.2.102. Modification of determination of central occlusion and method of fixation.** /S. Mgebrishvili, V. Gurbanov, I. Barbakadze/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 120-121. – geo.; abs.: geo., eng.

Central occlusion is the functional position of lower jaw, from where all chewing movements begin and end. The definition of central occlusion and its precise transfer to the articulator is the basis for making movable dental prosthesis. We have developed a method of central occlusion definition by applying the first layer of the mass of silicone imprint. In comparison with the current method of definition of central occlusion, the method proposed by us includes lots of advantages, namely: 1) image of antagonist teeth is more exactly shown that enables us to place models in the position of central occlusion without any inaccuracy, 2) after hardening silicone becomes harder mass compared with the softened wax that is later deformed. This feature of silicone enables application even at the time of having higher ambient temperature, 3) enables anew conduction of procedure till reaching desirable result without changing the mold of wax, 4) it is possible to separate models easily from each other without breaking plaster teeth, 5) procedure may be conducted easily by facilitating doctor's work. Fig. 2, Ref. 3.

Auth.

•**14.3.2.103. Chronic viral hepatitis in Georgia.** /I. Mchedlishvili, D. Gelovani, R. Chochishvili, T. Mchedlishvili/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 121-123. – geo.; abs.: geo., eng.

The investigation of different types of hepatitis in Georgia revealed that during 2001-2011 the incidence rate of acute hepatitis (hepatitis A, hepatitis B, hepatitis C) had decreased significantly throughout the country as well as in Tbilisi. On the other hand, morbidity of chronic hepatitis B and C had increased. In 2011 the incidence of acute hepatitis A 33.4-times decreased in comparison with 2001, while incidence of hepatitis B and C reduced 3.2-times and 4.7-times accordingly. However, the incidence of chronic hepatitis B and C increased 13-times and 8.6-times correspondingly. The incidence rate of chronic hepatitis B was 32 per 100 000 population in 2011. Recently, chronic hepatitis has high prevalence in Georgia than in other countries of Europe. These infections seriously affect public health in the country. Tab.2, Ref. 7.

Auth.

•**14.3.2.104. Prevalence of allergic rhinitis in children's population – Adjara Region.** /N. Katamadze, N. Adamia, L. Jorjoliani, N. Manjavidze, I. Ubiria/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 135-137. – geo.; abs.: geo., eng.

Allergic rhinitis is a widely distributed disease in children population. The goal of the study was estimation of prevalence of allergic rhinitis under subtropical climate conditions in the children population of Adjara region, Batumi. Study materials and methods: Active detection of allergic rhinitis symptoms through study of prevalence was conducted based on a single epidemiological study. For this purpose a questionnaire, as well as an expanded, study-specialized map of allergic rhinitis were developed;. We appropriated diagnostic-test criteria of allergic rhinitis by ARIA (2008-2010) and selected a representative study cohort. The studied

population included 1237 children of Batumi population from 4 to 15 years (511 girls and 726 boys). The study cohort was distributed according to age in two groups: the first group included 4-9 year-old children and the second group - 10-15 year-old children. According to the survey, during 12 month the recurrence episodes of sneezing, especially in first part of day, were detected in 9.8% of the study population and 52,8% of them were children from group I and 47.2% from group II. Nasal itching was observed in 15.5% of cases, 45.4% of group II children and 54.6% of group I children. Rhinorrhea was observed in 14.5% of cases, mainly in children from group II (69.8%). 13.9% of respondents had nasal obstruction. Positive results frequency was high in children from group I (57.1%). The mentioned symptoms in 4.5% of cases were accompanied with lacrimation and eye itching. The prevalence of allergic rhinitis symptoms in Adjara region was significantly high in boys compared with girls ($p < 0.05$). According to the results, in the study cohort, the allergic rhinitis was diagnosed in 15.3% cases. Late diagnostics of allergic rhinitis and hypo diagnostics are still a problem. Conclusion: According to the epidemiological study of allergic rhinitis in children population of Batumi, prevalence of allergic rhinitis was 15.3%, in 4.5% of cases being accompanying with conjunctivitis. Based on a combination of surveys, the clinical and specific allergic diagnostic peculiarities in 56.7% of cases intermittent (56,7%) and persistent (43.3%) allergic rhinitis was established with moderate (47.8%) and mild (52.2%) progress. The epidemiological study showed high frequency of hypo diagnostics. Tab. 4, Ref. 10.

Auth.

14.3.2.105. **Factors influencing the timing of infant's complementary feeding.** /N. Kavlashvili, M. Kherkheulidze, E. Kandelaki, I. Chkhaidze/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 140-143. – eng.; abs.: geo., eng.

The aim of the present study was to find out factors influencing the timing and adequacy of complementary feeding practices. The study was conducted at M. Iashvili Central Children's Hospital Child developmental Center in 2013 year. The data was collected from 389 mothers of infants' age ranging from six months to one year. A one-page questionnaire as a survey instrument was designed. Demographic variables were age, sex of the infant, mother's age, occupation of parents and residential area Women's knowledge of optimal child feeding practices and socio-cultural influences of child feeding were also included in the questionnaire. Data entry and analysis was done using SPSS statistical program. Completely filled questionnaires were received from 358 mothers. Results of the study show that CF was started in time only in 30,2%. In 18,1% it was introduced too early (<4 month), in 27,3 early (4-6 month) and in 11% - late (after 7 month). 13.4% of children haven't started CF at all. Results of the study show that most interviewed women lived in urban area (73.3%), most of them has high school/university education (65.1%), 51.7% of them were employed. 24.3% of infants came from single-child families, 75.6% from families with two or more children. Timing of complementary feeding was related to maternal age, young mothers started CF either too early or late. In rural areas early CF was significantly high than in urban areas ($P < 0,05$). Proportionally employed mothers and students also started CF earlier than housewives ($P < 0,01$). Mothers who had 2 and more child introduced CF timely compared to those who had the first child ($P < 0,01$). Most of mothers received information about semi-solid and solid food used for CF from pediatricians and family-doctors. From 98 cases when CF was started at 4-6 month, in 59% it was recommended by doctor. Our research study showed that educated women started complementary feeding of their infants at appropriate ages. 39 The data from the current study shows that many infants are beginning complementary feeding earlier than WHO recommends (6 month). Findings from our study showed that maternal knowledge, age, education level was directly related with timing of CF. Promotion of strong community based education and support to ensure optimal infant and young child feeding is recommended. Tab. 2, Ref. 18.

Auth.

14.3.2.106. **Rotaviral infection in children.** /I. Shalamberidze, T. Jokhtaberidze, M. Khotchava/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 143-145. – geo.; abs.: geo., eng. The research was conducted in Children's Infectious Diseases Hospital. For the diagnosis of rotaviral infection a quick test RIDA@Quick Rotavirus/Adenovirus Combi was performed. In total, 54 patients with diarrhea upon admission were assessed. Among them 74.06% were positive to rotaviral infection. Some of the patients had mix-infections (5.56%). The majority of the patients were males – 34 (63%), and 20 (37%) - were females. Most of the patients had persistent vomiting, which complicated with oral rehydration and required intravenous infusions of saline solution (Ringer Lactated solution, NaCl – 0.9%, Ringer solution). According to the research in Children's Infectious Diseases Hospital rotaviral infection is the leading cause of diarrhea in children and is one of the main reasons of admission to Hospital. The diseases in most cases are conveyed with moderate dehydration, and a severe dehydration with hypovolemic shock is rare. All received data is reflecting also literature overviews. Tab. 1, Fig. 7, Ref. 5.

Auth.

14.3.2.107. **Modern methods for treatment of vitiligo** /N.V. Tsiskarishvili, A. Katsitadze, L. Chitanava, N.I. Tsiskarishvili/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 151-155. – geo.; abs.: geo., eng.

The paper presents a review of modern methods for treatment of vitiligo and the mechanisms of their action. The existence of different forms of vitiligo creates the need for individual selection of therapy for each patient. Each therapeutic model should be applied sufficient period of time, since the initiation of repigmentation may be very slow. Effective therapy has to be continued up to complete repigmentation. Non-surgical treatments involve the use of certain topical and oral preparations (topical and oral corticosteroids, calcineurin inhibitors, topical analogs of vitamin D3, topical L-phenylalanine, antioxidants, stimulants of mitochondrial activity in combination with natural sunlight and oral Helins). In case of unsuccessful aforementioned conservative therapy, phototherapy (monotherapy or in combination with topical treatment) is recommended. Monochromatic excimer laser phototherapy (monotherapy or in combination with topical corticosteroids or calcineurin inhibitors) may be used as a reserve therapy in patients with unsuccessful phototherapy (UVB, UVA). Surgical procedures can be used in case of ineffective conservative therapy. The correct choice of techniques to suit the individual characteristics of the patient and the surgeon's skills can provide excellent cosmetic results. Special depigmentation methods can be used for treatment of Generalized / universal vitiligo taking into account their irreversible effects. At all stages of treatment we have to remember that vitiligo is chronic condition that dramatically affects the psychological aspects of the patient's life. Camouflage techniques may provide a temporary cosmetic effect, and psychotherapy can help patients overcome psychological aspects of the disease. Ref. 39.

Auth.

14.3.2.108. **Influence of the intestinal lavage with mineral water "Nabeghlavi" on the external secretion of liver.** /I. Chabashvili, N. Saakashvili/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 155-157. – geo.; abs.: geo., eng.

80 patients with chronic cholecystitis were observed. They took mineral water "Nabeghlavi" and utilized the same water for intestinal lavage. As a result, because intestinal lavage leads to the inactivation of toxic substances and better depletion, which prevents the liver from getting toxic substances, the double effect was achieved. High efficiency of the mineral water "Nabeghlavi" is associated with the stimulation of hepatic blood flow, elimination of cholestasis, reduction of inflammation and improvement of the chemical composition of bile. The mineral water "Nabeghlavi" contributes to the development of intestinal nonpathogenic microflora, which is impossible to reach by medications. Ref. 4.

Auth.

14.3.2.109. **Rehabilitation of patients with acalculous chronic cholecystitis with low-mineralized water "Sakharbedio".** /I. Chabashvili, N. Saakashvili/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 157-158. – geo.; abs.: geo., eng.

Chronic diseases of digestive system are considered as diseases of the century. We used the less studied mineral water "Sakharbedio" in patients with biliary system disorders. "Sakharbedio" is the low-mineralized water from the resort Menji. 70 patients with calculus chronic cholecystitis were investigated. They were taking 3,5ml/kg of the mineral water "Sakharbedio" three times per day during 24 days. At the same time the patients were adhered to dietary food according to the conditions of gastric secretion. Mineral water "Sakharbedio" improves liver function, urination, positively influences motor and concentration functions of the gallbladder. Investigation of the features of "Sakharbedio" revealed significant detoxification and spasmolytic effects of this mineral water and its extremely attractive properties – "Sakharbedio" is ecologically safe, effective, low-cost natural factor without side effects. Ref. 4.

Auth.

14.3.2.110. **Evaluating the state of the morphological parameters of root and canals of maxillary incisors and canines in Georgian population.** /N. Chipashvili, E. Beshkenadze/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 158-161. – geo.; abs.: geo., eng.

One of the main reasons that cause the failure of endodontic treatment is the lack of knowledge of the complex anatomy of tooth cavity. Numerous researchers have laid the foundation for anatomical and morphological peculiarities of root system of the tooth, their classification and nomenclature indices. This study is devoted to the investigation of anatomomorphological peculiarities of maxillary anterior teeth (incisors and canines) in Georgian population. The purpose of the work was to study the anatomomorphological data of teeth among Georgian population, to establish the average statistical indices of tooth length, the peculiarities of "canal system" and to make a correlation between the obtained results with the international statistical indices. Tab. 2, Ref. 9.

Auth.

14.3.2.111. Factors affecting child development and behavior. /M. Kherkheulidze, N. Kavlashvili, I. Chkhaidze, E. Kandelaki/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 165-168. – eng.; abs.: geo., eng.

The aim of the study was to assess early child development and identify biological as well as social risk factors that affect development. **MATERIALS AND METHODS** -The case-control study was conducted at M.lashvili Central Children's Hospital Child developmental Center during 2013 year. We assessed 2449 0-6 years old child admitted during the 2013 year for developmental and school readiness assessment. The full ante and postnatal as well as family history was collected, patients were assessed for physical and global development by special tools. In problematic cases child were assessed by neurologists, psychologists, ophthalmologists and hearing screening was conducted. **RESULTS** From the studied children 53,3% were boys and 46,7% girls (n=1143), 12,3% were under 1 year old, 21,2 from one to 3 year, 46,7% from 3- to and 21,2% from 5 to 6 years. 5,8% of studied population was premature. Most frequent neonatal problems most were: RDS that occurs in 8%, hyperbilirubinemia 2.1%, infections 2.0%, congenital anomalies 0.5%. From the family anamnesis most frequent were endocrine disorders (19.9% and allergic diseases 14.4% (n=352). From the family social problems most frequently were met economical shortages 55.6 45%. The results of the physical development show prevalence of the high weight for age (5.1%), while low weight and height for age were met in 1.5% and low weight for age 1.2% of cases. Among developmental and behavioral disorders emotional disorders were met in 8.2%, behavioral and emotional disorders 4.8% expressive language delay 2.2%, autistic spectrum disorders 1.6%. The study revealed significant correlation between the mother education level and child development ($P<0.0001$). The incidence of autistic spectrum disorders is significantly higher in boys then in girls ($P<0.0001$). Economical shortage influence child development and behavioral problems. The frequency of developmental and behavioral disorders is significantly higher in premature infants and in children with neonatal problems that need resuscitation. **CONCLUSION** The biological (prematurity, neonatal problems) as well as social factors (economical shortage, low maternal education) influence child development increasing developmental and behavioral problems in early years. Tab. 2, Fig. 1, Ref. 21.

Auth.

14.3.2.112. Spontaneous and specific modulation peculiarities of T-lymphocytes' adhesive receptors during parodontitis. /L. Jashi, M. Ivereli, N. Abashidze, N. Gogebashvili, Kh. Gogishvili/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 170-172. – geo.; abs.: geo., eng.

The article studies the spontaneous and specific modification peculiarities of adhesive receptors of leukocytes during parodontitis. We have determined that during parodontitis, the spontaneous activity of T-lymphocytes' adhesive receptors increases depending on the process generalization. Unlike T-lymphocytes, the activation of neutrophils' adhesive receptors' synthesis is insignificantly reflected and does not depend on the degree of the development of pathological process. The specific sensitization of the adhesive receptors of T-lymphocytes was more often revealed towards bacterial lipopolysaccharides versus liver lipopolysaccharides. The modulation of the adhesive function of T-lymphocytes using adhesive activity regulators, such as Prostaglandini (PE2), recombinant $\alpha 2$ interferon (r2INF), and Type I Collagen cause conflicting effects. The intensity of the effects is triggered by the strong pathological process in Parodontitis. More often Prostaglandin E2 results in inhibition of adhesive receptors of T-cells, while recombinant $\alpha 2$ interferon and Type I Collagen lead to the stimulation of the receptors. Ref.11.

Auth.

14.3.2.113. Using antioxidants, the kallikrein kinin system and lipid peroxidation inhibitors in the thrombolytic therapy of acute myocardial infarction. /M. Jibladze, A. Kistauri/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 172-177. – geo.; abs.: geo., eng.

104 patients with acute myocardial infarction (AMI) and 44 controls were studied to assess the efficacy of thrombolytic therapy (TLT) in patients with AMI using antioxidants and kallikrein kinin system (KKS) and fat peroxidation (LPO) inhibitors. Findings: 1. Using antioxidants and KKS and LPO inhibitors improves the course of AMI, significantly reduces the level of ischemia, and decreases the hospitalization period, number of complications and lethal outcomes. 2. Pathogenesis of favorable effect of using KKS and LPO inhibitors in the treatment of myocardial infarction includes the improvement of re-oxygenation stress, blood rheology and fermentation, coronary blood circulation and myocardial electrophysiological function. 3. Favorable effect of TLT using antioxidants, KKS and LPO inhibitors is linked to avoiding complications of reperfusion. Tab. 4, Fig. 4, Ref. 13.

Auth.

14.3.2.114. The role of multiplanar computed tomography in the diagnostics of tumors of the neck. /F. Todua, K. Mardaleishvili, L. Gzirishvili, D. Miminoshvili, G. Tsivtsivadze, R. Kharadze/. Clinical Oncology. – 2014. – #2. – pp. 16-23. – geo.; abs.: eng.

MDSCT-Angiography is an effective, highly informative method in the diagnosis of neck tumors that enables us to assess the changes around the tumor, also walls of large vessels and evaluate intra and peritumoral

vascularization of tumors. The MDSCT-Angiography plays very important role in planning the treatment tactics. Fig. 8, Ref. 17.

Auth.

14.3.2.115. **Methodological principles to improve results of treatment for rectal cancer.** /B. Mosidze, D. Lomidze, G. Kevlishvili/. Clinical Oncology. – 2014. – #2. – pp. 24-31. – geo.; abs.: eng.

Treatment of rectal cancer must be complex and include radical surgery, chemotherapy and radiotherapy. Such treatment gives significant improvement of distant results (20%), where 20% = 100%! The correctly conducted combined treatment increases the number of organ-saving interventions, and makes possible reconstruction and restoration operations, improves quality of life, increases the number of socially rehabilitated patients. Preoperative radiation therapy in combination with mesorectumectomy gives the best result in case of rectal malignancies. New technologies significantly expand boundaries of radical influence on tumor, preserve the function of damaged organ and improve quality of life of people with cancer. Tab. 3, Ref. 9.

Auth.

14.3.2.116. **Management of thyroid differentiated carcinoma therapy (University Clinic of Nuclear Medicine of the Vienna General Hospital).** /N. Shengelia-de Lange/. Clinical Oncology. – 2014. – #2. – pp. 42-47. – geo.; abs.: eng.

Thyroid disorders are widespread; a large proportion of the world's population is in need for treatment. Nuclear medicine is a well-used discipline for the diagnostic and treatment of various cancers and disorders, in particular those of the thyroid gland. Since the 1950, Iodine 131 radiation therapy is used successfully in patients with both benign and malign abnormalities in the thyroid. Ablation therapy with use of I-131 capsules is a well-established method for the treatment of differentiated thyroid cancer; when given after a total thyroidectomy, the patients' prognosis is evidently better. This article describes the long time experiences of the University Clinic of Nuclear Medicine of the Vienna General Hospital (AKH), which treats more than 500 patients annually in its safeguarded inpatient ward. Fig. 3, Ref. 7.

Auth.

14.3.2.117. **Efficiency of treatment with Bolnisi mineral water in the case of some pathologies of alimentary organs.** /L. Burchuladze/. Modern aspects of medical rehabilitation, prevention and healthy lifestyle. Int. Symp. – Sairme. 9-13 Oct. – 2014. – pp. 23-28. – geo.; abs.: eng., geo.

92 patients with *gastiritis chronica* and *cholecystitis chronica* were kept under observation. They were given the Bolnisi mineral water taking into account a secretory function of stomach. The analysis of findings made clear that after treatment with the Bolnisi mineral water, the secretory functions of stomach were regulated, the functional state of the liver, biliary tract and bile composition were improved. Tab. 3.

Auth.

14.3.2.118. **Effect of complex medical rehabilitation by physical factors on patients with spondyloarthritis ankylopoetica.** /I. Tarkhan-Mouravi, M. Tabidze, I. Malazonia, E. Khelashvili/. Modern aspects of medical rehabilitation, prevention and healthy lifestyle. Int. Symp. – Sairme. 9-13 Oct. – 2014. – pp. 36-39. – geo.; abs.: eng., geo.

It is found that complex medical rehabilitation using electromagnetic field of millimeter waves, thermal baths of sulphide water, massage of spine and the affected joints and muscles, causes in patients with spondyloarthritis ankylopoetica weakening, until disappearance, of inflammatory and destructive processes in the spine and in the affected joints and muscles, as demonstrated by reduction in the blood serum of C-reactive protein, haptoglobin, seromucoids and alkaline phosphatase; and reduction, down to the norm, of the erythrocyte sedimentation rate. Weakening, until the disappearance, of inflammatory and destructive processes in the specified structural formations entailed the improvement of movement in the spine and joints, and index increase of the spine, which was accompanied by the improvement of radiographic indicators (expansion of the intervertebral and sacroiliac joint gaps and alignment of the articular surfaces of affected joints), increase in working capacity and reduction, until disappearance, of pain in the spine and in the affected joints and muscles. Ref. 3.

Auth.

14.3.2.119. **The effectiveness of a complex treatment with Borjomi mineral water in the patients with diabetes mellitus.** /N. Malania/. Modern aspects of medical rehabilitation, prevention and healthy lifestyle. Int. Symp. – Sairme. 9-13 Oct. – 2014. – pp. 40-44. – geo.; abs.: eng., geo.

Total of 171 patients with diabetes of light and middle severity were examined. In some of the patients accompanying diseases were noticed, such as heart-blood-vessels and the system of digestion. The patients were examined before and after medical treatment together with subjective and objective data, carbohydrate and lipid metabolism. Methodology of the medical treatment included: medical nourishment, taking Borjomi mineral water, in case of need taking medicines for lowering diabetes, medical gymnastics, and passive

climate-therapeutics. Pursuant to the treatment the following was established: subjective and objective data have been significantly improved, normalization of carbohydrate and lipid metabolism took place in the patients; as at Borjomi resort, so beyond it, number of the anti-diabetes medicines taken by the patients had been reduced, or they were completely removed. Ref. 6.

Auth.

14.3.2.120. Effect of medical rehabilitation of patients with bronchial asthma using aloe and silver electrophoresis. /I. Tarkhan-Mouravi, K. Saganelidze, N. Gurgenidze/. Modern aspects of medical rehabilitation, prevention and healthy lifestyle. Int. Symp. – Sairme. 9-13 Oct. – 2014. – pp. 141-144. – geo.; abs.: eng., geo.

It is found that medical rehabilitation of patients with bronchial asthma using aloe and silver electrophoreses causes weakening, until disappearance of the organism sensitization and of inflammatory process in the bronchi; strengthening of the cellular link of immunity; improvement of immunological indices, respiratory function and clinical status. The indicated positive changes decreased with aggravation of the disease.

Auth.

14.3.2.121. Effect of medical rehabilitation on patients with traumas of peripheral nerve trunks of the extremities (TPNTE) with the complex use of electrostimulation and Akhtala therapeutic mud. /N. Saakashvili, I. Tarkhan-Mouravi, N. Kakulia, N. Jakobia, I. Kvinikadze, N. Kvinikadze/. Modern aspects of medical rehabilitation, prevention and healthy lifestyle. Int. Symp. – Sairme. 9-13 Oct. – 2014. – pp. 167-169. – geo.; abs.: eng., geo.

It has been established that the above-said medical rehabilitation with the complex use of electrostimulation and Akhtala therapeutic mud evokes a weakening of inflammatory process (up to the disappearance) in the focus of damage of peripheral nerve trunks of the extremities in the patients with TPNTE of the extremities, which has a normalizing action on the functions of the central and peripheral nervous systems. The weakening of the inflammatory process (up to the disappearance) evokes an enhancement of cellular link of immunity in the focus of damage of peripheral nerve trunks extremities and immunobiological reactivity in the patients with TPNTE of the extremities, the recovery of regulatory function of T-lymphocytes; has a normalizing effect on non-specific resistance of the organism and the indices of humoral immunity, improves the neuromyographic, rheovasographic and clinical data. These positive shifts were more pronounced at neurapraxia of peripheral nerve trunks of the extremities. The indicated rehabilitation had a positive effect on all the investigated patients.

Auth.

3.3 Health sciences

14.3.3.1. The role of sanology in modern medicine. /I. Dolidze/. Modern Issues of Medicine and Management. – 2014. – #1. – pp. 24-30. – geo.; abs.: geo. eng. rus.

The work considers the problems of development of perspective direction – sanology (medicine of health). Researches in this direction are not conducted in Georgia. This work is topical and promotes the development of health criteria and implementation of healthy life style in population. Ref. 9.

Auth.

14.3.3.2. Efficiency investment for health security of people working in harmful conditions. /M. Lomsadze-Kutchava/. Modern Issues of Medicine and Management. – 2014. – #1. – pp. 52-60. – geo.; abs.: geo. eng. rus.

In this paper, we analyse the effectiveness of investments made to ensure the health safety of people working in hazardous conditions. The article discusses the factors that adversely affect the health of people, such as loud noise, polluted environment, electromagnetic field, etc. The paper discusses the efficiency of investments made in the mentioned problems and economic aspects of the activities to be implemented. It also provides recommendations and recipes for improving health in hazardous conditions. Tab. 5, Ref. 6

Auth.

14.3.3.3. Managerial innovations and ways to improve the quality of service in the primary health care. /T. Chakhunashvili, L. Chakhunashvili/. Modern Issues of Medicine and Management. – 2014. – #1. – pp. 61-70. – geo.; abs.: geo. eng. rus.

The article deals with the importance of familiarization with the progressive international experience accumulated in the sphere of primary health care and the level of satisfaction of local population with the services provided in this health care sector. It found out that the available level of medical services in the country fails to meet international standards, which adversely affects the medical service efficiency and quality. It is noted that special attention should be paid to the evaluation of outcome, because the outcome is

exactly what reflects the main goal of medical service – to provide a patient with appropriate medical service. The study results are given. Tab. 1, Fig. 2, Ref. 20.

Auth.

14.3.3.4. Problems of organization of healthcare system management and medical service. /E. Motsonelidze, R. Kutateladze/. Modern Issues of Medicine and Management. – 2014. – #1. – pp. 71-80. – geo.; abs.: geo. eng. rus.

A healthcare system management model is proposed, as well as the options of organization of medical service and an innovative model of physicians' activity. Tab. 1, Fig. 3, Ref. 7.

Auth.

14.3.3.5. The importance of marketing in healthcare system. /D. Pirtskalava, I. Tsurtsunia/. Modern Issues of Medicine and Management. – 2014. – #1. – pp. 88-92. – geo.; abs.: geo. eng. rus.

The role of marketing in the healthcare system is discussed in connection with the regulation of demand for medical service under conditions of the state healthcare programs' implementation. The influence of marketing on such type of relations and the possibilities of achieving success are considered. Ref. 5.

Auth.

14.3.3.6. Evaluation of state opioid substitution treatment program in Georgia. /G. Piralishvili, D. Pirtskalava, M. Chavchanidze, I. Gamkrelidze, N. Nikolaishvili/. Georgian Medical News. – 2014. – #4(229). – pp. 62-66. – eng.; abs.: geo., eng., rus.

The aim of the research was evaluation of the results of the state opioid substitution programs by means of methadone and buprenorphine/naloxoneam in Georgia and the optimization of the routine measurement instrument. A detailed analysis of the conducted survey and results (statistics) of the treatment of different categories of patients is given, with the discussion of positive and negative effects. Tab. 2, Ref. 9.

Auth.

14.3.3.7. Reflection of tolerance to alcohol in the structure of the sleep-wakefulness cycle. /M. Gogichadze, M. Nemsadze, N. Lortkipanidze, E. Khachaturov, N. Oniani/. Georgian Medical News. – 2014. – #10(235). – pp. 87-92. – eng.; abs.: geo., eng., rus.

The purpose of the present work was to study the effects of tolerance to ethanol on the sleep-wakefulness cycle (SWC) structure. Experiments were carried out in chronic conditions on the adult cats (n=5). The following methods were used: the stereotaxic - for implanting electrodes; polysomnographic - for EEG registration of the SWC structure. Alcoholisation (0.2-2.5 g/kg 25% ethanol solution) was conducted by intraperitoneal injections that lasted for two weeks. The obtained results were processed statistically and significance of the changes was determined by the Student t-test. Low single doses of ethanol (0.2 - 0.5 g/kg) did not induce any significant changes in the structure of the SWC. While using doses of 0.6 g/kg it was noted only increasing of the latent period of the onset of sleep. However, the structure of the SWC recovered within 1-2 hours after injection. Increasing the dose to 1 g/kg caused severe intoxication. This was reflected in a behavioral (anxiety, tremor, vocalizations) and autonomic (vomiting and frequent urination) signs. Against the background of restless behavioral wakefulness synchronization of the characteristic of light slow-wave sleep developed. The volume of deep slow-wave sleep was statistically significantly decreased and the latent period of the onset of paradoxical sleep was increased. The structure of sleep was fragmented, due to frequent awakenings. For the fifth-eighth day of alcoholization the structure of the SWC restored, behavioral and vegetative signs of intoxication disappeared, which must indicate the development of tolerance to this dose of ethanol. The obtained results signify that development of tolerance to ethanol can be reflected in the alteration of the structure of SWC. Alcoholization disturbs the subtle mechanisms of the sleep due to destruction of brain homeostasis. Fig. 3, Ref. 14.

Auth.

14.3.3.8. Cannabis: a controversial 21st-century drug of antiquity. /D. Greydanus, M. Holt/. Georgian Medical News. – 2014. – #5(230). – pp. 24-30. – eng.; abs.: geo., eng., rus.

Cannabis consumption has been popular for thousands of years and its historical use is noted in many parts of the world, including ancient China, India, and the Middle East. It is currently the most popular illicit drug in the world, being utilized as a medicinal plant, and many parts of the world are legalizing its consumption. This article considers various aspects of cannabis use, including its prevalence, history, co-morbid drug abuse, designer cannabinoids, psychiatric adverse effects, medical adverse effects, and management options. The youth of the world should be comprehensively taught that cannabis is neither safe nor benign. Prevention with comprehensive drug education is the best plan for our youth since management of chronic or heavy cannabis consumption is difficult and fraught with failure if cessation is the goal. *Caveat emptor!* Tab. 2, Ref. 42.

Auth.

14.3.3.9. **Final height, target height and the community.** /M. Hermanussen, C. Aßmann, D. Groth, K. Staub/. Georgian Medical News. – 2014. – #5(230). – pp. 30-34. – eng.; abs.: geo., eng., rus.

Height varies with age, and it varies with historic time. Final height is determined by endocrine parameters and genetics, by nutrition and health, by environmental factors, by birth weight, early growth, BMI, and developmental tempo. European populations of the 19th century were short, but their shortness did not result from growth impairment at all ages. In those days, shortness was mainly due to a significantly blunted adolescent growth spurt. New modeling approaches suggest an independent regulation of adolescent growth and final height: the target for growth and final height appears to be set by the community. In order to test this hypothesis, we formed a geographic network of Switzerland consisting of 169 nodes (district capitals) and 335 connecting edges (roads), and investigated military conscript data obtained between 2004 and 2009. Average height of Swiss military conscripts was 178.2 cm (SD 6.5 cm). But conscripts from first order neighboring districts were more similar in height than expected. Short stature districts have short, tall stature districts have tall neighbors. We found significant height correlations between 1st ($r=0.58$), 2nd ($r=0.64$), 3rd ($r=0.45$) and even 4th order neighbors ($r=0.42$). It appears that tall stature communities generate tall people, short stature communities generate short people, and migrants orientate towards the new height target of their host population (community effect on growth). Fig. 6, Ref. 18.

Auth.

14.3.3.10. **The health of adolescents around a world in transition.** /P. Michaud, A. Ambresin/. Georgian Medical News. – 2014. – #5(230). – pp. 54-59. – eng.; abs.: geo., eng., rus.

For several years, the health of adolescents has been on the agenda of ministers, decision makers and health professionals. Around the world, while there has been a steady decrease of the death rates among young children, this is not the case for young people. This is mainly linked with the fact that mortality and morbidity during this period of life is largely linked with non-communicable diseases and conditions, including deaths from injuries, suicide, homicides and drug abuse. Unplanned pregnancies, illegal abortions, newly acquired HIV infections are also situations that have short and long term consequences. This paper reviews the epidemiological data pertaining to adolescent health and disease. It proposes evidence-informed avenues as how to address these issues in the field of health care (e.g. adolescent friendly services) and of prevention and health promotion. It also stresses the importance of creating safe environments for the development and well-being of young people and thus, of an interdisciplinary and inter sectorial approach to their complex health problems and challenges. Ref. 28.

Auth.

14.3.3.11. **Medical-social peculiarities of health state of schoolchildren in Ukraine.** /S. Nyankovsky, M. Iatsula, O. Senkevich, I. Pasichnuk/. Georgian Medical News. – 2014. – #5(230). – pp. 60-65. – rus.; abs.: geo., eng., rus.

The article considers the results of surveys on school children's health in Lvov region in the years 2002 and 2012. The basic risk factors for functional disorders, school disadaptation syndrome, and neurotic reactions are presented as well as the age prevalence of basic complaints. Among the factors that contribute to the decline of child's health level an important role belongs to the educational loading. It causes fast development of disadaptation syndrome with the neurotic reactions in different degree of expressiveness. The complex estimation of the children's health state and introduction of new technologies of revitalizing give an opportunity to prevent the increase of functional disorders and organic pathology in schoolchildren. Ref. 14.

Auth.

14.3.3.12. **Childhood vasculitis hospitalizations in Spain, 1997-2011.** /A. Villaverde-Hueso, V. Lonso, A. Morales-Piga, M. Hens-Pérez, I. Abaitua, M. Posada-de-la-Paz/. Georgian Medical News. – 2014. – #5(230). – pp. 65-72. – eng.; abs.: geo., eng., rus.

The aim of this study is to describe the childhood vasculitis hospital burden in Spain (1997-2011), considering type of disease, hospitalization rates and time trends. Data were obtained from the National Discharges Basic Minimum Data Set (National Patient Data Base). Inpatient events of children younger than 15 years of age were analyzed. Principal diagnosis of vasculitis were selected according Ninth Revision of the International Classification of Diseases: Takayasu arteritis, Polyarteritis nodosa, Kawasaki disease, Wegener's granulomatosis, Churg-Strauss syndrome, and Henoch-Schönlein purpura. A total of 14518 children hospitalizations related to vasculitis were identified in Spain from 1997 to 2011. The average hospitalization rate for children was 13.33 ± 1.71 per 100,000. Henoch-Schönlein purpura and Kawasaki disease were the most common type of vasculitis, hospitalization rates were 11.00 and 3.97 per 100,000 children, respectively. Other vasculitis hospitalizations are much rare in childhood. Average length of stay was 6.04 days and estimated cost per inpatient hospital care was 2,847€. Hospital case fatality rate was 0.05% for overall vasculitis. In conclusion, epidemiological data of childhood vasculitis are useful both to health decision-making and to identify research priorities. Tab. 2, Fig. 2, Ref. 33.

Auth.

14.3.3.13. Some personal views on pediatrics and not only. /K. Pagava/. Georgian Medical News. – 2014. – #5(230). – pp. 82-86. – eng.; abs.: geo., eng., rus.

The paper presents the author's personal views on youth education, medical education, child and adolescent physiology, some other common medical and pediatric issues. The role of the physician as an educator of the child is underlined. The pediatrician must be the main advisor to the society, school and family in the matter of youth education, contribute to their optimal self-realization. The importance of moral values, gender peculiarities and cultural codes are emphasized. The imprinting of cultural codes should be considered as a biological basis of patriotism. The effectiveness of the implementation of healthy life style is discussed. The opinion regarding the protection of youth from potentially negative effects on their development and behavior is expressed. It would be purposeful to give more consideration to the fundamental research, particularly to the problem of age-related morphological and functional peculiarities of the growing organism in the conditions of norm and pathology. One should have in mind the importance of research of the combination of harmful factors for the organism. The elaboration of empathic and optimistic attitudes should be considered as the very important goals of medical education. The differential usage of clinical guidelines is discussed. It is mentioned the purposefulness of more wide application of fuzzy logic approaches in medicine. The items of rare diseases, individualized medicine, alternative medicine and bacteriophage therapy are discussed as well. Ref. 12.

Auth.

14.3.3.14. Dietary fiber's benefit for gallstone disease prevention during rapid weight loss in obese patients. /G. Sulaberidze, M. Okujava, K. Liluashvili, M. Tughushi, S. Bezarashvili/. Georgian Medical News. – 2014. – #6(231). – pp. 95-99. – eng.; abs.: geo., eng., rus.

The aim of the present study was to compare the effects of very low calorie diets – protein rich and dietary fiber-rich food based – on gallstones formation during rapid weight loss. 68 patients were involved into the study. The body weight index in all cases exceeded normal value and equaled to 35 ± 4.7 kg/m². For weight correction purposes during 5 weeks the patients in first group were kept on a 520-800 kcal diet of "Margi" food products prepared according to our technology, and in the second group - on a protein rich diet of the same calorie content. The body weight and changes in the gall-bladder wall and content were assessed by sonography before starting the diet, after three weeks from the commencement of the diet and upon its completion. The measurement of the body weight after completion of the 5 week diet revealed decrease by 10.9 ± 1.5 kg in the first group and by 11.2 ± 1.1 kg in the second group. Sonography disclosed growth in the amount of biliary sludge in 3 cases in the first group and in 9 cases in the second group. The statistical analyses of results indicate successful and nearly equal reduction of body weight by means of dietary fiber rich and protein rich diet, but high fiber consumption showed statistically significant benefits for prevention of biliary slug accumulation. The study showed that, in the respect to weight loss, diets based on fiber rich and protein rich food are equal, but fiber rich diet has considerable privilege in prevention of gallstone disease. Our findings support the presence of known association between increased dietary fiber consumption and reduction of gallstone formation. Obesity and rapid weight loss are risk factors for development of gallstones. Taking in account the beneficial effect of dietary fiber, the food rich in this nutrient, particularly low-calorie fiber-rich food "Margi", can be recommended for rapid weight loss in obese patients. Tab. 2, Ref. 15.

Auth.

14.3.3.15. Antimullerian hormone in cases of different reproductive pathologies. /L. Barbakadze, J. Kristasashvili/. Georgian Medical News. – 2014. – #7-8(232-233). – pp. 16-21. – eng.; abs.: geo., eng., rus.

The aim of this study was to define the importance of determination of AMH during different reproductive pathologies and to identify the correlations between the tests currently used in ovarian reserve assessment (AMH, FSH, AFC) in different age groups of infertile woman. Study population consisted of 153 women. In 41 women with different reproductive pathologies we evaluate the values of AMH. 112 women with infertility were divided into the three age groups: group I <35 years (n=39); group II 35-40 years (n=31); and group III >40 years (n=42). AMH, FSH and AFC were determined on days 2-3 of menstrual cycle. We evaluated the AMH values during different reproductive pathologies (n=41) and found that: in cases of gonadal dysgenesis and ootesticular disorders AMH levels are decreased. In cases of POI AMH levels were extremely low. Normal levels of AMH were detected in cases of Hyperprolactinemia and Hypogonadotropic hypogonadism. In patients with PCOS AMH levels were increased. The correlation analysis between ovarian reserve tests was performed in 112 infertile women. Generally, age is in a significant high negative correlation with AMH level ($r_s = -0.67$, $p < 0.0001$) and AFC ($r_s = -0.55$, $p < 0.0001$), and in positive correlation with FSH ($r_s = 0.38$, $p < 0.0001$). AMH negatively correlates with FSH ($r_s = -0.48$, $p < 0.0001$) and positively with AFC ($r = 0.71$, $p = 0.0001$). There is a moderate negative relation between FSH and AFC ($r = -0.41$, $p = 0.0001$) and moderate positive relation between age and FSH ($r_s = 0.38$, $p < 0.0001$). The correlation analysis performed in separate groups showed that AMH and AFC in all three study groups correlates positively and are statistically significant ($r = 0.57$, $p < 0.0001$; $r = 0.69$, $p < 0.0001$; $r = 0.47$, $p < 0.002$ respectively). Whereas statistically significant correlation between FSH and AMH detected only in the first and second age groups ($r = -0.41$,

$p < 0.02$; $r = -0.55$, $p < 0.0001$ respectively). Statistically significant correlation between FSH and AFC revealed only in the third age group ($r = -0.42$, $p < 0.006$), as well as between age and AFC only in first age group ($r = 0.35$, $p < 0.03$). Nowadays, among used ovarian reserve assessment tests AMH should be considered to be more reliable, than FSH. Serum AMH level is in strongly positive correlation with AFC. Using of AMH measurement in combination with AFC may improve the evaluation of ovarian reserve. Determination of AMH also may be of diagnostic value in cases of different reproductive pathologies. Tab. 2, Fig. 1, Ref. 18.

Auth.

14.3.3.16. Prevalence and intensity of dentition defects and secondary deformations in the population of 15-40 age groups. /S. Kraveishvili, N. Shonia, Z. Sakvarelidze, N. Sakvarelidze/. Georgian Medical News. – 2014. – #7-8(232-233). – pp. 38-42. – eng.; abs.: geo., eng., rus.

Partial secondary adentia together with caries and parodont diseases is among the most widespread diseases of dentofacial system, correlated, in addition, to the number of lost teeth, with the age. Result in speech and chewing functions' disorders, change of face shape, esthetic and psychosocial inferiority, pathologies of digestive and other systems, formation of the chronic infection areas, changes of reactivity etc.,. Improvement of the methods of prevention and treatment of the above diseases is one of the most significant problems in the dentistry. Effectiveness of dental assistance organization and planning is based on the epidemiological studies. In Georgia, epidemiological studies were conducted in the populations of various age groups in previous years though, according to our data, no studies of dentition defects and deformations were conducted in the recent decades. Goal of our research was study of prevalence and severity of dentition defects and deformations, regarding sizes of existing defects, their localization, causes and types of deformation in different age groups, for development of specialized dentistry assistance plans and prevention programs. We have studied 147 patients of ages between 15 and 40 years. We have developed special questionnaire. Researches showed that in the studied age group (15-40), 62% (96 patients), i.e. more than half of studied 147 patients had secondary adentia. Most of them had the defects in the buccal teeth area. 112 of studied 147 patients required orthopedic treatment but only 18 (16%) of them have visited the clinic for this purpose while 94 (83.9%) of them were unaware about need of prosthetic assistance. Regarding significance of the mentioned problem, the obtained results show the need of timely orthopedic intervention for the purpose of prevention of further complications. As a result, a specialized dental assistance plan and prevention measures' program has been developed to prevent further complications. Tab. 1, Fig. 4, Ref. 11.

Auth.

14.3.3.17. Development and application of the information and communication technologies in quality standards of health care management for patients with arterial hypertension. /V. Smiianov, O. Smiianova, S. Tarasenko/. Georgian Medical News. – 2014. – #7-8(232-233). – pp. 65-68. – eng.; abs.: geo., eng., rus.

Mobile health technologies improve the quality of health care service. The information and communication technology is developed and applied to remind patients with arterial hypertension to follow medical recommendations. The feedback system from general practitioners was developed (the reminder system for patients sending the feedbacks). It helped to supervise follow-up patients online. Suggested system provides for forming the database for summarized analysis of online survey of the patients, who receive medical care at health care institution, to take managerial decisions concerning the improvements of medical services quality. Evaluation of efficiency of the applied technology assured that the number of patients, who checked regularly his/her arterial pressure, increased by 31.00%. The number of patients, who visited doctors for preventive purpose two or more times during given year, rose by 18.24%. The number of patients with target pressure grew by 24.51% and composed $38.55 \pm 4.26\%$. Fig. 1, Ref. 8.

Auth.

14.3.3.18. Development of a training programme in disability assessment methodology based on international classification of functioning, disability and health (ICF) for psychiatric disability claims in Georgia. /V. De Boer, M. Danelia, D. Zurabashvili, L. Chigladze/. Georgian Medical News. – 2014. – #7-8(232-233). – pp. 74-77. – eng.; abs.: geo., eng., rus.

The new concept for social integration of people with disabilities pointed at the need to develop disability assessment methodology with the subsequent validation, based on modern approaches that conceptualize disability as arising from the interaction of a person's functional status with the physical, cultural and policy environments, therefore focusing on an individual's functional abilities. The academy of Swiss insurance medicine, ASIM, worked together with Georgian representatives to develop the principles of functional assessment and provide a method of applying these principles. As instrument for output specification the Mini ICF APP was selected, translated and back translated from German to Georgian. A training course of one day was conducted after which psychiatrists tested the approach in 5 cases each and suggested minor modifications of interpretation. After this they each performed 40 assessments with the new methodology. Doing the assessments with the new procedure was appreciated by all participants and provoked no

problems. Being asked to fill out the Mini ICF form in a systematic fashion makes the reports more objective and transparent. The shift to a functional approach in evaluation of disability for work is practicable with the methodology ASIM has developed for this purpose and this fits with the present legislation. This approach could be used in other fields than psychiatry as well. Ref. 9.

Auth.

14.3.3.19. **Bartonella henselae infection–cat-scratch disease in children (case report).** /M. Kvezereli-Kopadze, A. Kvezereli-Kopadze, Z. Mtvarelidze, Sh. Tsintskaladze/. Georgian Medical News. – 2014. – #7-8(232-233). – pp. 82-86. – rus.; abs.: geo., eng., rus.

This study was designed to investigate the 11 year-old patient with cat scratch disease. The diagnosis of this infection was based on detailed history, physical examination and para-clinical data analyses. In case of cat-scratch disease (because it is rare diagnosis), a different approach is required to every specific occasion. A series of investigations (most informative is intrinsic factor antibody - IFA) should be conducted to determine the cat-scratch disease from the various reasons of the lymphocytic leukaemoid reaction. Tab. 1, Ref. 9.

Auth.

14.3.3.20. **Helicobacter and hepatobiliary diseases: conceptual view and review of the literature.** /S. Kandelaki, D. Kordzaia/. Georgian Medical News. – 2014. – #7-8(232-233). – pp. 92-98. – eng.; abs.: geo., eng., rus.

The authors conducted an analysis of multiple data concerning the possible role of Helicobacterias in pathogenesis of different hepato-biliary disorders in clinical as well as in experimental settings. Two pathways of Helicobacterias penetration into hepato-biliary system – “translocation” and “ascending way” - are discussed. Selection of “control group” in both – clinical and experimental studies – is identified as one of crucial problems. It is concluded, that there is a need for further clinical and experimental studies to determine the participation of different Helicobacterias in the initiation/pathogenesis of the hepatobiliary system. It is important to develop reliable experimental model, where only Helicobacterias cause the pathology of liver and bile tract and where the selection of “adequate control group” is possible. For the identification of helicobacter strains inhuman (where the problem of “adequate control group” selection will always remain), it is greatly important to conduct the complex study of multiple data of histological (immunohistochemical, fluorescence, etc.), cultural and molecular investigations of helicobacter species with subsequent phylogenetic analyses in different hepatobiliary diseases. Ref. 76.

Auth.

14.3.3.21. **Apolipoprotein B/apolipoprotein A-I ratio in relation to the metabolic syndrome, its components, total cholesterol and low-density lipoprotein cholesterol in the population of Georgia.** /Z. Makaridze, E. Giorgadze, K. Asatiani/. Georgian Medical News. – 2014. – #9(234). – pp. 32-39. – eng.; abs.: geo., eng., rus.

The study was designed to assess the association of ApolipoproteinB/ApolipoproteinA-I (ApoB/ApoA-I) ratio with metabolic syndrome, its components, total cholesterol (TC) and low-density lipoprotein cholesterol (LDL-C) in the population of Georgia. The subjects were 1522 Georgians of Caucasian origin aged 18-80 (653 women and 869 men) without diabetes mellitus. The subjects were divided into two groups. High ApoB/ApoA-I ratio group was defined as gender-specific upper quartile (≥ 0.88 for women and ≥ 1.0 for men) and low ApoB/ApoA-I ratio group as the remaining three quartiles (< 0.88 for women and < 1.0 for men). ApoB/ApoA-I ratio was significantly higher in patients with vs. without MetS ($p < .0001$). Mean values of ApoB/ApoA-I ratio significantly increased as the numbers of MetS components increased ($p < .0001$ in both sexes). After adjustment for age and gender, ApoB/ApoA-I ratio was associated significantly with MetS as definition (OR=1.86), IR as definition (OR=9.83), LDL-C (OR=1.99), systolic pressure (OR=3.31), diastolic pressure (OR=1.64), fasting glucose (OR=2.46), triglycerides (OR=2.52), high-density lipoprotein cholesterol (OR=7.08) (all $p < 0.05$). Tab. 4, Fig. 1, Ref. 35.

Auth.

14.3.3.22. **Clinical and epidemiological peculiarities of hemorrhagic colitis complicated by hemolytic-uremic syndrome.** /E. Pachkoria, E. Vashakidze, T. Megrelishvili, L. Tevzadze/. Georgian Medical News. – 2014. – #9(234). – pp. 70-73. – eng.; abs.: geo., eng., rus.

The aim of the research: identification of etiological structure of acute diarrheas and hemorrhagic colitis in Georgia, manifestation of clinical peculiarities and predictors of hemorrhagic colitis complicated by HUS (Hemolytic-Uremic syndrome). In 2011-2013 we studied 274 hospitalized patients at the Center of Infectious Diseases, AIDS and Clinical Immunology (160 hemorrhagic colitis and 114 non-bloody diarrheas). Causative agents of hemorrhagic colitis (160 patients) were determined in 110 (69%) cases; etiology of the non-bloody diarrhea (114 patients) was established in 46 (40%) cases. Enterontero-haemorrhagic E. coli (EHEC) strains are major causes of hemorrhagic colitis. For the confirmation of STEC infection by the bacteriological investigation some significant additional methods were used: serologic examination of feces on shiga-toxin molecular markers by ImmunoCard STAT and PCR methods. Thus, these above mentioned investigations

contribute to diagnosis STEC infection at the early stage of the disease. Based on our findings we were able to reveal predictors of complications of hemorrhagic colitis by HUS. They include: Delayed hospitalization, rural residents, premorbid background, onset of the disease with low-grade fever accompanied with abdominal cramps, manifestation of bloody diarrhea on the 2-3-rd days of the disease, frequent bowel movement (>20 times a day), development of oliguria and edema on the following days, leucocytosis in hemogram, elevation of LDH, creatinine and urea, hypoalbuminemia and development of ascites. Tab. 1, Ref. 9.

Auth.

•**14.3.3.23. Comparative evaluation of clinical effectiveness of treatment of giardiasis.** /G. Muldaeva, R. Begaydarova, E. Polyakova, Y. Yukhnevich, Sh. Kaliyeva/. Georgian Medical News. – 2014. – #9(234). – pp. 74-78. – rus.; abs.: geo., eng., rus.

Giardia is the most common causes of protozoan diarrhea that leads to significant morbidity and mortality worldwide. The purpose of this study was to determine the clinical efficiency of different scheme of therapy giardiasis with new original plant preparation "Sausalin" (Kazakhstan). We conducted open clinical trial with participation of 93 patients with giardiasis. According the method of treatment the patients were divided into three groups. Group I – Sausalin at the dose 300 mg/day; group II – Metronidazole at 750 mg/ day; group III – combination of Sausalin 300 mg/day and Metronidazole 750 mg/ day. The treatment was conducted during 10 days. The protozoal clearance rate and clinical symptoms were assessed. There were no significant differences in the efficiency of treatments in group I and group II. The protozoal clearance rate was 68% in group I (Sausalin); in group II – 42,1% (metronidazole). In group III – 83.2% (combination therapy) ($p=0.001$; 95% CI 54.6-89.7). There was no negative effect on clinical and biochemical blood analysis. We detected statistically significant differences in the dynamics of clinical symptoms (defecation disorders, dyspepsia, abdominal pain, and asthenia) of giardiasis in a group of patients receiving Sausalin. The scheme with new drug Sausalin can be used as alternative treatment of Giardiasis. Moreover, the use of the Sausalin is improved the clinical symptoms and safety of therapy. Tab. 1, Fig. 3, Ref. 6.

Auth.

•**14.3.3.24. Development of sexuality and motivational aspects of sexual behavior in men with obsessive-compulsive disorders.** /L. Gerasimenko/. Georgian Medical News. – 2014. – #9(234). – pp. 85-88. – rus.; abs.: geo., eng., rus.

Sexual behavior and formation of sexuality in men with obsessive-compulsive disorder is one of the pressing issues in contemporary medicine. Obsessive-compulsive disorder is characterized by the development of intrusive thoughts, memories, movements and actions, as well as a variety of pathological fears (phobias). Increase in the number of patients with this pathology in modern clinical practice of neurotic disorders, the young age of the patients and as a result violation of interpersonal, communicational and sexual nature is quite apparent. The study involved 35 men aged 23 to 47 years with clinical signs of OCD. We determined the severity of obsessive-compulsive symptoms using the Yale-Brown scale. We established the presence of a mild degree of disorder in 34.3% of cases; in 48.6% of cases disorder of moderate severity was diagnosed; remaining 17.1% were assessed subclinical condition of OCD at the applicable scale. The system of motivational maintenance of sexual behavior in men with obsessive-compulsive disorders is investigated. Motives of sexual behavior of the investigated men with the pathology are determined. The presented research in men with OCD has established multidimensionality and complexity of motivational ensuring of sexual behavior. Tab. 1, Ref. 14.

Auth.

•**14.3.3.25. Peculiarities of sexual development and reproductive function in young women with childhood onset weight problems.** /N. Chikvaidze, J. Kristesashvili, M. Gegechkori/. Georgian Medical News. – 2014. – #10(235). – pp. 11-16. – eng.; abs.: geo., eng., rus.

The risks of reproductive problems are higher in underweight and overweight or obese women, especially in case of rapid weight gain or loss. But evidence is inconsistent especially in relation to the effect of age of body weight changes. The aim of the study was detection of peculiarities of sexual development and reproductive function in underweight and overweight/obese females with childhood thinness or childhood obesity. 103 young females (48 – with low BMI, 55 – with high BMI) with different reproductive problems were examined prospectively. In all investigated patients full clinical examination was held, including body mass index (BMI), type of body fat distribution (waist-to-hip ratio), age of body weight changes, assessment of hirsutism, acne, stretch marks and hyperpigmentation, menstrual disturbances and fertility problems were recorded and gynecological ultrasound was performed. There was no difference established according to the age of menarche and types of menstrual disturbances between the groups of low BMI and high BMI females ($p>.05$). The correlation was established between the onset of menstrual disruption and progression of changes in body mass ($R=.448$, $p=.005$). Hirsutism, stretch marks and acantosis nigricans (hyperpigmentation) were exhibited significantly more frequently in the patients with high BMI ($p<.05$), whilst distribution of acne was almost the same in the study groups ($p>.05$). 74.5% of overweight and obese

patients had upper body fat distribution (waist-to-hip ratio > 0.8), whilst underweight patients had mostly equal (66.7%) or lower body fat distribution (31.3%) ($p=.000$). Polycystic ovarian syndrome (PCOS) and metabolic syndrome (MS) was the most frequent in overweight and obese patients, whilst non-classical congenital adrenal hyperplasia (NCAH) and ovarian dysfunction prevailed in the underweight females ($p<.05$). Infertility was mostly observed in patients with high BMI ($p<.05$). In conclusion, the peculiarities of sexual development and menstrual function in young females with childhood thinness and obesity are related to their reproductive disorders, childhood BMI and progression of BMI changes. Tab. 4, Fig. 1, Ref. 25.

Auth.

14.3.3.26. **Experience of practical application of the method of expert assessment in the study of quality of life.** /Zh. Kalamatayeva, E. Bekbotayev, A. Skakov, M. Brimzhanova, A. Omarova/. Georgian Medical News. – 2014. – #10(235). – pp. 58-62. – rus.; abs.: geo., eng., rus.

The article investigates the experience of practical implementation of expert assessment method for the evaluation of life quality of preschool children with different disabilities. The trial is carried out in four stages and two anonymous surveys. Based on the evaluation the most important eight problems are selected by experts. Seven problems related to social assistance of children with chronic disabilities and one problem related to availability of occupational therapy. It is recommended to use the results of expert evaluation in integrated development and establishment of standards of medical and social rehabilitation of patients. Tab.2, Ref. 10.

Auth.

14.3.3.27. **Evaluation and implementation of quality standards to ensure relevant medical care in the system of military medical services of Armenia.** /R. Khachatryan/. Georgian Medical News. – 2014. – #10(235). – pp. 82-87. – eng.; abs.: geo., eng., rus.

It was the goal of this review to determine if the MHS of Armenia meets benchmarks for health care quality; to provide military medical officials with relevant information to create an adequate environment for all the quality improvement initiatives being undertaken at the medical care level; to design and implement effective interventions to make informed strategic choices and promote quality and a culture of safety in. Documents addressing the quality of care in the MHS of Armenia were reviewed. Ref. 20.

Auth.

14.3.3.28. **Medical examination results after involving “Apipuri” in ration.** /G. Chakhunashvili, N. Badriashvili, M. Topuridze, N. Jobava, K. Chakhunashvili, I. Kalandia, Z. Pkhaladze, D. Chakhunashvili/. Pediatric Cardiology. – 2014. – #8. – pp.11-17. – geo.; abs.: geo., eng.

Assessing functional tests of basketball players under heavy load and involving “Apipuri” in the food ration to assess its effects Method: Research involves 100 basketball players of 12-18 age and assessing functional tests before and after adding “Apipuri” to the ration. The research has not been finished yet. Basketballers subjectively underline increasing of their stamina. However, no objective results were found to back those results yet. Multiple sportsmen have BBB and Ventricular Hypertrophies, none of which has yet been improved. Tab. 1, Ref. 21.

Auth.

14.3.3.29. **On some peculiarities of *Dipylidium caninum*.** /D. Tskhomelidze, N. Onashvili, A. Abashidze/. Pediatric Cardiology. – 2014. – #8. – pp. 74. – geo.; abs.: geo., eng.

Dipylidium caninum is a common parasite of dogs, cats and humans, especially children, all over the world. The adult tapeworm lives in the small intestine of the definitive host, where gravid proglottides separate from the strobila and proglottides are capable of moving on the substance or be passed with feces. Eggs and capsules are ingested by larvae of fleas belonging to the genera Pulex and Ctenocephalides or by the dog louse *Trichodectes canis*. When the infected arthropod is ingested by a suitable definitive host, the cisticercoid is liberated in the small intestine and develops to sexual maturing in about 20 days. Most human infections are in children younger than 8 years old, with a high percentage falling in the under 6 month age group. Transmission to humans usually results from accidental ingestion of ingested fleas or lice or from allowing dogs and cats to lick the mouths of children immediately after the pet has bitten and infected arthropod. Fig. 1, Ref. 4.

Auth.

14.3.3.30. **The use of Clovate ointment in the complex treatment of contact allergic cheilitis.** /N. Abashidze, M. Iverieli, M. Borjadze, Kh. Gogishvili, L. Jashi/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 3-4. – geo.; abs.: geo., eng.

The aim of our research was to develop an effective treatment scheme for Contact allergic cheilitis. To achieve the aim of our research we examined and treated 18-50 years old 24 patients, of whom 19 (79.2±1.1%) were women and 6 (20.8±1.1%) - men. The patients were divided into two groups. Each group

included 12-12 person. In the I group we added the application of "Clovate" ointment. Studies of our examination showed that the patients of the I group have been improved on the second or third day. Patients did not noted itch, feel of tension, and pain when opening the mouth widely; size of lips became close to the norm. Thus, it is recommended to use the ointment "Clovate" for the treatment of contact allergic cheilitis. Ref. 6.

Auth.

•**14.3.3.31. Food allergy epidemiology in children's population.** /N. Adamia, I. Chkhaidze, I. Ubiria, K. Barabadze, D. Khachapuridze, N. Katamadze/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 4-7. – geo.; abs.: geo., eng.

Share of food allergies is quite high in the general structure of allergy morbidity (varies between 0.1% and 7%). Allergy diseases comprise global problem of public health care system. Goal of the work: foal of our work is study of prevalence of food allergies and risk factors in children's population in selected populations of Tbilisi, Batumi and Kutaisi-Tskaltubo. Materials and methods: studied population includes 2655 children (2010-2013) from 1-month to 14-year age. 1359 of them were girls and 1296 – boys (I group: children from 1 month to 6 years and II group – from 6 years to 14 years). At the first stage of epidemiological study, screening of 2665 children was conducted by means of the initial questionnaire filled in directly at a time of interviewing of the parents. Identification of the factors of causal significance was provided based on anamnesis data, comparison of general serum and specific IgE and in vivo allergologic diagnostics (prick-tests). Obtained data were statistically processes by means of SPSS/V12.5 software (Statistical Package for Social Sciences). Results: Epidemiological studies showed that prevalence of food allergies in children's population (7.5% - Tbilisi; 6.2% - Kutaisi-Tskaltubo; 4.3% - Adjara) was 18.04%. Average total IgE, in both cases, was 3-5 times higher than normal value and no statistically reliable difference between the groups was found ($p>0.05$). Only 3.9 of children with food allergies had IgE within normal limits. High frequency of late diagnostics was established ($p<0.001$). Conclusion: Thus, according to the obtained data, share of the manageable risk factors is high and this could provide basis for development of targeted and effective prevention measures for the children's population. Food allergy is complex and versatile process requiring further study. Tab. 1, Ref. 22.

Auth.

•**14.3.3.32. Hygienic characteristic of the main risk factors of health of employees of the chemical industry of Georgia.** /L. Bakradze, R. Kverenchkhiladze, M. Tsimakuridze, G. Kverenchkhiladze, S. Nozadze/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 24-27. – geo.; abs.: geo., eng.

Working conditions in leading branches of the chemical industry of Georgia – production of arsenic and its preparations, cyanic sodium and nitrate fertilizer - for identification of the main risk factors of workers, health, establishments of the reasons of their formation and definition of priorities of preventive measures are studied. Considerable pollution of the air environment of the studied enterprises by harmful chemicals is revealed. The reason of the revealed circumstance in producing of arsenic and its preparations is the uncontinued technological cycles; Otherwise, despite a continuity of technological cycles in the technology of cyanic sodium and nitrate fertilizer production, pollution of air environment by toxic compounds is caused by insufficient tightness of the production hardware, insufficient efficiency of absorbing ventilation, and other industrial and non-industrial factors. Ref. 9.

Auth.

•**14.3.3.33. Acute hepatitis due to measles.** /T. Gegeshidze, E. Vashakidze, M. Kvitashvili/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 31-32. – geo.; abs.: geo., eng.

We retrospectively collected the characteristics of patients with serologically confirmed measles during an epidemic in Georgia in 2013. Liver involvement with elevated transaminase levels was found in 60% of the patients, 23% of patients had clinically established jaundice. Hepatitis commonly occurs in severe form of disease and it may manifest clinically as jaundice, but long-term follow-up shows a clear tendency to complete resolution of the liver damage. Hepatitis should be regarded as a usual symptom rather than a complication of measles infection in adults. Ref. 8.

Auth.

•**14.3.3.34. Optimization of treating open-wound surgical infections of the head and neck area using bacteriophages.** /G. Gvasalia, N. Khotenashvili, T. Danelia, G. Merabishvili/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 38-41. – geo.; abs.: geo., eng.

For the purpose of assessment of the treatment and prevention efficiency of the maxillofacial area open-wound surgical infections, 235 patients were researched during 4 years. Among them 185 had "new" casual not-suppurated, 50 patients- suppurated wounds. The bacteriologic research has shown that the overwhelming majority of bacteria, segregated from the "new" wounds during the first 6 hours, further play a significant role in the development of wound infection. The open wounds suppuration in the maxillofacial

area is developed in 12.4% of cases, the wound infection is caused by *S. aureus*, *Streptococcus spp*, *E coli*, *Proteus spp* and *Klebsiella*. Phago-prophylaxis of the wound infection decreases the suppuration frequency down to 3.4%; the suppurated wounds' phago-therapy surely improves the microbiological and clinical parameters of the wound regeneration process on average by 5.2+0.3 days, and decreases the regeneration time or the secondary wound closure period. Ref. 4.

Auth.

•**14.3.3.35. Health reform and public health in Georgia.** /N. Gokieli, Sh. Zarnadze, I. Zarnadze, D. Kitovani, L. Lomtadze/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 41-43. – geo.; abs.: geo., eng.

Public health services aim to protect or improve health. Resources should be used for interventions, the efficiency of which is proved and it should be implemented in accordance with the national or local priorities. The main services of public health are: epidemiological surveillance and control of the health status of the population, prevention and control of communicable and non-communicable diseases, identifying, preventing and controlling environmental hazards and other dangers to health diseases; promoting and enabling healthy life styles; conducting a review/study to justify benefits of interventions among population and estimate their coverage by the private companies; revising and developing evidence-based screening and preventive health examinations; recommending and elaborating models for reimbursing PHC providers for health promotion, screening and disease prevention services. Ref. 8.

Auth.

•**14.3.3.36. Hygiene assessment of actual nutrition among different psychologic types.** /T. Darsania, B. Kurashvili, Sh. Zarnadze, I. Zarnadze/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 49-51. – geo.; abs.: geo., eng.

Foodstuffs are utilized not only as the remedy of hunger satisfaction, but as a means of problem prevention and solving. The objective of the research/study was to find out how psychological disorders/malfunctioning influenced factual nutrition. The study was conducted throughout Georgia. Identification of eating behavior psychological types was carried out according to the questionnaires of Academic Department of Psychiatry, St. Georges Hospital Medical School modified by us. We studied different types of eating human behavior (rational, emotional, eccentric, external, limited/scanty), their food allowance/ration and foods' chemical content. All the cases of eating disorder indicated redundant energy intake. The highest eating energy value was recorded among external types. In case of emotional types redundancy reached 14.7%. Redundant energy intakes were more frequently manifested among emotional types of women. Fig. 2, Ref. 4.

Auth.

•**14.3.3.37. Assessment of foodstuff consumption frequency rate by population of Georgia.** /T. Darsania, B. Kurashvili, Sh. Zarnadze, I. Zarnadze/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 51-53. – geo.; abs.: geo., eng.

Improvement of population's health is significantly associated with adequacy of foodstuff and eating behavior. The objective of the presented research/study was assessment of foodstuff consumption frequency. The study was conducted throughout Georgia. We considered adequacy of consumed foodstuffs with the recommended magnitudes. We also studied the respondents' opinion about the amount of consumed foodstuffs and whether they intended to increase or decrease consumption of foodstuffs of the indicated group in case of improvement of their financial condition. The outcome of the research/study enables us to conclude that besides demographic, social and economic factors macro-structure of foodstuffs' consumption of population influences food preferences that make conditional consumption of excessive energy intake, non-balanced animal-proteins, inadequate intake of vitamins, micro elements and abundant consumption of fatty acids and cholesterol. Tab. 2, Ref. 4.

Auth.

•**14.3.3.38. Severe leptospirosis in Georgia.** /E. Vashakidze, T. Megrelishvili, T. Gegeshidze, M. Kvitashvili/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 58-59. – eng.; abs.: geo., eng.

Leptospirosis is a zoonotic disease of a worldwide distribution. Frequent circulating serotypes of *Leptospira interrogans* as an etiological agent in Georgia are: *L. icterohaemorrhagiae*, *L. canicola*, *L. grippityphosa*, *L. ballum*. In recent years, new serotypes have been identified: *L. mankarso*, *L. wolffii*, and *L. autumnalis*. Incidence during last 5 years has arisen from 0.63 to 1,32. Overall lethality is 7-14%. This research is aimed at identifying clinical and epidemiological aspects of severe leptospirosis. Totally 13 patients (11 males, 2 females) were registered, among them 4 cases (31%) were lethal (3 males, 1 female). Severe leptospirosis is characterized with high mortality rate in Georgia. Most frequent signs are: fever, jaundice, hepatomegaly,

myalgia, oligo-anuria, elevated creatinin, pneumonia, chills, cutaneous and mucosal haemorrhages. During recent years new serovars have been registered in Georgia, which have not been circulating before. Ref. 5.

Auth.

14.3.3.39. Assessment of actual nutrition of population of Racha-Lechkhumi Region. /N. Vepkhvadze, N. Tskhovrebadze, M. Khorbaladze, I. Kugoti, I. Tskhovrebadze/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 63-65. – geo.; abs.: geo., eng.

Actual nutrition of population of Racha-Lechkhumi Region (Ambrolauri, Oni, Lentekhi and Tsageri districts) of Georgia has been studied and adequacy of consumption of main nutrients has been assessed, the reasons of nutritional deficiency and excess nutrition have been determined and appropriate recommendations for improving the quality of nutrition have been developed. Analysis of the results indicates the disturbance of balancing, consumption of high-calorie foods, deficiency of vitamins and macroelements. Correction of the above can be done by public education about healthy lifestyle, particularly with implementation of the healthy eating principles. Tab. 1, Ref. 6.

Auth.

14.3.3.40. Georgian Manganese Ltd – hygienic characteristic of the air pollution of the working area of Chiatura mining and processing enterprise. /R. Kverenchkhiladze, A. Chikovani, M. Kvatadze, M. Arabidze, K. Khvadagiani/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 88-90. – geo.; abs.: geo., eng.

A study of the content of production dust and hazardous chemicals in the air of the working area of the mines and processing plants was carried out within the framework of a comprehensive research of working conditions of the workers of Georgian Manganese Ltd. - Chiatura Mining and Processing Enterprise. The studies were held within the framework of the State Occupational Disease Prevention and Monitoring Program. Elevated concentrations of dust and toxic gases were found in the air of the working zone. The dust concentrations exceed the MPC in 68.3-100% of cases, and the content of toxic compounds in 76% of cases. According to these indicators, the working conditions are rated as hazardous, mainly 3.2. and 3.3. classes. Pollution of working area air with dust and harmful chemicals (mostly manganese compounds in aerosol) is conditioned by peculiarities of the technological process. In addition, the reason of high concentration of these compounds might be obsolete equipment and systems, insufficient tightness of the hardware, lack or failure of ventilation systems; and generally, the wrong of organization of the working places. A complex of preventive and health improvement measures has been developed based on the research. It includes various recommendations. Ref. 9.

Auth.

14.3.3.41. Medical health insurance and its peculiarities in Georgia. /N. Kvizhinadze, S. Korganashvili/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 92-94. – geo.; abs.: geo., eng.

The healthcare development model is closely associated with a country's development level, healthcare policy, and cultural and historic experience. Based on the healthcare strategy, the funds allocated to it should serve to the introduction of different principles; in general, the main challenge of the healthcare system is the effective spending and management of healthcare funds and cases and control of prices on medical services. Based on the current situational analysis, it is obvious that the health insurance system has a number of defects: a) in some countries, insurance authorities have turned into bureaucratic monopolies, because of which it is unclear whose interests are being protected by them: patients, medical staff or own employees; b) the average insurance is more or less than the minimum requirements that are essential for high quality medical assistance; c) medical facilities are well equipped with modern equipment which, due to the high cost, is being used only for restricted medical treatments. Ref. 6.

Auth.

14.3.3.42. The influence of age, sex and anthropometric parameters on subsets of lymphocytes in Georgian population. /B. Lasareishvili, N. Pantsulaia, M. Iobadze, N. Kikodze, I. Pantsulaia, T. Chikovani/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 103-107. – geo.; abs.: geo., eng.

Changes in the immune system have a crucial role in the process of organism's ageing. Immune senescence is closely linked to age-associated diseases, such as chronic diseases and cancer. Revealing influence of impact factors on immune senescence has theoretical and practical importance. There are different patterns of immune senescence under different environmental conditions. Therefore, it is important to study it in populations that live under different geo-climatic conditions and belong to different ethnic groups. 250 health volunteers from Georgia's population were investigated. We studied the percentage of lymphocytes subsets in the peripheral blood and evaluated the influence of age, sex and anthropometric parameters on them. Lymphocytes quantitative data fluctuated in different periods of age. No significant

relation was revealed between the percentage of lymphocytes' subsets and anthropometric parameters. Tab. 2, Fig. 1, Ref. 29.

Auth.

14.3.3.43. Rotavirus infection in Georgia. /T. Megrelishvili, M. Lashkarashvili, Kh. Zakhshvili, N. Beridze/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 117-118. – geo.; abs.: geo., eng.

Etiological structures of acute diarrheas have been studied in children population 0-5 year of age. 5046 stool samples were taken and in 1482 (29%) cases rotaviruses were identified (ELISA method). The course of the disease was severe. Children were hospitalized because of exsiccosis. According to the results, prophylactic measures were carried out by the way of vaccination. `Rotarix` is the rotavirus vaccine which protects children from rotaviruses and now it is a part of Calendar of National Immunization. Tab. 2, Ref. 4.

Auth.

14.3.3.44. Dynamics of the etiological structure of vaginites 2012-2013. /E. Mirvelashvili, M. Dzagnidze, E. Kikacheishvili/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 118-119. – geo.; abs.: geo., eng.

The aim of the study was to investigate the etiological structure of vaginitis dynamics of 2010-2013. The vaginal flora in 250 females during the vaginitis was investigated by a bacteriological analysis. By the rate of excretion, staphylococci were on the first place; *T. vaginalis* – on the second, and *C.albicans* - on the third. One third of the microorganisms was detected in a form of monocultures, two-thirds - as associations, the most frequent combinations among which were: *S.epidermidis*+ *T.vaginalis*, *T.vaginalis* + *C.albicans*, *T.vaginalis* + *E.coli*. Among the combinations, vaginitis in a form of mixinfected etiology caused by the presence of three or more symbionts was observed. Tab. 2, Ref. 7.

Auth.

14.3.3.45. Hemolytic-uremic syndrome (HUS) and amebic dysentery in Georgia (case report). /E. Pachkoria, E. Vashakidze, T. Megrelishvili, L. Tevzadze/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 124-125. – geo.; abs.: geo., eng.

The number of patients with HUS syndrome was significantly increased in 2009-2011. Comprehensive investigations of the etiological structure of hemorrhagic colitis and the cases complicated by HUS (bacteriological, immuno-ferment – ImmunoCard STAT and PCR methods) were performed. The research was conducted in the Centers of Infectious Diseases and National Center for Disease Control and Prevention (NCDC). 25 cases of amebic dysentery were revealed in the research process in summer 2012. The course of the diseases was complicated by HUS in 2 cases. Both patients were female, of 65 and 36 years. One of them was at 14 weeks of pregnancy. The pregnant patient required dialysis and the other - 65 year-old female was under the observation of nephrologists. There was no lethality. Amebic dysentery in the above cases was confirmed by stool antigen test (EIA, sensitivity -100%, specificity-94,7%), but by bacteriological analyzes of stool specimens no enteropathogenic bacteria was isolated, and no Shiga toxin (stx1, stx2) was identified by the PCR method. It should be noted that our observation is important in its significance as our patients with HUS received purposeful investigations to reveal enterohemorrhagic *E.coli*. According to the literature data an association between amebic dysentery and HUS has been mentioned, but a cause and effected relationship has never been confirmed. Ref. 6.

Auth.

14.3.3.46. Isolation of exstraintestinal pathogenic *E.coli* from postcholecystectomic samples and their antimicrobial resistance profile in Georgia. /E. Pachkoria, E. Vashakidze, T. Megrelishvili, L. Tevzadze/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 125-127. – eng.; abs.: geo., eng.

We have been studying infections caused by *E.coli* in Georgia since 2009. Cases of STEC infection and HUS were represented in our previous articles. In this article we discuss the involvement of *E.coli*, especially its high resistant strains, in the development of the gallbladder diseases. Among isolated enterobacteriaceae there is a noticeable increased rate of extra intestinal ESBL-producing *E.coli*. These ESBL-producing *E.coli* produce an enzyme called extended-spectrum beta lactamase (ESBL) and are able to resist penicillins and cephalosporins as well as a number of other classes of antibiotics - making these infections much more challenging to treat. To evaluate the rate of *E.coli* in the development of the exstraintestinal abdominal pathology such as chronic calculous cholecystitis, bacteriological analyses of 130 postoperative tissue of the gallbladder were carried out; isolated strains' antibiotic sensitivity was studied by the Double Disk method; Currently ESBL strain genome analysis is under way MISEQ –Illumina Platform). 28 cultures were isolated (22%) among them *E.coli* was isolated in 9 cases (32%). ESBL-producing *E.coli* showed high resistance rate to Penicillins and Cephalosporins and to Ciprofloxacin (2 strains) and imipenem as well (4 strains). It is significant that the existence of ESBL-producing *E.coli* strains indicates to the circulation of high resistant

E.coli in Georgia. Nowadays microbial resistance is a growing major public health issue, and a strong concern for the medical community. Ref. 6.

Auth.

14.3.3.47. Role of physical exercise in prevention of diseases: new prospects. /T. Svanishvili, E. Tataradze, N. Chabashvili, Z. Sopromadze/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 127-128. – geo.; abs.: geo., eng.

Considering the world economic crisis, the use of low-cost preventive interventions, such as physical activity becomes necessary. Inclusion of physical activity in everyday lifestyle decreases pharmaceutical and overall costs of public health care system. In recent years, a number of scientific works has described the potential of regular physical exercise in prevention of several types of malignant tumors, along with cardiovascular and metabolic disorders, which have been traditionally viewed as targets for physical activity programs. For example, physical exercise can have a preventive role in the development of breast cancer, by means of influencing its hormonal and metabolic mechanisms, as well as in the development of colon cancer. Physical exercise decreases insulin resistance, which supposedly is a connecting link in pathogenesis of many malignant tumors, including endometrial cancer. According to the newest investigations, the preventive effect of physical exercise concerns auto-immune diseases as well, such as diabetes type 1. Therefore, national governments should pay greater attention to the development of physical activity programs, as an important method of diseases treatment and prevention. Ref. 11.

Auth.

14.3.3.48. Health risk assessment of chemicals in some enterprises of Georgia. /I. Gvineria, V. Saakadze, M. Juruli, O. Gvaberidze, L. Bakradze/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 138-140. – geo.; abs.: geo., eng.

The effect of chemicals on the health of workers was assessed in some Georgian enterprises (JSC Zestafoni Ferroalloy Plant and JSC Tbilisi Electric Locomotive Plant). It was revealed that out of 17 chemicals affecting workers in the Zestafony Ferroalloy Plant, 5.8% belong to I class of extremely hazardous chemicals, 11.7% belong to II class of highly hazardous chemicals, 41.1% belong to III class of moderately hazardous chemicals and 41.1% belong to IV class of slightly hazardous chemicals. In the JSC Tbilisi Electric Locomotive Plant, out of 32 chemicals, to which workers are exposed, 6.2% belongs to I class of extremely hazardous chemicals, 31.2% belong to II class of highly hazardous chemicals, 24.5% belong to III class of moderately hazardous chemicals, and 37.2% belong to IV class of slightly hazardous chemicals. A combined exposure to highly toxic chemicals causes high risk to health of workers, which necessitates the timely taking of preventive hygienic measures. Tab. 2, Ref. 5.

Auth.

14.3.3.49. Epidemiologic research among the workers of the JSC Zestafoni Ferroalloy Plant. /N. Chkhaidze, Tatia Todua, M. Turmanauli, Tea Todua, G. Kverenchkhiladze/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 147-149. – geo.; abs.: geo., eng.

In order to reveal the connection between the reasons of disease and risk factors, epidemiologic research activities have been held through interviewing method face to face with workers of the JSC Zestafoni Ferroalloy Plant. In this respect, special questionnaire forms have been composed. Upon the collection and procession of initial material, various data have been received, classified in compliance with gender, work experience, age groups, as well as according to classes of disutility (hygienic working conditions), family conditions, education, life conditions, and addiction to alcohol, smoking and drugs. The data received indicate that most of the respondents basically work in the classes of harmfulness with degree 3.2, 3.3, 3.4 and 4.0 and the influence of these factors might stimulate occupational and work-related diseases development. Many respondents use alcohol and smoke, which might serve as additional risk factors among the workers of the JSC Zestafoni Ferroalloy Plant. Fig. 5, Ref. 7.

Auth.

14.3.3.50. Health condition of Tbilisi underground workers. /Mar. Tsimakuridze, N. Khunashvili, M. Tsimakuridze, D. Zurashvili, N. Khachapuridze/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 150-151. – geo.; abs.: geo., eng.

The health status of Tbilisi underground workers was studied according to age, length of service and professional peculiarities. Purposeful prevention recreational activities for the workers of the above-mentioned sector were worked out. The research proved the influence of environment factors on the employees' health condition. Particularly, in the basic group practically healthy persons appeared 4.6 times less compared to the similar index of control group ($t=6$, $P<0.001$). In all age groups of basic professions and within individuals having long-termed working experience the number of sick persons significantly exceeded the index of control group of the same age and same length of service ($P<0.05$ - $P<0.001$). As a result of separate organs and systems' health condition analysis, it has been stated that blood circulation (SBC) problems, nervous and digestive system diseases are the leading disorders in underground workers. Risk-

factors for development of these diseases are noise, vibration, psychoemotional strains, compulsory condition of body and others. Tab. 3, Ref. 10.

Auth.

14.3.3.51. Main problems of occupational health and safety in Georgia and the ways of their settlement. /R. Javakhadze, N. Khatiasvili, Kh. Chigogidze, M. Tsimakuridze/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 168-170. – geo.; abs.: geo., eng.

Occupational diseases cause huge suffering and loss in the world of work. Technological and social changes, along with global economic conditions, are aggravating the existing health hazards and creating new ones. While much progress has been made in addressing the challenges of occupational diseases, there is an urgent need to strengthen the capacity for their prevention in national OSH systems. WHO at sixtieth World Health Assembly (2007) gave recommendations for Member States to establish appropriate mechanisms and legal frameworks in the sphere of labor medicine at national level for improving basic occupational health services for primary prevention of occupational and work-related diseases and injuries. In this article are given main problems of occupational health and safety in Georgia and the ways of their decision. Ref. 6.

Auth.

14.3.3.52. The investigation of Khikhadziri village mineral water, Khulo district. /N. Gordadze, I.D. Tarkhan-Mouravi, M. Kakabadze, N. Didebulidze, L. Metreveli, I. Sikharulidze, M. Kordzaia/. Modern aspects of medical rehabilitation, prevention and healthy lifestyle. Int. Symp. – Sairme. 9-13 Oct. – 2014. – pp. 29-35. – geo.; abs.: eng., geo.

Using 20 male albino rats, a histology study of stomach, liver and kidney was performed to assess the effect of Khulo district's Khikhadziri village mineral water. 10 rats of experimental group received mineral water for 30 days, rats of control group drank simply water. Stomach, liver and kidney were investigated. The specimens were stained with hematoxylin and eosin. Entire microstructure of stomach, liver and kidneys was intact. The liver lobules are formed of a polygonal mass of hepatocytes with portal spaces at the periphery and a vein, called the central or centrolobular vein, in the center. The fundal gastric pits contained the large acidophilic parietal cells and chief cells, secreting zymogen granules, showing the moderate activation of gastric secretory function. The cuboidal epithelial cells of convoluted proximal tubules were flattened. So, the data obtained revealed that 30 day-drinking of mineral water doesn't lead to a change in macro- and microstructure of stomach, liver and kidney of rats and the mineral water can be used in practice. Ref. 3.

Auth.

14.3.3.53. Determination of biomechanical criteria of human motions and their significance for assessing the pathological state. /G. Eliava, P. Kasradze, T. Tsintsadze, L. Topuria, M. Tabidze/. Modern aspects of medical rehabilitation, prevention and healthy lifestyle. Int. Symp. – Sairme. 9-13 Oct. – 2014. – pp. 161-165. – eng.; abs.: eng., geo.

The determination of the biomechanical parameter of human body, such as body center of mass or body center of gravity gives us an opportunity to assess body balance, perfection of body motions. In vertical position human body center of gravity is located approximately at the level of second sacral vertebra. In prone position the general body center of mass or body center of gravity shifts to the head by roughly 1 percent. Amplitude of vertical oscillations of centre of gravity in healthy female persons at the age of 19-20 has been determined in our studies. Research results testify that amplitude of vertical oscillations of general body center of mass is considerably depended on step length compared with other parameters. The study of change in amplitude of vertical oscillations of general body center of mass gives us an opportunity to determine its dynamics also during locomotive organs diseases when the range of motions is limited, as well as to schedule the ways of optimization of motor reactions. Ref. 5.

Auth.

14.3.3.54. Some questions of formation of a balneological region in the western zone of Kolkheti Lowland. /N. Akhvlediani/. Science and Technologies. – 2014. – #1(715). – pp. 103-108. – geo.; abs.: geo., eng., rus.

The questions of regulation of balneology resources, their rational distribution with a view to create the most favorable conditions balneotherapy in the balneological region, as well as the area arrangement through functional zoning are discussed. For a deeper study, a group of balneology resorts and places located near the towns of Zugdidi and Senaki: Menji, Tsaishi, Bia, Qvaloni, Khorga, Kulevi, Nokalakevi are considered as an example. Fig. 3, Tab. 1, Ref. 5.

Auth.

14.3.3.55. **Changes in the volume of nitrate-nitrite concentration in greens upon their chopping.** /G. Andriadze, E. Mkhchian, E. Shengelia, L.Gvasalia/. Science and Technologies. – 2014. – #1(715). – pp. 109-113. – geo.; abs.: geo., eng., rus.

By keeping manually chopped greens in the air for 2-3 hours, the process of accumulation in them of both nitrites and nitrates takes place. This means that the consumption of these products after this time interval involves major growth of nitrate-nitrite volume in the human body. Accordingly, the greens better to consume as soon as they are chopped. Fig. 2, Tab. 3, Ref. 11.

Auth.

14.3.3.56. **Glio-capillar interaction in the rat offspring's cerebral hemisphers under prenatal ethanol intoxication.** /R. Chikhladze, N. Ramishvili, Z. Tsagareli, L. Gogiashvili/. Georgian Medical News. – 2014. – #9(234). – pp. 129-134. – rus.; abs.: geo., eng., rus.

Brain cortex specimens (hematoxylin-eosin stained) from the newborn rats were analyzed for glial cells' morphological identification. Oligodendrocytes, astrocytes and glial index were tested in 1 and 7 days after birth. Under the prenatal alcoholism in the first 7 days of life in the animals' sensomotoric cortex the proliferation of glial cells, restructurization of the glio-capillary interaction, dyscirculatory changes affecting all layers of the cortex, including layer V are principal. It is concluded that the changes (death) of neurocytes are morphological expressions of the glio-capillary interaction pathology – the deficiency of the cerebral cortex blood supply and the disorganization of the blood-brain barrier. Tab. 1, Fig. 5, Ref. 22.

Auth.

14.3.3.57. **Analysis of the pharmaceutical method ADAPT used in health support programs.** /N. Kvizhinadze/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 90-92. – eng.; abs.: geo., eng.

Pharmacists continue to be among the most trusted and accessible healthcare professionals. The profession of pharmacy continues to evolve from product-oriented to patient-centered practice with opportunities emerging for population-based interventions. In response, pharmacists and student pharmacists are more involved in public health activities, including service learning and community outreach projects during introductory and advance practice experiences and extracurricular programs. According to the analysis of the training carried out at the Arizona University. It is obvious that the ADAPT instrument provides an application and resource to address pharmacy educational outcomes and accreditation standards pertinent to public health. The instrument will be beneficial to pharmacists in planning, developing, and implementing high-quality, evidence-based, well-planned pharmacist-directed health promotion programs. As pharmacists and student pharmacists continue to assume active roles in public health activities, instruments such as 25 ADAPT are important to ensure high quality health promotion programs that meet the needs of patients and populations and maintain compliance with laws and regulations. Healthcare providers and faculty staff anticipate that the ADAPT instrument will promote and further the documentation of pharmacists' contributions to address national health goals and improve the health of society. Ref. 9.

Auth.

3.4 Health biotechnology

14.3.4.1. **Comparative evaluation of physical-mechanical properties and surface morphology of the samples of base self-cured acrylic resin "redont-kolir" polymerized in the silicone and alginate matrixes.** /M. Bogatyrenko/. Georgian Medical News. – 2014. – #7-8(232-233). – pp. 33-37. – rus.; abs.: geo., eng., rus.

Determination of advantages of using silicone or alginate impression material as a matrix is decisive for quality of immediate and transitional dentures manufactured by the direct method using self-cured acrylic resins. The aim of this study was a comparative evaluation of physical-mechanical properties and surface morphology of the samples of base self-cured acrylic resin "Redont-kolir" polymerized in the silicone and alginate matrix. The samples were polymerized in the C-silicone - "Zeta plus-putty" ("Zhermack", Italy) and alginate - "Ypeen" ("Spofa Dental", Czech Republic) matrixes under different regimes: 1) in the pneumopolymerizer "Averon" at an air pressure of 3 atm., a temperature of 45°C for 15 minutes, and 2) polymerization in water at 45°C for 15 minutes. We determined the following physical and mechanical properties: bending load, toughness, bending stress at break, hardness by Heppler, conical point of fluidity and water absorption. Electron microscopy studies of the samples have been conducted on electronic raster microscope JSM-840 ("Jeol", Japan). As a result of studies, it was found that the optimum regime of polymerization for acrylate "Redont-kolir" is in the pneumopolymerizer "Averon" at an air pressure of 3 atm., a temperature of 45°C for 15 minutes. By the results of studying the surface morphology of the samples we

can draw a conclusion that the use of an alginate impression material as matrix allows to obtain a qualitatively better surface of denture. But taking into account the technological properties of the alginate impression materials, namely an expressed shrinkage, their use for this purpose must be limited by the time during which the impression matrix remain stable in size, which is specified by manufacturer's recommendations. Tab. 2, Ref. 6.

Auth.

14.3.4.2. Role of transcription nuclear factor κ B in mechanisms impairing oxidative metabolism in rats' brain under chronic hypomelatoninemia. /Y. Frenkel, V. Chernov/. Georgian Medical News. – 2014. – #7-8(232-233). – pp. 99-102. – rus.; abs.: geo., eng., rus.

The experiment carried out on 20 Wistar male rats weighing 180-220 g was designed to study the effect of NF- κ B activation on the free radical oxidation and bioenergy processes in the brain under modeled chronic hypomelatoninemia (animals were exposed to steady illumination at a dose of 1500 lux for 55 days). It has been shown the intraperitoneal administration (daily for the last 7 days of steady illumination) of nuclear factor κ B (NF- κ B) activation inhibitor II - JSH-23 (4-methyl-N-(3-phenylpropyl) benzene-1,2-diamine) in a dose of 1 mg/kg of animal's body wt is accompanied with a significant reduction in \cdot O² production by mitochondria and NADPH oxidase of leukocytes, by the formation of secondary LPO products, increased activity of superoxide dismutase and catalase, AO potential, ATP content and energy quotient. It might be concluded the disturbances resulting in the above mentioned processes in the brain under steady hypomelatoninemia are of NF- κ B-dependent nature. Tab. 2, Ref. 13.

Auth.

14.3.4.3. Total polyphenols and antioxidant activity in different species of apples grown in Georgia. /N. Gogia, M. Gongadze, Z. Bukia, M. Esaiashvili, I. Chkhikvishvili/. Georgian Medical News. – 2014. – #7-8(232-233). – pp. 107-112. – eng.; abs.: geo., eng., rus.

Many studies have shown that biologically active components in plant-based foods, particularly phytochemicals, have important potential to modulate many processes in the development of diseases, including cancer, cardiovascular disease, diabetes, pulmonary disorders, Alzheimer's disease, and other degenerative diseases. The aim of the our study was to provide an updated understanding and analysis of various apple sorts growing in Georgia by the compounds with a particular focus on their potential role(s) in disease risk and general human health. The Various sorts (Kekhura, Banany, Golden, Starty, Chempion, Aidaridy, Brotsky, Achabety, Sinapy, Jonagold and Antonovka,) of apples were investigated. The total phenolic content and antioxidant activity were studied in peel and flesh extracts and were measured by slightly modified method of Folin-Denis using Folin-Ciocalteu reagent and - 1,1-diphenyl-2-picrylhydrazyl (DPPH) radical scavenging method in those varieties of apples. Summarizing our data, we can conclude that, in accordance with the benefit to human health, the most prominent varieties of apples - Kekhura. It is rich with phenolic compounds, and also characterized by high scavenging activity. Also has good features Antonovka and Achabety. It should be noted that apple peel more helpful than the flesh, and therefore during consumption peeling of apples is unacceptable in terms of its usefulness. Tab. 1, Fig. 3, Ref. 14.

Auth.

14.3.4.4. Study of the immunomodulatory activity of progesterone in an experimental model of Jurkat cells. /A. Gokhelashvili, N. Gogebashvili, I. Datunashvili, N. Bejtitashvili, L. Jashi, T. Sanikidze/. Georgian Medical News. – 2014. – #7-8(232-233). – pp. 112-116. – rus.; abs.: geo., eng., rus.

Progesterone plays an important role in the regulation of the immune system during pregnancy. We investigated the influence of progesterone on the activity of T-lymphocytes in a model system of Jurkat cells. Jurkat cells were stimulated with 50 μ g/ml of phytohemagglutinin A (PHA) at 37°C for 5 minutes. Then, PHA was removed by centrifugation, the cells were washed and cultured for 24 hours alone or with progesterone (added to the incubation medium of Jurkat cells at a concentration of 0.07 and 0.7 μ l). The effect of progesterone on the level of apoptosis and expression of cytokines in jointly incubated intact and PHA-stimulated Jurkat cells. It was revealed that progesterone did not affect the intensity of apoptosis and cytokine expression in intact, but dose-dependently promotes intensification of apoptosis (to 88%) and inhibits the cytotoxic activity of jointly incubated intact and PHA-stimulated Jurkat cells (ratio of IL-2/IL-10 decreased from 2.56 to 1.53). Tab. 1, Fig. 1, Ref. 12.

Auth.

14.3.4.5. The possible effect of variable membrane potential of a cancer cell on different carcinogenic processes. /G. Gogichadze, T. Gogichadze, E. Misabishvili, G. Kamkamidze/. Georgian Medical News. – 2014. – #9(234). – pp. 116-120. – eng.; abs.: geo., eng., rus.

Cancer cells (unlike normal analogs) have a variable membrane potential on their surface, which depends on the intensity of metabolism of this type of cells and the environmental hydrogen index: in the case of low-pH (acid medium) they are known to have either a low negative or even positive charge, while in the case of high-pH (alkaline medium) – a relatively high negative charge. In this paper we suggest that the processes of

metastasis, progression and invasion ongoing in a macro organism can be ascribed to the presence of exactly this variable electric charge in a cancer cell. Ref. 27.

Auth.

14.3.4.6. The effect of peptide bioregulator and cobalt ions on the activity of NORs and associations of acrocentric chromosomes in lymphocytes of patients with hypertrophic cardiomyopathy and their relatives. /T. Jokhadze, T. Buadze, M. Gaiozishvili, M. Rogava, T. Lezhava/. Georgian Medical News. – 2014. – #9(234). – pp. 134-137. – rus.; abs.: geo., eng., rus.

The influence of peptide bioregulator - Livagen (Lys-Glu-Asp-Ala) separately and combined with cobalt ions, on the activity of nucleolar organizer regions (NORs) and the frequency of associations of acrocentric chromosomes in lymphocytes from patients with hypertrophic cardiomyopathy (HCM) and their relatives have been studied. It is shown that a combined action of Livagen and cobalt ions increases the frequency of large-sized scoring 2 NORs in both patients and their relatives. Significant was also the influence of the studied compounds on the associative activity of acrocentric chromosomes that was expressed in a sharp increase of this indicator in both studied groups. In this case more effective was the action of Livagen and cobalt ions. As activity of NOR and the frequency of associations of acrocentric chromosomes are dependent of the quality of acrocentric chromosome stalk condensation, we conclude that the influence of Livagen and cobalt ions on the lymphocytes of HCM patients and their relatives leads to the decondensation of heterochromatinized chromatin. This may be a prerequisite for release of inactivated genes in the studied groups of individuals as a result of their condensation. Our data are important because they provide new information about the protective effect of Livagen and Livagen+Cobalt ions on the lymphocytes of HCM patients and their relatives and may lead to the development of a therapeutic treatment. Fig. 3, Ref. 5.

Auth.

14.3.4.7. The fatty acid composition of large pumpkin seed oil (*Cucurbitae maxima* Duch) cultivated in Georgia. /B. Kikalishvili, D. Zurabashvili, D. Turabelidze, J. Aneli, L. Shanidze/. Georgian Medical News. – 2014. – #9(234). – pp. 138-141. – rus.; abs.: geo., eng., rus.

The aim of the study was to identify qualitatively and quantitatively the fatty acid composition of the seed oil of large pumpkin cultivated in Georgia (*Cucurbitae maxima* Duch) and evaluate its biological activities. The evaluation was conducted using a high-performance liquid chromatography method. Fatty acids ranging from C12:0 to C22:0 were identified in the probe. The oil composition was identified as follows: 0,2±0,01mg% lauric, 0,3±0,01 mg% miristic, 9,0±0,7mg% palmitic, 5,5±0,4 mg% stearic, 28,1±1,0 mg% oleic, 40,2±1,9 mg% linolic, 12,1±1,0 mg% linolenic, 2,0±0,2mg% arachinic and 1,2±0,1 mg% begenic acids. The investigation showed that large pumpkin seed oil contains a range of biologically significant fatty acids, the unique proportion of which attaches great value to the vegetative material. Tab. 1, Ref. 11.

Auth.

14.3.4.8. Clinical and biochemical analysis of ligature-induced periodontitis in rats. /Y. Chumakova, A. Vishnevskaya, A. Kakabadze, L. Karalashvili, Z. Kakabadze/. Georgian Medical News. – 2014. – #10(235). – pp. 63-69. – rus.; abs.: geo., eng., rus.

The most common experimental model of periodontitis is a "ligature" model. However, due to the complexity connected with performing on rats, modification of existing model is proposed, which differs by fixture of cotton ligature around the central incisor and not around the second molar. The purpose of research - a comparative evaluation of "peroxide" and modified by us, "ligature" models of periodontitis in rats. 2 series of experiments on 36 white Wistar rats were conducted. The animals were divided into two groups: intact rats (control) and rats with a "peroxide" model of periodontitis, which was reproduced by the addition to the diet of rats overoxidized sunflower oil (5% by weight of the feed), daily, for 45 days. "Ligature" model in rats was reproduced by applying a cotton ligature on the central incisor of the upper jaw for 14 days. Elastase activity, malondialdehyde content and catalase activity in the gums and in the blood serum was measured by biochemical methods. The degree of atrophy of the alveolar bone of the mandible was determined by morphometric method. It is found that in both models of periodontitis in rats, changes in the periodontal tissues and in the organism as a whole, is common for periodontal disease in humans. Clinically apparent inflammation of the periodontal tissues is observed, metabolic disorders in the gums, change of biochemical parameters in serum and progressive decline in the alveolar bone are determined. A comparative analysis of the two models showed that the modified "ligature" model of periodontitis in rats has several advantages over the "peroxide" model: shorter term of modeling, more pronounced clinical inflammation of periodontal tissues and faster resorption of alveolar bone. Tab. 3, Ref. 16.

Auth.

14.3.4.9. The effects of grape seed and coriander oil on biochemical parameters of oral fluid in patients with periodontitis. /M. Nikolaishvili, M. Gogua, Q. Franchuki, T. Tufinashvili, D. Zurabashvili/. Georgian Medical News. – 2014. – #10(235). – pp. 69-73. – rus.; abs.: geo., eng., rus.

Among the biochemical changes taking place in patients with periodontitis 1 and 2, the following take place: the content of lactate dehydrogenase increases, alkaline phosphatase activity increases and the activity of amylase deteriorates. Therefore, the probability of increase in superoxide substances, which causes an increase of pathogenic bacteria in the oral cavity and severity of periodontitis, can be assumed. The grape seed and coriander oil is of vegetable origin with antioxidant action. Their effect on the oral cavity causes a statistically significant increase in the content of amylase and decrease in the content of alkaline phosphatase and lactate dehydrogenase, also leading to the normalizing of the oral cavity's pH. It should be noted that application of the coriander oil is less effective. Tab. 3, Ref. 12.

Auth.

•**14.3.4.10. Discrepancy between HCV structural and non-structural genes in Georgian genotype two patients.** /T. Tsertsvadze, M. Karchava, L. Sharvadze, L. Gatsereia, E. Dolmazashvili/. Georgian Medical News. – 2014. – #10(235). – pp. 74-78. – eng.; abs.: geo., eng., rus.

Correct identification of hepatitis C genotypes is an important diagnostic tool, which guarantees further selection of adequate treatment regimen and correct duration. Ideal approach for accurate genotyping is amplification of both structural and non-structural parts of HCV genome. As different methods, which use either one or another region for HCV genotyping sometimes lead to indeterminate genotype and subtype results. Therefore, it is of importance to compare HCV genotyping results based on two different genomic regions. As part of this study, remnant 108 specimens, with previous history of successful genotype identification by 5'UTR/core Versant HCV genotyping kit, were retrospectively analyzed. "In house" HCV real time PCR-based method that amplifies parts of NS5B region was used for this purpose. Based on our data, genotyping calls were concordant between genotype one and genotype three specimens group in both regions. However, discrepancy was evident among genotype 2 group. Of 25 specimens originally typed as genotype 2 in structural region, only 7 was confirmed in non-structural region, remaining 18 specimens were typed as 1b. Therefore, the discordance rate between structural and non-structural regions for genotyping call among genotype two was 72%. Our data showed highly discordant structural and non-structural genome for genotype two identification in our specimens. We propose that this phenomenon might be due to the recombination event between genotype two and genotype one. Possible circulation of this strain in Georgia stresses the need for detailed sequencing and phylogenetic analyses of these specimens in both structural and non-structural parts of HCV genome. Tab. 1, Ref. 15.

Auth.

•**14.3.4.11. Epigenetic regulation of acute inflammatory pain.** /E. Abzianidze, E. Kvaratskhelia, T. Tkemaladze, K. Kankava, G. Gurtskaia, M. Tsagareli/. Georgian Medical News. – 2014. – #10(235). – pp. 78-81. – eng.; abs.: geo., eng., rus.

Acute pain is associated with tissue damage, which results in the release of inflammatory mediators. Recent studies point to the involvement of epigenetic mechanisms (DNA methylation) in the development of pain. We have found that during acute inflammatory pain induced by the application of 10% mustard oil on the tongues of rats, levels of DNMT3a and 3b were elevated markedly (36 and 42 % respectively), whereas the level of DNMT1 was not changed significantly. Previous injection of Xefocam with 0.4 mg/kg dose decreased levels of DNMT3a and 3b (25 and 24% respectively). The level of DNMT1 was not changed significantly compared to the control group. The findings support the idea that inhibitors of DNA-methyltransferases could be useful for pain management. Our data suggest that NSAIDs (alone or in combination with DNMT inhibitors) may be proposed as possible epigenetic regulatory agents, which may play a role in epigenetic mechanisms indirectly through altering the activity of inflammatory mediators involved in pain development. Tab. 1, Fig. 1, Ref. 10.

Auth.

•**14.3.4.12. Use of a solution test to evaluate loratadine generics.** /K. Baramidze, T. Chikviladze, M. Jorjikia, H. Ioramashvili, T. Otarashvili/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 19-21. – geo.; abs.: geo., eng.

The release of active compound out of four solid dosage form drugs - loratadine made by different manufacturers registered in Georgia is examined. It is established that all of the samples comply with monographs USP 36 NF 31 on test "dissolution", as from all samples are released more than 80% loratadine for 60 minutes. The solubility profiles of the study samples and the reference drug are compared and it is established that samples 2, 4 and 5 are equal with the reference drug. As regards sample 3 (the quotient of similarity – 49.87%, the quotient of difference – 9.07%), the outcomes of *in vitro* study are not satisfactory and thus the establishment of therapeutic equivalence requires additional *in vivo* studies. Tab. 2, Fig. 2, Ref. 8.

Auth.

14.3.4.13. **The study of ofloxacin in vitro release from solid dosage forms.** /K. Baramidze, T. Chikviladze, M. Jorjikia, H. Ioramashvili, T. Otarashvili/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 22-24. – geo.; abs.: geo., eng.

Examined is the release of active compound out of four solid dosage form drugs - ofloxacin from different manufacturers registered in Georgia. It is established that all of the samples comply with the requirement of monograph USP 36 NF 31 for test "dissolution", as from all samples more than 80% ofloxacin in 30 minutes are released. The solubility profiles of the samples under study are compared to found that the solubility profile of only two samples (#3 and #4) correspond to the reference and, therefore, only these two samples equal the referral medicine. As regards the samples #2 and #5, the *in vitro* study data are not satisfactory and thus the therapeutic equivalence establishment requires additional *in vivo* studies. Tab. 3, Fig. 2, Ref. 6.

Auth.

14.3.4.14. **Effect of cochlear implantation in children with hearing loss on their intellectual ability assessed by raven's colored progressive matrice.** /T. Devdariani, N. Manjavidze, K. Gogberashvili, Z. Kevanishvili/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 53-56. – geo.; abs.: geo., eng.

Raven's Colored Progressive Matrices (CPM) is a well-accepted and widely used tool for assessing the general intelligence of young children ages 5-11 years. The present study was designed to estimate the intellectual ability of early age children after cochlear implantation, effect of implantation on child's intellectual development after 6-12 months of intervention. A case-control study was performed in Tbilisi Inclusive Education Centre for children with hearing loss and National Centre of Audiology. 25 children from these centers formed group I as control. Cohort II included 10 deaf children after 6-12 months of cochlear implantation. Comparison of the study and control groups was performed by Mann-Whitney's Nonparametric Test for 2 independent groups. The results revealed statistically significant difference in intellectual ability between children from cohorts I and II. Therefore, it has no difference whether the deafness resulted from CMV infection or other causes. The intellectual ability of children after cochlear implantation was significantly higher than in children with hearing loss ($P < 0.05$). The intellectual development of implanted children after 6-12 months of intervention was not significantly different from the healthy children data. Fig. 1, Ref. 10.

Auth.

14.3.4.15. **Antioxidant polyphenols from betula medwedewi growing in Georgia.** /L. Zardiashvili, M. Jokhadze, J. Kuchukhidze, M. Maisashvili, V. Mshvildadze/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 66-67. – eng.; abs.: geo., eng.

The antioxidant effects in plants are mainly due to the presence of phenolic compounds such as flavonoids, phenolic acids, tannins and phenolic diterpenes. Oxidative damage is implicated in most diseases processes. *In vitro* studies are able to demonstrate for flavonols and flavones a considerable antioxidative activity, mainly based on scavenging of oxygen radicals. The antioxidative potential of different fractions (respective organic fractions of n-hexane, chloroform and ethyl acetate) of 70% methanol extract of *Betula medwedewii* was evaluated using free radical-scavenging activity on DPPH (1,1-diphenyl-2-picrylhydrazyl) assays. The methanol extract showed significant activities in all antioxidant assays and contained a high level of total phenolic content. It was observed that the level of hydrophilic phenolic content was higher than that of hydrophobics. Among those organic solvent fractions, ethyl acetate fraction exhibited significant activities due to the highest level of total phenolic content and their IC₅₀ values were 0.19 ± 0.02 mg/mL. These activities were superior to those of a commercial natural antioxidants tested. The chloroform and hexan fractions also exhibited significant free radical-scavenging activity (IC₅₀ 0.63 ± 0.03 µg/mL and 0.84 ± 0.04 µg/mL respectively) attributed to the high amount of hydrophobic phenolics. Tab. 1, Fig. 1, Ref. 5.

Auth.

14.3.4.16. **Modern aspects of pharmaco and ecogenetic diagnostic.** /M. Chipashvili, E. Imnadze, Ts. Gigenishvili/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 161-163. – geo.; abs.: geo., eng.

Human immunogenetical determination is out of question. The inheriting differences are not researched enough. That is why it is necessary to change the approach with each case. It is also necessary to run pharmacogenetical diagnostic in conservative and operative treatment course. As for the food and its addition genetic control, it requires to refine the methods of appropriate services and research on the molecular level. Nowadays even the natural food causes sudden individual reactions that are defined by the individual's heredity qualities. Thus, pharmaco- and diet therapy must be based on molecular-genetic researches. Pathological reactions on food and drugs in humans are caused by biochemical and metabolic defects. Hereditary defects of enzyme, receptor, transport and antigen protein system cause not only important functional defects, but may also be a reason of disability or even death. Thus, it is important to

make patients eco- and pharmacogenetic diagnosis. There are no resistant forms of diseases – but there is a genetic tolerance towards known drugs. Ref. 6.

Auth.

14.3.4.17. Actual problems of clinical pharmacy in Georgia. /T. Chumburidze, N. Nemsitsveridze, G. Simonia, N. Aptsiauri, T. Kilasonia/. Tbilisi State Medical University Collection of Scientific Works. – 2013. – #47. – pp. 163-164. – geo.; abs.: geo., eng.

Establishment of the Institute of clinical pharmacists in Georgia was the question of long-term discussions but due to lack of information and inertia of mentality it still has not been implemented. The study was aiming at better getting acquainted with the issues of clinical pharmacists in Georgian reality, so we supposed it necessary to carry out a survey - through questionnaires. Respondents were doctors, pharmacists and patients. According to the survey results the cooperation between doctors and pharmacists was supported by nearly 90% of respondents. The respondents cited doctor's position as impeding factor for developing cooperation between the physician and the pharmacist. Unfortunately, majority of respondents believe that there is no agreement between physicians and pharmacists in respect of prescribing medicines. According to the responses collaboration between the physician and pharmacist will have a very positive impact on patient's condition. Informing physicians and establishment of the institute of clinical pharmacist will help eliminate professional misunderstandings implying further improvement and pharmaceutical education in direction of clinical pharmacy, which will undoubtedly contribute to preparation of MS candidates specializing in clinical pharmacy and providing trainings in clinical pharmacy for the pharmacists working at drugstores/ chemist's shops. Fig.1, Ref. 6.

Auth.

3.5. Other medical sciences

14.3.5.1. Induratio penis plastica and the capability of vaginal penetration in the context of forensic evaluation. /K. Albrecht, G. Kedia, S. Ückert, L. Hagemeyer, M. Kuczyk, M. Klintschar/. Georgian Medical News. – 2014. – #9(234). – pp. 89-93. – germ.; abs.: geo., eng., rus.

The so-called induratio penis plastica (IPP), also known as Peyronie Disease or Morbus Peyronie, is the most common cause for deviation of the male penis. In most cases, the deviation is directed to the dorsal side. In face of a lawsuit related to a sexual offence, the opponent might argue that, due to an existing IPP, he is generally unable to insert his penis into a female's vagina. The aim of the present study was to examine the clinical files of thirty (30) consecutive patients who presented with IPP. Particular attention was given to the individual degree of penile deviation and the ability of the subjects to conduct vaginal intercourse. Subjects who had a dorsal penile deviation of 80° to 90°, or a lateral deviation of 60°, were unable to commence vaginal coitus. In contrast, three (3) subjects who presented with a ventral deviation of 30° to 40° had no difficulties in performing vaginal penetration. The medico legal aspects of these findings are being discussed. Fig. 1, Ref. 18.

Auth.

4. AGRARIAN SCIENCES

4.1. Agriculture, forestry and fishery

14.4.1.1. Agrochemical characterization of the main soil types of Georgia. /T. Urushadze, A. Tkhelidze, T. Urushadze/. Annals of Agrarian Science. – 2014. – vol. 12. – #4. – pp. 24-31. – eng.; abs: eng., rus.

On the basis of agrochemical research of all soil types in Georgia on the 22.5% of the total area of soils hydrolytic nitrogen is low, on 59,4% of the total area it is low or average. High content is marked only on 18.0%. Therefore, nitrogenous fertilizers must be used on almost of all types of soils. Regarding mobile phosphorus, 54.3% of the total area is marked with low content of this element, low or medium – on 40.9%. Higher than average phosphorus content is observed on 4.8 % of the total area. Therefore, most types of soils require phosphorus in the amount of 1.0-1.25. Exchangeable potassium content analysis shows that on 0.8% of land its content is low; the average or low content is observed on 16.0% of land; 27.6% of the total

area is distinguished by higher than average content of exchangeable potassium. High levels of exchangeable potassium are on 55.6% of the total area. The soils in the next 4-5 years will not require potash fertilizers. Light texture soils are poor or very poor in exchangeable potassium, so without potash fertilizers the harvest will be rather low. Ref. 22.

Auth.

14.4.1.2. Genetic peculiarities of the black soils of Georgia. /T. Urushadze, D. Machavariani, T. Urushadze/. Annals of Agrarian Science. – 2014. – vol. 12. – #2. – pp. 29-34. – eng.; abs: eng., rus.

Black soils (so-called plain chernozems) are characterized by sharply-expressed differentiation, powerful humus horizon, increased compactness, clay texture. The soil profile usually has the following structure: A-B-BC(BC)-C (Ca). Main diagnostic indexes are resin-black color of the upper part of profile (usually with luster shine), carbonate and clay formation of the middle part. These soils are distributed in hill-plain zone between mountains – in outer and inner Kakheti, in lower and particularly, in Middle Kartli regions. The basic elementary soil formation processes of black soil are: humus formation, humus accumulation, salinization, carbonate formation, sialitization and clay formation. Tab. 5, Ref. 12.

Auth.

14.4.1.3. The study of the toxicity level of soils contaminated with arsenic in Racha and Svaneti. /R.Gigauri, Sh.Japaridze, T.Gogiberidze, N. Khavtasi/. Annals of Agrarian Science. – 2014. – vol. 12. – #2. – pp. 42-45. – eng.; abs: eng., rus.

In two regions of Georgia (Racha, Svaneti), the percentage of arsenic in soils of the area adjoining the arsenic-containing landfills have been studied using the TCLP (toxicity characteristic leaching procedure) and WET (waste extraction test) methods/standards. Their forms, valence, solubility, and range were identified. As a result of the study, the soils are found to contain liquid forms of arsenate, namely sodium arsenates being noted for high toxicity level and range. For the soils distanced from the landfills by 10, 200, 500 the total arsenic contained in them was calculated. The toxicity level is found to decrease with the distance from the source of contamination and correspondingly equals 12.5, 7.0, 4.0 and 1.5 g/kg in percentage terms. Tab. 3, Ref. 5.

Auth.

14.4.1.4. Morphological peculiarities of fungal fruit bodies against adverse conditions. /M.Kutsia/. Bulletin of Akaki Tsereteli State University. – 2014. – #2(4). – pp. 10-17. – geo.; abs.: geo., eng.

The article presents a general overview of disease-causing fungi. Special attention is paid to fungal diseases of agricultural crops in Georgia and their ability to adapt to adverse conditions. The research data about the anatomical and morphological peculiarities of fungal fruit bodies are presented. Fig. 2, Ref. 3.

Auth.

14.4.1.5. Asymmetric, combined soil-processing agricultural machine. /A. Samadalashvili, T. Modebadze/. Bulletin of Akaki Tsereteli State University. – 2014. – #2(4). – pp. 24-32. – geo.;abs.: geo., eng.

Treatment (milling) of soil around fruit plants and dosed (spot) fertilizing is possible by means of asymmetric, combined soil-processing agricultural machine. The machine encompasses ploughing mill, mineral fertilizer storage tanker, fertilizer scattering rolls, which are switched on and off by means of clutching blade, and a gear, which is activated through the tractor-power drive shaft. The machine can be aggregated symmetrically as well and can be applied for surface treatment of soil, to bring in fertilizers and for scattered sowing of grass seeds (instead of fertilizer) after complete tillage of the soil with ordinary ploughs. Fig. 2, Ref. 2.

Auth.

4.2. Animal and dairy science

14.4.2.1. General characteristics of sheep-breeding in Georgia. /M.Tsintsadze/. Metsniereba da Tskhovreba. – 2014. – #2(10). – pp.102-105. – geo.; abs.: geo., eng., rus.

The paper discusses sheep-breeding as the oldest field of farming. The article intensively covers contemporary trends of its development and current situation in this field. Thoroughly are discussed what kind of sheep breeds exist nowadays in Georgia, their structure, exterior as well as productive indexes. Also concerns about current structure of the sheep breeding are discussed in the paper. The authors state the importance of revival of this field and raising the number of sheep heads in Georgia, which shall contribute to its productivity and would further develop the market economy in the country. Ref.1

Auth.

4.4. Agricultural biotechnologies

14.4.4.1. Transformation of biologically active stilbenoids from grapevine to red wine, food supplement and beverage. /M. Bezhuashvili, P.Vashakidze, N. Vepkhishvili, L. Elanidze/. *Annals of Agrarian Science*. – 2014. – vol. 12. – #4. – pp. 63-70. – eng.; abs: eng., rus.

Cis- and trans-piceid stilbenoids have been identified and determined in juice and skin of the red-grape vine varieties growing in Georgia. The experiment used different grape varieties, such as Saperavi, Cabernet Sauvignon, Otskhanuri Sapere, Aleksandrouli, Mujuretuli, Shavkapito, Tavkveri, Aladasturi, Dzelshavi, Ojaleshi. The substance isolated by means of preparations was identified with acid hydrolysis, thin-layer and high-effective liquid chromatography and UV-spectroscopy. It was found that the grape juice contains more trans-piceid, while the grape skin contains more cis-piceid. It was for the first time, trans-resveratrol was identified in the shoots of Saperavi grape (*Vitis vinifera* L.). Based on the gained data, the transformation of the grape stilbenoids in the red wine identified by us was fixed. We have developed the technologies to produce biologically active products containing stilbenoids by using the grapes. Tab. 6, Fig. 3, Ref. 27.

Auth.

5. SOCIAL SCIENCES

5.2. Economics and business

14.5.2.1. Evolution of modeling of innovation processes. /Z. Gasitashvili, S. Khutsishvili, J. Gagloshvili/. *Transactions of Technical University of Georgia*. – 2014. – #4(494). – pp. 55-64. – geo.; res.: geo., eng., rus. The effective innovation process organization problems in modern enterprises are considered. The definitions of innovation and innovation process, along with its meaning and forms are given. The innovation process modeling evolution periods are described, particularly five models are presented: starting from easy "linear" model to complicated nonlinear net and interactive models. The main features of such models, their pros and cons are analyzed; also the general peculiarities and development directions for non-linear models are presented. Fig. 8, Ref. 3.

Auth.

14.5.2.2. Macro and micro factors operating on the improvement of the competitiveness of air carriers. /Y. Sukhitashvili, N. Dumbadze, M. Sukhitashvili, B. Davitadze/. *Air Transport*. – 2014. – #1(9). – pp. 42-53. – rus.; abs.: geo., rus., eng.

Due the world global economic crisis and acute competition air carriers pay more attention to the reduction of costs and improvement quality of services, meeting thus population needs for movement. It is very important nowadays for air companies to take into account an optimal balance between tariffs and quality. In this case, the air carrier will offer to the customer quality services together with the acceptable price, which, in general, will increase its competitiveness on the air market. Ref. 6.

Auth.

14.5.2.3. Analysis of risk factors influencing an investment process. /M. Lomsadze-Kuchava/. *Modern Issues of Medicine and Management*. – 2014. – #1. – pp. 117-124. – geo.; abs.: geo. eng. rus.

This article discusses risk factors acting on an investment process. The concept of risk and methods reducing the impact of risk are given. Differences by types of investment risks are considered. The article refers to the process of return, as the difference between the receivables and payables. The paper describes the features of an investment decision, which becomes relevant when taking into account the risk factors. When evaluating prospective investment results, different methods, such as Net Present Value, Discount Rate, Divestment, are applied. Tab. 1, Fig. 1, Ref. 7

Auth.

14.5.2.4. Modelling of managerial decision-making in an energy company. /N. Giorgishvili/. *Modern Issues of Medicine and Management*. – 2014. – #1. – pp. 125-133. – geo.; abs.: geo. eng. rus.

The models of decision-making, their varieties and application issues are considered in this work. Opportunities of managerial decision-making at different limitations are defined. Theoretical and practical approaches of application of models are studied. Tab. 1, Fig. 2, Ref. 9.

Auth.

14.5.2.5. Leadership development characteristics under conditions of global economy. /G. Amkoladze, A. Gabrichidze, M. Giorgobiani, M. Zedgenidze, N. Kharadze/. *Modern Issues of Medicine and Management*. – 2014. – #1. – pp. 141-145. – geo.; abs.: geo. eng. rus.

The issues related to the selection of a leader of a high emotional intellectual level to manage the situations resulting from changes of of internal and external factors effecting the global economy, market, and a company are considered in this work. Ref. 5.

Auth.

14.5.2.6. Analysis of innovation activities of mining and geological enterprises. /G. Tabatadze, G. Lobzhanidze, T. Butulashvili, B. Tsertsvadze/. Mining Journal. – 2014. – #2(33). – pp. 84-91. – geo.; abs.: geo., eng., rus.

It is known that the success and competitiveness of the enterprises and firms is conditioned by their innovative activities. With this point of view the article analyzes the problem of introduction of new techniques in our mining and geological enterprises. It is stated that in spite of some positive trends, the innovative activities of said enterprises are still on a low level. It is conditioned by both the specific peculiarities of their activities, as well as by some subjective and objective factors. Certain measures to be taken to activate such innovative activities in the field are set out on a basis of analysis. Ref. 11.

Auth.

14.5.2.7. Support to small and medium business. /D. Silagadze/. Agrarian-economic Science and Technologies. – 2014. – #3 (24). – pp. 6-11. – geo.; abs.: geo., eng.

The necessity of development of small and medium business, which is the basis of modern market infrastructure of any developed country, is considered. The share of small business in the total volume of production and services makes 60-80%. The situation of agriculture in the business sector of Georgia is considered based on the data of the National Statistics Service. It is underlined that the country became the largest consumer of foreign products. According to a research made on 194 countries, Georgia ranks the last. Measures taken and to be taken by the State in the current year are discussed. The activities for supporting the development of small and medium business and the active role of the State in the process of their implementation are considered.

Auth.

14.5.2.8. Agrarian risks and insurance. /N. Damenia/. Agrarian-economic Science and Technologies. – 2015. – #1 (26). – pp. 41-45. – geo.; abs.: geo., eng.

Georgia is an agricultural country. Out of 52 types of soil met in the world, 49 are found in Georgia, which, however, does not mean much for banks; agriculture is considered as a high-risk segment and, therefore, agriculture makes only 1.9% of total lending. The biggest puzzle for agriculture is agro-insurance. As regards lending, most of banks avoid issuing credits due to the fact that agriculture is considered as a high-risk segment. International statistics and examples demonstrate that the State can greatly contribute to the development of the agricultural sector insurance. It is also possible to effectively increase the interest of the people by subsidies and encourage them to benefit from this type of insurance.

Auth.

14.5.2.9. Quality management and ISO 9000: as a new business model. /D. Chakhvashvili, O. Tomaradze/. Automated Control Systems. – 2014. – #1(17). – pp. 111-114. – eng.; abs.: geo., eng., rus.

The universality of standards ISO 9000 is that they do not offer absolute measurable quality criteria for individual types of products and services (for example, the required technical characteristics of the products). This would be impossible because the quality is the ability of products or services to meet people's needs, but the needs are diverse. Standards ISO 9000 reflect the methodology of the quality system's functioning, which must, in turn, provide for high quality of products and services, ensuring thus high degree of customer satisfaction. Fig. 1, Ref. 4.

Auth.

14.5.2.10. Development technological process of credit risk assessment. /E. Turkia, Zv. Arkhoshashvili, T. Pkhakadze/. Automated Control Systems. – 2014. – #1(17). – pp. 115-120. – eng.; abs.: geo., eng., rus.

In the article issues of technological development and improvement of the banking credit system are discussed. For the assessment of credit risk, the attention is focused on the analysis and decision support of the loan disbursement process. From this perspective, in the represented article formalizing and analytical methods (methods of questioning and portfolio, models of credit scoring and classification tree) of researching creditworthiness of the borrower and automating mechanisms of these methods are suggested. As the practical example there are represented business-processes diagram of loan disbursement, decision tree model and credit scoring algorithm for research of loan disbursement. Fig. 3, Ref. 4.

Auth

14.5.2.11. The standards and goals to improve operational risks management in organizations. /E. Turkia, N. Morozi, T. Kachlishvili/. Automated Control Systems. – 2014. – #1(17). – pp. 121-124. – eng.; abs.: geo., eng., rus.

Operational risk management in organizations is one of the high priorities and sensitive matters. Operational risk management prevents material, non-material and vital damage to the organization. In order to adequately and timely address such critical issues, maximal automation of data analysis, evaluation,

centralized monitoring, data collection of internal weaknesses and external threats to the organization, appropriate implementation methods and analytical tools are required. The article deals with above mentioned problems of operational risk management in organizations. It proposes goals and standards for the carrying out implementation of automated data processing. Fig.1, Ref. 4.

Auth.

14.5.2.12. Information support of exchange activity. /M. Tevdoradze, M. Saltkhutsishvili, M. Gedevanishvili, N. Lolashvili/. Automated Control Systems. – 2014. – #1(17). – pp. 125-130. – eng.; abs.: geo., eng., rus.

Activity of a modern exchange is characterized by rich information flows. For proper work of any type of market it needs a powerful information infrastructure. Many other organizations are included in information support of exchange. These organizations execute highly complex data processing protocols. In this article there are discussed different questions: components and segments of information infrastructure of markets; used documents; types of information. There are characterized functions of information service of exchanges and the functions that perform various types of organizations that in the field of information support the activities of the exchange. There are considered channels and methods of information transmission in the exchange. Tab. 1, Ref. 2.

Auth.

14.5.2.13. Modeling of processes of office-work in the distributed organizational-administrative systems of management. /T. Sukhiashvili, G. Maniev, I. Shurgaia/. Automated Control Systems. – 2014. – #1(17). – pp. 131-136. – eng.; abs.: geo., eng., rus.

Automation of management by organizational management systems demands creation of the distributed, multilevel systems. For the analysis and design of similar systems is used UML technology and different CASE of means developed on its basis. In a type of existing problems in management of organizational management systems, modeling of processes of office-work by the specified technology demands specific approach for creation of adequate models and elimination of those shortcomings which are shown upon functioning of similar systems. The given approach gives the chance to develop model patterns for organizational management systems which are necessary for development of similar computer systems. Fig. 2, Ref. 4,

Auth.

14.5.2.14. Management of supermarket business processes. /G. Janelidze, N. Gogilashvili/. Automated Control Systems. – 2014. – #1(17). – pp. 137-140. – eng.; abs.: geo., eng., rus.

Activity of a modern commercial organization exhibits the unification of the inter-related projects and processes. Several projects that are realized simultaneously are built in structure of existing business processes. Thereby, planning of business processes including the requirements of realized projects and external and internal influences of the environment is of key importance. The article presents the organization and management of the supermarket's main business processes, taking into account the achievement of ultimate goals depending on changing parameters of external and internal environment. Such approach to the organization and management of business processes will increase competitiveness of a supermarket. Fig. 1, Ref. 4.

Auth.

14.5.2.15. Role and significance of SNA (System of National Accounts) in economy. /Sh. Metreveli/. Caucasus International University Herald. – 2014. – #7. – pp. 89-92. – geo.; abs.: geo. eng. rus.

System of National Accounts (SNA) is an internationally agreed standard set of recommendations for the calculation of indicators of economic activity in accordance with clear rules of accounting at the macro level, based on the principles of economic theory. This modern information system is used actually in all countries of the world to describe and analyze the development of the market economy at the macro level. Indicators and classifications of the system reflect the structure of the market economy, its institutions and functioning mechanism. In order to clear out what happens in the economy and to identify the most important results of the economic process some way is needed to organize information about economic entities themselves as well as the various operations they carry, their assets and liabilities. This arrangement is carried out within the framework of the SNA using special rules and procedures. Nowadays experimental evaluations of sectorial accounts take place in the national accounts of Georgia. Besides the sectorial distribution, it is important to obtain reliable data sources. The main source of indicators displayed in the accounts is regular quarterly survey on household income and expenditure, as well as data of the Ministry of Finance and the National Bank of Georgia. In December 2014 methodological explanations are planned to be published on the official website of the National Statistics Office of Georgia which will reflect in detail the principles of data calculation and application for the formation of sectorial accounts. Ref. 6.

Auth.

14.5.2.16. Motivation paradigm in comparative management. /A. Katukia/. Caucasus International University Herald. – 2014. – #7. – pp. 97-101. – geo.; abs.: geo. eng. rus.

The work deals with motivation as the most basic function of management, because by development of competition the role and significance of motivation is getting on a higher step. The article begins with preindustrial theories about motivation and the author shows its genesis and how motivation arose as a phenomenon and developed as scientific issue; the author mentions reasons of its development as an object of scientific study. The author also analyzes and criticizes some theories and describes modern studies and researches. At the end of the article the situation in Georgia is discussed and the author's research is presented. Ref. 10.

Auth.

14.5.2.17. Possibilities of using Gantt chart in audit management process. /T. Kikvadze, I. Parseghashvili/. Business-Engineering. – 2014. – #4. – pp. 55-57. – geo.; abs.: geo., eng.

The article discusses the advantages of using Gantt chart in the process of planning different resources in audit management process. Necessary conditions for successful solution of this task are to reduce the audit process for which are necessary to calculate the time parameters and define needed human resources for current operations' desired effect with the minimum amount of financial costs. The article provides a detailed analysis of the Gantt chart making stages and variations of distribution of resources included in the planned chart implementation process. Fig. 2, Tab. 2, Ref. 4.

Auth.

14.5.2.18. Marketing research of Georgian wine export. /T. Bidzinashvili, T. Abuashvili, T. Tsereteli/. Business-Engineering. – 2014. – #4. – pp. 187-189. - geo; abs: geo, eng.

After Russia's embargo restrictions on the export of Georgian wine and its growth has been fixed only since 2011. In 2013, Georgian wine returned to the Russian market with noise, but that year the wine was successful not only on this market. In 2014, 15.4 million bottles of Georgian wine Georgia were sent for sale to 19 countries that is 243% higher as compared with the same period of the previous year. In general, it should be noted that an increase in wine exports, in addition to opening new markets, was due to the expansion of production in the country. The appearance of new industrial possibilities is important against the background that, in addition to Russian market, Georgia has to master the Belarusian export quotas; the mastering of the EU market is associated with difficulties of compliance with European standards and regulations. Hopefully, Georgia's Deep and Comprehensive Trade Agreement will open new prospects for Georgian wines on the EU market. Ref. 5.

Auth.

14.5.2.19. Genesis, problems and perspectives of Georgian antimonopoly activity. /S. Pavliashvili, L. Jangulashvili/. Metsniereba da Tskhovreba. – 2014. – #2(10). – pp. 12-20. – geo.; abs.: geo., eng., rus.

The work deals with the prehistory of antimonopoly activity in Georgia as well as the stages of the functioning of Antimonopoly Service. It shows that effective Antimonopoly policy depends not on how "strict" or "weak" are the rights of this service but on how accurately is established the legal and institutional base, how the political view of the authorities is expressed as well as the professionalism of the employees of the service. There is a brief summary of the new competition law in this work. It has been concluded that it should be developed the new program of free and fair competition which lets the government to bring legislation and institutions closer to the best international practices. There are the recommendations to promote free and fair competition. Ref. 4.

Auth.

14.5.2.20. Tendencies and perspectives of the international and regional tourism development. /G. Nadirashvili, D. Jangulashvili/. Metsniereba da Tskhovreba. – 2014. – #2(10). – pp. 20-30. – geo.; abs.: geo., eng., rus.

The work explores the tendencies and perspectives of the international and regional tourism development based on the analyses of the financial earnings and on the number of entering tourists in the world and according the macro region. The above-mentioned gives a broad picture how effectively the tourist resources of the countries have been used and what the particular geographical destinations in 1990-2004 and 2000-2010 years were achieved, as well as the perspectives for 2020 years. Tab. 5, Ref. 10.

Auth.

14.5.2.21. Modern individual's requirements to quality. /I. Adeishvili/. Metsniereba da Tskhovreba. – 2014. – #2(10). – pp. 50-52. – geo.; abs.: geo., eng., rus.

The study describes the human's requirements to quality. The study discusses five levels of quality according to the Maslow theory. The quality problems are given in competitive circumstances. It also talks about the quality of philosophy stages. The author refers to the National Food Agency's activities within Ministry of Agriculture and expresses several opinions regarding improvement of a quality. Ref. 5.

Auth.

14.5.2.22. Georgian hazelnuts in the world market. /A. Zedginidze/. Metsniereba da Tskhovreba. – 2014. – #2(10). – pp. 70-74. – geo.; abs.: geo., eng., rus.

The work reviews the economic significance of Georgian hazelnuts, the present status of their production and demand for them in the world market. The world statistics associated with hazelnut spread, production and marketing in Georgia and on the world markets for the last years are presented. Tab. 1, Ref. 4.

Auth.

14.5.2.23. The principles of market infrastructure formation on the drainage territories of Kolkheti Lowland. /R. Beraia/. Science and Technologies. – 2014. – #2(716). – pp. 30-32. – geo.; abs.: geo., eng., rus.

To establish a market infrastructure on Kolkheti Lowland, it is necessary that associations of farms be formed on its drainage territories; this would ensure compensation for the costs of land-reclamation organizations incurred during performance of the first-, second-, as well as third-order drainage works; it is also promising for forming branchless commercial banks (mainly joint-stock). Ref. 4.

Auth.

5.3. Educational sciences

14.5.3.1. M-Learning in education - problems and perspective. /M. Gegechkori, V. Bakhtadze, T. Lominadze, M. Tevdoradze, T. Kaishauri/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2014. – #18. – pp. 213-215. – geo.; abs.: geo., eng., rus.

The essence of Mobile Learning (M-Learning) - modern educational technology is explained in the article. The characteristic of M-Learning, also overview of its main features and factors that determine the increasing demand for mobile learning is given. The possibilities of involving and use of M-Learning in the process of teaching and learning in educational institutions as well problems and perspectives of mobile learning is shown. Several advantages and restrictions of this type of learning are considered. The list of categories of mobile learning also the short definitions of these categories is given. Ref. 7.

Auth.

14.5.3.2. Engineering education in Europe: preparation for professional engineering standards – CDIO initiative. /O. Zumburidze, G. Dzidziguri, T. Lominadze, N. Zhizhilashvili/. - Automated Control Systems. – 2014. – #1(17). – pp. 7-10. – geo.; abs.: geo., eng., rus.

Engineering education is one of the priorities of the European educational system. There are developed number of standards and initiatives that have been successfully implemented in the educational process of leading European universities in order to issue competitive professional engineers of high quality. The paper represents the results of the researched conducted within the frame of the project ENGITEC ("Modernizing higher engineering education in Georgia, Ukraine and Uzbekistan to meet the technology challenge", 530244-TEMPUS-1-2012-1-SE-TEMPUS-JPCR), funded by the European Commission under the TEMPUS grant competition. Ref. 4.

Auth.

14.5.3.3. Analyses of engineering educational curricula in advanced European universities: best practices from UK (University of Leeds), Sweden (Kungliga Tekniska Hogskolan) and Italy (Politecnico Di Torino). /O. Zumburidze, G. Dzidziguri, T. Lominadze, N. Zhizhilashvili/. Automated Control Systems. – 2014. – #1(17). – pp. 11-16. – geo.; abs.: geo., eng., rus.

Within the frame of the project ENGITEC ("Modernizing higher engineering education in Georgia, Ukraine and Uzbekistan to meet the technology challenge", 530244-TEMPUS-1-2012-1-SE-TEMPUS-JPCR), funded by European Commission grant competition TEMPUS, there was conducted researches of Engineering educational programs in leading European engineering universities. The paper presents the results of this research on the bases of the Mechanical Engineering program. Fig. 2, Ref. 4.

Auth.

14.5.3.4. Modern education methods for built-in control system study. /N. Mchedlishvili, I. Mosashvili, I. Davitashvili/. Business-Engineering. – 2014. – #4. – pp. 40-42. – geo.; abs.: geo., eng.

The control system using the Matlab/Simulink and the FPGA board has been studied. The library was built and design used by the standard Simulink DSP Builder with discrete integrators, PID controller, PMW generator and A/D controller and represents a FPGA implementation. "Case study" method has used to demonstrate the control system with built-in Matlab / Simulink environment. Fig. 4 Ref. 4

Auth.

5.4. Sociology

14.5.4.1. Application of biometric technologies in the electoral processes. /A. Prangishvili, L. Imnaishvili, M. Bedineishvili, N. Kirkitadze, Z. Matsaberidze/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2014. – #18. – pp. 25-30. – geo.; abs.: geo., eng., rus.

The paper presents the advantages and problems of using biometrics in electoral/election systems. Perspective protocol of biometric election system is proposed in the work. Results are analyzed by using a biometric election system. Fig. 3, Ref. 4.

Auth.

14.5.4.2. Main trends of contemptotary human resources management. /G. Dzidziguri, M. Nonikashvili/. Automated Control Systems. – 2014. – #1(17). – pp. 46-51. – eng.; abs.: geo., eng., rus.

By the Communiqué of the Conference of European Ministers Responsible for Higher Education, Leuven and Louvain-la-Neuve, 28-29 April 2009 the higher education institutions have been asked to pay particular attention to improving the teaching quality of their study programmes at all levels. For this purpose the work provides to identify higher education institutions' personal qualification and competencies and their development ways. In particular, it reviews the Behaviour Engineering Model (BEM) developed by Thomas Gilbert and shows how to use opportunities of this Model. The Model provides us with a way of systemically identifying barriers to individual and organizational performance. Crucial elements for a successful functioning of any organization are job analyses and competency design of positions. Hence, these two aspects are very important in human resources management processes. Objective matching of an employee with his/her job tasks can only be based on a job analysis assessment results. Also is given concrete actions by author's version to solve the raised problems. Tab. 1, Ref. 5.

Auth.

14.5.4.3. Test reliability for professional selection process. /M. Nonikashvili/. Automated Control Systems. – 2014. – #1(17). – pp. 141-144. – eng.; abs.: geo., eng., rus.

Selection and distribution of professional staff in the workplace, selection of candidates for targeted training assumes concrete expression in modern conditions. Properly diagnose to an individual ability contributes the selection of a suitable profession of each person's abilities and propensities. An objective assessment of the tests can be achieved through a well-designed and flexible system. It is essential to measure the test reliability of during a professional selection testing. In this work is given reliability assessment methods and provides recommendations related to this issue. Ref. 4.

Auth.

14.5.4.4. The problem of measuring intelligence in modern education. /J. Nikuradze, V. Meladze, V. Kvintradze/. Automated Control Systems. – 2014. – #1(17). – pp. 160-163. – eng.; abs.: geo., eng., rus.

Measurement of mental abilities became relevant in the first half of the 19th century. The first study in this area belongs to Galton. Galton is considered the founder of the empirical approach to intelligence. Today according to I.V. Useltsova technique has the advantage of "Ravens Progressive Matrices" proposed by L. Perouzm and J. Raven. Ref. 3.

Auth.

14.5.4.5. Intelligence and its some models. /J. Nikuradze, V. Kvintradze, V. Meladze/. Automated Control Systems. – 2014. – #1(17). – pp. 164-167. – eng.; abs.: geo., eng., rus.

The paper deals with the issues related to intelligence. In spite that the problem has been studied for a long time there is still no universal definition of intelligence. Several views (models) of several authors on the essence of intelligence are given in the article. Irrespective of many differences, these models have many common features, which are presented in the article. Ref. 4.

Auth.

14.5.4.6. The social-geographical research of quality of population life in the regions of Georgia with the development of new and alternative research methods. /N. Gavardashvili, A. Gavardashvili/. Science and Technologies. – 2014. – #2(716). – pp. 54-60. – geo.; abs.: geo., eng., rus.

With the aim of defining quality of life in the regions of Georgia (Signaghi, Dusheti, Gori Districts, Cities Rustavi, Batumi) the sociological survey was carried out during May 1-21, 2014. 300 respondents participated in the survey. The respondents were chosen by random selection. The respondents assessed the criteria defining the quality of life with scores from 1 (the lowest) to 5 (the highest). With the aim of defining quality of life (its qualitative and quantitative meanings area changing from year to year) the mathematical model containing the following eight components was developed. They are: life security, environmental problems, healthcare quality, education system efficiency, gender status, economic state of population, socioeconomic state of the country, status of a person in the society. Fig. 1, Tab. 1, Ref. 6.

Auth.

5.5. Law

14.5.5.1. “Right to die” in dramatic section of dimensions. /M. Ugrekhelidze, E. Gotsiridze/. Caucasus International University Herald. – 2014. – #1. – pp. 36-52. – geo.; abs.: geo. eng., rus.

Is the request of euthanasia a natural right “reasonably alleged by a human being?” Right to euthanasia has as much “chance” to exist, as the other fundamental human rights do. It emanates directly from “human dignity” and core principle that the human being must always be the end, not the means. It is as natural, inborn, inherent and “reasonably alleged by a human being,” as the other Fundamental Rights and is based on the idea of fundamental justice. Ref. 11.

Auth.

14.5.5.2. Rights and values - guarantees and the reality. /M. Tsatsanashvili/. Caucasus International University Herald. – 2014. – #7. – pp. 53-59. – geo.; abs.: geo. eng. rus.

The article is devoted to the philosophical and legal understanding of real guarantees for human rights protections that introduces a new model of dialogue between the State and society. Shown is the importance of the main value of this idea - logical axioms of dignity and freedom to create real guarantees of rights protection. Analyzed is the correlation value of the rights and obligations in the formation of the legal system, which is a tool for implementing the rights and the guarantee of state obligations. Substantiated is the importance of ideology and psychology in the practical sphere of right protection guarantees - in legislation and the realization process of the law. On the basis of the displacement methods from the abstract to the concrete and legal modeling reasons for the decline of the effectiveness of instruments of human rights protection in the early 21st century are given. Formulated is a model of overcoming the crisis and achieving consent in this field. The advantage of this new model is the self-organization of the legal system on such principles as: 1. The right is not only the supreme value, the dignity and freedom should also be reflected in rights; 2. Not only the State and the law are rights protection guarantees, an ongoing dialogue on the establishment of correlation systems of rights and obligations between society, the State and the individual should not be disregarded as well. Ref. 6.

Auth.

14.5.5.3. The object of entrapment – clarity upon the basic issue. /P. Guruli/. Caucasus International University Herald. – 2014. – #7. – pp. 60-66. – geo.; abs.: geo. eng. rus.

The issue of entrapment attracted the attention of scholars as early as in the 19th century. Despite almost two centuries of research, controversies around it are still alive. Some scholars support the idea of complete criminalization of this conduct, while others advocate for its partial legalization. Besides writers relatively rarely concentrate on the object of entrapment and substantial number of the views expressed upon the matter needs further sophistication. Since the object of a criminal offence is valuable idea, the protection of which underlies the criminalization of the conduct, even the slightest misunderstanding with respect to it may result in distortion of the legal practice. Therefore, we need to bring an utmost clarity to the issue of the object of entrapment. The different historical backgrounds led to considerable distinctions between approaches developed in the civil law countries and common law countries. A comparative analysis of these divergent concepts might significantly complement our knowledge on the matter. The objective of this essay is to develop a scientific approach useful as a practical commendation in legal life; to bring clarity upon the basic issue. Ref. 28.

Auth.

14.5.5.4. Traditional and contemporary evaluation of engagement institute in legal and civil terms. /N. Rosefashvili, N. Ivanelashvili/. Caucasus International University Herald. – 2014. – #7. – pp. 75-79. – geo.; abs.: geo. eng. rus.

Mankind has acquired lots of traditions during the century-old historical development; some of them being still kept. One of the most important and viable traditions is marriage, while engagement is an exceptionally interesting part of it. Exactly traditional and contemporary legal aspects of the engagement institute are the main object of our review. Engagement was and is a pre-marriage agreement that is made between woman and man and comes to an end with marriage. Because of its importance, the engagement custom gradually found itself in legal regulation sphere. In some modern states (for instance, Turkey, Germany) different aspects regarding engagement are represented in legislation. In Georgia, the engagement institute is more traditional and less legal. Some aspects regarding engagement need to be perfected in Georgian legislation. Ref. 10.

Auth.

14.5.5.5. Legal status of unwed mother with illegal children - general overview. /L. Chiglashvili/. Caucasus International University Herald. – 2014. – #7. – pp. 80-84. – geo.; abs.: geo. eng. rus.

The article refers to survey and analysis of problematic issues regarding the legal status of unwed mothers. Specifically, the topic for review covers the cases of women, who delivered babies out of wedlock and undertook a hard burden of single motherhood. Such women require certain privileges and support on the part of the government. Although, international law has greatly affected the formation of Georgian legislation and the mechanism of protecting women's rights, most of international norms are still partially implemented in Georgia. The main purpose of the article is to settle legal regulation of social and moral issues of single mothers in Georgia in the fastest and most efficient way on the legislative base of European countries. Ref. 18.

Auth.

14.5.5.6. Aspects of civil protection of honor, as a form of privacy life manifestation. /M. Bichia/. Metsniereba da Tskhovreba. – 2014. – #2(10). – pp.126-133. – geo.; abs.: geo., eng., rus.

The study showed that sociological and legal content of honor plays an important role in determining the ontological nature of honor. In addition, the honor and dignity are different categories, particularly in the civil law sense. However, the honor and dignity in the legal point of view are characterized by the rights of requirements that are similar to all legal persons, as a human. Ethical and legal aspects of dignity and honor, also other important issues relating to subject of discussion of this article are considered in detail. Ref. 26.

Auth.

14.5.5.7. The oath as the confirmation in accordance to the Book of Law by Vakhtang VI. /M. Kopaliani/. Metsniereba da Tskhovreba. – 2014. – #2(10). – pp.133-138. – geo.; abs.: geo., eng., rus

Determination of the rights and functions of public officials of state organizations, gathering of the ancient Georgian legislation sources and foreign sources are connected to the name of Vakhtang IV in Georgia, which is depicted in the Book of Law written by him. Vakhtang IV was called "the creator of laws" like Roman Emperor Justinian. In the Book of Law, along with the many issues, the talk goes about list of different evidences, and namely about the role and purpose of the oath in our country, subject of oath, about the people making the oath, legal relationships generated from the obligation and based on oath. Ref. 6.

Auth.

14.5.5.8. Death penalty in Georgia and Former Eastern Bloc Countries. /G. Asatiani/. Metsniereba da Tskhovreba. – 2014. – #2(10). – pp.142-147. – geo.; abs.: geo., eng., rus.

The article reviews death penalty as a type of punishment that had been used in Georgia from the ancient times till the end of 20th century. It contains a brief description of legislation in both feudal and soviet era, namely, the crimes for which death penalty as the capital punishment was used in different historic periods of time. The article also speaks about the way that the Georgian state and the law have passed concerning such an important issue as a refusal of death penalty as the capital punishment. Along with the Georgian example, it touches the experience on the use and subsequently on the abolition of death penalty in the countries of former "socialist block". There are also research results conducted by different organizations in different periods of time about the attitude of the society towards the death penalty. The article views international legislation, particularly international conventions and agreements that regulated and still regulate the possibility of use of death penalty in the civilized world. Namely, it is applied to crimes and cases that were committed for which international legislation allowed death penalty as a possibility of use of a punishment. It also talks about the modern world's views, arguments often presented by the supporters and opponents of death penalty abolition, principles of humanism and state competence on using the capital punishment. In conclusion, the author stresses his own opinion on the problematic issues in the article. Ref. 5.

Auth.

14.5.5.9. Social and material-technical guarantees of judges' independence. /K. Koberidze/. Metsniereba da Tskhovreba. – 2014. – #2(10). – pp.148-151. – geo.; abs.: geo., eng., rus.

The article reviews inferences made by Consultative Council of European Judges and recommendations by Committee of Ministers of Council of Europe about social and material-technical guarantees of independence and the rules of financing courts in some of the European countries. Moreover, in this regard, the existing condition in Georgia, recent judicial reforms and legislative amendments reinforcing the establishment of fair justice are also considered. Ref. 7.

Auth.

14.5.5.10. Intersection of human rights and international investment law: some brief observation. /G. Khatidze/. Law and the World. – 2015. – #1. – pp. 6-20. – eng.; abs.: geo., eng.,

The ultimate goal of IIAs, as different from the rationale of human rights, is to promote and protect investment flows in capital-importing states. Notwithstanding those two different areas of international law, intersection of international investment law and human rights, as evidenced by some recent investment cases where investment tribunals had to engage with human rights issues in investment arbitration, is

obvious; furthermore, characterized with growing trends. Considering a growing process of globalization and interdependence of public and private actors, as well as a power and an influence of foreign direct investment makers, it becomes obvious that the IIAs should be converted from *one pillar* into *double pillar* mechanisms wherein those investment agreements and treaties should seriously consider various human rights issues. Without that approach, intersection of human rights and investment issues is concerned with substantive as well as procedural difficulties. Ref. 60.

Auth.

14.5.5.11. European Court of Human Rights' advisory opinion: pros and cons. /I. Kelenjeridze/. Law and the World. – 2015. – #1. – pp. 21-30. – geo.; abs.: geo., eng.

This study explores Legal Aspects of Advisory Opinion which is one of the functions of the European Court of Human Rights. The study describes positive as well as those problematic issues of Advisory Opinion which have been outlined in Protocol No.16 to the Convention on the Protection of Human Rights and Fundamental Freedoms. The aforementioned topic has not yet been explored from a legitimate perspective. The function of Advisory Opinion, as proposed by the European Court of Human Rights, is to provide a legal guideline since a political body may not properly decide a legal issue. Provision of an Advisory Opinion to the highest national jurisdictions relating to pending cases, as a novelty introduced by Protocol No.16, may itself limit the independence of and cause the impact on national courts. Apart from that, the European Court of Human Rights may itself be impacted by its Advisory Opinion as a decision of national courts could be appealed to the European Court of Human Rights. Ratification of Protocol No.16, therefore, reduces the level of independence of national jurisdictions. This study aims to analyze those risks within the scientific level in context of legal measurement. Ref. 22.

Auth.

14.5.5.12. New considerations on Sino-European relations from the perspective of the global balance of power; the mirage of the silk road. /D. Popescu/. Law and the World. – 2015. – #1. – pp. 31-56. – eng.; abs.: eng.

The world today is a mess - there is no doubt about it. But probably this is also how the contemporaries of other historical times saw their present. We could rather say that the international order is difficult to predict at the beginning of a century which is already dominated by very confusing moves and combinations. Using the author's own means of research and observation (field research, the perception of reality from the perspective of the study of history, and a compared dimension), this article wishes to shed some light on a part of the role played by the European Union in the international policy under the circumstances of the fast transformations suffered by the global economic and security environment. The strategic relation with China is worth discussing at several levels (depending on the various categories of interests); our considerations about the course of the strategic partnership between the two powers and about the current evolutions of the international scene try to provide only some necessary benchmarks for an overall understanding of this diplomatic closeness. The United States and Russia are global phenomena with complex, eventful trajectories and a direct impact on modern universal history. Having emerged on the international arena approximately at the same time, the evolution of the European Union and China (the name Zhōngguó means the Middle Kingdom) is not reflected in the adoption or appropriation of the features of the old dualist model generated by the two ideologically opposing groups, the West and the East. They both try specific governing and extension formulas: the first chooses the road of the European integration and thus stands out in the classical landscape of intergovernmental cooperation and transnational dialogue between the states and the second counts on the advantages of its physical architecture which generates prosperity, to make its presence felt on the global scene. Last but not least, the article wishes to bring forward, within a certain contextual framework, those essential elements of civilisation which provide an easier understanding of the surrounding political and economic realities, advancing new reflection leads. Ref. 104.

Auth.

14.5.5.13. Hong Kong, China - 1997 (What is the way to Abkhazia?!). /J. Gakhokidze, S. Midelashvili/. Law and the World. – 2015. – #1. – pp. 67-75. – geo.; abs.: geo., eng.

Despite of twenty-year efforts of Georgian Government, International Community and Friendly Countries of Georgia, the situation in the conflict resolution is not getting better. Russian-Georgian War in 2008 turned out to be fatal for Georgia the disastrous results of which radically changed the political reality of the region. The results of war encroached the national interests of Georgia, including the prospects for conflict resolution in the first place. 20% of Georgian territory is occupied. After the war, we completely lost the control on the Kodori gorge and Akhagori region. While the International Community and even the Russian Federation have repeatedly recognized Georgia in its borders, Russia, neglecting the fundamental principles of International Law (in particular, the territorial integrity) recognized Abkhazia and so-called South Ossetia as Independent States. Unfortunately, after the war, Abkhazia and so-called South Ossetia were considered towards Georgia as separated regions. Under such circumstances, it became necessary to search for new ways of conflict resolution based only upon real politics. Real politics is non-alternative and the only right way

to peacefully settle the conflicts. The use of war and violence to accomplish this is nonsense and nothing more. Apparently, based upon the new political realities, a different strategy is necessary for both Georgian Government and International Community to take the conflicts out of deadlock. Hong Kong is a very interesting phenomenon for us because its return to the Mother Country on the first day of July 1997 was truly a unique event and the current reality. Therefore we consider it is important to analyze historical as well as political-legal and economic aspects of the solution of the conflict like Hong Kong and draw possible parallels, search for similarities and differences between Georgia and its separated regions. Ref. 6.

Auth.

14.5.5.14. Applicability of natural normative order to the economic, political, social and legal systems in the light of human rights. /B. Savaneli/. Law and the World. – 2015. – #1. – pp. 84-97. – eng.; abs.: eng.

This article is a pioneering scientific work at the intersection of natural and human sciences, which aim is to ensure sustainable peace and prevent global economic, political, social and legal disorder under the aegis of the Bill of Human Rights. The proposed theory offers a new mechanism to overcome existing disorders and to prevent further disorders, pushing mankind to move from the closed circular position on the position of spiral development. The paper serves as a fruitful source of new ideas for researchers, professionals and successful students working in the area of physics, mathematics, biology, philosophy, anthropology, sociology, economics, and jurisprudence or connected areas. Ref. 5

Auth.

14.5.5.15. Progressive method of taxing on income. /E. Shubitidze/. Law and the World. – 2015. – #1. – pp. 89-109. – geo.; abs.: geo., eng.

Progressive method of taxing personal income is one of the most effective ways of distributing financial resources among taxpayers. This article aims at emphasizing the advantages of progressive taxation compared to proportional method. Though, herewith we highlight the risks to be considered when acquiring the progressive taxation method. The essay suggests discussing alternative principles to justify the personal income tax, which have been formulated recently and tend to acquire rising attention among analysts and tax law scholars. The essay aims to measure the progressive method of personal income taxation in legal perspective, by setting aside economic factors. Doing so, we may doubt the essay will fail to reflect the objective reality, still it offers alternative legal point of view and strengthens the ground for legal dispute within tax law as interdisciplinary study. Facts and reasoning lead to the following statements: taking into account the inequality measures in Georgia, given the GINI coefficient, resource redistribution is by all means the task of leading priority, to achieve diminishing social inequality and to guarantee equal opportunities for self-realization and promotion of democracy, etc. Ref. 15

Auth.

14.5.5.16. Function of judiciary power in the enforcement process. /Z. Chkonia/. Justice and Law. – 2013. – #3(38). – pp. 122-127. – geo.; abs. eng.

As a result of analyzing the opinions of founders of the theory of division of power and those of the thinkers referred to in this paper, we can conclude that the enforcement function should not be included within the competence of the judicial power, because performing such function will violate the balance that should be protected pursuant to the principle of the division of power. This is why the procedural (and not the agency-level) control of court is necessary not only over the enforcement of the judgment delivered by the court itself, but also during the enforcement proceedings in general, which from its side serves the goal of protecting the lawfulness of this process and effective performance of enforcement, and thus securing the protection of rights of both a creditor and a debtor in the process. Ref. 20.

Auth.

14.5.5.17. Evolution of civil enforcement law in Georgia. /Z. Chkonia/. Justice and Law. – 2014. – #2(41). – pp. 122-132. – geo.; abs.: eng.

The following can be concluded based on a historical-legal analysis of the development of the enforcement proceedings in Georgia: Study of the Georgian law of the feudal era enables us to conclude that there were effective mechanisms of enforcing the court judgments and other judicial acts, which of course represented significant safeguards for protecting the parties of enforcement. There used to be a refined and effective system of legal proceedings in the kingdoms-principalities of Georgia, which was gradually replaced since joining Russia in 1801 by the clearly demonstrated reactive legal proceedings, which was based on the inequality among nobility ranks. Consequently, instead of the refined enforcement system, which existed before this, we ended up with a completely ineffective system of enforcement and legal proceedings in general. In regards to the development of enforcement proceedings and the civil law proceedings in general, we should say that it was a progress to implement the judiciary reform in 1864 and consequently to establish the procedural legislation as a separate field after these reforms. However, we should also point out that

despite the reform, in fact, the enforcement proceedings still remained to be ineffective. The civil law proceedings and, consequently, the system of enforcement proceedings in fact did not change in Georgia during 1918-1921. As for the Soviet period, the enforcement proceedings were less effective in Georgia. Besides, we should point out that procedural rights of the parties were neglected during legal proceedings, in general, at the legislative level. Based on the historical-legal analysis of the enforcement law of Georgia I consider that the administrative independence of enforcement agencies should be ensured as a necessary way towards creation of the effective enforcement proceedings, under the procedural and not administrative control by the judiciary power. Ref. 6.

Auth.

14.5.5.18. Development of judicial organization and civil procedure in Georgia. (historical-legal analysis). /Z. Chkonia/. Justice and Law. – 2014. – #3(42). – pp. 81-101. – geo.; abs.: eng.

The following conclusions can be drawn after studying the development of civil procedure and judicial organization in Georgia: there had been a well-organized system of civil proceedings and judicial organization in Georgia since ancient times, which was replaced after joining to Russia in the beginning of the 19th century by the legal proceedings, where the key principles of the procedure (discretion, adversary process, openness, etc.) were substantially neglected, although these principles were formally recognized at full length by the Statutes of Civil Proceedings adopted in the Russian Empire in 1864; they were incompletely implemented in practice, especially in the Caucasus, where the judiciary reform was implemented with limited scope. After the Soviet annexation, a judicial system was established in Georgia, although it significantly depended on the executive power and its political will. The Soviet legislation did not recognize the separation of state power into several branches. Consequently, the judiciary body was not considered to be a 'power' at all during the Soviet period. The prosecutor's office had a function to oversight the judiciary, which substantially limited its independence, and thus, ruled out the existence of a fair trial. The inquisitorial nature of the civil courts, prosecutor's involvement and its unlimited roles in fact neglected the directional, adversarial and other recognized principles of civil procedure. Ref. 4.

Auth.

5.6. Political Science

14.5.6.1. Some reflections on the improvement of state control. /G. Gvinepadze, T. Gvinepadze/. Transactions of Technical University of Georgia. – 2014. – #4(494). – pp. 64-64. – geo.; res.: geo., eng., rus. The recommendations for government agencies to improve the relationship with the parties which are collaboratively working on addressing challenges posed to the state and are directly responsible for them, as well as on mechanisms to improve the management of these structures are given. Ref. 3.

Auth.

14.5.6.2. Working out of a model of an effective management of organizational system of the region's sustainable development. /A. Prangishvili, M. Macharadze, Z. Gasitashvili, M. Kiknadze/. Proceedings of the A. Eliashvili Institute of Control Systems. – 2014. – #18. – pp. 19-24. – geo.; abs.: geo., eng., rus.

Regional economics considerably determines the regional development. Regional development is characterized by factors of such development. Therefore, in order to determine the problems of management of regional development, degree of impact of factors (indicators) of regional development on the criteria of regional development should be studied. Criteria of regional development are many, so we have inconceivably large range of scenarios in simulated experiment. The work tries to develop the sub-range of factors with high magnitude (high degree of impact) from the range of factors of regional development. This sub-range will be the basis for studying economics of regional development and it is very actual problem. Simulation of social-political situations is effectively used for studying these problems. The work considers the tasks of modeling and studying economical sustainability on the basis of control impact and different types of experiments. Tab. 1, Fig. 2, Ref. 3.

Auth.

14.5.6.3. Prospects of federalism in Ukraine. /G. Goradze/. Caucasus International University Herald. – 2014. – #7. – pp. 67-73. – geo.; abs.: geo. eng. rus.

The article aims at analyzing the possible federalization of Ukraine, which has caught an eye recently and has become the topic of international discussion. Ukraine is a unitary country with one autonomic unit – the Autonomous Republic of Crimea that has the special chapter in the constitution, where its purviews are defined. Ukrainian federalization is compared to Belgium and sometimes even to Canada by some politicians and scientists, so the optimal model for Ukraine is bipolar federalism. Belgian federalism is deeply discussed in the article stating that Belgian model cannot be an example for Ukraine according to several authors. The article has skeptical view about the bipolar and ethnical federalism, as disintegrated processes are generally strong in these federalisms. Other than that the article also includes the disadvantages of any type of

federalization of Ukraine. For instance, the bureaucratization, the delay in decisions, the problem of controlling local political elite, budget crisis, additional expenses, closing of economy and dependence of particular regions on Russian economy. At the end the article also states that the best option for Ukraine is the decentralized unitary state. The optimization of public entities and employees should be done to minimize the negative elements of bureaucracy in governing the country. Ref. 24.

Auth.

5.9. Other social sciences

14.5.9.1. The state and concerns about the refinement of the judicial system. /G. Gogichaishvili, G. Surguladze, M. Akhobadze, G. Gvinepadze, T. Sukhiashvili/. Transactions of Technical University of Georgia. – 2014. – #4(494). – pp. 43-48. – geo.; res.: geo., eng., rus.

Modern computer systems, as compared with their predecessors, have to operate in a territorially and temporally distributed network environment. Furthermore, they must adapt quickly to requirements and changes in the government. This approach to the creation of a system requires detailed agreement of joint actions, not only regarding the judicial matters, but also referring to the relations with higher authorities. The article provides guidance for developers of computer systems with the goal to improve the interactions between these branches of government. Fig. 1, Ref. 4.

Auth.