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## THE ROLE OF AGRO-POLICY IN EFFICIENT USE OF AGRICULTURAL RESOURCE POTENTIAL

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**Summary.** Agricultural policy, based on a more efficient use of agricultural resource potential, which includes solving the problems of socio-economic development, is manifested in the importance of the country's economic development. From the point of view of neutralizing the negative impacts of global processes in conditions of limited resources, fulfilment of demand with the local production is characterized by a peculiar role in macroeconomic stabilization. In recent years, a number of measures have been taken to achieve positive results in these areas, including more efficient use of resource potential in the agricultural sector. These measures, including the modernization of production and the expansion of innovation, by aiming at the efficient use of economic resources, constitute priorities for the influence of the state on processes.

**Keywords:** resource, efficiency, quality, import, demand, investment, improvement.

Improving the efficiency of the agricultural sector at the current stage of development of the national economy is considered as one of the priorities of state economic policy. From this point of view, the implementation of an agrarian policy prepared to solve the problems of socio-economic development, based on a more efficient use of the resource potential of agriculture, is showing itself with its importance.

The expansion of the economic activity of a state has particular importance in terms of neutralizing the negative impacts of global processes in the context of limited resources. So, on the one hand, ensuring competition with imported products, on the other hand, the provision of import substitution subject to payment from domestic production, has a peculiar role in



macroeconomic stabilization. Recently, a number of legislative documents have been adopted, in order to achieve positive results in these areas, including more efficient use of resource potential in the agricultural sector. These documents are primarily aimed at ensuring the further sustainability of the non-oil sector and the development of regions, the diversification of the economy, improving infrastructure and social services in the country in subsequent years [1, p.7].

In order to solve the indicated issues "State Program for the development of agricultural cooperation in the Republic of Azerbaijan for 2017-2022", was adopted as well. In developed countries, producers of goods also get the opportunity to work effectively in cooperatives, combining their agricultural property (land, agricultural machinery and other resources) on the basis of the principle of voluntariness in order to increase the profitability of the economy and minimize costs [2, p.11].

"The Strategic Roadmap for the Production and Processing of Agricultural Products in the Republic of Azerbaijan" also addresses problems associated with the use of resources in the agricultural sector. It is noted that the issue of small land ownership and small farms currently has a special influence among the problems that impede the competitive abilities of the agricultural sector in the country. Very low level of organization of small farms creates difficulties both in paying for their resource requirements and in the issue of entering the market [3, p.17].

Thus, the goal of developing and implementing measures to ensure the efficient use of production resources are: to increase employment and living standards; development of scientific and technological progress; stimulating the supply of demand for goods through local production, expanding the production capacity of the agricultural economy, forming potential to provide access to global markets; ensuring economic and food security of the country and others. From the point of view of the foregoing, several alternative directions of the strategy for the development of agricultural production can be noted:

- stimulation of relatively weak production areas. For this purpose, state efforts are aimed at developing the production of uncompetitive products of foreign manufacturers, even in the domestic market;
- activation of developed industries with sufficient potential for foreign trade operations. In order to achieve this, successful exporters seek to strengthen the state in foreign markets;
- the implementation of the strategy of import substitution by the export-state is trying to produce more goods on its own, import is carried out in the absence of anologic local goods;

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- the creation of non-existing spheres - at the initial stage of the existence of newly created production segments, when it is necessary to ensure price advantages for goods substituting imported goods, state support is aimed at them;

- allocation of resources for efficiently functioning areas — providing state support to the most efficient areas with export potential;

- stimulation of structures that use production resources more efficiently;

This means that measures are expanding to develop the real sector of the economy, movement the potential of import substitution, strengthen the scientific and technical base of agriculture in the conditions of high technology and limited agricultural resources.

One of the priorities for increasing the production potential and the level of its use is government support. It should be noted that at present, indicators of investment and innovative potential in the agricultural sector are at a low level compared to developed countries. This factor negatively affects the use of resources, which generally leads to lower income of the agricultural sector compared to other sectors of the economy, limits the competitiveness of enterprises, and creates problems in the production of competitive products [5, s.57]. From this point of view, by increasing the productive potential of high-tech goods, its scientific and technical base, etc., within the framework of agricultural development priorities, plays an important role in stimulating the efficient use of production potential. In addition, it should be taken into consideration that the indicators of the investment and innovative potential of the agricultural sector largely depend on the characteristics of this important sector of the economy. Therefore, one of the main areas of stimulating activity is the creation of the necessary conditions for increasing the investment activity of agricultural entities.

State policy aimed at the development of the agricultural sector, stimulating the efficient use of production potential, mainly consists of:

- stimulating the development of repeated production processes through normative legal regulation of investment and other financial relations and measures to improve investment attractiveness;

- providing the necessary support to the formation, development and use of the resource potential of its development in the strategic areas of the agricultural sector;

- ensuring the socio-economic development of agriculture in terms of innovation and modernization;

- supporting the development of innovative production of competitive products that can replace products of analogic import;

- creation of conditions for attracting special investments in strategically important areas of agricultural development for the country.

Despite the fact that in recent years a lot of attention has been paid to ensuring the efficient use of production potential in the agricultural sector at the level of the state economic policy, nevertheless there are certain shortcomings in this area. Studies show that although the necessary tools and institutions that ensure the successful preparation and implementation of relevant programs within the framework of this policy serve to accelerate the socio-economic development of the agricultural sector as a whole and increase the efficiency of the agricultural economy, significant resources and opportunities are still not used. This means that it is necessary to use additional tools and institutional means that can provide favorable conditions in terms of the efficient use of production potential in the agricultural sector. The implementation of the strategy for ensuring the efficient use of the production potential of the agricultural sector should be carried out gradually, starting with the stimulation of commodity production, to innovative development by increasing the production of scientific and high-tech products. The basis of this strategy should be the improvement of the quality of products and technologies used at enterprises, the expansion of the application of innovations in production.

Therefore, the state attaches special importance to the following issues in agricultural policy:

- strengthening the role of the state in the development of processes and stimulation through measures to support agriculture;
- increasing the encouraging role of the state in the formation, development and effective use of the resource potential of agriculture;
- achievement of material, financial, innovative and modernized balance of socio-economic development of the agricultural sector;
- expanding financial support for the development of innovative production of local products to compete with imported products;
- creating the necessary conditions to attract investment in strategically important regions for the country's food security.

The study shows that the policy of import substitution in agricultural production and the provision of services is an important part of the state strategy.

The study shows that the policy of import substitution in agricultural production and the provision of services is an important part of the state strategy. From this point of view, diversification of production, as well as specialization are the main conditions for increasing the production of strategic products. From this point of view, promising directions for the development of agriculture are not only the implementation of an active economic policy

that serves to increase production, but also measures to preserve manufactured products, packaging, the formation of a transport network, and the reduction of losses at all stages of reproduction. In addition, ensuring full payment of the country's needs through the active implementation of diversification of production is one of the main goals of agricultural policy.

The solution of these issues, of course, is based on the efficient use of resources. Modernization of production and the direction of innovation in the use of economic resources allows us to prioritize the influence of the state on processes from an economic point of view, focusing on the efficient use of available resources [4, s.36]. International experience shows that one of the decisive directions for increasing the efficiency of the use of production resources is to stimulate innovation, determine the potential for innovative development and ensure rapid implementation. The innovative direction of the efficient use of resources implies widespread application of intensive and advanced technology, results of scientific research in production. Efficient use of resources and their protection is possible as a result of an innovative approach to all stages of agricultural production, the main line of modern agricultural policy.

It is obvious that various regions are engaged in agricultural production in our republic, and it is impossible to talk about those measures that can give positive results, not knowing the specifics of each region, and the level of provision of resources. In this direction, the state is creating opportunities to accelerate the socio-economic development of regions through the efficient use of significant resources with the help of effective tools it uses. Although, in order to increase the efficiency of the regional economies, including accelerating the efficient operation of agricultural production structures, it is necessary to use additional institutional means that can create more favorable conditions.

The modernization of production technologies and the attraction of innovations in production constitute one of the foundations of a high-tech production strategy and this factor is considered as the main condition for improving the quality of manufactured products.

Given the above, it is possible to note the presence of the following opportunities that can ensure the efficient use of resources for the development of the agricultural sector:

- condition for creation of normal legal and economic condition for application of latest achievements of scientific and technological progress, innovative products and technologies;
- growth of employment, decline of unemployment and increase of living standards;

- development of local scientific achievements, an increase in the level of implementation of research results in production as a result of a decrease in the share of purchased equipment and technologies;
- strengthening the country's economic and food security;
- increasing demand for local products and expanding production opportunities;
- necessary environment for internal and external investment inflows;
- providing resource potential and improving utilization.

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**DEVELOPMENT OF REGIONAL INNOVATION SUPPORT  
INSTITUTIONS FOR THE IMPLEMENTATION OF THE BEST  
AVAILABLE TECHNOLOGIES <sup>1</sup>**

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**Abstract.** The best available technologies (BAT) are an effective tool for modernization, improving energy efficiency and greening production. Their implementation is based on periodically updated reference books on the best available technologies, which are formed according to the industry principle and can serve as a guide for enterprises planning their implementation. The practice of introducing BAT in developed countries has shown that the formation of such directories is preferably based on our own technological developments, which is associated with the difficulties of introducing foreign technologies for each country. In this regard, it is advisable to replenish the BAT directories at the expense of their own innovations, which requires the transformation of existing innovation support institutions for the implementation of BAT. The proposed article, using the example of the Rostov region of

<sup>1</sup>This article was prepared with the financial support of the RFBR in the framework of the scientific project №. 19-010-00860 "Formation of the organizational and economic mechanism for managing the sustainable development of regional innovation systems based on the best available technologies".

the Russian Federation, examines the institutions supporting innovation in the region, suggests possible promising directions for their development in order to ensure the expansion of the flow of innovative developments and their pilot implementation for the formation and updating of Russian BAT guides.

**Keywords:** region, innovation institutes, the best available technologies, reference books on the best available technologies.

The experience of the European Union countries has shown high efficiency of the mechanism for regulating the development of industry and environmental management based on the best available technologies. "Best Available Technologies" (BAT) are "technologies and organizational measures that minimize the impact on the environment as a whole and the implementation of which does not require excessive costs" [1].

Stimulating the introduction of BAT in the manufacturing sector allows us to solve environmental problems by cost-effective methods, helps modernize the economy, increase its energy efficiency, and therefore can be considered as the most progressive and fairly universal way of transition to the most progressive models of economic development.

In the Russian Federation in recent years, significant transformations of environmental and innovation legislation have taken place, which make it possible to talk about the willingness to use the BAT mechanism.

In 2014, a list of areas of application of the best available technologies was approved in Russia [2], "criteria for classifying technological processes, equipment, technical methods, methods to the best available technology" were defined [3].

In addition, as part of the implementation of the national project "Ecology", which began in 2019, a separate federal project "Implementation of the best available technologies" is provided. Since 2016, a special structure has been created - the Bureau of the Best Available Technologies ([www.burondt.ru](http://www.burondt.ru)), as well as technical working groups [4], which ensure the development and updating of BAT guides. By the time the project is planned to be completed in 2024, all BAT guides and current national BAT standards will be updated. Periodic - at least 1 time in 10 years - updating of directories is supposed.

Thus, in general, a regulatory environment has been formed in Russia that ensures the implementation of BAT in industrial enterprises.

The bodies that regulate the issuance of integrated environmental permits, as well as enterprises implementing BAT, can use the BAT directories as a tool to determine their priorities in the modernization and greening of production. Since 2020, for enterprises implementing BAT, it is planned to exempt from environmental charges. In this regard, the BAT guides are an important and central tool for changing the behavior and motivation of

enterprises to implement environmental management in their production systems. In general, the issue of updating and replenishing directories with specific BATs becomes extremely important and fundamental, since their content will largely determine the paths for further development of both the enterprises themselves and the economy as a whole.

Nevertheless, the Russian economy, as well as a number of other countries introducing the BAT mechanism, is characterized by the incompatibility of the latest foreign technologies with current Russian enterprises, both from a technological point of view and from the point of view of their cost. Enterprises introducing BAT may have additional financial barriers associated with the excessively high cost of modernizing the production of equipment based on foreign BAT.

Since in the Russian Federation the regional aspect is quite strongly manifested in the development of the innovation system, it is regional innovation systems that should become suppliers of potential BAT to the market. In this connection, the institutes of stimulation of innovations operating in the Russian regions should be aimed at additional support of relevant scientific research, development and their pilot implementation.

We are talking about potential BAT, since innovative technologies themselves cannot yet be considered as the best available due to their insufficient testing. At the same time, BAT suggest that they are already technologically implemented on a scale sufficient for their industrial use, and allowing to determine their effect both in terms of achieving specific environmental parameters and economic efficiency. This makes them more reliable and predictable for enterprises implementing them.

For this, it is necessary to ensure the synchronization of the work of regional innovation systems and their institutions with the goals of developing and implementing potential BAT.

Rostov Oblast is one of the most developed regions of the Russian Federation and the South of Russia. There is a developed network of innovative institutions that provide incentives for innovative activities of business entities. The Rostov Region also has a number of competitive advantages, among which are its favorable geographical position, high availability of natural resources for the development of the mining and processing industries, and a highly developed industrial complex, which makes the region preferable in terms of analyzing existing innovative institutions and formulating directions for their development for the implementation of BAT.

At present, based on their official information presented on the website of the Government of the Rostov Oblast, the following innovation support institutions operating in the region can be distinguished (Table 1).



**Table 1 - Analysis of the institutions of innovative development of the Rostov Oblast in the context of the possible formation of conditions for the development and pilot implementation of potential best available technologies [compiled by 5, 6, 7]**

Institution	Functionality relevant to the creation of BAT	Possible role in the development and implementation of BAT
1. Innovation Agency of the Rostov Oblast:		
- Regional Engineering Center (REC)	organization of an engineering consulting system for SMEs <sup>1</sup> ; formation of systems of technological and industrial intra-industry subcontracting; ensuring interaction between SMEs and engineering companies, financial institutions; assistance in technological modernization of SMEs on preferential terms; coordination of technological modernization in priority sectors for the region	When introducing the development of BAT as a priority, the formed system will allow for the interaction and cooperation of various participants in the process at the stages of research and development and pilot implementation of potential BAT
- Business Accelerator	search for technical solutions from individual developers, technology transfer centers of universities, research institutes, etc.; examination of the commercial viability of innovative projects and development of a strategy for their commercialization; attracting to cooperation entrepreneurs focused on the creation of high-tech start-up companies, the formation of project teams; assistance in the preparation of a package of documents for early stage investors; fundraising in projects.	It can provide conditions for interaction between the developer and the potential BAT and the implementation organization or enterprise; attracting investment in the development and implementation of BAT.
- Agency of the Federal Fund for the Promotion of the Development of Small Forms of Enterprises in the Scientific and Technical Sphere	implementation of innovative development programs, creation of new and development of existing high-tech companies, commercialization of the results of scientific and technical activities; bringing the scientific idea of sustainable business; independent examination of innovative projects for scientific and technical novelty, financial and economic feasibility, the prospect of market sales of products.	It can create conditions for orienting the research and development vector to the development of BAT
2. Innovation and technology centers (10 centers)	conducting industry research (each center has its own industry focus); stimulation of innovative activity of organizations in the real sector of the economy; attracting qualified researchers and specialists; providing a basis for research, etc.	Development of industry-specific BATs; Attracting and training researchers in the BAT development sectors.
3. Working groups for the introduction of innovative products and innovative developments (11 working groups)	consideration of issues on the analysis of problems and the effectiveness of the implementation of measures aimed at the introduction of innovative products and developments	Analysis of the results of the realization of measures aimed at the implementation of BAT in specific industries and sectors of the economy

<sup>1</sup>Subjects of small and medium enterprises.

Analysis of the institutes of innovative development of the Rostov Oblast in the context of the possible formation of conditions for the development and pilot implementation of potential best available technologies, carried out in tab. 1 shows that, in general, a framework has already been created in the region to stimulate the development and implementation of innovative technologies. For successful integration of goals related to the development and implementation of potential BATs into this system, it is advisable in the future to include, on the basis of intersectoral interaction between executive bodies, the goals and objectives related to the promotion of specifically BAT developments in the functionality of the respective institutions, i.e. to complement their goals and objectives with the concept of BAT, BAT guides and their definition as a potentially large-scale developing market for research and development. It might also be advisable to form a separate intersectoral working group on the development and pilot implementation of potential BATs, including representatives of the authorities regulating the development of industry, agriculture, environmental protection and nature management processes, as well as those responsible for the functioning of the tables. development institutions. At the federal level, it would be possible to propose the inclusion of the development and pilot implementation of potential BATs in the functionality of the Federal Fund for the Promotion of the Development of Small Forms of Enterprises in the Scientific and Technical Field as a separate priority. These measures will contribute to the activation of innovative organizations in the region in the direction of developing potential BAT.

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## USE OF ALTERNATIVE ENFORCEMENT PROCEEDINGS IN RUSSIA

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**Abstract.** The article actualizes the problem of the impossibility of the execution of judicial acts due to the evasion of the debtor from this obligation. To solve this problem, the author proposes a phased introduction of alternative methods designed to ensure the real implementation of solutions. This will require the phased introduction of a new private institution, designed to assess the solvency of the debtor and even ensure the collection of debt out of court.

**Keywords:** bailiff, enforcement proceedings, alternative procedures, private bailiff

The Federal Bailiff Service in Russia is currently the only body specifically authorized to enforce decisions in civil cases, including in cases involving economic disputes. Before the stage of initiation of enforcement proceedings, the collector does not have any particular complexities of a procedural nature, but after the initiation of the institution, it often becomes clear that the debtor has actually ceased activities. His organization (often the main legal form of which is a limited liability company) has not submitted reports to the tax authorities for years, and the bailiff has no choice but to stop enforcement proceedings on the basis of paragraph 3 or paragraph 4 of Art. 46-Φ3 "On Enforcement Proceedings".

In this case, the collector may submit a request for an executive search of the debtor's property. After 6 months from the date of return of the writ of execution, the claimant has the right to present it for execution again. But even this measure does not always guarantee the exactor the actual enforcement of the judgment.

One of the reasons that make it impossible to enforce a judicial act is the legal status and scope of authority of the bailiff. I cannot but take into account the fact that the law gives it the status of a civil servant, and not just a servant who performs any of the internal functions of the FSSP, but

with state-authority powers. In such constructions, it is necessary to guarantee the procedural rights and obligations of the party at the level of the legislative act. Thus, the parties to the enforcement proceedings have the right to appeal against their actions to a higher official, a senior bailiff, who is also the head of the territorial body of the FSSP, or to a court of general jurisdiction in the manner prescribed by the Code of Administrative Procedure of the Russian Federation.

The duties of the bailiff are contained in Article 12 of the Federal Law "On Bailiffs". Among them: the adoption of necessary and sufficient measures for the proper execution of judicial and other acts; providing opportunities for the parties or their authorized representatives, familiarizing themselves with the materials of the enforcement proceedings, including taking copies of them, making extracts, etc.; consideration and resolution of applications submitted to it by the parties of the enforcement proceedings, issuance of relevant decisions, as well as an explanation of the procedure and timing for their appeal; self-removal from enforcement actions in the event of establishing direct or indirect interest in the outcome of the enforcement proceedings, or if there are any other grounds to doubt its impartiality; in the event that this is required for the proper conduct of enforcement proceedings, the receipt and processing of personal data in the volume necessary for this purpose. It is impossible to ignore the authority of the bailiff to search for the person who is the debtor under the writ of execution, as well as property belonging to him; the search for a child under an executive document, which contains a request for his transfer. These circumstances provide the bailiff with the right to carry out activities of a purely investigative nature, such as: 1) contacting credit organizations with requests for the provision of data for operational and inquiry information; 2) to verify documents proving the identity of an individual in cases where there is reason to believe that he or his property is wanted, or if he keeps a wanted child; 3) carry out inquiries, examine documents, conduct inspection of real estate, vehicles and other property belonging to wanted persons; initiate the search for a citizen who is a defendant in a civil case on the basis of a court act.

It should be understood that the enforcement of a writ of execution is an extreme measure. Debtors, realizing that the bailiff will seize the current account, or worse, schedule tenders, withdraw all assets from their organization and the funds in the current account. If this happens, the bailiff will have no choice but to simply state the fact that the debtor does not have any property, and issue an appropriate resolution.

A special place will be occupied by state or municipal authorities, budgetary or state institutions acting as debtors in enforcement proceedings. Such a practice has developed that the collection of funds occurs only on the basis of a court decision and an act of the bailiff.

Another problem is the actual location of the debtor's organization. The territorial division of the FSSP extends its jurisdiction strictly within the boundaries of its administrative-territorial unit, which simplifies and at the same time complicates the work of the bailiff in view of two conditions: 1) the legal address of the debtor's organization refers to the territory under the jurisdiction of the territorial body FSSP 2) the actual absence of property at the legal address. There are even cases where even at the legal address of the debtor there is actually not even a building where, according to the extract from the register, his organization is located!

This state of affairs only contributes to an increase in distrust of the judicial system and of the institution of judicial executors in particular. A reasonable question arises: are any alternative procedures possible that can provide real (rather than formal) satisfaction of the material requirements of the recoverer? And if so, is it necessary to create special institutions for this, part of which will be exclusively private structures, or structures in which the state will also participate, but its participation will be minimal? And does the FSSP system need radical changes?

Undoubtedly, enforcement proceedings are important in any state. If there is no voluntary performance, then with the help of coercion violated rights and the rule of law in society are restored. Great Britain is not an exception, in which its own system of enforcement proceedings is created. Under statutory law, there are a number of regulatory acts that govern enforcement proceedings. Such documents are the Judicial Act of 2003, the Ordinance on Bailiffs of the High Court 2004, the Act on the Tribunals, Courts and Enforcement Procedure 2007, the Criminal and Judicial Act of 2013 and other regulatory acts. Judicial Act of 2003 defines the legal status of enforcement bodies. Division into districts for the purpose of administering judicial enforcement activities is observed in England and Wales. Each of these districts, and there are 105 of them, is assigned at least 1 bailiff. But it happens that 1 bailiff is assigned to several districts at once. There are also bailiffs who are not tied to specific districts; they form the Association of Court Bailiffs at the High Court<sup>1</sup>.

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<sup>1</sup>Martynova N.A., Volkova V.R. "Linguistic aspect of the legal status of the bailiff in England" // In the collection: Science, technology, education: interaction and integration in modern society. Collection of scientific papers based on the materials of the I International Scientific and Practical Conference. 2018. P. 137-139.

This institution applies only in case of non-enforcement of a judicial act. The deadline for the fulfillment of his claims is set to 14 days from the date of removal, and only after this period the plaintiff (collector) has the right to initiate enforcement proceedings. But here is a more complex system of recourse of a judicial act, which boils down to the appointment of a specific bailiff official who will conduct the enforcement proceedings. But in my opinion, this procedure seems even more bureaucratic. And the timing of the approval process is also lengthy.

Under such circumstances, it makes sense to create some alternative mechanism for the enforcement of judicial acts. In the UK, one such alternative is the institution of foreclosers with a very interesting legal status. According to paragraph 63 of the Act on the Tribunals, Courts and Enforcement Procedure of 2007, agents include individuals: acting on the basis of a certificate issued in accordance with the law; protected by “privilege”, that is, having a special status in connection with the implementation of activities on the rights of an employee of a state body; acting not independently, but under the supervision of an authorized entity<sup>2</sup>. This may be a police officer, a tax officer, or even a court officer. Such an institution will certainly help to significantly accelerate the process of enforcement of a judicial act. But such a procedure can be applied only if the debtor could not fulfill the decision against him. Another way is to create a private structure, staffed by qualified personnel with a legal education, experience in the judicial, investigative and Ministry of Internal Affairs bodies, which will carry out these executive actions.

Another global problem is the lack of material incentive. The monetary allowance of a public servant remains low, which provokes staff turnover, and this directly affects the work of the body executing the court decision, since it affects the workload of the official, and therefore the quality of work. And the level of material and technical support objectively does not allow fully and with the least efforts to collect the necessary information on the debtor. In addition, many debtors are already “preparing” for the enforcement proceedings to be instituted against them. The number of such debtors is growing, and the number of enforcement proceedings is growing along with them. S.M. Amantayeva proposes the creation of a unified information base for all individuals based on the FTS system. By combining with this database, the speed of processing a request for information on personal data of a taxpayer increases. But this measure will only solve the problem of proper notification of the debtor about the

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<sup>2</sup>Raylyan A.I. Enforcement proceedings in England // Executive law. - 2015. - №1. P. 39 - 44.

initiated enforcement proceedings against him<sup>3</sup>. I believe that creating something similar makes sense for legal entities and individual entrepreneurs. In some cases, this may even simplify the search for persons who were responsible for managing the organization of debtors; for individual entrepreneurs, this measure will allow to be notified of the initiation in advance, which will make it possible to fulfill the requirements of the executive document on a voluntary basis, without waiting for the forced debiting of funds from the account or description of the property with subsequent sale at the auction.

Recently, more and more emphasis has been placed on institutions whose main task is to reduce the role of the state in resolving disputes arising between participants in civil turnover<sup>4</sup>. For these purposes, a claim procedure was introduced; it was thanks to it that it was possible to significantly reduce the burden on arbitration courts. In addition, it is beneficial both for a recoverer who does not need to go to court and a debtor, he will not incur any legal costs. The mediation procedure also helps to resolve disputes, the task of the court is only to approve the settlement agreement concluded between the parties to the dispute. At the same time, it is completely optional for the parties to resort to the help of these institutions. The parties also have the right to conclude a settlement agreement at the stage of enforcement proceedings.

It is proposed to introduce a similar practice regarding enforcement proceedings. Create a kind of self-regulatory organization that will have a license and is endowed with rights similar to the current powers of the bailiff to request the necessary information about the composition of the property of the debtor, which can significantly increase the effectiveness of the enforcement of a court decision, namely: information about persons who are founders of the organization of the debtor regarding participation in other organizations; on committed controlled transactions by the debtor organization or individual entrepreneur; transactions concluded between interdependent legal entities.

In cases provided for by law, it is proposed that these organizations be given the right to initiate bankruptcy proceedings against the debtor. But this can be done if this organization has one of the areas of activity that is the provision of legal services so that it can be involved as a representative of the applicant.

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<sup>3</sup>S.M. Amataeva "Optimization processes in the activities of bailiffs" // Modern problems of financial regulation and accounting of the agro-industrial complex of the material of the I All-Russian Scientific and Practical Conference 2017 P.198-199.

<sup>4</sup>See for example Kudryavtseva A., Podgorny A. In the pursuit of efficiency // Banking Review. – 2019. - № 1. P. 92 - 93.

For effective work, it will be necessary to equip such organizations with private bailiffs who have passed the qualification exam<sup>5</sup>. To carry out current work, it is allowed to hire assistants who will perform related work, such as sending requests to credit organizations and credit bureaus. The latter is obliged to provide information to the bailiff-executive of the FSSP. It should be noted that the bailiff may also send the same request to ensure the order of the courts.

It would not be superfluous to give such a bailiff the right to engage in private practice on debt collection<sup>6</sup>. However, in practice this may mean ordinary assignment, since it will be more profitable and easier for the claimant to cede the right of claim.

But I must admit that the institution of private bailiffs<sup>7</sup> for a Russian recoverer may seem very costly<sup>8</sup>. Therefore, the replacement of the state bailiff with a private one should occur gradually. But the introduction of institutions capable of assessing the solvency of potential debtors will not only increase the percentage of actual performance, but also assess the possible risks of incurring losses and face the virtual impossibility of recovering them due to insolvency.

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<sup>5</sup>Lapteva S.A., Zolotareva L.I. Enforcement of court decisions: theory and practice // Administrator of the court. - 2017. - №1. P. 25 - 31.

<sup>6</sup>A similar procedure exists in the Netherlands. See Reshetnikova I.V. Reflecting on Judicial Proceedings: Favorites. - M.: Statute, 2019. 510 P.

<sup>7</sup>Usmanova D.R. "On the Model of the Institute of Private Bailiffs" // Time and Law. – 2010. - №3. P.32-34

<sup>8</sup>Drozdova A.A. "Introduction of the Institute of Private Bailiff in Russia" // Executive Law. – 2013. - №4. P. 19-24



**ACTUAL PROBLEMS OF COMBATING THE SMUGGLING  
OF NARCOTIC AND PSYCHOTROPIC SUBSTANCES**

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**Abstract.** This article discusses of the some issues of combating organized drug crime. The historical experience of the fight against drug crime is analyzed and mechanisms for improving legislation in the field of combating the smuggling of narcotic drugs or psychotropic substances and their precursors are proposed.

**Keywords:** Criminal law, Russian Federation, smuggling, organized crime, drug business, drug crime, narcotic drugs, psychotropic substances.

Drug crime has been and remains one of the key socio-political problems facing society and the state. The Russian Federation is pursuing an active comprehensive policy aimed at countering the spread of narcotic drugs and psychotropic substances and their precursors. At the moment, there is a tendency to the formation of transnational drug cartels.

Various, complexly organized criminal communities and structures are being intensively reorganized into powerful transnational cartels, by building new criminal alliances with the foreign branches of the abovementioned drug cartels. As a result, the fight against the above phenomenon acquires the status of a transnational problem at the state level<sup>1</sup>.

In the XXI century, the Russian Federation faced a serious problem of the expansion of the drug business into its territory and an increase in the domestic market of narcotic drugs and psychotropic substances that are atypical for our state (heroin, amphetamines, cocaine). According to UN estimates, Afghanistan supplies 85% of the global volume of morphine and

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<sup>1</sup>Kolosov Yu.M., Krivchikova E.S. International law. - M., 2005. P.504.

heroin, which makes this country a solid monopolist in the market. About 50% of the heroin consumption market is in Europe and the Russian Federation, and the only source is Afghan opium. At the beginning of 2017, more than 580 thousand consumers of narcotic drugs, psychotropic substances and their analogues were registered in the Russian Federation.

At present, the formation and strengthening of the illegal drug business continues in the Russian Federation, this negative trend requires the creation of an effective criminal legal framework to counter this phenomenon. The legislator, in view of the already existing legal framework, makes it necessary to refer to articles of the criminal law that cannot fully comply with the necessary and proper level of the fight against the drug business, as well as those that do not meet the tendency of the constant growth of the drug threat.

The legislator does not give a clear legal definition of the term “drug business” for the law enforcer, which causes certain difficulties in the process of applying the criminal law when qualifying crimes related to narcotic drugs, psychotropic substances or their analogues, which, for the most part, is mediated by the absence of legal regulation of this concept.

Please note that earlier the norm on liability for drug smuggling was contained in Part 2. Art. 188 of the Criminal Code. The object of the criminal attack was public relations regulated by customs legislation, as well as the conditions and procedure for moving goods or other items across the customs border of the Russian Federation. This composition the legislator classified as a crime against economic activity.

Silchenko E.V. formed the criminal law definition of illegal drug business, which is the systematic commission by members of a criminal community (criminal organization) of acts directly related to the illegal trafficking of narcotic drugs, psychotropic substances or their analogues, and a number of related criminal acts aimed at ensuring its functioning, with the purpose of obtaining criminal proceeds and their subsequent legalization<sup>2</sup>.

The crime in part 2 of Art.188 of the Criminal Code of the Russian Federation was the illegal transfer across the customs border of the Russian Federation of narcotic drugs, psychotropic substances, their analogues, plants containing narcotic drugs or psychotropic substances, or parts thereof containing narcotic drugs or psychotropic substances, instruments and equipment located under special control and used for the production and manufacture of narcotic drugs and psychotropic substances, potent, toxic, poisonous, explosive, radioactive substances, radiation sources, nuclear materials, firearms,

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<sup>2</sup>Silchenko E.V. To the question of determining the object of criminal assaults forming the system of illegal drug business // Economics. Right. Print. Bulletin of KSEU. 2013. №4. P. 122.

explosive devices, ammunition, weapons of mass destruction, their delivery means, other weapons, other military equipment, as well as materials and equipment that can be used to create weapons of mass destruction, their delivery means, other weapons, other military equipment, for which special rules are established for moving across the customs border of the Russian Federation, strategically important raw materials or cultural values her in respect of which special rules for the movement across the customs border of the Russian Federation. The volume of the subject of this criminal encroachment necessitated a legislative differentiation, which resulted in the allocation in the Special Part of the Criminal Code of new, independent compositions.

The introduction of Art. 229.1 of the Criminal Code of the Russian Federation was carried out by the adoption of FL № 420 of December 7, 2011. The legislator, in the process of constructing the composition of this crime, allocated them depending on the properties of the object and subject. It follows from this that this composition refers to attacks on public health and public morality.

The subject of a crime in Art. 229.1 of the Criminal Code is the smuggling of the following items: narcotic drugs; psychotropic substances, their precursors or analogues, plants containing narcotic drugs, psychotropic substances or their precursors, or parts thereof containing narcotic drugs, psychotropic substances or their precursors, instruments or equipment under special control and used for the manufacture of narcotic drugs or psychotropic substances<sup>3</sup>.

In Art. 43, the national security strategy of the Russian Federation names the activities of criminal organizations and groups, including transnational, related to the illicit trafficking of narcotic drugs and psychotropic substances among the main threats to public security<sup>4</sup>.

The statistics of the Judicial Department under the Supreme Court of the Russian Federation allows us to draw attention to the positive trend, expressed in a decrease in the number of persons convicted under Art. 229.1 of the Criminal Code of the Russian Federation. So in 2017 - 345 people, including 190 citizens of the Russian Federation, 2018 - 260 people, of whom 171 were citizens of the Russian Federation, in the first half of 2019 - 108 prisoners, 77 of them were Russian citizens.<sup>5</sup>

<sup>3</sup>The Criminal Code of the Russian Federation of June 13, 1996 № 63-FL // SLS "Consultant Plus" URL: [http://www.consultant.ru/document/cons\\_doc\\_LAW\\_10699/](http://www.consultant.ru/document/cons_doc_LAW_10699/). Appeal date 01.11.2019.

<sup>4</sup>Decree of the President of the Russian Federation of December 31, 2015 № 683 "On the National Security Strategy of the Russian Federation" // SLS "Consultant Plus" URL: [http://www.consultant.ru/document/cons\\_doc\\_LAW\\_191669/](http://www.consultant.ru/document/cons_doc_LAW_191669/). Appeal date 01.11.2019.

<sup>5</sup>Judicial Department at the Supreme Court of the Russian Federation // URL: <http://www.cdep.ru/index.php?id=79&item=5081>. Appeal date 01.11.2019.

To solve this problem, it is possible, through a legislative amendment to Art. 229.1 of the Criminal Code of the Russian Federation, to make some amendments in order to increase its criminal legal effectiveness, by differentiating criminal liability through the introduction of special criminal law structures for assistance in the smuggling of drugs and their precursors (by analogy with Art. 205.1 of the Criminal Code).

It is possible to raise the issue in the form of a scientific discussion on the allocation of new, independent compositions from Art. 229.1 of the Criminal Code of the Russian Federation, with the introduction of the appropriate sanction.

Submit to Art. 229.1 of the Criminal Code of the Russian Federation, a note on exemption from criminal liability, in the absence of a different *corpus delicti*, the presence of active repentance and cooperation with law enforcement agencies. Such a legislative technique is effective, based on the analysis of the application of Art. 126, Art. 222, Art. 223, Art. 228 of the Criminal Code of the Russian Federation. This will allow to effectively identify cell leaders, hold them accountable, and therefore destroy these criminal communities, which will help to significantly reduce the supply of narcotic and psychotropic substances.

You can pay attention to foreign experience in combating the smuggling of narcotic drugs, psychotropic substances and their analogues. This experience can be of some value to the legislator as part of the search for ready-made and tested solutions for combating drug crime and the drug business as a whole, as a phenomenon. As an example, one can analyze the Criminal Code of the Republic of Belarus, where the list of qualifying features was expanded by law and one of them indicates the commission of smuggling by a person previously convicted of this crime. In addition, the legislator of the People's Republic of China devoted 9 articles to this criminal act. The attention of the Russian legislator should be drawn to the following qualifying features of Art. 347 of the Criminal Code of the People's Republic of China: resistance to investigation, detention, arrest under aggravated circumstances, armed cover for smuggling and participation in the international organized drug business. These signs cover the objective side of the crime, which, in turn, significantly increase its social danger and require the attention of the Russian legislator, fixing them as qualifying Art. 229.1 of the Criminal Code of the Russian Federation.

Establish an institute of international, inter-agency cooperation on criminal jurisdiction, instead of international treaties adopted in the 90s that do not show the necessary level of effectiveness.

Reforming and modernizing the material and technical support of law enforcement officials, in our opinion, will increase the level of detection of drug-related crimes. It is necessary to allocate budgetary funds to equip with modern technical and special means to improve methods for detecting and fixing committed offenses at the state border of the Russian Federation.

In our opinion, legislative consolidation of these proposals will help to significantly reduce the level of smuggling of narcotic drugs and psychotropic substances, increase the level of detection of these crimes by law enforcement agencies, which will allow to more effectively deal with this transnational problem.

## CREATIVE SELF-DEVELOPMENT OF PERSONALITY: CONCEPT, CONDITIONS, LEVELS, STAGES

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**Abstract.** Analyzing the psychological and pedagogical literature, the authors consider such concepts as self-development, creativity, personality, creative self-development, identify the conditions, levels, stages and factors under which a university student has the opportunity to self-actualize their own creative capabilities.

**Keywords:** personality, self-development, creativity, creative self-development, abilities.

The development of modern domestic education has a relatively steady tendency towards stabilization. This is a consequence of the generally stable economic and socio-political development of Russia after the transformations that took place at the end of the twentieth century. All this time there was a process of scientific understanding of what was happening, which revealed objective trends in the development of national education.

Today, education determines how quickly Russia will move to a democratic and legal state, to a market economy, as well as the country's lagging behind global trends in economic and social development. These trends and the processes and phenomena of modern life caused by them are deeply and comprehensively studied by scientists - representatives of various sciences.

The most global changes in the development of mankind in the modern world are associated with the transition from the industrial society to the information society. E. Toffler wrote about this 30 years ago: "In the past, land, labor and capital were key elements of production. Tomorrow — and in many industries, this tomorrow has already come — information will become the main component" [10, p. 89].

In a situation where knowledge and information become the “fundamental social factor” determining economic development, the role of human capital is steadily increasing, which in developed countries makes up 70-80 percent of national wealth. But at the same time, the requirements for the quality of the intellectual potential of a person who must be ready for lifelong education and for the development of new information technologies are objectively increasing.

Radical changes, the high dynamism of the development of modern society suggest an increase in the role of the professional's personality, his activity, individual vision of events, the ability to independently find information, analyze and synthesize it, make decisions in non-standard professional situations, in the face of uncertainty. A modern worker is required to have a creative approach to solving professional problems, the ability to work in non-standard conditions, constant self-education, the pursuit of personal and professional self-improvement. The ability for professional creative self-development is a requirement of educational standards of the third generation, it becomes a necessary quality of a professional, which is necessary to develop at a university in the process of mastering a basic educational program by a student.

Thanks to *self-development*, the person realizes his abilities, improves himself, as a result of which he becomes the initiator of the self-development of the community in which he is, thereby contributing to the cultural and historical development of society. In solving modern socio-pedagogical tasks of our society, the importance of self-development of the personality of a young specialist comes to the fore. And the graduates of the pedagogical university are faced with the task of forming and constantly improving their abilities for learning and independent work in the conditions of the dynamic development of culture. On the other hand, the formation of students' creative skills, communication skills that help them to determine and act in unexpected, contradictory conditions, fostering the desire for self-development are the challenges facing modern pedagogical education.

A proper understanding of the categories “self-development”, “creative self-development” is impossible without understanding the concept of “creativity”, its psychological, pedagogical, philosophical and social essence.

In the scientific literature, creativity is interpreted differently. Creativity as a type of human activity is characterized by a number of essential features, which each time manifest in their unity. According to V.V. Bailuk “creativity is one of those characteristics, dimensions of a person that reveal him, the main thing in him. Creativity as a type of human activity in its individual and social being is always a form of qualitative development

and acts as a person's ability to create products that are new, original, unique." (Bailuk principles and methods of education and self-education of students).

A.V. Petrovsky, M.G. Yaroshevsky defines creativity as "an activity, the result of which is the creation of new material and spiritual values" [6], and S.L. Rubinstein as "an activity, as a result of which an original and socially significant product is created".

V.I. Andreev defines creativity as "a type of human activity characterized by: a) presence of a contradiction, a problem situation or a creative task; b) social and personal significance and progressiveness, i.e. it contributes to the development of society and the individual; c) presence of objective (social, material) prerequisites, conditions for creativity; d) the presence of subjective (personal qualities, knowledge, skills, especially positive motivation, creative abilities of a person) prerequisites for creativity; e) novelty and originality of the process or result. If at least one of these signs is mentally excluded, then creative activity either will not take place, or activity cannot be creative" [1].

A.K. Spirkin gives the following definition: "Creativity is a mental and practical activity, the result of which is the creation of original, unique values, the establishment of new facts, properties, laws, as well as methods of research and transformation of the material world or spiritual culture." We note that the most common definition of creativity is its definition as the activity of creating something new. In particular, creativity is defined as "the process of creating a substantially new things" (P.K. Engelmeyer); as "a person's activity that creates new material and spiritual values with social significance" [4].

In our opinion, creativity is a person's ability to find information, analyze it, draw original conclusions, create qualitatively new (unparalleled) material and spiritual values based on knowledge, competencies, imagination, intuition. Creation of the new is typical for people who are able to abandon stereotypes, norms, and established values, have developed independent thinking, and easily generate ideas.

To understand the phenomenon of "self-development" of an individual, in our opinion, the statement of E. Fromm that "a person is initially endowed with the *ability to adventure in human self-development*, which depends not only on the individual's mental self-awareness, but also on a number of other factors and guidelines" is interesting [9]. V.A. Zhmurov claims that this is "a characteristic of an individual's internal ability to work on himself, for growth, development" [5].



Consider, what is the essence of creative self-development? V.I. Andreev understands creative self-development of a person as “a special kind of creative activity of a subject-subject orientation aimed at intensifying and improving the efficiency of the “self” processes, among which system-forming are self-knowledge, creative, self-determination, self-government, creative self-realization and self-improvement of a person” [1].

*Creative self-development, as a process, is characterized by the dynamism and activity of the mental aspects of the work that occur at the same time. This is accompanied by the emergence of a new creative principle, which with sufficient creative activity is strengthened, entails the formation of a creative personality, but at a higher level of creative self-development [2].*

S.E. Anisova identifies the following characteristic features of creative self-development:

1. *Consistency and continuity: the process of creative self-development can be represented in the form of a spiral, each turn of which, rushing up, first represents a line of difficulties, overcoming of which allows consolidating what has been achieved and moving on to a new ascent along the spiral path - neoplasms in creative self-development.*

2. A high level of creative self-development can be achieved if there is a formed *individual style of activity.*

3. Creative self-development is always accompanied by *free will*, which is manifested in the choice of forms of activity, means of activity, means of communication, etc.

A personality can fully develop itself only under the condition that the personality itself strives for self-improvement. Therefore, it seems necessary to highlight in the creative self-development of the subject of his motivational sphere. It is also important to take into account the fact that the university should create such conditions in which students would continuously strive for self-realization of their own creative capabilities. This means that the process of university preparation should be considered as a significant stage that stimulates self-development. And, of course, creative self-development of a student is impossible without the active work of his own.

In our opinion, the process of creative self-development among university students takes place in several stages:

1. The stage of motivation, which can be both external and internal. Very often this stage coincides with the beginning of training, i.e. in the first year. The novelty element of the learning process can serve as a catalyst that will lead the student to the realization that the process of development of his personality depends, first of all, on himself.

2. The second stage, the goal-setting stage, at which the student determines what he should do, in which area to improve and in what order.

3. At the planning stage, the student selects areas of activity, distributes over time the development of certain skills and competencies, where he can develop them: in the process of mastering the main educational program or in extracurricular activities and at what course.

4. Then follows the stage of implementation of the planned activity, in which the student actively takes part in research activities, participates in the organization of various events.

5. At the stage of reflection, the student evaluates the work done, makes adjustments to the plans for self-development and the cycle repeats.

Self-development of a student's personality begins with self-knowledge, which is a powerful incentive, good motivation and includes: comparing yourself with colleagues and other people, self-observation, critical self-assessment of your personality and activity results, introspection, following an example or ideal. And the condition of self-knowledge, first of all, is communication, as an active interaction with others in the activity. According to V.A. Slavenin, the art of communication presupposes psychological selectivity, a practically psychological mind, and pedagogical inaction; the ability to identify and take into account the individual typological characteristics of children, induce pupils to action, charge and "infect" them with their own confidence and "energy" [7]. This becomes possible with the creative potential of the student's personality.

Summing up, we can conclude that the creative self-development of the student's personality is their own knowledge of their own potential opportunities and their creative realization in the future not only professional activities, but also social and family life. At the same time, in the process of training and education at a university, conditions must be created in which the student would continuously strive to develop his own creative abilities.

An analysis of the psychological and pedagogical literature, dissertation research [6] suggests that creative self-development of the student's personality in the university educational space can take place if: firstly, when organizing the educational process, the goal is the creative self-development of students and for this purpose appropriate conditions; secondly, the educational environment in which the student is located helps him to realize his own development plans; thirdly, pedagogical assistance and support is provided to young people in their understanding of the essence of self-development and how to achieve it. For this, student conferences are held at the Institute of Social Education, dedicated to issues of self-knowledge, self-development, self-discipline, self-education, etc.

Thus, we understand the creative self-development of students as a continuous process of mastering a student's accumulated experience of generations, both in mastering the main educational program and in conducting scientific and educational events. This is achieved through the efforts of both the teaching staff and the efforts of the student himself, who seeks to develop his intellectual, physical, emotional potential, which he could use in his professional activities.

Analyzing the possibility of creative self-development of students at the Institute of Social Education of Ural State Pedagogical University, we came to the conclusion that it depends on how the goals of the student and the university coincide, how much the student's interests are taken into account when organizing the educational process, how well the teaching staff works in this direction. Based on our own pedagogical experience, we have revealed that the process of creative self-development of a student's personality cannot be spontaneous, it should not depend on circumstances, since it is always recognized by the personality itself. Creative self-development of a person occurs, as a rule, in a creative environment that can ensure the dynamics of the development of students' value systems for self-improvement, therefore the creation of such an environment in a university is one of the main tasks of higher education teachers.

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**MORAL EDUCATION OF PRESCHOOL CHILDREN:  
SCIENTIFIC AND THEORETICAL ASPECTS**

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**Abstract.** The article analyzes the main substantive categories of the concept of moral education. Certain aspects of moral development and education of preschool children are considered. Particular attention is focused on the characteristic components of children's moral education.

**Keywords:** moral education, children of preschool age, moral standards, moral education.

Questions of moral education and self-education of a child's personality have always and at all times interested society.

According to teachers such as L.S. Vygotsky, D. B. Elkonin, L.I. Bozhovich, A.V. Zaporozhets, Y.Z. Neverovich, the period of the origin and formation of ethical instances, moral standards and morality is precisely the preschool age.

Considering the issue of moral education of the individual, I.F. Kharlamov in his studies emphasizes that the observance of moral norms and rules is not based on coercion, but on the consciousness of the individual, on its understanding of these norms and rules and the need to observe them.

According to the researcher, an important role in the context of moral education is played by moral customs, habits and traditions that are cultivated in society. Morality of a personality cannot be based only on its moral consciousness; it becomes more durable when compliance with moral norms and rules takes on the character of habitual ways of behavior and activity [13, p. 145].

An analysis of the scientific literature on the problem of moral education shows that there is no single approach to the content of moral education. But, nevertheless, we can distinguish some approaches to the definition of the concept of moral education, such as cognitive, evaluative-emotional, integrative, worldview, axiological, behavioral (activity), holistic.

In her work, E.V. Chekina focuses on the research of N.I. Boldyrev and N.V. Arkhangelsky, who believe that, in the aspect of the cognitive approach, moral education is the process of the formation of independence and stability of judgments about moral norms that govern human relations and the process of forming the ability to give a meaningful description of moral values [15].

From the position of N. V. Arkhangelsky, the main structural component of the concept of moral education is moral enlightenment aimed at the development of moral consciousness and thinking [1].

A. M. Stolyarenko, studying the problem of moral education, points out the studies of V.P. Vakhterov, P.F. Kapterev, I.F. Kharlamov, who are supporters of the evaluative and emotional approach. In their opinion, the perception of information about morality and the development of one's own value orientations are impossible only at the knowledge (cognitive) level. In this process, emotions and feelings play a large role. Moral education is considered as a process of forming value judgments that characterize the attitude to moral values, human relationships, stability, depth and strength of moral feelings. The core component of moral education in this case is the development of moral feelings, the development of moral assessments and the system of life relations (personal, public, state) [12, p. 211].

A proponent of an integrative position, IP Podlasy, believes that the process of moral education requires taking into account the dialectical unity of the cognitive and sensory experience of the individual [9].

V. A. Slastenin, based on a world outlook approach, interprets moral education as the process of forming an integral moral concept of nature, society, man, which finds expression in the system of values and moral ideals of the individual and society. Accordingly, adhering to the axiological approach, he defines moral education as a specially organized process of internalization of universal values [11, p. 89].

In their studies, B.T. Likhachev and I.S. Marienko consider moral education in the aspect of a behavioral or activity approach, as a process of the formation of stable conscious skills and habits, moral behavior. In addition, it is a process of free moral self-determination and self-management of life, as well as a person's desire for a moral ideal.

The main components of moral education supporters of this approach highlight the formation of skills and habits of behavior, the formation of the ability to make moral choices in the process of diverse activities and communication with people [7; 8].

From the point of view of a holistic approach, in the works of O.S. Bogdanova and L.I. Kataeva, moral education is interpreted as an integral process of the formation and development of the moral personality of a child. The integrity of moral education is achieved when the complex, contradictory life itself is the basis, source and material of the pedagogical process. Morality is formed not only at verbal or activity events, but also in everyday social relations and life difficulties, in which the child has to understand, make choices, make decisions and perform actions based on his knowledge and ideas obtained in the process of moral enlightenment [3, p. 69].

Interesting, in our opinion, is the point of view of L.S. Vygotsky on the system of moral education of children. Lev Semenovitch linked moral education of a person with the rejection of the authoritarian principle of morality, so that every action should be returned to the child in the form of impressions of how he acts on others, that the child should always know the final results (consequences) of his actions [4].

According to the ideas of L.S. Vygotsky, the rules of morality must be assimilated and observed by the child on the same motivational basis as the rules of the game: for the sake of the pleasure of living together.

The child's knowledge of moral standards does not yet speak of his upbringing. It is important that this knowledge is not only acquired, but also appropriated, it becomes its value and a conscious motive for behavior, which will form a child's positively stable attitude to moral standards [4].

Moral education, as defined by Yu. K. Babansky, is a process aimed at the formation and development of a holistic personality of a child, and involves the formation of his attitude to the homeland, society, team, people, work, his duties and himself [2, p. 298].

S. A. Kozlova and T. A. Kulikova give the following definition of the concept of "moral education" - it is a purposeful process of introducing children to the moral values of humanity and a particular society [6, p. 67].

A. G. Khripkova, considering the problem of moral education, believes that this type of education is carried out only in the process of including pupils in various types of practical activity and organizing it in such a way that it contributes to the formation of positive moral relations and personality traits and qualities.

The researcher also identifies the following tasks of moral education [14, p. 188]:

- formation of moral consciousness among pupils. This is a joint activity of the teacher and children, aimed at mastering the rules and norms of behavior;

- development of moral feelings. This task is realized through the influence of the teacher on the consciousness and emotional sphere of pupils;
- formation of skills and habits of moral behavior.

In the process of moral education of the individual, the formation of its morality is important. Children, communicating with peers and adults, coordinate their activities, obeying certain norms, rules and requirements.

In the process of assimilation of moral standards, such a personal characteristic is formed as moral upbringing, which materializes in socially valuable properties and qualities of a person, manifests itself in relationships, activities, and communication. The moral upbringing is evidenced by the depth of moral feeling, the ability to emotional experience. As a rule, moral education is characterized by the maturity of the moral consciousness of the individual: moral education, the ability to analyze, judge the phenomena of life from the position of a moral ideal, give them an independent assessment [13].

According to I. S. Marienko, the concept of “moral education” is the stability of positive habits and familiar norms of behavior, a culture of relations and communication in a children's team [8, p. 59].

O.S. Bogdanova and L.I. Kataeva consider moral education as an appropriate level of the formation of moral behavior, moral feelings of a person and the development of moral ideas. The upbringing of the moral behavior of preschoolers, in their opinion, is the formation of a “mechanism for translating moral acts into moral habits, as a result of which the child assimilates moral values and norms of behavior, and develops a need to carry out learned actions and use learned methods of behavior” [3, p. 136].

Moral feelings, according to I. F. Svadkovsky, are emotional sensations, experiences that arise in a child in the process of real moral relations and interactions [10, p. 39].

T. V. Dutkevich believes that a significant role in the development of moral experiences is played by situations where the child interacts with peers, between whom equal partnerships arise. Consequently, a senior preschooler has a need for moral guidelines: what to do, how his peer will feel, how to maintain a relationship with him. The moral assessment of actions from external requirements becomes the child's own assessment, and includes his experiences and his attitude to certain actions. In addition, the role-playing game, where there is a need to take into account the interests of a peer partner, is a practice for the development of moral feelings in older preschool children. Thanks to the game, children not only experience, but are also more aware of moral standards [5, p. 165].



In the development of moral feelings, the communication and joint activity of the child with adults and peers are of paramount importance.

According to the point of view of O.S. Bogdanova and L.I. Kataeva, the formation of the initial moral ideas of preschoolers is a psychological and pedagogical dominant in the development of a child's personality. According to researchers, "moral ideas are formed in the mind of a child on the basis of a certain sequence of actions skillfully directed by adults" [3, p. 120].

The formation of moral ideas include the development of concepts, beliefs, value judgments, which the person begins to be guided in behavior [8].

H. Stoltz and R. Rudolph point out that mastering moral notions is a long and complex process. "Expansion of the child's life experience leads, on the one hand, to a deepening and differentiation of moral ideas, and on the other hand, to their generalization, closer to elementary moral concepts (about friendship, respect for elders, love for the homeland). The emerging moral notions begin to play a regulatory function in the behavior of children, their relationships with people around them "[16, p. 15].

In his studies, B.T. Likhachev gives a definition of moral education or bad manners, which, depending on social conditions, can manifest itself in various qualitative states. Low moral education is expressed in impulsive behavior, insufficiently realized in the framework of the norms and requirements of public morality. This situation arises in the absence of attention to moral enlightenment, to a clear organization of moral life. High moral education of children is determined by the unity of developed moral consciousness, thinking, will, feelings and behavior. It is achieved subject to the integrity of the educational process, the unity of the formation of moral consciousness and life [7, p. 348].

Thus, moral education is a purposeful process of introducing children to the moral values of humanity and a particular society. The main task of moral education of children in the system of preschool education is the formation of moral consciousness in them, which determines the development of moral feelings and the establishment of sustainable moral behavior, which, in turn, ensures favorable socialization of children.

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**SYMBOLIC MEANING OF RUSSIAN COMPANIES' NAMING  
BASED ON THE FASTEST DEVELOPING COMPANIES  
OF THE RUSSIAN FEDERATION**

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**Annotation.** The analysis of the meaning stored in the names of Russian companies is carried out in this article. The data sample consists of the fastest developing companies of the Russian Federation. The results depict major trends of the naming of companies in Russia. The naming trends that were unveiled are then analyzed and conclusions are drawn.

**Keywords:** naming, company naming, symbolism, name meaning, information field, corporate message, transliteration, westernization

The modern society enables the access to the enormous volumes of data with little delay. Moreover, information is accessible for almost everyone. However, such accessibility has its demerit – the informational overload, which renders people impassive to comprehending new information. As the informational field is continuously becoming cluttered with corporate information, corporate messages and corporate names, especially, it is of the utmost importance for the company and its consumers to receive as much information as possible applying as least efforts as possible. Naming that sends a key message in a concise form is used in such cases.

Naming strives to achieve two important aims: to differentiate a brand in the informational field and to form conscious or subconscious associations about the company or its produce or services in the minds of the clientele or potential target audiences [2]. In order to succeed in these aims, companies pay additional attention to the naming process. It is meant that a consumer must receive key information regarding the company in an explicit or implicit way.

This article contains the results of the analysis concerning the symbolic meaning of the naming of those Russian companies that are deemed to be leaders on the Russian market by growth.

The companies listed in the rating “50 fastest developing companies of Russia in 2019” [9] were used as a data sample. Hence, the rating was used as a foundation for the research. The rating is compiled annually by the Russian media holding “the RBC Group”, which is the largest non-governmental Russian media holding that specializes in business information and its proliferation. The companies are included in this rating based on their income dynamics for 3 years and a fourth year is added as an original reference mark for comparison. In order to compile the rating, the RBC Group abided by the following criteria [9]:

- 1) The company must be registered as a legal entity earlier than the end of 2014;
- 2) The company must not be in the process of dissolution or reorganization;
- 3) The income for 2015 must be over 1 billion rubles;
- 4) The income for 2017 must be over 3 billion rubles;
- 5) The annual income for the last 3 years must be at least 20%;
- 6) The company must abide by the principle of transparency and openness as information about the company must be located in open sources;
- 7) The company must not specialize in finance;
- 8) The company must not be a governmental holding or its subsidiary;
- 9) The controlling share of the company must not be held by an organization under the governmental control;
- 10) The company must be owned by a Russian physical entity or a private corporate body;
- 11) The company registered in a foreign jurisdiction that hold the major part of its assets on the Russian Federation is eligible for the long list.

We can make a few assumptions based these criteria. Firstly, the rating reflects dynamics strictly for the private sector. Secondly, the companies in the rating abide by the principles of transparency. Thirdly, the companies that are listed in the rating are deemed to be successful.

In addition, it must be stressed that the RBC Group used an additional multiplier to depict the matter in a more objective way. It is stipulated by the need to differentiate the rate of growth from 1 billion rubles to 5 billion rubles and the rate of growth from 20 billion rubles and 50 billion rubles. Thus, the multiplier was derived:

$$\text{Multiplier} = \sqrt{\frac{\text{Income 2018} - \text{Income 2015}}{\text{Income 2015}} \times \log_{10} \text{Income 2018}}$$

The final result is additionally multiplied by 10 for better representation [9].

Therefore, 50 companies listed in the rating were used by us as a data sample for the content analysis of the symbolic meaning of the fastest developing Russian companies. The content analysis was conducted to make well-reasoned assumptions concerning symbolic meaning of the companies' names.

The rating "50 fastest developing companies of Russia in 2019" lists 50 non-governmental companies, which are "Ярпео", "Петон", "Уралвтормет", "Ямал СПГ", "РэйлАльянс", "Благо", "Лига ставок", "Промстрой", "Первый завод", "171 Меридиан", "ВкусВилл", "Стройпроминвест", "Сибантрацит", "Степь", "Сибирская горно-металлургическая компания", "Ветла", "Первая тяжеловесная компания", "Fonbet", "Евроритейл", "Карелприродресурс", "Ярче!", "Трансресурс", "Гринлайт", "Монополия", "Красное & Белое", "Русские перцы", "Рузхиммаш", "Неофарм", "Авеста Фармацевтика", "Логистика 1520", "Прайдекс Констракшн", "Гранд Капитал", "Авелар солар технолоджи", "Солид – товарные рынки", "Автотор", "Аквиойл", "Бристоль", "Вайлдберриз", "Славянск Эко", "Гослото", "Малая нефтяная компания Татарстана", "Промстроймонтаж", "Колеса даром", "Вита", "Современные горные технологии", "Azur Air", "Торговый дом KSP Steel", "Новгородпродукт", "Славяна" and "Форум-Авто".

As the content analysis of the corporate names was finished the companies were grouped depending on their name meaning and the symbols hidden in it. Henceforth, 7 name groups were made, which are the following: composite names that are at least two words fused together; specialization names that depict companies' proficiency area; geographical location names that stress the geolocation of the corporate entity; symbolic names that derive from symbols and accentuate peculiar notions; abbreviated names; transliterated names; and names written with the Latin alphabet instead of the Cyrillic alphabet.

64% of the companies' names in the data sample include information regarding their proficiency area. 56% of the companies' names have underlying symbolism. 44% of the companies' names are composite names fused from a few word roots. 26% of the companies' names are transliterated names from English. 18% of the companies' names contain their geolocation information. 12% of the companies' names are written using the Latin alphabet instead of the Cyrillic one. And only 8% of the companies preferred an abbreviated name for themselves.

It should be mentioned that some names belong to multiple groups simultaneously, for instance, "Ярпео" and "Уралвтормет" are identified as composite names, specialization names and geographical locations names.

On the ground of the analysis the following can be concluded. Firstly, the tradition of composite naming has been preserved from the Soviet era and is still popular in the Russian Federation. Secondly, the majority of companies are prone to send a message regarding their proficiency area and geographical location via naming. Thirdly, Russian companies tend to avoid using abbreviations in naming.

In addition, it should be accentuated that for Russia it is common for companies to have two names. The first one is written in legal documents, whereas the second one is used in advertising, PR, etc. The legal names have stricter requirements; such as being written only in the Cyrillic alphabet. The requirements for the commercial name are significantly liberal. For instance, “Azur Air” and “Pridex Construction” are commercial names and “Азур эйр” and “Прайдекс Констракшн” are legal names.

The most interesting for us in regards to the research is the symbolic names group. To this type belong the following companies: “Благо”, “Первый завод”, “171 Меридиан”, “ВкусВилл”, “Степь”, “Ветла”, “Первая тяжеловесная компания”, “Ярче!”, “Гринлайт”, “Монополия”, “Красное & Белое”, “Русские перцы”, “Неофарм”, “Авеста Фармацевтика”, “Логистика 1520”, “Прайдекс Констракшн”, “Гранд Капитал”, “Авелар солар технолоджи”, “Автотор”, “Бристоль”, “Вайлдберриз”, “Славянск Эко”, “Колеса даром”, “Вита”, “Современные горные технологии”, “Azur Air”, “Славяна” and “Форум-Авто”.

The company “Благо”, meaning “Boon” specializes in producing vegetable oil. In its name the enterprise makes use of the universal notion of “boon”, which means “bringing something good in their customers` life”. The company “Первый завод”, meaning “the first factory”, refines oil. It tries to differentiate by having “the first” in its name, which obviously goes back to the era of the USSR, when it was founded and meant “the first factory built in the city”. However, in the modern times “first” is perceived as “superior to competitors”. The company “171 Меридиан” is an advertising agency, which name seems to be a result of creativity as 171 meridians are the last meridians in the East and in the West. Hence, the name stresses the global character of its business practices. The name of the healthy food supermarket “ВкусВилл”, meaning “tasty village”, is composed of the Russian word for “tasty” and the transliterated word for “village”. Therefore, the company name symbolizes that its food comes from villages and is based on the common notion that food from villages is tastier and healthier. The agrarian holding “Степь” is named after the Russian word for “steppe”. Its name symbolizes the steppes of the southern parts of Russia, where the company`s most produce is made. The oil trading company “Ветла”

decided to stress its adherence to the principles of ecological business practices by adding the name of the white willow in its corporate name. The company “Первая тяжелолюсная компания”, meaning “the first heavily-loaded company”, has the same origin as “Первый завод”. The near house supermarkets “Ярче!”, meaning “brighter”, accentuate, how brighter the life of its customer would be if they preferred the brand, and use the common notion of buoyancy. The car spare parts distributor “Гринлайт” associates with the green light of the traffic lights and its notion for “accessibility”, “permission” and “meeting the standards”. The transportation company “Монополия” prefers to highlight that it provides the full profile of transportation and logistics services using the economic notion “monopoly”. The name “Красное и Белое” of supermarkets specializing in selling alcohol draws attention to “red and white”, which symbolizes the types of wine. The alcohol supermarkets “Русские перцы”, meaning “Russian pepper”, is an allusion to the teenager and young adult slang connotation of “peper” as “cool guy” and showing that it is oriented towards teenagers and young adults. “Неофарм” is composed of the word derived from the Latin “neo” in order to send a message that its pharmaceutical technologies and practices are high end. Another pharmaceutical company’s name “Авеста фармацевтик” is based on the Zoroastrian holy book called Avesta. We may assume the idea is that their medicine is “a revelation from above”. In the basis of the corporate name “Логистики 1520” lies a peculiar fact that the most common width of the Russian rail gage is 1520 mm. It suits the company well as its proficiency area is a railway logistics. “Прайдек Констракшн” is a transliteration of “Pridex Construction”. According to the company’s corporate site, its name shows pride in what the company builds [8]. The name “Гранд Капитал” consists of “grand” and “capital” sending the message of “grandeur”. “Авелар солар технолоджи” is another transliteration. The possible idea was to use “avelar” sounding akin to Spanish, Portuguese and Italian as the company’s primary market used to be the southern regions of Europe. “Автотор” was founded in Kalinin-grad, a former German city. Henceforth, the name includes the German word “Tor” (gate) most probably in order to symbolize the quality of spare parts on par to the German ones. The company name “Бристоль” is an allusion to the city in Great Britain of the same name. It depicts the adherence to the royal quality of its alcohol supermarkets. In the corporate name for an online market there is an English word combination for “wild berries”, which means that “its products are for bright people”. In “Славянск Эко” the accent is laid on “eco” to show that its mild produce is of ecological make. In the name “Колеса даром” the latter part is stressed as it

sends a message “for free”. The company “Vita” derived its name from the Latin, which means “life”. A suiting name for the pharmaceutical industry. The most important part of the corporate name “Современные горные технологии” is “modern”, because this part of the name depicts the use of modern technologies and equipment. The symbol in the basis of “Azur Air” is a clean, blue sky. Hence, the flights on board of this air lines are to be associated with clean, blue skies and pleasure. “Славяна” symbolizes “slavic”, “natural” and “ecological” milk produce. “Форум-Авто” makes use of the word “forum” to demonstrate its readiness for a dialogue between the company and its clientele.

Therefore, Russian companies, as well as companies in general, try to transfer the key information about themselves and their proficiency in such a way that a recipient, confronted with the corporate name in the information field, could form some associations in regards to the company. The symbols placed in the corporate names are to transfer additional information in an implicit way.

Within the scope of the data sample used it is possible to deduce some inferences concerning the naming trends of the fastest developing Russian companies. Moreover, we can extrapolate the findings to the Russian Federation as a whole to certain degree.

Firstly, the most obvious trend in naming, the composite names, was inherited by Russia from the USSR. We may assume that it was pragmatically viable for Soviet enterprises to use this type of names as the market was lacking in competition and there was no need to differentiate itself in the modern sense [7]. Therefore, Soviet enterprises used to be named according to their specialization or/and location, because it was imperative for them to send a message containing information about their proficiency or geographical location. A lot of companies, especially in natural resources industries, continue still to use such composite names. The main issue is that due to that type of naming no additional associations form.

Secondly, a westernization trend in naming is observable in Russia. Companies use foreign words in transliteration or in Latin script in order to appeal to foreign audiences or to promote additional associations in Russians. Moreover, population of the developing countries is prone to appraising brands using foreign words as superior to domestic produce, according to multiple researches [1, 3, 4, 6]. In addition, English language in corporate naming becomes more preferred due to its status of lingua franca and the increase of its speakers in the world.

Thirdly, usage of symbols in corporate naming is on the rise in Russia. It seems to be among the most popular types of brand naming as it makes



people to come up with their own associations concerning the company.

Fourthly, the practical approach to naming, when the corporate name represents its specialization and geographical location, is still viable and one of the most popular naming types in Russia.

Making a conclusion, we would like to highlight that the Russian corporate naming traditions are first and foremost a mix of both, Soviet enterprise naming traditions and new Russian corporate naming traditions. Current market situation and globalization heavily influence Russian corporate naming and approach to it. It is essential for Russian companies not just to cling to the old Soviet ways, but to experiment with naming taking into consideration international naming trends. It is imperative if Russian companies strive for proliferating the messages to their target, key and potential audience in an efficient way.

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## KNOWLEDGE MANAGEMENT AS A FACTOR IN THE DEVELOPMENT OF INTELLECTUAL CAPITAL OF A SELF-LEARNING ORGANIZATION IN THE KNOWLEDGE ECONOMY

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**Abstract.** The article notes that an increase in intellectual capital is impossible without moving in the direction of creating a self-learning organization. The concept of a "self-learning organization" forms an approach to managing intellectual capital and to managing the knowledge that the company staff possesses, allowing it to be effectively used and expanded.

**Keywords:** organization personnel, self-learning organization, intellectual capital, knowledge management.

The modern world is moving to a new stage in its development, the basis of which is the knowledge-based economy - the knowledge economy. Its distinctive feature is that knowledge plays a decisive role in it, and its production is a source of economic growth. A special place in the knowledge economy is occupied by the knowledge management and intellectual capital of the organization.

In the broad sense, knowledge management is understood as "the activity of all parts of corporate management related to the analysis and effective use of employee knowledge to achieve the goals of the organization" [1, p. 50].

There is also the point of view that "knowledge management is a strategy that transforms all types of intellectual assets into higher productivity and efficiency, new value and increased competitiveness; a combination of strategic and operational efforts aimed at increasing the use of the intellectual capital of an organization in order to increase productivity (profitability) of the organization; a discipline that provides an integrated approach to the creation, collection, organization, access and use of knowledge of the organization's information resources; a combination of certain aspects of personnel management, innovative and communication management, as well as the use of information technologies in the management of organi-

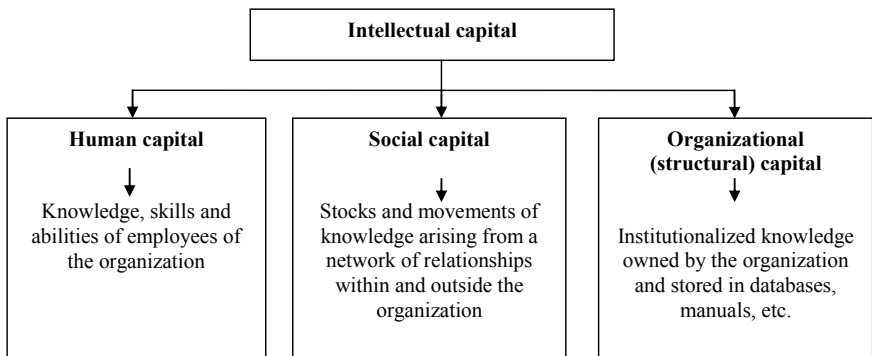
zations" [2].

Western researchers believe that knowledge management is the process by which an organization manages to profit from the amount of knowledge and intellectual capital at its disposal. Profit can be obtained if knowledge can be applied to create more efficient and rational processes, since knowledge management gives the company an immediate financial result: due to the reduction of costs, the production cycle is shortened, allowing the product to be produced faster, delivered to consumers and payment to be received [3].

According to another point of view, this concept covers the exchange of knowledge, management of external flows of information, training, structuring of knowledge in a company, joint work in communities, customer relationship management [4].

Based on the analysis of these points of view, we can conclude that knowledge management plays a key role in the formation of intellectual capital, which is "the totality of knowledge owned by the enterprise, as a result of capitalization of which it becomes possible to obtain superprofits and increase the market value of this enterprise" [5, p. 36].

In modern scientific literature, a broader definition of intellectual capital is given. So, for example, M. Armstrong characterizes intellectual capital as "the stock and movement of knowledge useful for organizing. This knowledge can be considered as intangible resources, which together with material make up the market or total value of the enterprise" [6, p. 64]. M. Armstrong considers the intellectual capital of the organization as three components (Fig. 1).



**Fig. 1. The structure of intellectual capital according to M. Armstrong**

Human and organizational capital do not function on their own, but constantly interact with each other, social capital takes on this role, playing an important part in the interaction between people. Through social capital, human capital creates organizational capital that belongs to the firm, and it can be developed through knowledge management.

In this regard, it can be noted that human capital is the determining component of intellectual capital, i.e. it is considered as a key factor determining the efficiency of use of all other resources available to the organization. As world experience shows, investing in personnel, creating conditions for the professional growth of employees and increasing their responsibility and independence give high and quick returns on invested funds.

It should be noted that in some works knowledge management is equated with intellectual capital management. Establishing a correlation of these concepts, L. Edvinsson notes: "Knowledge management is only one of the components of the intellectual capital management system. Knowledge management mainly boils down to the storage, targeted transfer and targeted dissemination of knowledge. With this approach, knowledge is primarily regarded as an object that can be compared with a book in the library. And intellectual capital is primarily concerned with the potential of the organization's future incomes. It is more connected with the flows of knowledge, and not with their reserves" [7, p. 19].

Knowledge management is also considered as one of the subsystems of the intellectual capital management system. Moreover, knowledge management in an organization includes: creation, distribution (transfer, exchange), targeted use, transformation and storage of knowledge [8, p. 41-42].

In our opinion, the approach of M. Armstrong unjustifiably narrows knowledge to information, and knowledge management - to management of their stocks. We believe that knowledge management is the management of the process of creating and increasing the intellectual capital of an organization. And since human capital is the main component of intellectual capital, knowledge management is basically a process of managing the knowledge of personnel.

Knowledge management of corporation personnel includes:

- assessment of information and knowledge available to employees, both explicit and implicit;
- acquisition of knowledge by staff (new - from the outside and transformed - from internal sources);
- sharing knowledge through collaboration;
- employee training;

- preservation of staff knowledge;
- elimination of personnel information that does not meet the requirements of the market [1, p. 51].

For an effective exchange of knowledge in an organization, it is necessary to create an effective system of both material and non-material motivation that promotes the involvement of all employees in the process, and an organizational culture that creates the conditions for a more efficient exchange of knowledge.

It should be noted that knowledge management is an ongoing process in which all employees of the organization are involved. In this process, organizational training is important, acting as a process of acquiring new knowledge in a dynamically changing market environment, which is one of the main factors of a company's success in a competitive environment. "The business world has begun to realize the need for a process of continuous learning, since it is this approach that prepares employees for all changes and makes it possible to achieve the desired result" [1, p. 52].

Training employees in modern conditions is becoming an essential function of management in general and knowledge management in particular. Almost all companies in the world create a holistic system of personnel development, training and advanced training. Caring for training, continuous training of everyone is an indispensable attribute of a successful company. In order to adequately respond to the challenges of our time, each company must become an organization where the ongoing process of training of all employees from all departments takes place.

The effectiveness of training directly depends on the stability of this process. "Organizations that are not trained (and therefore do not change) at the same time as the rapid changes taking place around are considered doomed" [9, p. 244]. An organization in which training is carried out continuously under the influence of changes in the requirements of the external and internal environment of the organization itself can be described as self-learning.

The first to introduce the term "self-learning organization" into scientific circulation was P. Senge. He described the self-learning organization as a team, "where employees are constantly expanding their capabilities to help them achieve the desired results, where new ways of thinking are developed, where collective aspirations are freely distributed and where employees are continuously learning how to conduct joint training" [10].

In the future, the idea of a self-learning organization was supplemented by other foreign researchers. So, M. Pedler defines a self-learning organization as an organization "that facilitates learning for all its members and

is continuously transformed" [11]. D. Garvin considers a self-learning organization as an organization "having the skills in the field of creation, acquisition and transfer of knowledge and modifying its behavior in such a way that it reflects new knowledge ..." [12]. Moreover, as the author notes, only a self-learning organization is able to ensure the acquisition of knowledge from experience, the continuous development of an improvement program, the use of systematic methods for solving problems, as well as the rapid and effective dissemination of knowledge within the organization using formal vocational training programs.

K. Argiris gives the following definition: "a self-learning organization is an organization that knows how to create, acquire and disseminate knowledge and changes its behavior in accordance with new information, original opinions and modern models of thinking" [13].

In relation to the term "self-learning organization" J. Burgoyne notes that a self-learning organization must adapt to its environment and develop its staff in such a way that it is consistent with it [14]. Thus, in accordance with his definition, a self-learning organization directs the activities of individual managers in the field of career and life planning in such a way that it meets the strategic needs of the organization. This is done by identifying individual needs, such a formulation of business strategies that would include data on relevant skills, and continuous organizational analysis and training based on experience.

Thus, the self-learning organization is aimed at improving the efficiency of the company, adapting to the operating environment and involves the active mastery of new ways of working, new strategies through the organization's knowledge management. However, do not confuse a self-learning organization with organizational learning and individual learning. They are only part of a self-learning organization. Training brings the greatest effect where it is part of the working life, and is not conducted in isolation from the organization. Knowledge acquired outside the organization may be rejected by the organization, as the organization may not be ready for it. Any self-learning organization should have a "common vision", since without a common understanding of clearly defined goals it is impossible to cooperate effectively. Employees should not represent the organization as a set of discrete departments, but as a common whole, they should see what role they play in the organization to achieve the general goal. A self-learning organization is an organization that is constantly changing under the influence of environmental changes, through training and effective knowledge management, which leads to an increase in intellectual capital.

So, the considered theories confirm that the management of the intellectual capital of an organization is carried out by managing the knowledge of its staff, in turn, effective knowledge management is theoretically possible and practically feasible only in a self-learning organization. Since it is the fulfillment of the five disciplines of achieving the main learning goals identified by P. Senge (personal mastery, creating a common vision, mental model, group learning, systemic thinking) that allows the organization to implement a knowledge management system based on staff mutual training [15]. In a self-learning organization, it becomes possible to effectively manage staff development through a knowledge management mechanism.

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**CULTURAL DISCOURSE AS A REFLECTION  
OF CONTEMPORARY ART**

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A lot of articles have been written on the problems of cultural and art discourse but neither of them considers the discourse as an inclusive system consisting of different types of texts and presenting different aspects of cultural life. In our hectic life with its furious pace modern society faces the lack of culture and spirituality. The role of mass media, and magazines in particular, is difficult to overestimate. Cultural and art magazines try to fill up the gap in some spheres of life forming spiritual values of information-oriented society.

The aim of the present research is to define the specific character of cultural discourse and its main types – informative and estimating with emphasis on advertising and narrative components. The research is carried out in the cognitive linguistics context. The author tries to analyze and compare different functions of ‘cultural’ and ‘art’ texts by the example of vintage magazines.

The topicality of the research is determined by certain tendencies developing in modern linguistics. The context serves as a cognitive field, an indispensable condition of cognition in the cultural aspect. Special emphasis is laid on the communication necessity as the ground of cultural discourse since any cultural context is a constituent part of public and social life. The object of the research is the discourse of vintage magazines represented by British press. The author introduces ‘vintage discourse’ using the discourse analysis approach to describe it.

**Keywords:** discourse, culture, cultural discourse, art, vintage, vintage magazine, “glamour” magazine, mass media, conceptsphere.

A number of scholars were involved in the problems of analyzing texts on art history topics, among which A.T. Anisimova, E.V. Vokhrysheva, S.N. Kazimova, O.V. Alexandrova, N.D. Ivanova and others. Among art criticism

texts, the most attention was paid to articles on painting, architecture, film and theater criticism, etc. Each of these texts is devoted to a separate subject or field of art. The lexical components and syntax of such texts were examined in detail, however, a comprehensive analysis has not yet been carried out. Many articles have been written on the topic of cultural and art discourse, but none of them describes discourse as an inclusive system consisting of different types of texts and representing various aspects of cultural life. In our life, with its frantic pace, modern society is faced with a lack of culture and spirituality. The role of the media, and magazines in particular, is hard to overestimate. Cultural and art history magazines try to fill this gap in some areas of life, forming the spiritual values of an information-oriented society.

The purpose of this study was an attempt to determine the specific nature of the "cultural" discourse and its main types - informative and evaluative, with emphasis on advertising and narrative components.

Researchers rightly note the interdisciplinary nature of discourse, which is at the junction of linguistics, sociology, psychology, ethnography, literary criticism, stylistics, and philosophy. However, the categories of discourse are almost exclusively understood as textual.

Discourse can change within us, depending on the changing situation in which we are. However, discourse is not an isolated text structure.

The implementation of the discourse in the language or in any variant of the language (technical, cultural, special, familiar), adequate in the framework of a specific situation. The situation dictates the relevance of a particular discourse in any sphere of public life. It identifies leading trends and concepts that are subject to socio-political influence, a certain ideology. Discourse in its own way is a reflection of reality. At present, the ideology of cynicism and violence pervades almost all types of **public** discourse. For example, in modern cinema "the tendency to be cruel and ruthless, the tendency to destroy people" rules (A. Konchalovsky). This reflects reality, real life, permeated by terrorism, extremism, a thirst for economic benefits. These vulgar images are transferred not only to political, economic and social discourses, but also to cultural discourse. Culture and art are inseparable from the rest of life. This is probably what explains the fact why Quentin Tarantino's films are so popular and loved in modern society. It is impossible to deny the primacy of the situation and the historical moment.

Therefore, it can be stated with accuracy that discourse is not only **individual**. The concept of **public** discourse is more stable, as it can reign for several years and be used by entire generations. Here you can already talk about such a concept as **generation discourse**.

“With modern philosophical dictionaries, discourse is defined as a verbally articulated form of objectification of the content of consciousness, regulated by the type of rationality that dominates in a particular sociocultural tradition. In accordance with this approach, the object of scientific interest in discourse analysis is the process of “correspondence” between the culture associated with it political consciousness and language ”(1; 57). The ability of ideology to influence the nature of discourse is beyond doubt, but is it possible to use discourse in solving ideological problems? To answer this question, it is necessary to conduct a cognitive study of several discourses in order to reveal the degree of such influence.

First of all, one should comprehend the principles of the functioning of discourse in the media environment and the principles of its perception by the mass audience. Concepts or discourse units should appear in this case as carriers of a certain ideology. In almost any form of social discourse there is a certain ideology. She speaks most clearly in political, economic, cultural discourses in which the life of society is reflected. It is natural that in the scientific and technical discourse it is very difficult to track, in this case we can only talk about the presence of certain trends and concepts.

Discourse in general, and art history discourse in particular, is one of the main aims to convince the reader of a certain vision of the picture of the world. In classical texts about art, the authors convince the reader of a certain vision of beauty, often in the absence of an image of the work. To do this, they resort to rhetorical devices.

This study is devoted to the study of cultural discourse on the material of English glossy and vintage magazines, which, undoubtedly, are a cultural phenomenon of the 20th - 21st centuries. The texts of the art criticism content of British authors of the mid and second half of the 20th century and the end of the 20th - beginning of the 21st century, which are the most authoritative authors in this field, were chosen as the material for the study. In the study of vintage magazines, we try to find out what factors form the cultural discourse and how this literature on art differs from the one that preceded the era of modern art, as well as from 21 century cultural texts.

The word “vintage” comes from the French expression “l’age du vin” - the term in its original sense denoted the year of the harvest from which the wine was made, and which was later transformed into “vendange”. Thus, the word “vintage” comes from the French vintage, which is a wine-making term and translates as “aging wine”.

The concepts of “vintage” and “being vintage” in our country appeared relatively recently and for most of our compatriots are alien and incomprehensible. This is proved by the fact that these concepts are still not fixed by most dictionaries. And those dictionaries that include this definition primarily connect it with the world of fashion and glamor. The ambiguity of the term “vintage” made it possible to logically combine in one concept rationalism of controlled origin and fashion trends, which corresponded to the image of a new product.

Vintage magazines are a phenomenon that can be fully appreciated only in modern conditions, since earlier (in the middle of the 20th century) they were not. A sign of vintage depends entirely on the time frame and appears in any phenomenon only after a certain period of time. The concept of “vintage” can be described by the concept of “antique”. The spread of this word in our time can be associated with a trend or even a fashion for everything antique and ancient, i.e. for everything that has acquired additional value over time.

The most receptive and responsive to the concept of “vintage” discourse was the discourse of glossy magazines. Moreover, highlighting the concept spheres of modern glossy magazines, we notice that only glossy magazines devoted to fashion, leisure and culture share common concepts, and therefore concepts, with vintage magazines. It can be concluded that the discourse of vintage magazines is most similar to the discourse of glossy magazines as the “heirs” of the first.

The magazine as a mass medium determines the division of discourse into two components: advertising and narrative. In turn, the thematic block of the discourse of a glossy magazine is structurally limited by the format of the journal heading. However, its advertising and narrative components are in interaction.

The unit of the advertising component of a glossy magazine’s discourse is a discursive advertising segment, which is a complete advertising work on a specific topic that expresses the pragmatic intention of promoting a product/service. The unit of the narrative component of the glossy magazine discourse is the discursive narrative segment, i.e. a combination of linguistic and non-linguistic means, which is implemented in the narrative form characteristic of the narrative component of the glossy magazine discourse.

The discourse of vintage magazines included initially diverse spheres of art and culture. Most often, these magazines covered modern cultural events and phenomena, naturally for that time. Contemporary art is a kind of object of a vintage magazine. The 20th century was a turning point in various fields of art and cultural life of all mankind. There were new trends

in painting and architecture, new musical directions, the film industry and the fashion industry appeared. Art became popularized, more accessible, and the vintage magazine played a role in this process, bringing the simple reader closer to what previously seemed to him inaccessible. This fact explains the need for the emergence of vintage discourse.

The discourse of vintage magazines shows stability and resistance to extralinguistic phenomena and changes. Such texts differ in the general sphere of conceptualization, common canons, strategies, and lexical and grammatical features (the predominance of the book style of speech, the abundance of terms and cliché forms, a high percentage of intersections with the literary language; a lot of nominal forms, and verbs of perception from verb forms). In cultural texts, the informative function comes to the fore and contains a deep and detailed analysis. However, in places there are "lyrical" digressions towards emotional influence on the reader, as well as evaluative elements, without which it is impossible to present any critical article. Rather rare cases of using stylistic devices indicate a high degree of scientific character of the texts studied.

Over the past decade, the style of British journalists to interpret the phenomena of modern society and works of art has begun to change. Vintage magazines gradually grew into glossy ones that retained their original concept.

Vintage magazines, however, differ from the glossy ones in some discrepancies in the subject and degree of study of areas of culture that are common to them. The rapid development of 20th-century art, the apparent complication of its conceptual picture and the expansion of the range of co-existing artistic practices led to the emergence of a new genre of journalism. Having analyzed this fact, we can argue that already in the beginning of the 21st century we are dealing with a new generation of cultural texts. In our study, we try to identify the features of a new culturological discourse, study the factors that influenced its occurrence, and also find out how the culturological discourse of the new stage of development differs from the "classical" text, or how a modern glossy magazine differs from a vintage one.

Considering the development of cultural discourse in diachrony, i.e. After analyzing the glossy and vintage magazines of the previous and modern generations, we came to the conclusion that the advertising component largely prevails over the narrative component, and this increase in this advantage occurred gradually, which indicates a growing tendency in society to consume goods and services, rather than just getting "Cultural information", which in turn indicates the transformation of modern society into a consumer society, and where the media, and glossy magazines in particular, play no last role.

It should be noted that cultural discourse is a slightly broader concept than art discourse, since not all cultural phenomena can be elevated to the rank of art.

At the beginning of the second half of the twentieth century, we witnessed the emergence of new genres of art, among which stood out the discourse of vintage magazines, as well as other cultural phenomena of the last century. In a fairly short period of time, "pop art", "land art", "opart", "body art", "performance", "installation" and many other types appeared. In the 80s, "live art" emerged, a combination of theatrical and visual arts. The emergence of interactive theaters, where the main events are transmitted using video effects, and the actors only supplement them with their game, becomes the prerequisite for the emergence of video art, which in the USA was an alternative to television. Video art initially came out as a protest against the growing momentum of television. In the future, thanks to technological progress, this genre moved to a qualitatively new level, giving impetus to the emergence of a new direction - media art, the scope of which is much broader than that of traditional genres.

Currently, the Internet and a variety of interactive applications promote media art, make it accessible to a wide range of people, thereby erasing its elitism, characteristic of other types of art. At the same time, numerous subspecies of the media genre appear, bordering other areas of art.

Most of the works of art of the XX - XXI centuries do not urge us to appreciate the beautiful. On the contrary, they are directed against its aesthetics and traditional canons of beauty. Modern creations of artists often cause criticism, surprise and simply rejection of the new. According to some critics, they most likely serve to aestheticize the ugly, unsightly, and shocking. All sorts of innovations were described in books and publications, which were guides on contemporary art. Their authors described modern culture in a context that was understood by the recipient, explaining new phenomena with the help of new discursive techniques. The titles of these books, publications, and television programs spoke of the emotional impact on the reader and viewer. Among them is "The Shock of the New" 1980, a documentary television series hosted by renowned American art critic of Australian origin Robert Hughes. The series was shot in the late 70s and traced the roots of modern art quite well. In his book "Relative values, or What's Art Worth?" Louise Buck and Philip Dodd explore the mechanisms of influence that contemporary art uses. "Century of Change" and "Art for Whom?" often captured live speech by critics and art critics, as well as introduced new words expressions, concepts and ideas. Critics used different tricks to describe works of art, developing a kind of new language in which they began to speak and write.

The revolution in art and the reorientation of values continues to this day. The communication of the viewer and the work of art forces the first to participate in the process, to react, to continue the dialogue.

Contemporary art has greatly expanded its borders. After Marcel Duchamp's famous "readymade", almost a century later, the 2000 Turner Prize, the most popular award given to British artists every year at the Tate Gallery in London, was nominated by the artist Tracy Emin, who presented her work to the audience. ... unmade bed. Of course, the viewer was not called to appreciate the beauty of this subject. The artist challenged, plunging the audience into shock and forcing them to find their own explanations for this provocative work: for this "frankness", as well as for the largest number of viewers that attracted this work, she was awarded the Prize. In 2001, Martin Creed received the prize by presenting the work "Lights turning on and off", which was exactly what the title says. By this, the artist raised the question of conventions in the gallery space.

Looking at all these innovations in art, we understand that sensible literature explaining these phenomena is simply necessary for us. New texts interpret contemporary art and put it in context, making it understandable. At the beginning and in the middle of the 20th century, texts on art were written by the serious scientific language of a specialist who received a classical art education and analyzes a work of art only from a classical point of view, attributing it to one direction or another and giving the viewer the opportunity to see the main thing in the work: the critic tried develop the viewer's taste and ability to understand beauty. Contemporary criticism of art is of a different nature: their authors argue, ask, persuade, offer various interpretations, resorting to the most various artistic means. They can take the form of dialogue with the reader, carry the features of colloquial speech, be expressive and use stylistic means that are not characteristic of the scientific works of art critics familiar to us. Their authors are not always art critics: more and more, compared with the beginning of the 20th century, journalists, artists, curators, and gallery owners write about art ("gallery owner" - a new profession at the end of the 20th century - means "gallery owner" or "person engaged in the gallery business, that is, the sale of works of art through exhibiting in his gallery; this word is not yet in the Russian language dictionary, but it is widely used in the field of fine art). The approach to the interpretation of works of art has changed in connection with the emergence of completely new needs, phenomena and forms in art, and the circle of authors creating these texts has expanded.

The need for creativity, the creation of beauty, or the reflection of reality in any way since ancient times has been in possession of man. In any period of the development of mankind, art was a measure of the possibilities of human thought. A person's need for creativity was manifested and is manifested in various ways, from the most "elitist" (high fashion) to the most primitive (primitive art, etc.). Creativity can affect various aspects of life and manifest itself in different areas of professional activity. The specificity of the culturological discourse is that its nature is secondary, it in a special way combines the need for creativity and the need for communication. This discourse serves the world of art, commenting and interpreting it, where art is a kind of object of this discourse. It is in art that the need for creativity is paramount and fundamental.

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**LITERARY FORMULAS OF MILITARY TALES IN THE "SKASKAS" OF  
SIBERIAN EXPLORERS AS ONE OF THE WAYS OF FICTIONALIZATION  
OF RUSSIAN LITERATURE OF THE TRANSITION PERIOD**

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**Abstract.** In this article, using the example of the tale “On the Capture of Veliky Novgorod”, located in manuscript collections of the XVI century, and “The Notes of Yerofei Khabarov on the Campaign in Dauria” of the XVII century, the genetic connection of historical military stories and the “skaskas” of Siberian explorers is traced, the influence of business writing on literature is noted, a conclusion is drawn on the continuity of genres and on the development of the personal principle in literature.

**Keywords:** literature of the XVII century, the formation of genres, “skaskas” of explorers, a military novel, a personal beginning, annexation of land

The literature of the "new time" – the XVII century – is one of the most interesting periods in the history of Russian literature. The time when the old ancient Russian Middle Ages traditions are breaking down, new literary genres, plots appear, the general orientation of culture changes from “pro-Byzantine” to “pro-Western”. It is in the literature of the XVII century, according to the observations of the leading researcher of Russian literature D.S. Likhachev, when for the first time a personal principle appears, which gives an incentive to the development of verbal art [2; 174]. Defining the significance of the XVII century in the history of Russian literature, D.S. Likhachev notes that the XVII century in Russia “took upon itself the functions of the Renaissance, but did so under special conditions and in difficult circumstances... Although Russia did not know the era of the Renaissance, it had to solve the problems that the Renaissance was solving” [2; 172-173]. And all this happened in the XVII century.

A qualitative change in the genre forms at this time occurs, among other things, due to the "introduction of the elements of business writing into literature, which, unlike previous times, are given more and more purely literary functions" [2; 174]. The validity of this thesis is confirmed by an analysis of the texts of such a new genre for seventeenth-century literature as "skaskas" (self-name of a document, from the verb *сказывать*) of Siberian explorers. The authors of these "skaskas", i.e. details, reports - servicemen, explorers, navigators, Cossacks, who were in the public service and were sent on expeditions to the lands located beyond the Urals, to Siberia, to the east in order to explore these lands and join them to the Russian state. These people - warriors, travelers, initiators and discoverers of the «землиц незнаемых», - had to make a report on the campaign upon their return. They composed it themselves or dictated to the clerks (scribes) of the Ambassadorial order - they gave "skaskas".

The goals and objectives that faced the Siberian explorers, limited their freedom of narration, demanded the factual presentation - a description of the natural conditions and wealth of new lands, water and land routes leading there, the tribes inhabiting these lands. Nevertheless, the value of the "skaskas" texts consists precisely in the fact that through the restrictions imposed by the genre of the official report on expeditions, through rationalism and certain norms of written speech, elements of a living spoken language, in essence, folk verbal creativity, often collective ("skaskas" could often be retold more than once) are played out. It should be borne in mind that these oral reports were drawn up, edited and corresponded by officials serving in orderly huts, clerks of embassy orders, and priests. These were quite educated and competent people who, working on oral reports, often emotional and embellished, acted as co-authors of these reports, bringing in their own vision of the situation and following the already established literary traditions. Thus, it can be argued that "skaskas" of Siberian explorers is a syncretic genre that combines the historicism of the narrative and the artistry of presentation. This is due to the dual genetic structure of this type of text - business writing, on the one hand, and oral history, on the other.

Researchers of ancient Russian literature have always been attracted by the problems of continuity, borrowing literary devices, turns of speech, traditions of a similar description of similar situations. In this paper, we will try to trace the genetic proximity of "skaskas" of Siberian explorers to military narratives of an earlier period, clearly illustrating the continuity of the literary traditions of ancient Russia and the literature of the transitional era. As objects for comparative analysis, we take the texts "The Notes of Yero-

fei Khabarov on the Campaign in Dauria”, published in the Supplements to the Acts of History, and the tale “On the Capture of Veliky Novgorod”, which we found in two lists in manuscripts of mixed content in the State Public Scientific and Technical Library of the Siberian Branch of the Academy of Sciences in the collection of Tikhomirov (hereinafter: SPSTL SB RAS Tikh. 373) and the Russian State Library in Piskarevsky Collection (hereinafter: RSL Pisk. 183).

The text of the tale “On the Capture of Veliky Novgorod” is devoted to the description of the accession of Novgorod to the Moscow Principality at the end of the XV century and is a rather unique work, since one story contains a story about events that lasted almost a decade, i.e. about all three campaigns of Grand Knyaz Ivan III to the city and about the final loss of independence by the Novgorod Republic. We already noted earlier that this is a complex plot-based text, animated by numerous details, it is characterized by compositional and stylistic completeness. A textual analysis of this story and the annals of the annexation of Novgorod to Moscow showed that the chronicles were only an event source for the novel, read in Tikh. 373 and Pisk. 183 literary collections, but there are no textual coincidences; this story and the annals have different styles and manner of presentation. The composition of the tale “On the Capture of Veliky Novgorod” is chained, with each of the parts having its own structure. The narrative follows the traditional pattern of the military story, but in addition to the logical and chronological method of presenting the material, the plot organization of the text is already clearly traced. The time of creation of this story is defined by us as the first half of the XVI century [6; 207].

As for the text “The Notes of Yerofei Khabarov on the Campaign in Dauria”, the genre is a typical “skaska” about the expedition of 1651–1652, but its text is quite voluminous and written in many details.

We are interested in the “common places” of these texts, since both of them are in one way or another devoted to events characterizing the process of accession of lands to the Moscow state. We will analyze the texts according to the published by N.I. Prokofiev in “Notes of Russian Travelers” “The Notes of Yerofei Khabarov on the Campaign in Dauria” [1] and the tale “On the Capture of Veliky Novgorod”, the scientific publication of which is contained in the monograph “Chronicle tradition of stories about the accession of Novgorod to Moscow. Typology of stories on the capture of Russian cities” [5].

Let’s try to trace whether the similarity of the subject is a condition for the use of similar text formulas. The list of these “common places” is as follows:

1. Traditional for military narratives reference at the beginning of the story of the small number of troops and the quantitative superiority of enemies. For example,

tale "On the Capture of Veliky Novgorod"	The Notes of Yerofei Khabarov on the Campaign in Dauria
<p><i>Было новгородския силы 16 воевод, а воинства 40 000 и 16 000 избранных конников въ твердыя доспехи оболчены. И приидоша же к реку Шелонь великого князя воеводы князь Данил Дмитриевич Холмский да Федор Давыдович, а с ними толке 5 000 рати московские [5; 218-219].</i></p>	<p><i>И языки нам в роспросе винулись, что де "собирались наша Дючерская земля и Ачанская вся, а войска де нашего было восемьсот, и вы де побили у нас многих людей"[1; 382].</i></p>

2. Description of the large losses suffered by enemies, and the small number of their own in the portrayal of a battle. For example:

tale "On the Capture of Veliky Novgorod"	The Notes of Yerofei Khabarov on the Campaign in Dauria
<p><i>Москвичи же пребрешше за реку и видьша бежание новгородцевъ и восприаша от Бога храбрость и начаша новгородцевъ съчи сстигая и ту убиша москвичи новгородцевъ боль 12 000, а изымаша боль 2 000 добрых людей, посадников и тысяцких, и боляр, и простых людей много...</i>  <i>А московские рати на том бое ни один человек не убиенность, но всцьлы, Богом сохранены быша [5; 219-220].</i></p>	<p><i>- И всех их побито, дауров, которые на съезде и которые на приступе и на съемном бою, больших и малых шестьсот шестдесят один человек. А наших казаков убили они, дауры, четырех человек, да наших же казаков переранили они, дауры, тут у городка сорок пять человек, и те в се от тех ран казаки оздоровели [1; 374].</i>  <i>- И мы круг города их, иноверцов побитых, считали, и всех их побили сто семнадцать человек. И у нас на том бою одного человека до смерти убили, именем Никифора Ермолаева, а изранили нас пять человек [1; 382].</i></p>

3. Speech, given by a voivode to the army before the start of the battle that supports morale – is also a part of the structure of military narratives. This is the etiquette of the genre.

tale “On the Capture of Veliky Novgorod”	The Notes of Yerofei Khabarov on the Campaign in Dauria
<p><i>Воеводы же московския князь Данил Дмитриевич Холмский да Федор Давыдович начаша между собою укрѣплятися глаголюще: не убоимся, брате, многия силы новгородския... Москвичи суще и имя на себѣ вѣлико имущу нынѣ же сотворим славу государю нашему, на се пославшему нас, себе же похвалу и честь и память вечную во вѣки и бога нашего призвавше на помощь и да идем к ним за реку негли устрашатся и побегут [5; 219].</i></p>	<p><i>И яз, Ярофейко, и служилые люди и волные казаки, помолясь Спасу, и пречистой владычице нашей Богородице, и угоднику Христову Николе чудотворцу, промѣж собою прощались и говорили то слово яз, Ярофейко, и ясаул Андрей Иванов, и все наше войско казачье: "Умрем мы, братцы казаки, за веру крещеную, и постоим за дом Спаса и пречистые и Николы чудотворца, и порадеем мы, казаки, государю царю и великому князю Алексею Михайловичи) всеаРусии, и помрем мы, казаки, все за один человек против государева недруга, а живы мы, казаки, в руки им, богдойскимлюдем, не дадимся!" [1; 383].</i></p>

4. Divine support for the Moscow army during the battle.

tale “On the Capture of Veliky Novgorod”	The Notes of Yerofei Khabarov on the Campaign in Dauria
<p><i>-Москвичиже пребрѣдше за реку и видѣша бежаніе новгородцевъ и восприяша от бога храбрость и начаша новгородцевъ съчи състигаа [5; 219].</i></p>	<p><i>И нападе на них, богдоев, страх великий и, божиею милостию... и пречистый владычицы Богородицы и святаго угодника Христова Николы чудотворца, покажися им сила наша несчетная, и все досталные богдоевы люди прочь от города и от нашего бою побежали врознь [1; 383].</i></p>

5. The use of metaphors and text formulas characteristic of military stories.

tale “On the Capture of Veliky Novgorod”	The Notes of Yerofei Khabarov on the Campaign in Dauria
<p><u>силы новгородские... яко лѣсъшумящъ и колыблющя неподвижно иаки каменье бездушное, лежаще по брегу реки</u> [5; 219].</p>	<p>- <u>И божиею милостию и государским счастьем</u>, тех дауров в пень порубили всех с головы на голову [1; 374].                      - <u>И настреляли они, дауры, из города к нам на поле стрел, как нива стоит насеяна</u> [1; 374].                      - <u>И служилые и волные казаки, прося у бога милости, к тому улусу бросились, государю радеючи и не щадя лица своего</u>[1; 375].                      - ... <u>и молились Спасу, и пречистой Богородице, и Николе чудотворцу, и радеючи государю и помираючи за веру крещеную и не щадя лица своего, против государева недруга</u> [1; 383].</p>

6. Chronicle, diary orientation in the description of prey captured, a detailed listing of gifts presented, etc.

tale “On the Capture of Veliky Novgorod”	The Notes of Yerofei Khabarov on the Campaign in Dauria
<p><u>И декабря въ 4 день пироваль князь великий у архиепископа Феофиладаровъ великому князю отъ владыки три поставы сукна Ипского, а поставъ по 30 рублевъ, да 100 золотыхъ корабленыхъ да зубъ, а проводного бочка вина красного, а другая былого. Декабря въ 5 день пироваль князь великий у князя Василья Шуйского; даровъ отъ него великому князю три поставы сукна Ипского, да 3 камки, 30 золотыхъ корабленыхъ, два кречета да соколь</u> [5; 221].</p>	<p><u>И тот город, государским счастьем, взят с скотом и с ясырем. И числом ясырю взято бабья поголовно старых и молодых и девок двести сорок три человека; да мелкого ясырю робенков сто осмнадцать человек. Да коневья поголовья взяли мы у них, дауров, болших и малых двести тридцать семь лошадей. Да у них же взяли рогатого скота сто тринадцать скотин</u> [1; 374].</p>

Thus, we note the undoubted similarity of textual (literary) formulas present in military narratives, as well as in stories about the capture of cities and in the “skaskas” of Siberian explorers.

It can be argued that the traditions of ancient Russian literature in the XVII century do not die, they continue to serve as a support and remain a powerful source for the work of new authors. Business writing becomes one of the links in the literary process. Dry forms of documents and travel diaries, thanks to the co-authorship of inspirational clerks of embassy orders, turn into works that store information important for future generations, and often have a special aesthetic potential [4; 36].

Quite fair is the statement of the remarkable seventeenth-century literature scholar E.K. Romodanovskaya: 'The literature of modern times is far from always being brilliant, but in the vast majority of works it is personal.' [3; 5]. We find this personal beginning in all the "skaskas" of explorers. And the presence of a personal beginning in the text allows us to talk about the "delimitation" of the old Russian and new literary traditions, about the next stage in the development of literature, this is a bridge to the literature of modern times, to fiction.

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## SOMATIC AND PSYCHOLOGICAL EFFECTS OF OCCUPATIONAL STRESS ON MEDICAL STAFF

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**Abstract.** This article is devoted to the study of somatic and psychological consequences of the influence of occupational stress on the health status of medical units employees. The studies were aimed at considering the influence of interdependent components: psychological (occupational burnout) and somatic (incidence), taking into account separation, age, incidence rate and length of service.

An important component of all processes of the transition of a physiological norm into a pathological one is the ability of the body to adapt to the changing conditions of the internal and external environment.

Professional-psychological adaptation is a dynamic process that includes temporary, functionally and qualitatively different states. We have identified three periods of professional psychological adaptation: “physiological adaptation (disadaptation)” lasting up to 15 years, “transitional adaptation” from 15 to 25 years, and “pathological adaptation (maladaptation)” begins after 25 years. For the third period, the formation of a stable pathological system is characteristic.

As a result of the study, it was found that the duration (severity of incidence) and the number of cases of incidence with temporary disability depends on age and after 50 years, there is a significant increase, which indicates the transition of the incidence into a chronic form.



The results of the analysis of the distribution of morbidity by individual classes showed that there is no relationship between diseases and occupation of the medical workers (doctor, nurse, etc.), and more significantly department, specialty and length of service.

The reasons for the high morbidity with temporary disability at the initial professional stage (0-5 years) include a long period of non-work in the specialty, non-coincidence of professional suitability with the chosen specialty and low professionally significant personal qualities.

**Keywords:** professional stress, adaptation, incidence, medical staff.

The activities of medical specialists require the presence of significant professionally significant personal qualities for the profession, such as communicative abilities, self-regulation and psychological defense skills, stress tolerance and health. Currently, preventive activities aimed at strengthening and maintaining these qualities can be considered relevant.

The study of occupational stress and its impact on the working population is of interest to many researchers of this problem and it can be considered an important scientific task. Stress in the workplace affects the working capacity, productivity and quality of work, health status and occupies a leading position in applied psychological research [3, 10, 11, 8].

The tense conditions of professional activity under the influence of excessive emotional and psychological stresses cause professional stress [15, 13].

Currently, the causes and consequences of the influence of professional stress on specialists of various socially significant professions have been studied: teachers, doctors, military, firefighters, rescuers, etc. [18, 14, 16, 7, 5].

Overstrain and depletion of the reserve mechanisms of functional systems leads to a deterioration in the health status of workers and reduces labor productivity. Chronic stress often occurs due to small production factors, but they are constantly acting and have an adverse effect on the specialist and often worsen the quality of labor [17, 9]. At the same time, the mechanisms of the effect of stress on human health are not fully understood. Assessment of factors causing occupational stress and its impact on health is a very important aspect of modern science [12, 1, 2].

To study the effects of occupational stress, we studied the level and structure of the incidence of medical workers with temporary disability by the continuous sampling method. The sample was 285 observations. To assess the effect of occupational stress on professional or emotional burnout, we used the techniques developed by N.E. Vodopyanova and Boyko V.V. [6, 4].

To analyze the results, we used methods of statistical analysis, modeling and cluster analysis using the Chebyshev measure.

We believe that an important factor in the occurrence of health problems for specialists working in medicine is occupational stress, which has its own specifics depending on the specialty, and age and working (professional) experience play a significant role in it.

At the initial stage of the formation of production stress, external and internal factors trigger the mechanism of psychological stress, which leads to the development of intrapersonal conflict (unresolved). It forms a dominant focus of tension of the functional activity of the physiological system (physiological stress), and the psychological factor induces the occurrence of this system.

If the intrapersonal production conflict is not resolved, the stressful situation remains significant and impulses enter the central nervous system that support the dominant activity and adrenaline and physiologically active substances are released into the blood.

An important influence on the occurrence and development of occupational stress is the ability to adapt professionally.

Professional adaptation may result in constructive self-realization in work (partial or complete).

In another case, destructive professional adaptation develops, because young specialists have not formed communicative qualities, psychological defenses and professionally significant personal qualities, which leads to pathological forms of protection in the form of professional burnout, deformation, destruction, stagnation, deviant behavior.

At the same time, by professional-psychological adaptation we understand the dynamic balance in the system of professional activity and individual characteristics of a person, which forms the adaptation of a person to new working conditions for him and to achieve the required performance.

If we consider the process of violation of professional psychological adaptation, at least with the participation of two components of psychological and somatic, we assume that psychological factors are triggering in violation of adaptation.

To study the problem and the psychological factor in the development of the pathological process, we will try to consider it by the example of emotional burnout according to the results of the method of V.V. Boyko [4].

In the "stress" phase, the prevailing symptom is 11.3%, with a predominance of experiencing psycho-traumatic circumstances 38.9%. In the "resistance" phase, the prevailing symptom is 30.3%. The phase of "exhaustion" in the prevailing symptom is 13% with a predominance of psychosomatic and psycho-vegetative disorders of 21.6%.

We consider the change in symptoms and phases of professional burn-out as dynamic processes that can use psychological defenses by reducing the emotional response to work stress. We propose to consider these dynamic processes as adaptation states in the form of physiological or pathological adaptation.

We consider phase rotation as a dynamic process and when a person is exposed to a stressful factor, it can move from one phase to another, and everything will depend on the ability of the physiological system of a person to withstand negative effects.

At the stage of "burnout", the body is not able to cope with psycho-emotional stress on its own and there is a transition from the psychological to the somatic process, which ultimately can form a psychosomatic incidence.

Therefore, in the phase of "exhaustion" in terms of negative effects on psychological and somatic health, there are symptoms of psychosomatic and psycho-vegetative disorders.

At the initial stage, with an undeveloped symptom, the two most extreme phases of tension and exhaustion are most pronounced. In this case, the phase of resistance (counteraction) is slightly expressed. In the future, the role of the resistance phase increases due to the formation of sustainable adaptation (self-regulation, psychological defense, the development of communicative and professional qualities, etc.), processes undergo changes in the direction of reducing stress and exhaustion. These processes are influenced by time, which is determined by the age or length of service in the profession and is subordinate to the "dose-time-effect" relationship accepted in toxicology.

The convention of the formation of phases should be noted, but, nevertheless, the stressing factor leads to confusion of the adaptation system (emergency stage) and causes two extremes that are characterized by the state of physiological or pathological adaptation. In the future, the formation of psychological resources causes an increase in adaptive capabilities and a transition to sustainable adaptation.

Cluster analysis using the Chebyshev measure showed the closeness of indicators: experience, age, specialty and the number of days of disability. The place of work does not play a significant role. The results of rank correlation prove the above conclusions. The severity of the disease (days of disability) is significantly affected by the age and length of service in the profession.

Individual temporary and functionally different parts of the adaptation process can have qualitatively different states and the degree of interde-

pendence of morbidity and adaptation. We have allocated 3 periods interconnected with the experience of work in the profession, morbidity and professional psychological adaptation.

The first period of "physiological adaptation (disadaptation)" lasts up to 15 years of work in the profession, while there is a consistent decrease in almost half the processes of psychological and somatic adaptation.

Disadaptation occurs with prolonged stress on the functional systems of the body, which are not able to fully compensate for the overload caused by a violation of the interaction with the external and internal environment. Disadaptation can occur in the form of mild disorders and have a reversible process, which, without external intervention, leads to the restoration of health.

The incidence in this period of experience of up to 15 years has a tendency to decrease, and it is often acute, subacute in nature, because there is a decrease in the impact, first of all, of the psychological component. Along with this, there is a process of increasing the functional adaptive reserves of the body by increasing the compensatory-adaptive reactions and mechanisms, which leads to a coordinated change in the processes and their reduction by almost half.

The second period of "transitional adaptation" lasts up to 25 years. The transition from physiological to pathological adaptation has a fairly long time in the profession, while there is a mismatched and unstable increase in psychological and decrease in somatic components.

Psychoprophylaxis and correction of the causes of stress can reduce occupational psychological disadaptation. Continuous work in the profession forms the mechanisms of psychological protection, knowledge and ability of conflict-free communication, stress resistance in response to traumatic effects. With an increase in the length of service in the profession, the mechanism of accumulation of stress and reduction of stress resistance starts to work, while the reserves of psychological and somatic health are depleted, and professional and psychological maladaptation increases by 20-25 years of working experience.

The third period of "pathological adaptation (maladaptation)" is observed after 25 years of work in the profession, while a stable pathological system is formed. In the third period of adaptation, close relationships and consistent increases in indicators of the psychological and somatic components are observed.

With maladaptation, the reserve capabilities of the body become largely exhausted, which leads to chronic pathological changes, disability and social activity of a person. With maladaptation, a stable pathology of a certain

system or organ is formed that is not able to independently perform its function without external influence. An example of this condition can be such diseases as: insulin-dependent diabetes mellitus, renal hypertension (tumor of the adrenal gland), high cholesterol, etc.

Professional-psychological maladaptation leads to chronic morbidity, which is proved by the methods of correlation and regression analyzes of the relationships of adaptation, morbidity and it is a statistically significant value (0.48). However, in certain periods of service, the relationship between professional psychological maladaptation and morbidity has a different severity. So, in the 1st period up to 15 years, a consistent decrease in both indicators occurs and the correlation is = 0.68, in the 2nd period from 15 to 20 years, the incidence rates and professional-psychological adaptation vary in different directions and are inconsistent, which indicates the absence of statistically significant relationships, in the 3 period of more than 25 years, the relationship of indicators become the most significant and amount to 0.72.

We have identified high morbidity with temporary disability and professional burnout among medical personnel with professional experience of up to 5 years, the main reasons that can be attributed to this include a long period of non-work in the specialty, a mismatch of professional suitability with the chosen specialty and low professionally significant personal qualities.

The discrepancy between medical and total length of service is observed among doctors in 48.8%, 42% of nurses and 83% of tenders.

Professionally significant personal qualities correspond to optimal indicators among doctors in 44.4%, paramedical personnel in 43%, service personnel in 33%.

We would like to note that the incidence has its own specifics and is tied to work experience and age.

We found that the duration (severity of incidence) and the number of cases of morbidity with temporary disability depends on age. Starting from 50-55 years, there is a sharp increase in the number of days of incidence from 26 at the age of 45-50 to 36 and then there is a dynamic growth of 55-60 years - 47, 60 years and older - 73.

The following classes of diseases make the largest contribution to the duration of morbidity with temporary disability (disease severity): neoplasms, skin and subcutaneous tissue diseases, circulatory system, musculoskeletal system and connective tissue, nervous system, while the duration of the disease does not coincide with the number of cases of diseases.

If we take all classes of diseases for 100%, then the number of cases of respiratory diseases will be 43; musculoskeletal system and connective tissue 21; circulatory system 12; digestive organs 10, i.e. 85.5%.

With increasing age, the number and maximum duration of morbidity with temporary disability indicates the dynamics of the aggravation (chronicity) of morbidity in such classes of diseases as: circulatory system, respiratory system, musculoskeletal system and connective tissue, digestive system.

For psycho-prophylaxis and correction of the influence of professional stress on the somatic and psychological health of medical workers, it is necessary to use effective psychophysiological, psychological and therapeutic technologies aimed at reducing the risk of the formation of professional psychological disadaptation and the emergence of crises in the profession. This approach will allow to properly plan financing and significantly reduce the cost of prevention and treatment.

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## ANALYSIS OF THE INCIDENCE OF CHILDREN AND ADOLESCENTS POPULATION OF THE REGIONS WESTERN KAZAKHSTAN

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**Annotation.** An analysis of the incidence of children and adolescents was carried out using the example of oil and gas producing regions of Western Kazakhstan: Aktobe, Aktau, Atyrau (main groups) and Uralsk (control group). The importance of the retrospective of the incidence of children and adolescents to find ways to solve problems and transform adverse situations of environmental factors is substantiated [1]. The analysis of materials on the statistics of the health of children and adolescents contributes to a targeted search for measures and the development of regional programs for the prevention of diseases and the maintenance of a healthy lifestyle [2,3]. Monitoring of the incidence of children and adolescents revealed deterioration in the health of children and adolescents in the cities of Aktau and Atyrau, which are most affected by adverse environmental factors.

**Keywords:** Health, children and adolescents, incidence, ecological environment.

**Relevance.** World Health Organization contributes to health disparities. Among adolescents, the social determinants of health have been of particular interest, since the effects of these determinants are crucially important for the health of entire populations and for national economic development. With these considerations in mind, in efforts to enhance adolescents' health, more emphasis has been placed on promoting various health-protecting factors than on merely reducing health risks. Furthermore, achieving good health would seem to require a comprehensive approach in which externally situated factors would be combined with individual-level factors [4]. Research examining the associations between assets and health indicators has mainly focused on a few selected assets. However, few studies have included many assets; to examine whether having more assets makes a larger contribution to adolescents' health than having fewer assets [5]. In the field



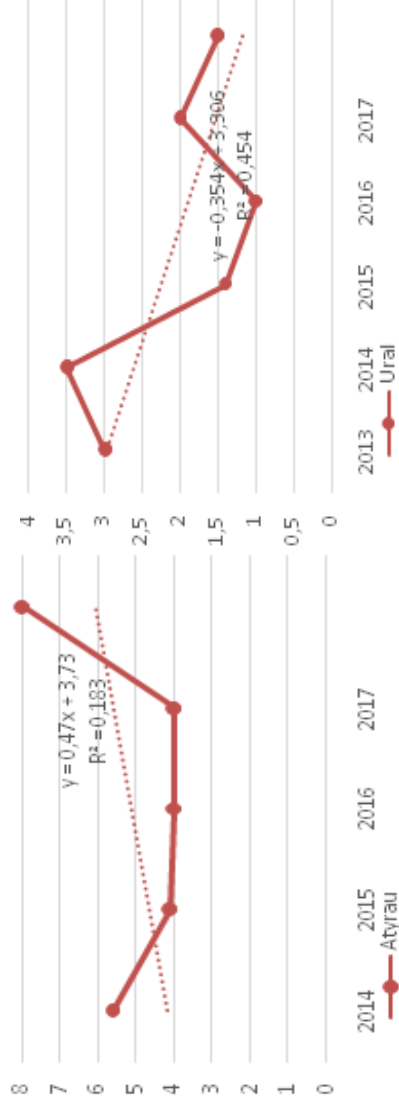
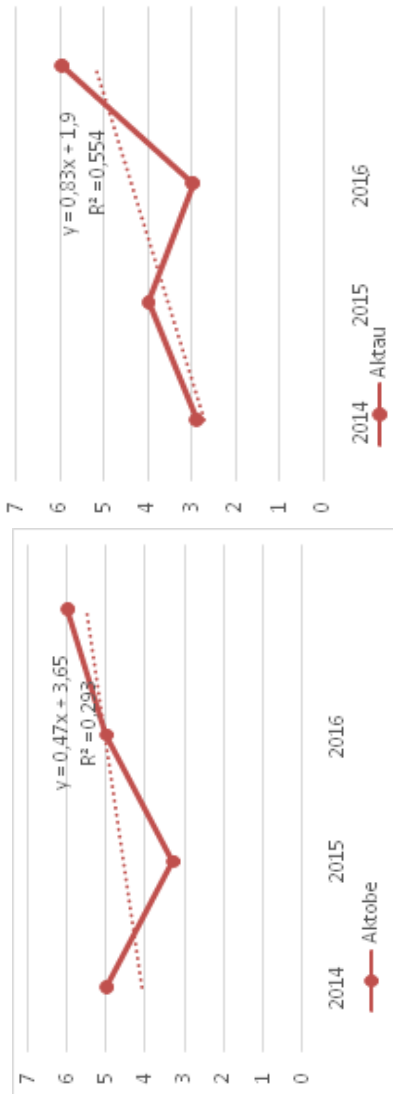
of public health and health promotion, the concept of 'health assets' has attracted considerable interest in the 21st century. A health asset can be defined as 'any factor (or resource), which enhances the ability of individuals, groups, communities, populations, social systems and/or institutions to maintain and sustain health and well-being, and to help reduce inequalities'[6].

**The purpose of the study** is to conduct a retrospective analysis of the incidence of children and adolescents among the regions of Western Kazakhstan.

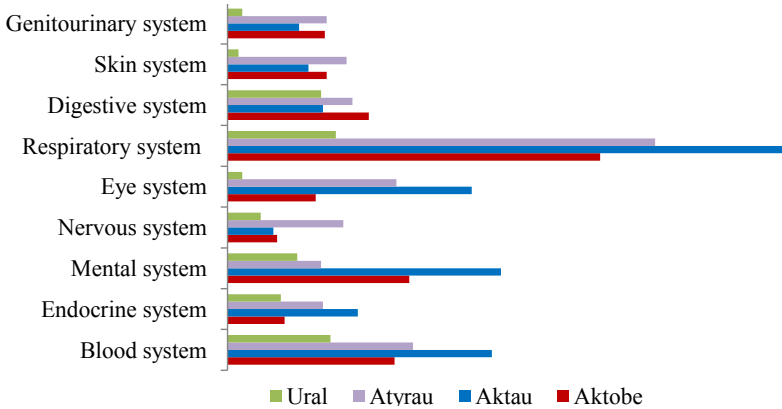
**Materials and methods.** Collection and processing of information on the incidence of the population was carried out according to the main departmental medical documents for registration and reporting on the number of diseases - F.12 for the last 5 years (2014-2018). Data was also copied based on the materials of the Department of Statistics (medical and demographic indicators). Monitoring characteristics of air pollution were taken from the Department of Ecology.

**The results of their discussion.** The data obtained regarding the state of atmospheric air for the period from 2014-2018 evidence of increasing technogenic pollution of various environmental objects. The air pollution index over the studied period of time is the highest in Aktobe, Aktau and Atyrau (Table 1).

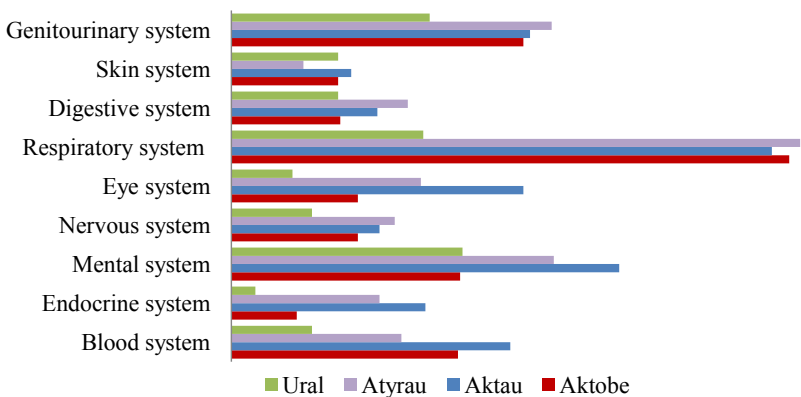
Air pollution index



Among children and adolescents of school age in the regions of Western Kazakhstan for five years, high incidence rates, leading respiratory system, then blood and blood-forming system, endocrine system, eyes system and digestive system follow (Pic. 1,2).



**Picture 1. The structure and dynamics of the incidence of children 2014-2018 years**



**Picture 2. The structure and dynamics of incidence in adolescents 2014-2018 years**

The analysis of materials on the statistics of the health of children and adolescents contributes to the targeted search for measures and the development of regional programs for the prevention of diseases and the maintenance of a healthy lifestyle. A retrospective of the incidence of children and adolescents revealed a deterioration in the health status of schoolchildren in the years of Aktau and Atyrau in Western Kazakhstan, who are most affected by adverse environmental factors.

**Conclusions.** Conducting epidemiological studies to identify the leading factors in children and adolescents, creating systems of epidemiological surveillance and monitoring the prevalence of environmental factors to reduce the incidence of children and adolescents, currently corresponds to the basic directions of general health protection for future generations of Kazakhstan.

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## THE USE OF SPINAL ANESTHESIA IN EMERGENCY SURGERY IN GYNECOLOGY AND SURGERY

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**Abstract.** Spinal anesthesia with the use of hyperbaric bupivacaine has proven to be an adequate and safe method of prolonged monoanesthesia in certain groups of patients when complex intubation is suspected or there are contraindications for its implementation. The data from the given clinical study substantiate the need for a wider use of spinal anesthesia in these clinical cases.

**Keywords.** Spinal anesthesia, hyperbaric bupivacaine.

Since the initial description in 1899 by August Beer, spinal anesthesia (SA) has experienced periods of popularity and oblivion. The last decade of the twentieth century was marked by an unprecedented surge in interest in regional methods of pain relief. Popularity is associated with the undoubted advantages of the method: simplicity and accessibility, the ability to reliably block pain impulses, providing relaxation, preventing the development of many neuro-vegetative reactions, preserved by the patient's consciousness. Operations performed under this type of anesthesia

are accompanied by less blood loss, lower levels of cortisol, free fatty acids, adrenaline and norepinephrine. According to the generally accepted opinion, this is due to the blocking of afferent and efferent pathways. The absence of hyperglycemic reactions, usually observed with general anesthesia, is possibly mediated by blockade of efferent sympathetic fibers directed to the liver, as well as inhibition of the release of catecholamines by the adrenal medulla. In a number of fundamental studies of recent years, it has been shown that general anesthesia eliminating pain perception does not block the passage of pain impulses at the segmental level, i.e. the spinal cord does not receive adequate antinociceptive protection, which is the basis for the formation of postoperative pain, impaired microcirculation and intestinal motor function in the postoperative period [1,2].

Spinal anesthesia (SA) is currently widely used in elective surgery. Our team has been using this method since the end of 1999. The accumulated experience of the planned use of this type of anesthesia, let us actively switch to the use of SA in emergency surgery. The main argument against this is the fact that spinal administration of anesthetic aggravates hypovolemia present in any acute surgical pathology. But the literature data do not take into account the peculiarities of modern spinal forms of local anesthetics (in particular, bupivacaine), along with adequate analgesia, very gently affect hemodynamics, and do not cause such a rapid restructuring, such as lidocaine or its combination with narcotic analgesics. In addition, in the case of regional methods, there is no problem of a full stomach and patients with various forms of hypertension are at less risk.

**Materials and methods.** We used SA with a hyperbaric solution of the spinal form of bupivacaine during the following surgical interventions (data are given in table 1)

**Table 1. Surgical interventions performed using SA**

Surgery	Total
Uterine Amputation	225
Appendectomy	102
Sewing a perforated ulcer	2
Bowel obstruction surgery	2
Surgery for strangulated hernia	43
Limb amputation	58
Rectum foreign body removal	2
Initial wound surgery on limbs	3
Total	437

Techniques for anesthesia did not differ from generally accepted ones. In the operating room, an infusion of crystalloid preparations of 10-15 ml / kg began (before the start of the administration of the anesthetic, the infusion was 700-1000 ml). 15 to 20 minutes before the puncture (in the ward), 0.5 to 1 mg of atropine was intramuscularly administered. In the position on the right side, under the local anesthesia, a subarachnoid space was punctured at the level of L<sub>2-3-4-5</sub> using a "standard" Quincke-Babcock type needle G 25-26 with a length of 80 mm by median access according to general rules through a standard needle for intramuscular injections. When liquor entered the needle pavilion, it was rotated by 360° to confirm the correct location. If the cerebrospinal fluid did not come from all quadrants, then this was regarded as finding a needle next to the dural sleeve and we refused to administer the anesthetic to avoid injury and inadequate blockade. Markain was administered for 1 to 2 minutes, without mixing with cerebrospinal fluid at a dose of 10-15 mg for operations on the lower extremities and 15-20 mg for abdominal operations. The patient indulged in the position of Fowler under the control of the block level. Medication sleep (if necessary) was achieved with benzodiazepines (20-35 mg) under the control of the effect. In cases of threatening bradycardia, atropine was re-administered.

A five-point scale was used to assess the adequacy of analgesia, based on the patient's behavioral responses during surgery and postoperative questionnaire data

The scale for assessing the adequacy of anesthesia (Shibanov V.Ya., 1988)

Indicator	Criteria	Score
The nature of pain during surgery	No pain	2
	Moderate, tolerable pain	1
	Hardly tolerated pain	0
The attitude of the patient to the anesthesia type	Only positive	3
	Uncertain	1
	Negative	0

The sensor unit was evaluated using a needle test, the motor unit similar to the Bromage scale. Monitoring was especially carefully performed every 3 minutes during the first 20 minutes, taking into account the fact of the gradual fixation of MA by the structures of the spinal cord (Duthie, 1987; B.G. Covino, 1989). Measurement of blood pressure, heart rate and SaO<sub>2</sub> (pulse oximeter "ELOX 01C") was performed by selective - mathematical analysis of the heart rhythm with an assessment of the activity of

the elements of the autonomic nervous system on a rhythm cardiomonitor. For quantitative assessment, the following indicators are calculated: voltage index according to R.M. Baevsky (VI) - normal indicators 200 - 1000; activity indices of the sympathetic (SIM) and parasympathetic (PAR) ANS divisions, normal indices are up to 30 [1,2].

Economic feasibility and pharmacoeconomic effect were evaluated.

**Results and discussion.** In most cases, adequate analgesia (sensory block) and myoplegia (motor block) occurred after 4 to 10 minutes. The duration of anesthesia was  $220 \pm 24$  minutes. A clear topical border of the spinal block ranged from the xiphoid process to the line connecting the nipples (in 8 cases, the border of the block rose to a level 2 cm below the clavicle).

When analyzing the effect of analgesia, we found that the effect was  $4.74 \pm 0.1$  points. In the study of hemodynamic parameters, it was noted that in patients the initial blood pressure significantly decreased by the skin incision stage ( $92, 1 \pm 8.52$  and  $59.2 \pm 5.1$  mm Hg) and returned to the initial value at the end of the operation. Vasopressors were used in 3 cases, for a short time. In 2 patients operated on for acute appendicitis during a long gestation period (22 and 28 weeks), ephedrine was used to prevent fetoplacental insufficiency. The effectiveness of the adequacy of anesthesia was confirmed by the results of a mathematical analysis of the heart rhythm:  $INB = 210 \pm 10.3$ ;  $SIM = 12 \pm 0.2$ ;  $PAIR = 8.4 \pm 1.3$ .

Complications. Block insufficiency occurred in 8 patients with spinal anesthesia supplemented with intravenous administration of ketamine and fentanyl while maintaining spontaneous respiration; in one case, we switched to endotracheal anesthesia due to the expansion of the scope of surgical intervention.

PHB was noted in 2 cases, had a mild course and was stopped by conservative methods.

Given the limitation of budgetary funding for healthcare, the economic pharmacoeffect is also obvious - as a result of which this type of anesthesia can be attributed to resource-saving technologies.

### Conclusions

1. SA bupivacaine for emergency surgical interventions has established itself as an adequate, safe, simple and economical method of pain relief, which gives grounds for wider use in urgent surgery.

2. For the listed nosological units, it does not require additional prolongation, combination with analgesics and dose reduction due to toxicity.



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## ANALYSIS OF VISCOSITY AND CRYSTALL-FORMING PROPERTIES OF THE SALIVA OF STUDENTS

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**Abstract.** The viscosity and crystal-forming properties of students' saliva were studied. The crystallograms were examined under a microscope and recorded as a graphic file on a computer. Microscopy of a dried droplet of saliva revealed various types of crystalline patterns. The unevenness and inequality of the crystalline pattern was found in different parts of the dried drop. The types of crystals corresponding to high and low viscosity of saliva were revealed. Saliva with increased viscosity is characterized by crystals with a dense arrangement, a random orientation, and saliva with a low viscosity is characterized by a microcrystallization pattern (small, shapeless, scattered, rarely located formations without a clear structure)

**Keywords:** saliva, viscosity, crystallogram, mineralizing potential, typification.

### **Introduction**

One of the modern areas of clinical and laboratory diagnostics is the development of non-invasive and minimally invasive methods for diagnosing pathological conditions. The study of saliva for many clinical and biochemical parameters has a number of advantages compared to laboratory blood diagnostics. This biomaterial obtained without invasive intervention is widely used not only in clinical practice, but also in hygienic, toxicological, immunological and scientific studies.

### **Purpose of the study**

Conduct a comparative analysis of the viscosity and crystal-forming properties of the saliva of students.

### **Materials and research methods**

A study of 78 samples of the saliva of students of the 1st year dental faculty, who gave their consent to participate in the experiment, was conducted. Saliva was taken on an empty stomach in a volume of 2 ml. The saline mineralizing potential was evaluated by the method (Leus P.A.,

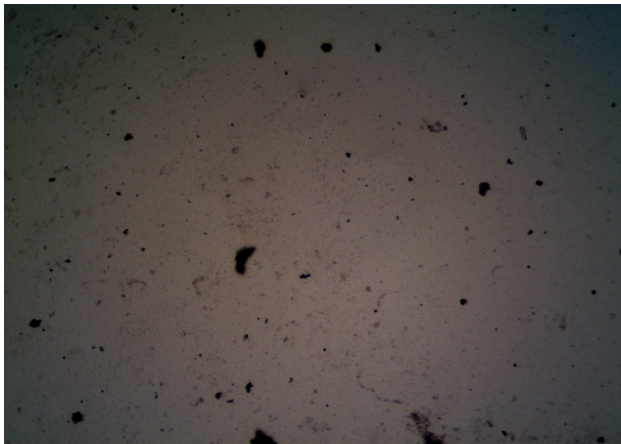
1977): after settling the native form, a supernatant in a volume of 0.01 ml was applied to the surface of a glass slide three isolated drops and dried at room temperature on a strictly horizontal surface. Next, microscopy of the samples was carried out.

When examining dried saliva under a microscope, various types of crystalline patterns and unevenness in different parts of the drop were revealed. The nature of the pattern on the glass was evaluated as follows: 1 point — a placer of randomly arranged irregularly shaped structures; 2 points - a thin grid of lines throughout the field of view; 3 points - individual crystals of irregular shape on the background of a grid and clumps; 4 points - medium-sized tree crystals; 5 points - a clear, large crystalline structure similar to a fern or parquet. Each of three drops of saliva was evaluated and the average MPS value was calculated. MPS values from 0 to 1 are considered very low, from 1.1 to 2.0 - low, from 2.1 to 3.0 - satisfactory, from 3.1 to 4.0 - high, from 4.1 to 5, 0 - very high.

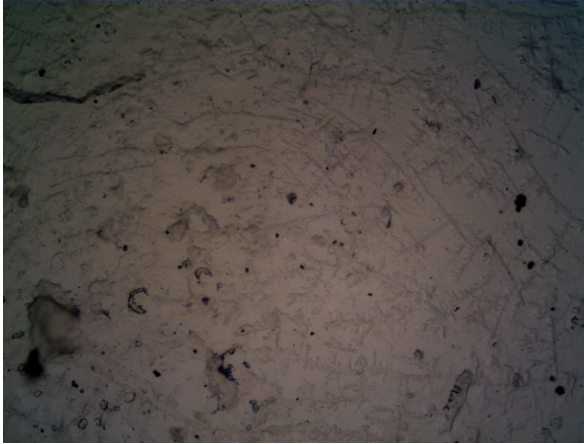
Saliva viscosity was determined according to the generally accepted method (Redinova T.L., Pozdeev A.R., 1994):  $TW/TS = VS/VW$ . where: TW - the time of the outflow of water (in sec.), TS - the time of the outflow of saliva (in sec), VS - the viscosity of saliva (in relative units), VW - the viscosity of water (in relative units). If we take the viscosity of water in relative units as 1, then the viscosity of saliva will be equal to  $VS = T_{\text{saliva}}/T_{\text{water}}$

### Results and discussion

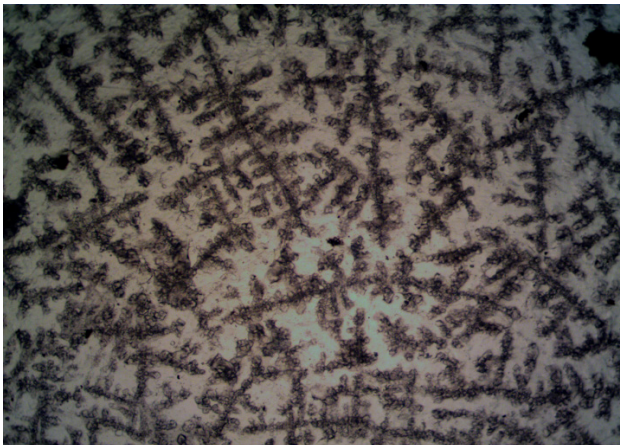
During the study, type 1 MPS was detected in 7% (N = 5) of the examined, type 2 and 3 in 8% (N = 6), type 4 of MPS was recorded in 31% (N = 24) of cases, and type 5 in 46% (N = 36) of examined.



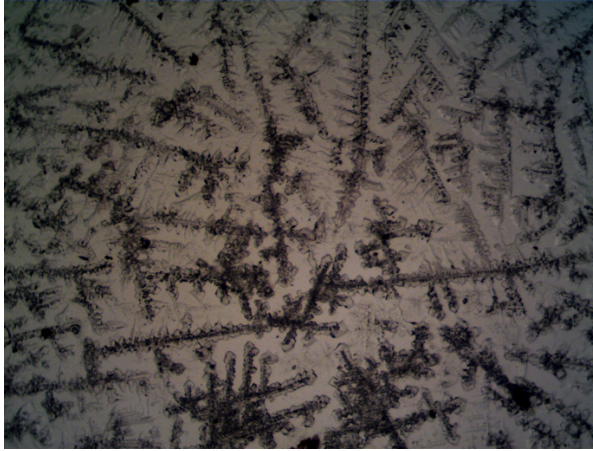
**1 type of MPS**



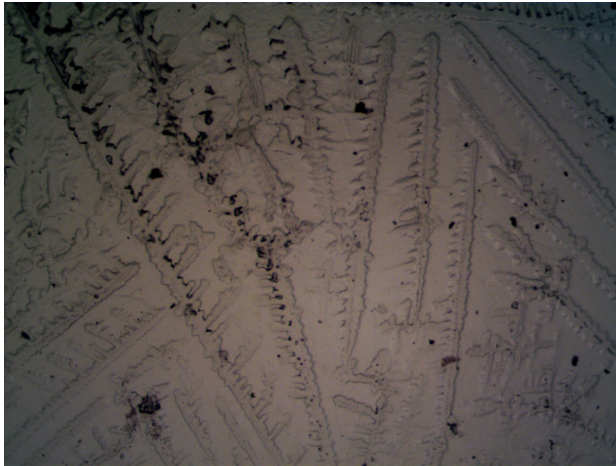
**2 type of MPS**



**3 type of MPS**



**4 type of MPS**



**5 type of MPS**

An analysis of saliva viscosity, measured in relative units, correlates with the crystalline pattern of a dried droplet of saliva. According to our data, saliva viscosity values in relative units were: for 1-3 types of crystals, from 1 to 3 relative units (low saliva viscosity), for 4-5 types of crystals, from 4 to 8 relative units (high viscosity).

According to published data, the ideal (normal) type of crystallization of saliva has the form of clearly formed "fern leaves" or "coral branches" evenly distributed over the entire surface of the droplet.

It is known that changes in the composition of saliva and the shape of the crystals formed correlate with diseases in the oral cavity (caries, gingivitis, periodontitis, etc.), as well as with somatic diseases and physiological changes in the body.

### **Conclusion**

Microscopic examination of the saliva of students found that its crystalline pattern is not the same and depends on the viscosity of the saliva. The revealed polymorphism of the crystals of the saliva of students suggests the possibility of further study in pathological conditions with the aim of developing methods for non-invasive monitoring of the disease and its correction.

## INDICATORS OF BONE MINERAL DENSITY IN PERIMENOPAUSAL AND POSTMENOPAUSAL WOMEN

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**Abstract.** As a result of the study, a decrease in normal indicators of bone mineral density in women over 40 years old even before the onset of menopause was revealed. The maximum value of osteopenia was detected in women with a menopause of up to 5 years, inclusive. Indicators of osteoporosis were determined in premenopause, increased with the duration of menopause, and reaching maximum values with a menopause duration of more than 18 years. From our point of view, an integrated approach to the diagnosis of osteopenia and osteoporosis is necessary. Osteodensitometry indices must be taken into account in full in women of the late reproductive and premenopausal periods.

**Keywords:** Osteopenia, osteoporosis, osteodensitometry, premenopause, postmenopause.

Osteoporosis is a systemic disease of the skeleton of the body, characterized by a decrease in bone mass and microarchitectural damage to bone tissue, followed by an increase in the fragility of bones and an increased risk of fractures. [1,2,3] Osteoporosis is called a “silent epidemic,” since bone loss is asymptomatic and is often diagnosed only after fractures. The most common form of this disease is postmenopausal osteoporosis, which is characterized by a progressive decrease in



bone strength with age, which is noted with the onset of menopause. With an increase in the life expectancy of women, the risk of developing osteoporosis and fractures increases [1,2,3]. But a change in the mineral density of bone tissue can also occur in women who have not yet reached the menopausal period, since already in the late reproductive and premenopausal periods there is a decrease in the estrogen-producing function of the ovaries, which may also lead to the development of changes in bone tissue. This is possible because bone tissue is the target organ of estrogens, which play an important role in modulating bone resorption.

The aim of this work was to study the indicators of bone mineral density in women of different age groups, the importance of these indicators for early diagnosis of osteoporosis, as well as in predicting the risk of fractures. The objects of this study were the data from a study of 138 women aged 40 to 89 years. Patients with diseases affecting bone metabolism were excluded from this study: systemic diseases of the connective tissue, hyperparathyroidism, thyrotoxicosis, illness and Itsenko-Cushing's syndrome, malabsorption syndrome, renal failure, impaired liver function, oncological diseases, surgical menopause, and also the patient, long-term receiving corticosteroid, cytostatic, anticonvulsant therapy and drugs for the treatment of osteoporosis. Depending on the age, the patients were divided into groups, as presented in table 1.

**Table 1 Age characteristics of the examined group of patients**

Age groups	1 group (40-49 years old)		2 group (50-59 years old)		3 group (60-69 years old)		4 group (70-79 years old)		5 group (80-89 years old)	
	Abs.	%	Abs.	%	Abs.	%	Abs.	%	Abs.	%
Number of women	13	9,4	34	24,6	40	28,9	30	21,7	21	15,2

All patients underwent a study of the state of their bone tissue.

The state of bone tissue was studied by measuring the mineral density of bone tissue using dual-energy x-ray osteodensitometry using the NORLAND osteodensitometry apparatus (USA) in the lumbar spine and in the femoral neck.

Research results and discussion. Normal bone mineral density was found in 30 (21.7%), osteopenia in 44 (31.9%) women, osteoporosis in 64 (46.4%) patients. Our data are consistent with the data of several authors on the prevalence of osteoporosis in a population older than 40 years [1,2,3].



When analyzing the age-related dynamics of bone mineral density, it was found that osteodensitometry values corresponding to osteoporosis increase with age. Normal bone mineral density decreases with age, and osteopenia tends to increase up to 60 years. After 60 years, osteopenia is gradually declining.

Noteworthy is a group of women of 10 women with osteopenia aged 40-49 years. In 5 of them, the age of postmenopause has not yet been reached, but indicators of bone mineral density have already been characterized by osteopenia. It was revealed that the menstrual cycle in these women was irregular, with menstruation delays of several months. A further more in-depth examination of these women during an ultrasound examination of the pelvic organs revealed a decrease in the ovarian reserve, and when studying the indicators of antimuller hormone and estradiol, they decreased below the reference values for this age group, accompanied by an increase in estradiol. This allowed us to conclude that in these patients the subsequent development of osteoporosis and the occurrence of osteoparetic fractures are possible.

There was a decrease in normal indicators of bone mineral density in the group of 60-69 years old compared with the group of 70-79 years old, which is associated with the identification of two main characteristics of bone metabolism, each of which leads to a decrease in bone mass: osteoporosis with high bone metabolism, with which high bone resorption is not compensated by normal or increased bone formation; and osteoporosis with low bone metabolism, when the rate of bone resorption is normal or reduced, and the rate of bone formation is slowed down.

It is likely that both forms of bone metabolism can manifest themselves as different stages of the osteopenic process in one patient. The first one occurs in the shortest possible time after the onset of menopause and is due to the loss of the protective effect of estrogen on bone tissue, and is characterized by accelerated loss of bone mass, especially spongy bone. The second is manifested with age and is characterized by a slow-down in bone remodeling processes. Our results can also be associated with the process of adaptation of the body to a low level of estrogen in a number of patients examined by us in the age group of 70-79 years and the completion of the first stage of the osteopenic process with the cessation of loss of bone mineral density. Whereas in some patients in the age group over 80, the influence of the second form of bone metabolism with a decrease in bone formation increases. In almost half the cases of the disease, osteoporosis is asymptomatic and is diagnosed only in the presence of bone fractures. Externally, the aging of the musculoskeletal

system is manifested by a change in the statics and dynamics of the human body. Osteoporosis of the bones leads to a decrease in the height of the vertebral bodies, causing a wedge-shaped deformation with an apex anteriorly and an increase in kyphosis in the thoracic region. On examination, attention is drawn to a change in the patient's posture - kyphosis of the thoracic spine, which today is considered as the first clinical sign of osteoporosis.

Thus, according to our data, a decrease in normal indicators of bone mineral density in women older than 40 years before the onset of menopause was noted. The maximum value of osteopenia was detected in women with a menopause of up to 5 years, inclusive. Indicators of osteoporosis were determined in premenopause, increased with the duration of menopause, and reaching maximum values with a menopause duration of more than 18 years. From our point of view, an integrated approach to the diagnosis of osteopenia and osteoporosis is necessary. Osteodensitometry indices must be taken into account in full in women of the late reproductive and premenopausal periods.

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## THE PROBLEMS INHERENT IN THE COMPETENCY APPROACH WITH RESPECT TO DEVELOPING EDUCATIONAL PROGRAMS

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**Abstract.** The article discusses some factors of the successful formation of general cultural and general professional competences. It is shown that the formation of competencies is the main goal of education.

In the article are observed some factors of successful formation of common cultural, professional and common professional competences. It is shown that the formation of competencies is the main goal of education.

**Keywords:** general cultural competence, professional competence, simulation training, general professional competence, competency-based approach, educational content.

The involvement of higher vocational education in innovative processes is reflected in the new Federal State Educational Standard for Higher Education (FSES HE), which features a focus on the formation of certain general cultural students. professional and general professional competencies. It is this set of competencies that are reflected in the Federal State Educational Standard of Higher Education and should be formed among graduates, which ensures the readiness of a young specialist for the successful implementation of professional activities [1].

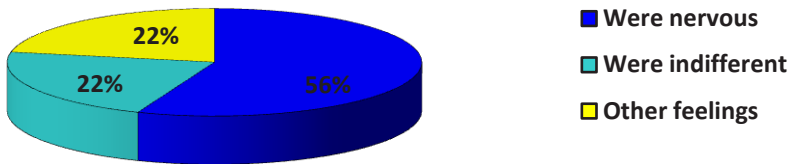
Differences of competences from other products-results of the educational process are that they: are an integrated result; allow you to solve a whole class of problems in contrast to functional literacy; exist in the form of activity, and not just in the form of knowledge about the methods of activity. Competence is a didactic unit of assimilation, a form of combination of knowledge, skills, experience that allows you to cope with the tasks.

So, what are the conditions necessary for the formation of the necessary competencies and the successful training of a future specialist in demand on the labor market?

In the recent past, an innovative direction has appeared in the educational process - simulation training, which is a product of scientific and technological progress. The development of a medical university student of a certain competency implies, among other things, the development of practical skills. During the development of the skill, a complex of problems arises on the patient: lack of time, risk to the patient's health and dissatisfaction, lack of communication skills among students. Simulation training allows you to safely and real-time improve manual skills, increasing the level of professional skill of students. Due to the presence of simulators of different level of realism, the possibility of training on them is very extensive: starting with simple manipulations and ending with the reconstruction of the clinical situation of any degree of complexity. The introduction of simulation methods in the training system for graduates of medical schools is currently mandatory and approved by law: order of the Ministry of Health and Social Development of the Russian Federation of January 15, 2007 № 30 "On approving the procedure for admitting students of higher and secondary medical schools to participate in the provision of medical care to citizens"; Order of the Ministry of Health and Social Development of the Russian Federation dated December 5, 2011 № 1475 "On approval of federal state requirements for the structure of the main professional educational program of postgraduate professional education", letter of the Ministry of Health and Social Development of the Russian Federation dated April 18, 2012 № 16-2 / 0/2-3902 "On the procedure for organizing and conducting practical training in the main educational programs of secondary, higher and postgraduate medical or pharmaceutical education and additional professional educational programs."

Due to the special importance of simulation training in the process of mastering competencies, a study was conducted in the framework of this work. To analyze the assessment of the accreditation process by students at the simulation center of the Federal State Budgetary Educational Institu-

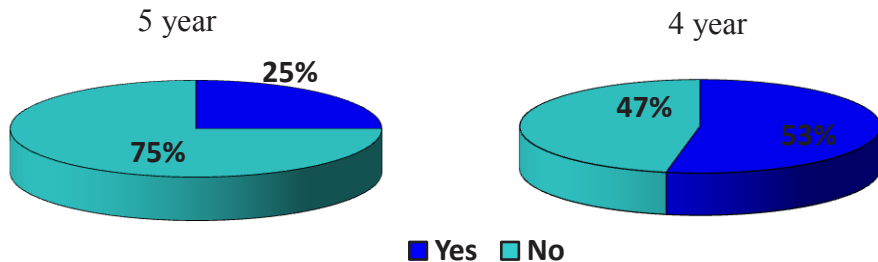
tion of Higher Education NOSMA of the Ministry of Health of Russia, we conducted a survey of 200 graduates. As a result of the analysis of the questionnaires, the following data were obtained. For 45% of the graduates surveyed, the size of the premises in which the accreditation took place was important. For 55% - this factor did not matter. Supervised work caused anxiety in 56% of students, in 22% - other feelings and in 22% - did not cause any feelings (Fig. 1).



**Fig. 1. The number of students experiencing a different reaction to video surveillance during the accreditation process (%).**

Accreditation on simulators 65% of respondents considered more effective than passing an exam on practical skills. A complete identity of the simulation room to the real was considered necessary by 82% of students. 95% of the students who were surveyed did not notice any negative points in the process of accreditation.

The survey was also conducted for 100 4th and 5th year students who are in the process of accreditation. Among 5th year students, 64% noted the importance of the area of the simulation room. The number of 4th year students who consider this factor important was even higher - 71%. A feeling of nervousness in the presence of video surveillance when passing the exam was noted by 72% of the 5th year students and 95% of the 4th year students. All 5 year respondents considered it necessary to fully copy the simulation room from the real. Among 4-year students, 87% also considered this way. When asked whether they would be ready for accreditation at the end of the 5th year, only 50% of fifth-year students and 84% of fourth-year students answered positively. Of great interest was the issue related to the effectiveness of accreditation on simulators compared to passing the exam in practical training. 75% of 5th year students and 53% - 4th year students have confirmed the high efficiency of accreditation (Fig. 2).



**Fig. 2. The number of 4th and 5th year students who gave a positive or negative answer to the question about the effectiveness of accreditation compared to passing an exam in practical skills (%).**

According to the competency-based approach, the content of education is designed to be based on the principle of modular learning. The modular approach in higher vocational education is a concept of the organization of the educational process, in which the totality of the student's professional competencies is the goal of training, and the modular construction of the content and structure of vocational training is used as a means of achieving it [2].

A module is understood as an integral set of skills, knowledge, relationships and experience (competencies) to be developed, described in the form of requirements that a student must meet upon completion of the module, and is an integral part of a more general function. Each module is evaluated and certified. It is a relatively independent unit of the educational program aimed at the formation of a specific professional competence or group of competencies. Accordingly, a modular program is a combination and sequence of modules aimed at mastering certain competencies necessary for assigning a qualification.

An important component of the education process at the present stage is the widespread use of such teaching aids that are able to form the student's necessary skills and professional qualities. The teacher's task consists not only in the presentation of new knowledge, but also in the ability to guide the participants of the training on an independent search for original solutions to problem situations, to increase activity and initiative. In the new conditions, the teacher regulates and organizes the educational process, prepares methodological support, formulates topics, questions and assignments for discussion in groups, conducts consultations, monitors the implementation of the plan, and at the same time gives him the opportunity to choose and combine the most effective teaching methods, which undoubtedly helps to improve the quality of the educational process.

The strategic task of the teacher is to actively introduce and use well-known active and interactive forms, as well as their original developments, that is, actively participate in the process of improving the educational process [3]. To implement the requirements of modern standards in the work program of the discipline (module), the teacher should reflect specific recommendations on the use of active and interactive forms of training with a brief description of the technology of their application.

Interactive- means to interact, be in a mode of conversation, dialogue with someone. In other words, in contrast to active methods, interactive ones are oriented towards a wider interaction of students not only with the teacher, but also with each other, aimed at increasing students' activity in the learning process. The task of the teacher in interactive classes is to manage the activities of students in accordance with the objectives of the lesson. The teacher develops a lesson plan (usually these are interactive exercises and tasks, during which the student learns the material). Interactive learning - these are various forms of interactive learning, implemented through interaction both between the student and the teacher, and between the students themselves.

Modern problem-based teaching should be applied in all types of classes, provided that the teacher, the students and the teaching material are ready for the lesson, a clear plan for its implementation has been developed. The art of a teacher giving a problem lecture is to manage the creation, development and resolution of problem situations.

The task of the teacher is to state the problem situation before receiving the necessary information to solve it. Thus, students independently try to find a solution to a problem situation. Educational problems should be accessible in terms of complexity, take into account the cognitive abilities of the trainees, proceed from the subject being studied and be significant for the assimilation of new material and the development of personality.

Problematic lectures provide creative assimilation by future specialists of the principles and laws of the studied science, activate the educational and cognitive activities of students, their independent classroom and extracurricular work, the assimilation of knowledge and their application in practice.

It should also be noted that the ability to convert oral and written information into a visual form is the professional quality of many specialists. Consequently, in the learning process, elements of professional thinking should be formed: systematization, concentration, emphasis on content.

The essence of the technology in question can be represented in a combination of four parts:

1. Systematic use in the educational process of visual models of one particular type or their combinations.
2. Formation of students' skills of rational "compression" of information and its cognitive-graphic presentation.
3. Inclusion in the educational process of visual models, which should have clear steps and methodological solutions.
4. Mandatory use of simulation training in the educational space.

Another component of the successful development of educational programs is a set of measures to improve the methodological work of the university.

Methodical work should meet the principles of expediency, scientificness and social conditioning in the work; all provisions and conclusions should be scientifically substantiated, aimed at the development of modern technologies, forms and methods of education and training, have a practical orientation, the possibility of use in high school. The methodological work of each teacher should become the property of the whole team, therefore, each teacher of the educational institution should be engaged in the methodological work, this is their job duty. The problem of the methodological activities of the university teacher is updated in connection with a change in the educational space. The aim of the pedagogical activity of a university teacher in modern educational conditions is to achieve a high-quality result - a bachelor, specialist, master, - which indicates their professional readiness. The quality of the methodological support of educational programs implemented at the university depends on the quality of the educational and methodological activities of the university teacher. The internal university quality assurance system involves the systematic monitoring of the methodological activities of teachers.

An important factor affecting the quality training of a future specialist can be considered a teacher's continuing education. The effectiveness of the continuing education process depends on the end results of the educational institution and is determined by how it implements the main functions of identifying and solving problems: a problem-oriented analysis of the state of the pedagogical system; search for solutions to problems; planning innovations; motivation of performers; implementation of changes, monitoring, evaluation and regulation of change processes. Further training of teachers through the introduction of information technology in the educational process is associated with the solution of such tasks as updating and systematization of information resources of the educational process; development and testing of technologies for multimedia support of the educational process; the identification and characterization of the



system of pedagogical tools that contribute to the formation and enhancement of the competence of teachers; development of methodological recommendations for teachers and the administration of an educational institution on the organization of methodological support for professional activities of teachers in the context of informatization of education; creation of a virtual teaching room; creation of a comprehensive integrated model of information and methodological support of the educational process of public education.

One of the priority areas for continuing education of teachers is the formation and deepening of their information competence. At the same time, a number of tasks set for the informatization of the education system are highlighted:

- improving the management mechanisms of the education system based on the use of automated data banks of scientific and pedagogical information, information and teaching materials, as well as communication networks;
- improvement of the methodology and strategy for the selection of content, methods and organizational forms of training, education, corresponding to the tasks of developing the personality of the student in modern conditions of informatization of society;
- creation of methodological training systems focused on the development of the learner's intellectual potential, on the formation of skills to independently acquire knowledge, carry out information-educational, experimental research activities, various types of independent information processing activities;
- creation and use of computer testing, diagnostic methods for monitoring and assessing the level of knowledge of students;
- improving professional skills using simulators of different levels of realism.

Improving the information competence of the teacher is associated with the process of intellectualization of the activities of the teacher and student, developing on the basis of the implementation of the capabilities of new information technologies and supporting the integration trends of the process of cognition of the laws of subject areas and the environment, combined with the advantages of individualization and differentiation of education [4]. The most important procedure that directly affects the quality of specialist training is also professional and public accreditation. According to the Law on Education in the Russian Federation, "professional and public accreditation of professional educational programs is a recognition of the quality and level of training of graduates who have mastered such an educational

program in a specific organization engaged in educational activities that meet the requirements of professional standards, the requirements of the labor market for specialists, workers and employees appropriate profile. " The specifics of professional and public accreditation is that, firstly, it does not replace the constantly modernizing state accreditation, and secondly, it evaluates the quality of the program in terms of matching the quality of graduate training with the needs of the labor market. According to accrediting organizations, the main reasons for passing a university procedure of professional and public accreditation are: "synchronization of learning outcomes for ongoing educational programs with current labor market requirements and industry professional standards"; "Strengthening internal and external guarantees of the quality of education at the level of ongoing educational programs and the educational organization as a whole"; "Optimization of the management system of the educational organization"; "Improving performance indicators of the educational organization"; "The formation of a culture of quality among the administrative and teaching staff."

During professional and public accreditation, all components of the educational program are evaluated, first of all, its content, educational technologies, design, which influence the formation of a set of professional competencies. This is also an assessment of graduates. Despite a fairly detailed study of the technology for the analysis of the educational program, based on the study of not only the necessary documentation, but also the results of interviewing students, graduates, teachers and employers, attending training sessions and certification events, assessing the actual learning outcomes based on the results of examination sessions, state exams and the defense of final qualification works, confirming the reliability of the assessment of actual learning. On the basis of data on the results of examination sessions and final state certification, the assessment of actual results of graduate training on the basis of a direct expert assessment of the knowledge, skills and competencies of graduate students, the significance of the expected learning outcomes, the procedures associated with assessing the quality of graduates are still quite a problem area. Of course, accreditation of graduates using modern simulation centers is a significant help in solving this problem.

A significant advance in this direction could also be the addition of an assessment of the quality of the educational program by monitoring university graduates in the labor market - an analysis of their demand for the professional community over the past 3-5 years. Thus, professional public accreditation itself is absolutely necessary for universities today, but the improvement of this system is also necessary, which is due to constant changes in the educational environment and labor market requirements.

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## BIOLOGICALLY ACTIVE SUBSTANCES OF CHLORELLA IN ANTI-CELLULITE COSMETICS

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**Abstract.** The problem of structural changes in the skin, known as “cellulite”, is familiar to many women. Cosmetic anti-cellulite products must contain biologically active substances that stimulate the breakdown of fats, enhance blood circulation and lymph, activate metabolic processes in the skin cells. Chlorella contains a unique complex of biologically active substances, including proteins and amino acids, lipids, vitamins, pigments and others. In order to create an anti-cellulite cosmetic gel, the chemical composition of a Russian industrial sample of chlorella was analyzed, its potential as a cosmetic ingredient was evaluated, studies were conducted on the selection of prescription components of the target product, gel samples were obtained and their physicochemical and cosmetic parameters were determined. Known laboratory analysis methods were used. As a result of the work, a high protein content of 48.5% was found in the chlorella sample. chlorophyll - 3.58%, carotenoids - 0.15%, with a relatively low lipid content. The results of selecting the components of the gel formulation are described: chlorella - 2-3%, other assets - propylene-glycol extracts of juniper, horsetail, horse chestnut -1-3%, wheat germ oil - 0.5-1.5%, ginger essential oil - 0.1-1.5% and others. Natural plant polymers – sodium alginate and pectin – were used as structure-forming agents. It is shown that the developed cosmetic gel based on chlorella, with regular use, reduces the signs of cellulite, is convenient to use, has high colloidal and thermal stability.

**Keywords:** anti-cellulite gel, chlorella, biologically active substances, use, formulation.

### **Introduction**

Interest in the biologically active substances of chlorella continues to grow over the past years. Awareness of cosmetics consumers about the potential benefits of chlorella is increasing along with a growing body of research in the biology and chemistry of this microalgae. The possibility of using chlorella in cosmetics is associated with its ability to synthesize a special complex of biological compounds.

### **Literature review**

According to the researchers, the dry biomass of chlorella contains 40-55% protein, 35% carbohydrates, 5-10% lipids, minerals, a wide range of vitamins, pigments and other biologically active compounds [1,2,8,10]. The active components of chlorella include proteins and amino acids, poly-unsaturated fatty acids, chlorophyll, carotenoids, B vitamins, vitamin C, pantothenic and folic acids, vitamins E, K, trace elements. Due to the microscopic size of chlorella (about 10 microns), its biologically active substances easily penetrate the pores of the skin and act very effectively. The complex action of the active components of chlorella can contribute to the normalization of metabolic processes in skin cells, including lipid metabolism, improve tissue nutrition and regeneration, help restore collagen and elastin, and weaken inflammatory processes [4].

### **Theoretical background**

Anti-cellulite cosmetics occupy an important place in the cosmetics industry. Consumers prefer to use cosmetics with natural herbal ingredients to eliminate cellulite; chlorella has not been used in this area.

To understand the possibilities of using chlorella in anti-cellulite products, it is necessary to analyze the developmental features and the reasons for the appearance of this cosmetic skin defect. Currently, the mechanism of cellulite formation is not fully understood and even the concept of cellulite is interpreted differently by different authors. In Russian cosmetology, the term "cellulite" refers to a certain cosmetic defect - uneven, rough, flabby skin, which is the result of structural changes in the subcutaneous fat layer. The pathogenesis of cellulite is a weakening of the tone, congestion in the blood and lymph circulation, uneven deposition of subcutaneous fat [7]. The development of cellulite first leads to the formation of edema, and then to the development of tissue fibrosis. As the fibrous tissues become denser and harder, the surface of the skin becomes uneven, and the "orange skin effect" appears. The causes of cellulite are hormonal disorders, heredity, malnutrition and others. Measures for the prevention and elimination of cellulite are complex: stimulation of fat breakdown, reduction of lipogenesis, activation of blood and lymph circulation in adipose tissue, elimination of congestion, increase vascular tone and strengthening of their walls.

The presence of a unique set of biologically active substances in chlorella allows us to consider it as an effective tool for the prevention and elimination of cellulite.

The aim of the work was to create an anti-cellulite cosmetic gel based on an original complex of biologically active substances of plant materials, primarily chlorella.

### **Materials and research methods**

The objects of study were the Russian industrial powder sample of the microalgae *Chlorella Vulgaris*, as well as other prescription components of the anti-cellulite gel - sodium alginate, pectin, glycerin, hydrogenated castor oil, wheat germ oil, ginger essential oil, propylene-glycolic extracts of juniper, kosher juniper, x water and others. All prescription components corresponded to the state standards of the Russian Federation and technical specifications for these products.

### **Research procedure**

A chemical analysis of a sample of the microalga *Chlorella Vulgaris* was carried out for the content of protein, lipids, fiber, hemicelluloses, chlorophyll, carotenoids, vitamin B<sub>12</sub>, water, known laboratory methods [5,6,9]. The prescription components necessary for the formation of the structure of the cosmetic gel and its biologically active complex were selected, as well as ensuring the stability of the gel quality during storage, the optimal amounts of the prescription components were determined. The components of the gel and their content were selected in such a way as to obtain an anti-cellulite gel that is easily applied and retained during skin wrap, and the biologically active components contained in it simultaneously increased tone and strengthen the walls of blood vessels, stimulated lipid metabolism, which as a result made the skin more even and elastic.

The quality of the anti-cellulite gel was evaluated by organoleptic characteristics, colloidal stability and thermal stability.

### **Results and discussion**

It was established that the sample of *Chlorella Vulgaris* contains: protein - 48.5%; lipids - 4.82%; chlorophyll - 3.58%; carotenoids - 0.15%; fiber - 14%; hemicelluloses - 12.2%; vitamin B<sub>12</sub> - 0.019 µg/g, water - 9.9%. High concentrations of protein, chlorophyll, carotenoids in this sample of chlorella suggest that its inclusion in a cosmetic product will contribute to the normalization of metabolic processes in skin cells, including lipid metabolism, it will enhance tissue nutrition and their regeneration, which is necessary for the prevention and elimination of cellulite phenomena.

The composition of the anti-cellulite gel formulation included natural gelling agents - sodium alginate and pectin, the oil phase - hydrogenated castor oil and wheat germ oil, a complex of biologically active components - chlorella, ginger essential oil, propylene-glycolic extracts of juniper, horsetail, horse chestnut, and also glycerin, preservative, demineralized water.

Sodium alginate is a polysaccharide consisting of residues of D-mannuronic and L-guluronic acids and their salts. Derived from *Laminaria* seaweed. Sodium alginate has a gel-forming and also pronounced biologically active effect: it increases the tone of the skin and subcutaneous layer, stimulates metabolic processes, normalizes the functioning of the sebaceous glands, strengthens and tightens the skin. Pectin is a plant heteropolysaccharide, floral agent. It positively affects the skin condition: tones, moisturizes, stimulates the regeneration process, protects against UV-radiation.

Hydrogenated castor oil is easily absorbed, contributes to the rapid penetration of biologically active components of the gel into the skin, softens and moisturizes the skin, forms a protective film on it, preventing excessive evaporation of moisture. Wheat germ oil contains polyunsaturated fatty acids - not less than 60 wt.%, Vitamin E - not less than 200 mg/100g. It has antioxidant, regenerative and anti-cellulite effects. Ginger essential oil contains zingiber, gingerol, camphene, cineole, citral, linalool and other compounds. Ginger essential oil is introduced into the gel as a means of toning and warming the skin, improving blood circulation.

To enhance the anti-cellulite effect, propylene-glycolic extracts of juniper, horsetail and horse chestnut are included in the gel formulation. Juniper extract has powerful antiseptic and tonic properties, stimulates the skin to intensive renewal, activates cellular metabolism, helps to remove excess fluid from tissues. Horsetail extract contains silicon, which affects collagen synthesis and strengthens capillary walls, vitamin C and flavonoids with antioxidant properties, as well as phenolcarboxylic acids, saponins, alkaloids and other compounds. Thanks to the complex of these substances, skin elasticity is increased, the surface is smoothed, and the skin takes on a more healthy appearance. Horse chestnut extract contains flavonoids, saponins, tannins, vitamins, trace elements. Horse chestnut extract reduces blood coagulation, strengthens and tones the walls of capillaries, improves blood circulation.

Glycerin is introduced as a moisturizing component. As a preservative, Sharomix 705 plus was used - a liquid mixture of benzoic acid, sorbic acid, dehydroacetic acid, vitamin E in benzyl alcohol.

The optimal amounts of all of these ingredients in an anti-cellulite gel were determined. Table 1 shows the organoleptic characteristics of the gels obtained with the introduction of chlorella in an amount of from 1 to 5% by weight of the gel. It was found that at all concentrations of chlorella, the gel structure is uniform, stable, the gel is easily applied to the skin. However, at a concentration above 3%, the specific smell of algae is strongly expressed, which is transmitted to the client's skin. At a concentration of less than 2%, the cosmetic result is poorly expressed. Therefore, effective concentrations of chlorella in the gel can be 2-3%.

Based on the complex of studies, the anti-cellulite gel formulation was developed, shown in Table 2, laboratory gel samples were produced.

**Table 1 - the Effect of chlorella concentration on the organoleptic characteristics of the gel**

Chlorella concentration, %	Organoleptic characteristics of gels		
	consistency (structure)	colour	smell
1,0	gel-like, homogeneous	color is uneven, there are green inclusions of chlorella on the background of a transparent gel	subtle, with a specific odor of algae
2,0	gel-like, homogeneous	color is uneven, there are green inclusions of chlorella on the background of a transparent gel	subtle, with a specific odor of algae
3,0	gel-like, homogeneous	green, the gel is evenly colored	subtle, with a specific odor of algae
4,0	gel-like, heterogeneous	green, the gel is evenly colored	strong, with a pronounced specific odor of algae
5,0	gel-like, heterogeneous	green, the gel is evenly colored	strong, with a very pronounced specific odor of algae, unpleasant

The analysis of physicochemical characteristics and cosmetic action of the gel samples. High marks are obtained for the physicochemical characteristics of the product, its compliance with the indicators of colloidal stability and thermal stability to the state standard of the Russian Federation (GOST 29188.3). The compositions of the obtained anti-cellulite gel were tested on volunteers - women aged 45 to 70 years with weak and moderate signs of cellulite. Anti-cellulite gel was used to wrap body skin in problem areas. As a result of the use of the proposed gel, skin elasticity increased, the surface was smoothed out and skin "tightened", fat deposits decreased, the skin acquired a more healthy appearance.



A patent of the Russian Federation for an invention [3] was obtained for the formulation and production technology of the anti-cellulite gel.

**Table 2 - Recipe of anti-cellulite gels based on chlorella**

Component Name	Mass fraction, %
Sodium Alginate	1,0-3,0
Pectin	0,3-0,8
Hydrogenated castor oil	1,0-3,0
Wheat germ oil	0,5-1,5
Ginger essential oil	0,5-1,5
Chlorella	2,0-3,0
Juniper propylene-glycol extract	1,0-3,0
Horsetail propylene-glycol extract	1,0-3,0
Horse chestnut propylene-glycol extract	1,0-3,0
Glycerol	2,0-4,0
Preservative	1,5-2,5
Water	Other

### Conclusions

It was been established that Russian industrial samples of chlorella have a high content of biologically active substances - proteins, chlorophyll, carotenoids, etc., due to which they are promising raw ingredients for cosmetic products. As a result of comprehensive research, a formulation was developed and samples of a chlorella-based anti-cellulite gel were obtained, with the addition of other plant assets. The recommended chlorella content in the product is 2-3%. The obtained anti-cellulite gel has high organoleptic and physical characteristics, with regular use it improves skin condition.

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**ON THE INCREASED THREAT OF INVASION OF PERCH *PERCA FLUVIATILIS* LINNÆUS, 1758 IN THE AMUR BASIN**

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**Abstract.** Zabaykalsky Krai is one of the largest regions of Russia, the invasion of Amur sleeper *Percottus glenii* Dybowski and *Perca fluviatilis* Linnaeus perch from them are dangerous for local fish species.

The work provides materials on the progress of perch invasion, its occurrence in the Upper Amur basin, acceleration of the rate of invasion and the consequences of perch resettlement for the local ichthyofauna. The situation is substantiated that the rate of invasion will increase, which is associated with both climatic factors and human economic activity. An increase in the rate of movement of perch will create conditions for large-scale invasion of perch in the main part of the Amur basin, which can cause significant damage to the biological diversity of Amur fish.

**Keywords.** Zabaykalsky Krai, invasion of perch, Ingoda, Shilka, quarry ponds, Amur basin.

In the modern era of globalization of world development, the rate of anthropogenic transformation of both individual ecosystems and the biosphere as a whole increases sharply, which is reflected in a rapid change, often a depletion of the species diversity of these systems. An important role in these processes is played by biological invasions, by which we mean all cases of the penetration of living organisms into ecosystems beyond their original range. Infestations can be caused by both targeted human activities and the natural movement of organisms beyond their usual distribution (Dgebuadze, 2002, Panov, 2002). Moreover, often a natural, independent movement can be carried out after the initial limited purposeful movement of individuals of any species outside its native range.

Infestations of different groups of animals and plants are of great practical importance. Some of them contribute to increasing the biodiversity and bio-productivity of ecosystems, some invasions do not significantly affect the development of ecosystems, while others are dangerous and can cause significant harm, including economically different sectors of the economy. All this determines the relevance of the study of invasion, including fish invasion in different regions.

Zabaykalsky Krai - is one of the largest regions of Russia located in Eastern Siberia. Its area is 431.5 thousand km<sup>2</sup>, which is more than the area of such countries as Japan, Italy or the former Federal Republic of Germany (Encyclopedia, 2007). On the territory of krai there are more than 40 thousand watercourses and over 15 thousand lakes, in which 70 species and varieties of fish live. Invasive of them are 18 species (Gorlachev, Gorlacheva, 2019; Gorlachev, 2016). Of these, the most dangerous for Transbaikalia and adjacent territories are the invasions of Amur sleeper *Perccottus glenii* Dybowski, 1877 and perch *Perca fluviatilis* Linnaeus, 1758.

Despite the fact that perch is widespread in the water bodies of Europe and North Asia, including the Baikal and Vitim basins, in the adjacent water bodies of the Upper Amur basin, which occupy the entire central part of Zabaykalsky Krai, perch was absent until the beginning of the 20th century, although it is believed that Previously, it lived in the Amur basin (Atlas, 2002). However, G.L. Karasev doubts this, who believes that “perch could not die out completely in the entire Amur basin in the Neogene (if it lives here)”. “There was no doubt that the perch could have survived at least locally somewhere in the Amur basin” (Karasev, 1987, p-246).

The southeastern boundary of the native range of perch in Eastern Siberia is the Baikal basin, bordering the Upper Amur basin in the east. Until recently, the absence of perch in the water bodies of the Upper Amur basin is due to the fact that Transbaikalia is part of the Central Asian world watershed of the Pacific and Northern Arctic oceans, caused by systems of mountain ranges stretching in the territory of Eastern Siberia from southwest to north-east. It was mountain morphostructures, along with a wide range of climatic factors, that contributed to the isolation of three large foci of ichthyofauna in this territory - Siberian, inland and eastern (Karasev, 1987).

Perch, whose natural range is located in the Siberian hearth, could not naturally expand its boundaries to the east and south-east by the type of diffusion due to the systems of mountain ranges that prevent independent expansion.

However, in December 1919, peasant A. Afanasyev, in barrels, transported 160 specimens of different age perch from Lake Ivan (Vitim basin) to Lake Kenon (Ingoda-Amur basin). In this way, the Apple Ridge was overcome - the main barrier preventing the penetration of perch into the Amur basin.

It took only three years for the perch to multiply rapidly and subsequently become the dominant species in Lake Kenon, which changed the ichthyofauna of this reservoir (Nikolsky, 1956). Minnow of Lagovsky *Phoxinus lagowskii*, minnow of Chekanovsky *Phoxinus chekanowskii*, common minnow of *Phoxinus phoxinus*, spined loach of *Gobitis melanoleuca* gradually disappeared from the ichthyofauna of Lake Kenon, the number of pike and catfish decreased.

Despite the abundance of perch in Lake Kenon, a rapid expansion of its range did not follow due to the lack of direct connection between Lake Kenon and the Ingoda River. The appearance of its solitary specimens in the Ingoda River in the early 50s was indicated by G.V. Nikolsky (1956), who considered unacceptable the further settlement of perch in the Amur basin.

The rapid expansion of the range in the Upper Amur basin began after the delivery of several dozen sexually mature perch in 1968 to the Verkhne-Darasunskiye Ponds by representatives of the community of fishermen and hunters of Shilka, conducted with the permission of the Chita Inspection of Fish Protection. Perch brought into the Upper Darasunsky ponds quickly multiplied and after breaking through these ponds across the Kiya River, it fell into the floodplain Shilkinsky ponds, where by 1983 it had reached a relatively high concentration (Gorlachev et al., 1986).

Its morphological plasticity, a wide range of nutrition, and high fecundity are noted. According to morphological characteristics, the perch in the Shilkinsky ponds is slightly different from the perch from Lake Kenon in relative head length, eye diameter, snout length and maximum body height. The perch population living in quarry ponds grew noticeably faster and was more nourishing than the perch population from the channel part of the Shilka River. The abundance of Amur chambers, mustard, and lake minnow in the open ponds of the Shilka River created favorable conditions for the rapid growth and development of perch, and periodic fluctuations in the level of the Shilka River facilitated the penetration of perch into other water bodies.

In recent years, it has been registered in the lower reaches of the Nercha River, in the upper and middle reaches of the Shilka River, its tributaries and floodplain water bodies in the estuarine sections of the Onon and Aga rivers, water bodies and streams of the lower and middle reaches of the Ingoda River (Gorlacheva, Afonin, 2007).

Despite the rapid pace of perch invasion in the Upper Amur basin, it is believed that there is no perch in the Amur itself. One of the last fundamental works on Amur fish indicates that at present the perch has naturalized and settled on the rivers Ingoda, Chita, Onon and Shilka, but “there is no perch in the middle and lower reaches of the Amur, in the Far East, Kamchatka and Chukotka” (Antonov et al., 2019 p. 266).

However, one should expect a quick penetration of the perch into the channel of the Amur River, its middle and lower reaches. The reason for this should be floods in Eastern Siberia and the Far East, especially floods in Transbaikalia in 2018.

For example, the water level in the Chitinka River in July 2018 was the highest ever recorded for all years of observation, starting from 1936 and amounted to 405 cm, the level of the Ingoda River in the Ulet region increased to 450 cm, and the Shilka in the Sretensk region to 650 cm. As a result of a sharp increase in water level, almost all previously isolated floodplain water bodies, quarries, ponds of the Shilka, Chita, Ingoda and other small rivers of the Central and Southeastern regions of Transbaikalia, united into single powerful rapid streams. There is no doubt that these streams demolished a significant part of the inhabitants of water bodies, including perch, downstream. This is confirmed by the information of local fishermen of Shilka, who in 2019 did not find perch in catches from floodplain water bodies, although earlier it was usual in these water bodies.

The very movement of perch downstream is not an unconditional guarantee of invasion. The success of the invasion will depend on many factors - on the number of individuals displaced, their concentration in new habitats, the number of re-introductions, the nature of nutrition, eurybiontism, competitiveness and plasticity of the species, which, as we saw earlier, are manifested in perch in a wide range. Morphological plasticity, high fecundity, a wide range of nutrition down to one's own juveniles, the ability to suppress other species and become the dominant species in new habitats suggest that the movement of a significant amount of perch downstream of the Shilka River can lead to its large-scale invasion in the middle and lower Amur River.

However, floods are not the only reason for such progress. In some relatively closed reservoirs of the Upper Amur basin, a high concentration of perch is observed. An example is the quarry ponds of the Tataurovsky brown coal deposit, the operation of which began in 1982.

The Tataurovsky ponds are located in the swampy floodplain of the Ingoda River, which flows along the Chita-Ingodinsky Valley, which extends in the northeastern direction between the Yablonovy Range and Chersky Ridge (Encyclopedia, 2007).

Three quarries are currently filled with water. The length of the southern quarry where the observations were made exceeds 3 km, a width of 120-300 m, and average depths of about 30 m. The shallow-water coastal zone occupies several tens of meters.

Despite the fact that quarry ponds have a connection with the Ingoda River, the floods of 2018 did not affect these ponds, since they are protected from the river bed by high dumps formed during overburden operations.

In total, in 2018, 7 fish species were recorded in the southern quarry pond - stone moroko *Leuciscus waleckii* (Dybowski), prussian carp *Carassius auratus gibelio* (Bloch), amur minnow *Phoxinus lagowski* (Dybowski), amur bitterling *Rhodeus sericeus sericeus* (Pallas), amur catfish *Parasilurus asotus* (L.), burbot *Lota lota* (L.) and perch *Perca fluviatilis* Linnaeus. All species noted, except perch, are common in the Ingoda River Valley. Perch in this area of the river was not noted, but it was it who dominated the quarry pond and was characterized by a high abundance.

The total fish catch in the quarry pond per standard network with a mesh of 24-30 mm when setting the nets at night was an average of 27 specimens. The ratio of fish in the catch of perch-chebak-crucian was as 7: 1: 0.25. The remaining fish species were represented by single specimens, and minnow Lagovsky and mustard were recorded only in a relatively narrow (up to 10-15 m) zone of the coast with depths of up to 2 meters. Then there was a sharp increase in depths.

The perch population in the quarry pond was represented by age groups from 3+ to 6+ inclusive, with a predominance of the 3+ age group. According to morphological indicators, the perch from the quarry pond was closer to the perch from the retaining ponds of Lake Kenon, but in terms of linear and weight growth it was lower than the perch from the lakes Arahley, Shaksha, Kenon, but higher than in Lake Tasei.

By itself, the high abundance of perch in relatively closed quarry ponds does not pose a threat to the Upper Amur river system, however, according to work plans, quarry ponds should be filled with rock mass from adjacent territories where coal mining will continue. Filling the open ponds with overburden will cause a significant part of the perch, like other fish, to be displaced into the Ingoda river bed, followed by their transfer to the Amur river bed. This will threaten the acceleration of perch invasion in the area and perch, as an invasive predator, can cause significant damage to the biological diversity of Amur fish, especially to its valuable species.

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## CYTOGENETIC ANALYSIS IN THE EVALUATION OF COWS OF DIFFERENT GENOTYPES

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**Abstract.** This article discusses the use of cytogenetic methods in animal husbandry, the identification of risk groups, and sets out the principles for the prevention of chromosomal disorders in farm animals. The performed cytogenetic analysis can serve as one of the evaluation criteria in choice and selection of animals.

**Keywords:** cytogenetic analysis, frequency of chromosome aberrations, genotype, breeding bulls, karyotype.

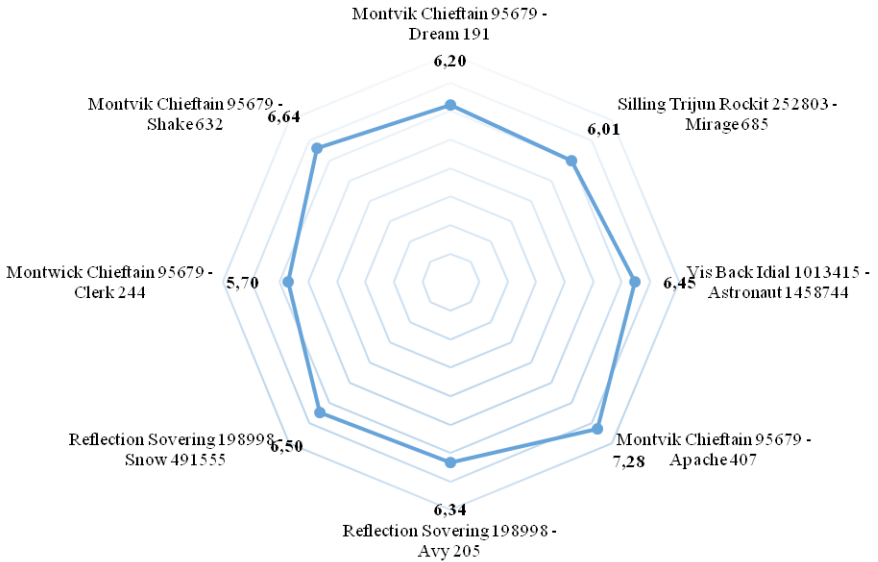
**Relevance.** Karyotypic monitoring has attracted the attention of scientists since the second half of the XX century, and this is due to the concentration and intensification of animal husbandry, an increase in anthropogenic pressure. This sharply raised the question of the prevention of hereditary diseases in domestic animals, including chromosomal etiology. Countries with developed animal husbandry make extensive use of national genetic monitoring programs, which include cytogenetic examination of animals as an indispensable element.

**Purpose of research** - studying the frequency of occurrence of various types of chromosome aberrations, in particular in cattle, and summarizing the need for cytogenetic examinations of animals.

**Research methods.** The object of research was the chromosomes of cattle of black-motley breed. The main source of chromosome preparations were peripheral blood lymphocytes. This method is based on the preparation of white blood cell mixtures. This method is technologically advanced and acceptable for working with cattle. The preparation of metaphase plates was standard. Used the system "Lymphocar". The search for metaphases for anal-

ysis was carried out with a magnification of a 100<sup>x</sup> microscope under oil immersion. Cells were selected at the stage of early metaphase or oval-shaped metaphase without or with a minimal number of chromosome overlays. In the analysis, gaps, chromatid and isochromatid breaks, and fragments were recorded as aberrations. We studied the presence of structural chromosomes and the incidence of abnormalities in cows of different genotypes. Animals belonged to one of the farms of the Moscow region, which is engaged in breeding black-motley breed in order to obtain dairy products. The research results were processed by methods of variation statistics, using computer programs.

**Research results.** Each chromosome of the haploid set is characterized by its own set of genes unique to it. Each type of animal is characterized by its own set of chromosomes, characterized by their number, size and morphology, i.e. their own unique variant of packaging of hereditary information, preservation of which is a necessary condition for the normal development and vital activity of animals. The set of chromosomes inherent in organisms of a certain type is usually denoted by the term karyotype. As many studies have shown, the level of the presence of spontaneous structural changes in chromosomes, which could be considered a kind of norm, has not yet been found. So, among bulls of black-motley breed, an average of 5.8% of structural aberrations were found, and in some animals this indicator reached 16.7-20%. In our studies, we evaluated the structural abnormalities of chromosomes. Analysis of the frequency of chromosome aberrations showed that during all periods of research, the frequency of chromosome aberrations was at an average level of 5.7 - 7.28%, Figure 1. Unilateral selection of animals for high productivity inevitably leads to the accumulation of genes associated with low resistance to diseases, and hence to an increase in the proportion of cells with chromosome aberrations. These are a risk factor. Studies by foreign authors have shown a relationship between an increased number of cells with structural aberrations and impaired productive and reproductive qualities in cattle (Kovacs A., 1984; Lewin H.A., Stewart JA, 1986; Glazko V.I., Glazko T.T., Arkhipov N.P., 1996; Glazko V.I., 2001; Glazko V.I., Glazko T.T., 2004). Many authors point to the hereditary condition of this phenomenon (Adamenko V.A., Klenovitsky P.M., Shavyrina K.M., 2005; Bakai A.I., 2009; Bulusov K.A., Bakay A.I., 2010 ; Mehdiyeva K.S., Bakay F.R., Lepyokhina T.V., Ilyalov D.F., 2016). Structural abnormalities of the chromosome set lead to a sharp imbalance of the hereditary material, and are usually fatal mutations. That is why early cytogenetic screening is necessary. The level of structural disturbances can serve as one of the evaluation criteria for the choice and selection of animals.



**Figure 1 - The frequency of chromosome aberrations (%) in daughters of various bulls**

**Conclusion.** Structural chromosome aberrations are found in somatic cells in cows of different genotypes. One of the bulls showed an increase in the proportion of lymphocytes with an increased level of structural chromosome abnormalities. The chromosomal aberrations described above are often accompanied by impaired reproductive qualities of animals. Moreover, in a number of breeds and lines the frequency of the anomaly is quite high. Cases of hereditary transmission of increased spontaneous variability of the chromosome set were also noted (Ernst L.K., Zhigachev A.I., 1990; Alekseevich L.A., Barabanova L.V., Suller I.L., 2004; Zavada A.N., 1997; Mehdiyeva K.S., Bakay F.R., Lepyokhina T.V., Ilyalov D.F., 2016). In this regard, the need for a widespread introduction of cytogenetic examination in animal husbandry is obvious.

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## THE EFFECT OF NATURAL ANTIOXIDANTS ON THE EXTENSION OF SHELF LIFE OF MEAT PRODUCTS

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**Abstract.** The information on natural antioxidants and their effect on the extension of the shelf life of meat semi-finished products is presented. Production of prototypes was carried out and data on the effect of rosemary on the quality characteristics of semi-finished products, as well as shelf life, were studied.

**Keywords:** antioxidants, rosemary, shelf life

Today, instant products, namely meat semi-finished products, are gaining more and more popularity.

The market of meat and meat products in Russia today is the most impulsively developing segment. The range of products is expanding more and more every day. The most popular segment in the meat industry is the semi-finished product segment.

Meat semi-finished products are registered in 92% of outlets in the Russian Federation. The main method of selling semi-finished products is retail sales, of which more than half are supermarkets. On average, in a convenience store selling 32 names of similar products. If several years

ago, retail trade complained that semi-finished products are not a product for everyone, today semi-finished products are just as common and demanded as sausages. Semi-finished products are relevant not only in Russia but also abroad. Large-sized, small-sized and chopped semi-finished products occupy a large part of foreign buyers and make up (up to 20%).

In this regard, there is a problem of extending the shelf life and selling in order to maintain the quality of products.

It is known that changes in the quality and spoilage of products are associated with the oxidation of lipids in them, which can lead to the accumulation of hydroperoxides and their further decomposition with the formation of secondary oxidation products - hydroxy acids, ketones and low molecular weight acids.

In order to slow down this process, manufacturers use nutritional supplements called antioxidants. These additives affect the course of oxidative processes in the food product, namely they provide good organoleptic characteristics during long-term storage of semi-finished products.

Antioxidants are classified into two types: natural (carotene, vitamins A, C, D, E, selenium, estrogen, etc.) and synthetic origin (ascorbic acid, sodium ascorbate). By adding antioxidants to foods, we thereby extend shelf life without compromising organoleptic performance. In addition, many natural antioxidants contain many vitamins, which is another plus, and also have a low cost, which will not affect the pricing policy of the product.

### **The purpose and objectives.**

The aim of this work was to study the effect of the natural antioxidant rosemary on the quality indicators and shelf life of minced meat semi-finished products

In accordance with the goals, the following main tasks were solved:

- substantiate and experimentally confirm the choice of extract with antioxidant properties in relation to lipids of raw meat;
- produce the development of prototypes of chopped semi-finished products using a natural antioxidant;
- identification of the effectiveness of the effect of rosemary extracts on the quality indicators of minced meat semi-finished products and the duration of their storage;

The objects of research were:

- rosemary extract;
- developed samples of chopped semi-finished products with a concentration of rosemary extract of 0.010%, 0.012% and 0.014%;
- control sample without extract.

**Research Methodology.**

The studies were conducted in the laboratory conditions of the department of technology for storage and processing of livestock products.

As a main basis for chopped semi-finished products, the recipe for meat chopped semi-finished products was taken Kiev cutlets according to TU 9214 - 553 - 00419779 - 2001. For the preparation of prototypes, 5.620 kg of minced meat was produced, which was divided into 4 prototypes weighing 1.405 kg, one of which became the control (without rosemary extract, № 4).

Rosemary extract was added to samples № 1, № 2, and № 3. The amount of rosemary extract was selected according to the studied scientific research literature (0.010 - 0.014% by weight of the semi-finished product). And it amounted to:

- for prototype № 1 - 0.010% (0.014 g of rosemary extract);
- for prototype № 2 - 0.012% (0.016 g);
- for prototype № 3 - 0.014% (0.019 g).

**Research results.**

According to GOST 32951 - 2014 "Semi-finished meat and meat products. Specifications "minced meat semi-finished products should have a mass fraction of protein of not less than 9.0% and a mass fraction of fat of not more than 35.0% per 100 g of product. The results of studies of physical and chemical indicators are presented in table 1.

**Table 1 - Physico - chemical indicators of the main mincemeat**

Physico - chemical indicators	Analysis results
Protein,%	12,22
Fat,%	13,46
Moisture,%	58,0
Ash,%	1,36
Tryptophan, mg/100 g	163
Oxyproline, mg/100 g	162
Protein - quality indicators	1,01

As can be seen from table 1, meat chopped semi-finished products correspond to all quality indicators, namely, the amount of protein was 12.2%, and fat - 13.46%.

Protein - qualitative indicator - the ratio of tryptophan (an essential amino acid) to oxyproline (an essential amino acid), may be a quality criterion for meat minced processed foods. This indicator amounted to 1.01. This indicates the high nutritional value of the meat product, which means it contains muscle proteins, the structure of which are the essential amino acids that a person needs for normal life.

To determine the taste characteristics of the semi-finished products of the test samples, a tasting was carried out. The tasting was carried out on a five-point scale, using tasting sheets (according to GOST 9959 - 91), the evaluation results (average score) are presented in table 2.

**Table 2 - Organoleptic evaluation of prototypes**

Five-point product rating	Control sample	Prototype № 1	Prototype №2	Prototype №3
Appearance	5	5	5	4,8
Colour	5	5	5	5
Smell, aroma	5	4,8	4,6	4,5
Consistency	5	5	5	5
Taste	4,8	4,7	4,6	4,3
Juiciness	4,8	5	5	5
Overall rating	4,93	4,91	4,86	4,76

The results of the tasting assessment showed that all the studied samples of semi-finished products received high marks in terms of quality.

But sample № 3 received a lower rating, as it has a more pronounced taste and aroma of rosemary, which may not appeal to every buyer.

To study the effect of natural antioxidants on the shelf life of minced meat semi-finished products, we evaluated the processes of oxidative spoilage at 1.15.30 and 60 days of storage.

The following values were used as standard values for oxidative damage indicators:

- peroxide value - no more than 10 mol O<sub>2</sub>/g of fat, calculated per 1 kg of product, taking into account the content of fat in it;
- acid value - not more than 4 mg KOH/g of fat, calculated per 1 kg of product, taking into account the content of fat in it;
- thiobarbituric number - no more than 2,000 per 1 kg of product.

The antioxidant activity of CO<sub>2</sub> of rosemary extract was determined by studying the rate of lipid oxidation by changing the peroxide, acid, and thiobarbituric numbers characterizing the accumulation of primary lipid decomposition products.

To assess the development of oxidative damage, the experimental samples were examined at 4 control points: on 1.15.30 and 60 days of storage.

Table 3 presents the dynamics of oxidative processes in minced meat semi-finished products. This dynamics shows that during storage for 60



days a small amount of secondary oxidation products appears in the meat bits, indicators of acid, peroxide and thiobarbituric numbers do not exceed acceptable levels, as well as their increase does not affect the organoleptic characteristics of the semi-finished meat product.

**Table 3 - Changes in the chemical composition and oxidation products**

Sample Name		Name of indicator		
		Acid number	Peroxide value	Thiobarbituric number
1 day	Control sample	1,65	1,14	0,062
	№1	1,38	1,04	0,048
	№2	1,45	0,99	0,042
	№3	1,45	0,98	0,040
15 days	Control sample	2,25	1,52	0,095
	№1	1,62	1,22	0,089
	№2	1,54	1,05	0,053
	№3	1,53	1,05	0,054
30 days	Control sample	2,34	1,89	0,105
	№1	1,70	1,49	0,082
	№2	1,64	1,29	0,063
	№3	1,65	1,28	0,062
60 days	Control sample	2,94	2,35	0,209
	№1	2,05	2,89	0,122
	№2	2,14	1,89	0,103
	№3	2,15	1,88	0,102

Analyzing the table, we can conclude that the performance of sample № 3 on the 30th day of storage corresponds to the performance of sample № 4 (control) for 1 day of storage, which means that rosemary extract positively affects the shelf life of the semi-finished product, thereby prolonging it.

Also from the table it can be seen that sample № 2 and sample № 3 have similar values. It follows from this that it does not make sense to increase the concentration of rosemary higher than 0.012% by weight of the semi-finished product, in addition, sample № 3 has a lower organoleptic rating than sample № 2.

Taking into account the analysis of all quality indicators of minced meat semi-finished products, the recommended shelf life of new products is 60 days at a storage temperature of minus 18°C.

### Conclusions.

As a result of the work, a natural antioxidant and the amount of its introduction into the product were selected.

The data obtained confirmed the positive effect of antioxidants on meat semi-finished products, namely an increase in shelf life due to the introduction of rosemary in the formulation of the antioxidant.

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## THE EFFECTIVENESS OF THE USE OF SEXUALLY SPERM OF BULLS OF HOLSTEIN BREED IN THE PEDIGREE OF UKRAINE

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**Abstract.** The article presents the results of the use of sexed sperm of bulls on Holstein heifers of the breeding flock of State Agri-Enterprise “Chaika”, the Dudarkiv branch of Kyiv Region.

In 2012, the farm purchased 75 sperm doses of sexed sperm obtained from two bulls of Holstein breed, American selection: Ri-Val-Re MOUNTAINEER-ET 60815578 (50 sperm doses) and Diamond-Oak FROSTY 31520543 (25 sperm doses). As a result, 38 live calves were obtained, accounting for 58-44% of the fertilization of the calves, with a sex ratio of litters ♀89:♂11 and ♀91:♂9%.

The level of milk yield of firstborns obtained from the use of sexed bull sperm was 7717 kg of milk for the first 305 days of lactation, which exceeds the milk yield of mothers ( $d = +862$  kg,  $P \geq 0.999$ ) and insignificantly that of peers ( $d = +276$  kg). Moreover, these first-borns show reduced fat content in milk ( $d = -0.02 \dots 0.05\%$ ,  $P \geq 0.99$ ).

Farm specialists are advised to pay special attention to the strict adherence to the technology of use of sexed sperm of bulls, taking into account the expediency of its use and economic justification.

**Keywords:** Holstein bulls, sexed and traditional semen, dairy productivity, firstborns.

Development, acquisition and practical use of sexed sperm of sire bulls is the greatest achievement of biological science in breeding, selection and reproduction of agricultural animals of the 21<sup>st</sup> century. Today, artificial insemination of cows and heifers with sexed sperm of bulls is a new biotechnological method gaining the widespread worldwide commercial use.

As early as in 1996 the company X&Y, USA, patented a method for sperm sortation using laser equipment. Cogent (Great Britain) is the world's first company to use the method of distribution of sires' sperm by sex under production conditions (1999). The world's leader in manufacturing, distribution and quality of sexed semen is the American company CRI (*Cooperative Resources International*). The company's products are distributed in 67 countries of the world.

The well-established method of sperm distribution by sex-determinant attribute makes it possible to use the best bulls making top five or ten world's leaders of INTERBULL – International Bull Evaluation Service - in the selection process. If such heifer intended to become a herd replacement is obtained and properly raised, it is possible to obtain a cow with notably higher genetic potential.

In Ukraine, the sexed sperm of foreign selection has been used in dairy farming since 2005. It is distributed by the corresponding foreign companies to such farms as Agricultural Limited Liability Company (ALLC) Promin, ALLC AF Glushky, ALLC Agrofirma Kyivska, OJSC Poltavaplemservis, Private Agricultural Enterprise (PAE) Pleshkani etc.

The use of sexed semen calls for certain conditions and qualification of insemination operator. Improper storage and thawing of sexed sperm may negatively affect its fertilizing ability. It has been regularly mentioned by the originators of the development and practitioners. Unfortunately, some of Ukrainian farms have a negative experience of the use of sexed bull sperm. Therefore, we decided to share the results obtained from the experience of one of Ukraine's leading dairy enterprises.

**The objective of our study** was to evaluate the efficiency of the use of sexed sperm of Holstein bulls in breeding farm and to compare the milk productivity of first-borns obtained from sexed and traditional sperm of bulls using various methods.

**Methods.** The study was conducted in a herd of purebred Holstein cows of State Agricultural Enterprise Chaika, Dydarkiv Branch, in Boryspilskii District, Kyiv Oblast. During the selection of cows according to a set of features (reproductive ability, lactation performance, economic use duration), this herd suffered the lack of breeding stock for its replacement. For this reason, in 2012 the farm, with the help of an English nominee company in Ukraine, Right Frank LLC, bought from Cogent 75 sperm dosages of sexed sperm belonging to two Holstein bulls of American selection: Ri-Va-Re MOUNTAINEER-ET 60815578 (50 semen dosages) and Diamond-Oak FROSTY 31520543 (25 semen dosages). These bulls belong to the famous lines Chif 1427381.62 and Marshall 2290977.95 correspondingly. The sexed sperm of these bulls was used in mating age heifers.

A control group of animals – the “daughters” - was formed from the heifers born from the use of bulls’ sexed sperm. A group of mothers was singled out according to their origin and a group of age-mates – according to calving dates. The animals falling under the group of “mothers” and “mates” were obtained using a traditional non-sexed sperm of bulls.

The established feeding system in the farm and the technology of management provides the implementation of inherited genetic potential of cows’ performance in 2010-2018 at the level of 6900-8100 kg of milk. It became a basis of comparative analysis of lactation performance of the formed groups of animals that have already completed the first lactation using the generated database of Dairy Farming Management System (DFMS) Intesel Orsek.

**Results.** The data obtained from the use of sexed sperm of bulls Ri-Val-Re MOUNTAINEER-ET US 60815578 and Diamond-Oak FROSTY ET US 31520543 have shown, that the insemination of the heifers with the sperm of the both bulls is rather low. First of all, it is due to the low qualification of artificial insemination operators available in the farm, and the non-compliance with the terms of optimal insemination of heifers according to their oestrus. It resulted in obtaining of 27 and 11 calves from each bull with the sex correlation of ♀89 : ♂11 and ♀91 : ♀9.

In the process of raising of the daughters of Ri-Val-Re MOUNTAINEER, only 12 of 24 heifers lived to the mating age. The average age of the 1<sup>st</sup> insemination of all the heifers with the sexed sperm was 16.2 months (with the variation of 15.6 months in the daughters of Ri-Val-Re MOUNTAINEER and 16.8 months in the daughters of Diamond-Oak FROSTY). In total, the first lactation was completed by 10 firstborns of each bull.

In the contiguous generations “mothers-daughters” (n = 20 animal units) we observe the increase in lactation duration (from 356 to 408 days) and milk yield (from 7762 to 9953 kg of milk; d = +2191 kg; P ≥ 0.99).

In the first 305 days of lactation the reliable difference in lactation performance is observed only in the daughters obtained from the use of sexed semen of the bull Diamond-Oak FROSTY. Thus, the level of milk yield in these cows increased to reach 8222 kg of milk in comparison to the milk yield of the mothers (+1592 kg; P ≥ 0.999) and the mates (+450 kg) for the corresponding period. At the same time the fat level in the milk of the firstborn daughters decreased from 3.67% and 3.64% to 3.60%, with the persisting tendency to the decrease of protein level in the milk in comparison with the mothers and their mates.

No notable and statistically reliable difference in the milk performance parameters of the daughters of the bull Ri-Val-Re MOUNTAINEER was observed.

Besides, we revealed, whether there were any changes in the birth of heifers and bulls before the use of the bulls' sexed sperm and after it in general for the herd of cows and heifers.

To that end, we analyzed the dynamics of obtaining the litter from the breeding stock over seven recent years (2012–2018). The daughters of the bull Ri-Val-Re MOUNTAINEER calved mainly during 2014, and the daughters of the bull FROSTY – at the end of 2015–early 2016. As a result of the birth of 34 heifers obtained from the sexed sperm of the bulls in 2014–2016, no notable shift in the correlation of the sex of the litter was observed.

The study conducted suggests the following **conclusions**.

1. The use of 75 sperm dosages of sexed sperm of the bulls Ri-Val-Re MOUNTAINEER-ET US 60815578 and Diamond-Oak FROSTY ET US 31520543 in the purebred Holstein heifers in State Agricultural Enterprise Chaika, Dydarkiv Branch provided the change of the sex rate in the litter and obtaining heifers in 89–91% of cases. However, the non-compliance with the requirements of the process of use of the sexed sperm caused rather low insemination of the heifers – 58–44%.

2. Of 34 heifers, obtained from the use of sexed sperm of the bulls, 22 firstborns were introduced into the herd, and 20 cows completed the first lactation, which accounts for almost 60% of potentially possible amount.

3. The milk yield level of the firstborns obtained from the use of sexed sperm of the bulls is rather high (7717 kg of milk in the first 305 days of lactation), it exceeds the yield level of the mothers ( $d = +862$  kg) and slightly exceeds the yield of the mates ( $d = +276$  kg). At the same time, the fat level of milk of such firstborns decreases ( $d = -0.02 \dots -0.05\%$ ).

The further use of sexed sperm of bulls in each of the farms must be substantiated and feasible.

**PROBLEMS OF SATISFACTION OF DOMESTIC MARKET  
WITH OIL PRODUCTS**

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**Abstract.** Celsius research is the safeguard of the energy security of the Republic of Kazakhstan. It is proposed that the oil and lubricants of oil and lubricants in the NPP are presented. The overall state of the underlying oil industry has been analyzed in an unsatisfactory manner in dynamics and consumption of petroleum products. It is reported that the refractive index of the oil refining in the NPP does not affect the process of processing the product. It is recommended that you use the PetroBaem cheese for cooking oils and subsequent repairs of the finished product in the installation of motor engines for proms.

**Purpose of the research.** Energy security of the Republic of Kazakhstan. The volume of crude oil refined in oil refineries (refineries) is analyzed. The general condition of the existing oil refining industry, where the dynamics of consumption of oil products can not satisfy structure and structure is analyzed. due to the incompleteness of processing, the lack of deep oil refining. Application of PetroBaem to improve raw materials in oil mines and further processing of the product is recommended for the installation of engine oil at the beginning of the field.

**Keywords.** Optional process, deep processing, hydrocatalytic processes, thermal and extraction processes, upgrading, PetroBaem technology.

The main goal is to ensure the energy security of the Republic of Kazakhstan in terms of full satisfaction of internal consumption with major types of oil products, as well as complex development of the oil refining industry.

The growth of oil production by the KazMunaiGas national oil company is expected to reach 163.1 tons by 2020. The share of KazMunayGas in the Kazakhstan market will reach 20 percent. However, the capacity of the country's oil refineries is not sufficient to handle such a volume, The volume of processed crude oil in oil refineries is 8% of all processed volumes.

**Actuality of the research.** Despite the high output power (10 million tons per year), the complexity of oil production, current load of Kazakhstan production is much lower than that of the leading oil refineries, which is incapable of meeting the changing dynamics and structure of oil products consumption, describes the condition.

Refinery is limited in technological possibilities, does not allow deep processing of oil and production of basic oil products, because of the lack of processed products, the share of fuel oil and vacuum gasoil is high.

Despite the increase in the volume of mortality in recent years, the unhealthy situation is taking place: not all three Kazakh oil refineries are fully charged, as they are not covered by hydrocarbon raw materials.

Pavlodar Oil Chemistry Refinery (POCR) is responsible for only 56% of the Russian oil and only works with Russian oil. Shymkent Oil Refinery (Petro Kazakhstan Oil Products) is loading 65% of the Atyrau Refinery 84% [4].

First of all, due to the situation in Kazakhstan, the companies operating in Kazakhstan are not oriented to export, because the world oil market prices are much higher than the domestic market. In this connection, as the annual production of hydrocarbon resources grows by 2020, crude oil exports to 80 million tenge. reach.

At the same time, the completeness of final processing of crude oil refining at Atyrau refinery is 62%. Shymkent Refinery - 77% and Pavlodar Refinery - 89%. This can be attributed mainly to the low level of secondary oil refining processes.

It follows from the need to implement the following strategic tasks to meet the domestic demand in the main types of petroleum products to ensure the energy security of the Republic of Kazakhstan:

- increase the capacity of primary oil refining;
- Improvement of processing of these products;
- Increase the share of further deep processing of oil;



Result of the research. West Kazakhstan's oil refers to the heavy category (AM) and natural bitumen TB - it is not the usual raw material. Changes in raw material specifications are based on a set of conventional technologies, and new routes for AM processing are discussed in the world and the term "upgrade" is used to describe them [5].

All technologies of the apparatus combine unusual methods (vacuum-wave effects, photocatalytic processing, deep processing of hydrocarbon at low temperature and application of high critical condition) with known technologies [6,7,8,9,10,11,12].

Mixing hydrogen into catalytic processes makes it possible to efficiently separate heavy raw materials - quality distillates, and thus increase their cost and product quality [13,14,15,16,17].

The main disadvantages of such processes are the use of expensive catalysts that quickly break out of the "raw poisoning" of primary raw materials, with high metal capacity and complex equipment, as well as strict processing parameters with high hydrogen peroxide.

Despite these difficulties, the introduction of hydrocatalytical processes in AM treatment is one of the top priorities. One of the priorities for AM transport preparation is the types of asphalt recovery processes [18,19,20,21]. The disadvantages of the process should be that high metal containers have to distinguish between the low cost of the liquid products and the coke size.

The overall effectiveness of different ways of processing of non-conventional oil raw materials can be summarized as follows:

- Hydrogenation processes allow deep processing of AM and ensure high quality and synthetic oil spill, but material costs can be increased.
- Thermal and extraction processes reduce product quality, but reduce costs.

The most important decision then is to improve AM raw materials using advanced thermal and extraction processes, and to process synthetic oil using hydrocatalytical processes.

**Analysis of results.** As the analysis of the considered technologies has shown, many companies do not disclose the text of new technologies, but only the main concept, the block diagram and test results. The level of performance of new AM processing technologies is different: some are studied under laboratory conditions, while others are considered as pilot installations.

Despite the high level of scientific research in the field of production processes, transportation and oil refining of Kazakhstani scientists, these works are not available, despite the many patents. [7,8,9,10,11,22,23,24]

One of these works is PetroBaem technology [22,23,24]. PetroBaem AM and TB have no analogues in world practice in terms of the best technology, efficiency, economic performance and energy efficiency improvements and final processing. Technology is based on the use of acute cracking reaction, which develops under the influence of tubers of electrons expelled at low temperature. The pilot testing technology confirms the high efficiency of the process [23]. Technology is particularly relevant in Kazakhstan as it has a large amount of AM and TB.

The research recommends that PetroBaem be used to improve raw materials at the beginning of the oilfields and continue further processing on smaller diesel engine production units.

**Conclusion** The economic effectiveness of implementing this technology will be achieved through the following measures:

- a) Reduced costs for field development;
- b) The cost of installing a block assembly unit is reduced, their simplicity in their assembly and operation, the ability to deliver to any blast-furnace mine and to satisfy the domestic demand with major types of petroleum products.

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**AUDIT OF INFORMATION SECURITY OF AUTOMATED  
PRODUCTION MANAGEMENT SYSTEM OF AN INDUSTRIAL  
ENTERPRISE**

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**Abstract.** This article discusses the task of conducting an information security audit of an automated production management system of an industrial enterprise. The problem of analysis and organization of information about the infrastructure and services of the information system of the object of protection is formulated and solved. A threat model in the form of a cognitive map is built. Calculation of the risk of information security breach is performed.

**Keywords:** audit, automated production management system, information security, risk management.

Currently, due to the dynamic development of information technologies, accompanied by an annual increase in information attacks, the issue of ensuring information security is becoming increasingly important. The main reasons for the growth of attacks are: an increase in the number of vulnerabilities discovered daily in existing system and application software, an increase in the number of attack objects themselves, and an increase in the number of internal attacks by users of automated systems. These factors indicate the importance of conducting a quality and timely audit of information security (IS).

An information security system (ISS) is created to effectively ensure the protection of information (PI) processed in an automated production control system (APCS) of an industrial enterprise. ISS operates at a certain level of management and includes a set of integrated software

and hardware tools for protecting information selected on the basis of analysis of the information system (IS), identifying its vulnerabilities and establishing the level of compliance with the required criteria. Nowadays, ensuring the information security of an APCS processing important assets of an industrial enterprise is a necessary condition, violation of which can lead to significant losses, loss of image and even a complete halt of activity.

An industrial enterprise is a complex management object because of its multifaceted structure with various numerous production, technological and economic relations within the system, which in turn leads to the need to create APCS. Automatic control systems are divided into several varieties depending on the control object: APCS and automated process control systems (ACS TP). The difference between these systems is in the management levels covered, where APCS covers the levels from the enterprise to the workshop, ACS TP - from the workshop and lower (at the workshop level there can be both APCS and ACS TP).

In general, APCS is a combination of software, technical, information, organizational and technological means, as well as the actions of qualified specialists whose goals are to solve the problems of planning and managing various types of activities of an industrial enterprise.

The APCS of an industrial enterprise has divisions that can be divided into two components according to their functionality: production divisions (directly involved in the production process) and management services whose task is to plan, control and adjust the work of production divisions. APCS is a complex system with a huge number of internal and external relations that can improve the efficiency of any enterprise, and the process of its implementation, the development of a set of rules and instructions, training personnel to work with the system can take long periods of time.

Modeling is an effective tool for studying the characteristics of complex information protection systems at the design stage and during the modernization of existing systems. To create ISS, it is necessary to develop a model of the object of protection, which significantly reduces the level of uncertainty in decision-making.

Despite the huge number of standards in the field of information security (IS) risk management, in which the criteria for security assessments were formulated, the problem of a numerical assessment of the risk of IS violation is still relevant. This is due to the fact that these standards do not contain assessment methods with which it is possible to conduct a comparative analysis of various options for protecting information systems and to develop measures to increase their security.

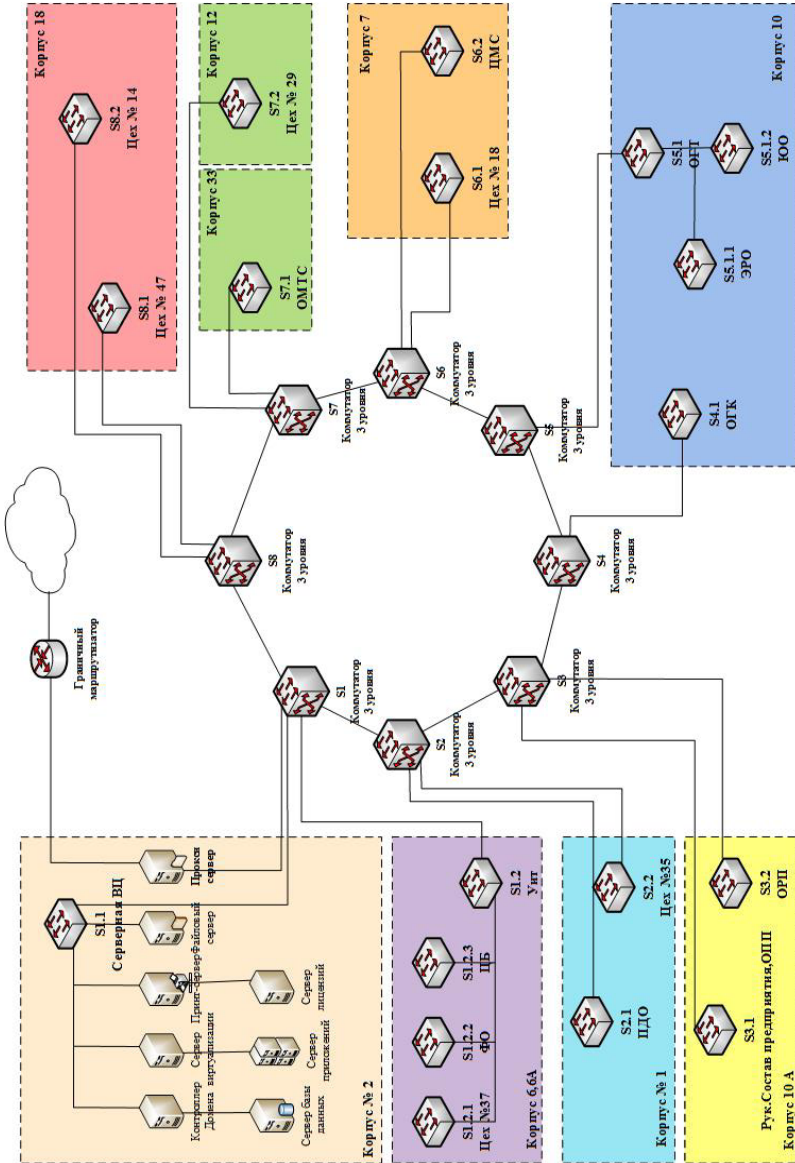


Figure 1 - Infrastructure of a APCS

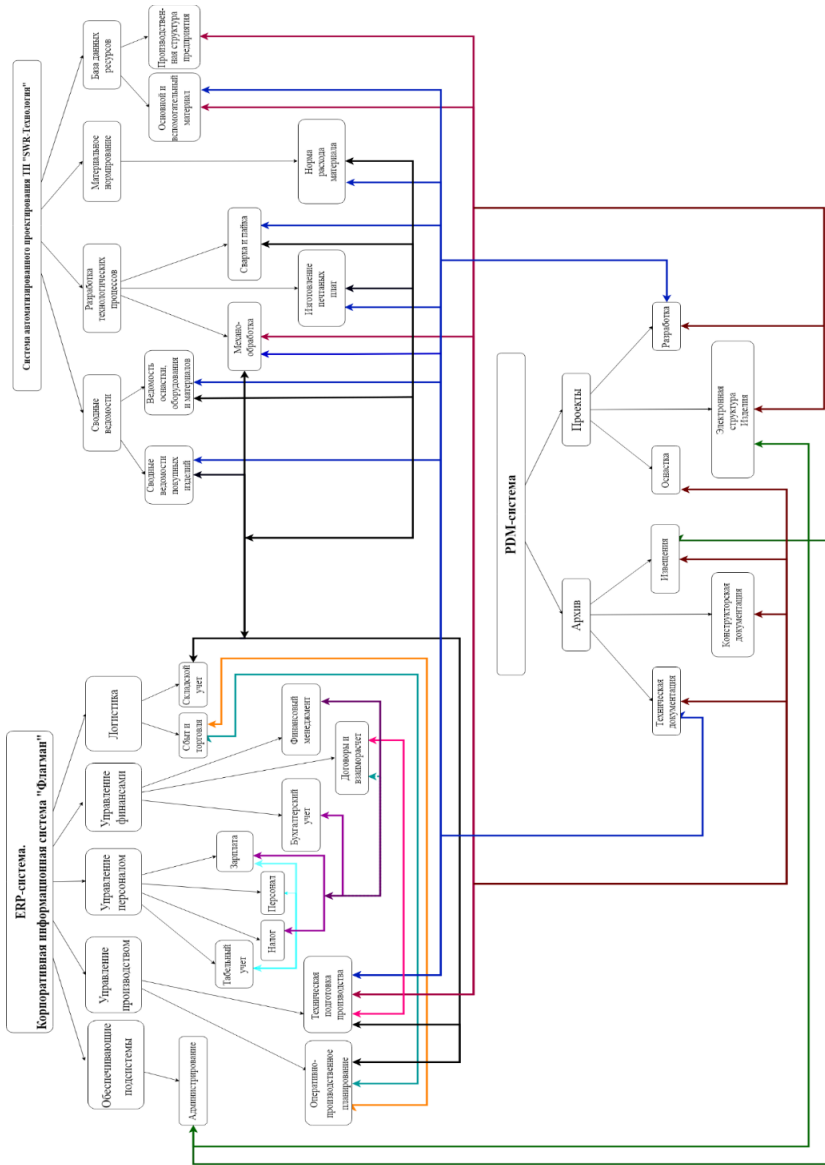


Figure 2 - Analysis of the used information services of a APCS

To determine the numerical assessment of the risk of IS violation, we use the construction of a threat model in the form of a cognitive map (CC) in projection onto the network topology. To build a threat model, you need to have detailed information about the network infrastructure, the subjects and objects of information interaction, access rights, and security services used. The developed QC is a threat model based on objects in the form of a combination of elements interconnected. Each source of threats on the way to the objects of attack has intermediate concepts, which are means of protection, and the connections themselves reflect the process of realization of threats on the way of their spread.

Building a cognitive map allows you to visualize the distribution of potential threats from potential sources - stakeholders to critical information resources on the network.

Threats can be implemented due to violations of security policy: illegal user behavior on a workstation or server, attempts to network connections, launch applications and many other actions carried out by an employee whose access level does not correspond to the level of confidentiality of information resources. Information security policy is the basis for organizing the process of information protection, setting the resolution of the actions of information entities in relation to information objects, and vice versa. In accordance with the information security policy, enterprises establish the separation of access rights at the network level.

By external threats we define the actions of an external entity not involved in the organization (an attacker, hacker), as well as an external intruder from a higher organization. The objectives of the external entity are to penetrate the protected system, gain access to assets (all valuable resources of the organization in the form of design documentation, production technology, reporting and much more), information theft or sabotage of the flow of information business processes. An attacker can carry out all these illegal actions by using the means included in the information system or its protection system, and their shortcomings, various leakage channels, and introducing software bookmarks into the system. An external intruder in the person of an employee of a higher organization already has certain access rights and therefore it will be much easier for him to exceed all the above-mentioned powers and perform all of the above actions compared to an attacker.

The objects of attack are information assets that are of interest to internal, external users and attackers.

To visualize the shortest ways to advance probable threats from their potential sources, a fuzzy cognitive map was created in the projection onto the network topology (Figure 3).



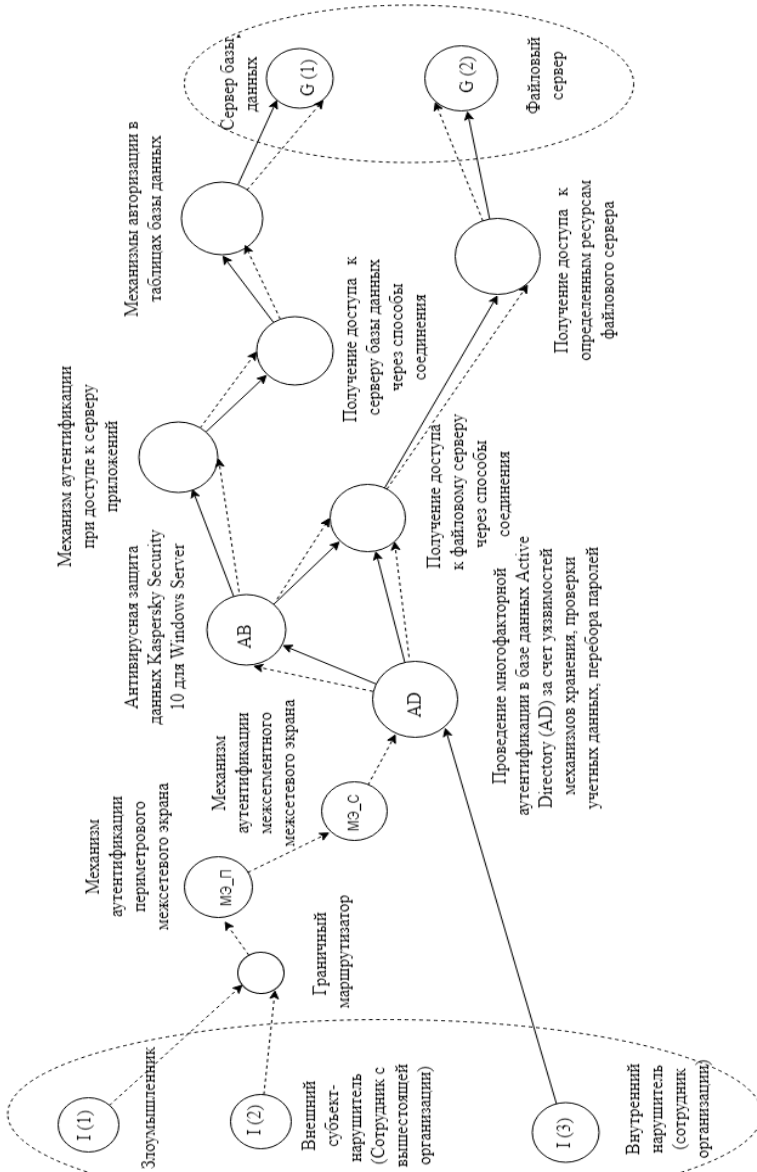


Figure 3 - Model of threats to an industrial enterprise

Input concepts are the sources of threats - internal intruders who are employees of an industrial enterprise, an attacker and external users of a higher organization, output concepts - information assets stored on servers participating in business processes (on a file server and database server).

At each source of threats, on the way to the objects of attack, there are intermediate concepts, which are means of protection, vulnerabilities of which help to realize the threat.

The numerical values of the vulnerabilities are focused on the vulnerabilities of the Federal Information and Export Control Service information security threat database and on the vulnerabilities of the National Vulnerability Database.

The value of information security risk is calculated for the case when all sources of threats are activated simultaneously with equal probability and are equal to 14%.

The audit of the IS APCS of an industrial enterprise showed that the results of the risk of IS violation do not meet the required security states of the established classes.

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**DESIGN OF OPERATING TECHNOLOGY WITH THE DEVELOPMENT  
OF CONTROL PROGRAMS AND VIRTUAL SIMULATION  
OF PROCESSING FOR CNC MACHINES**

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**Abstract.** The control program was designed in the PartMaker software environment launched through the Parasolid machine emulator. In addition, using the simulator, the program was debugged on the machine and the prototype of the “flange adapter” part was processed

**Keywords:** 3D-simulation, cutting tools, technological equipment, operation, control program

For all supported types of machine tools, PartMaker implements accurate 3D simulation of processing, taking into account the geometry and scheduled movement of all moving elements of the machine, tool and part.

Note that PartMaker is one of several CAM systems developed by Delcam for various applications and sectors of the machining market; therefore, many processing methods are currently unified for the entire family of Delcam CAM systems. In particular, the PartMaker developers have inherited from the CAM-system PowerMILL (intended for programming exclusively milling) proven its high efficiency in trochoidal and Vortex strategies.

For manufacturing a part from a cylindrical billet in large-scale production conditions, a Parasolid CNC machine was chosen.

The following operations were designed: cutting the end face of the workpiece, turning the part, boring a hole, turning the groove, threading.

The design of the control program was carried out in the PartMaker software environment, launched through the Parasolid machine emulator. In addition, the program was debugged on the machine using the simulator.

The model built in the Compass 3D program is imported into PartMaker through one of the "intermediate" formats, for example, Parasolid.

When modeling, it is important to observe the correct construction of models: the contours for extruding or obtaining a solid model by rotation must be closed, not have intersections or overlays of lines or sketch curves.

Before starting work, it is necessary to set the origin of the coordinate system at the center of the end face of the workpiece so that the Z axis coincides with the axis of rotation of the part and is directed in its positive direction from the body of the part.

The next step is to extract the geometry for turning from the model and set the workpiece. You must also specify the value of the "departure" of the workpiece from the cams.

The first transition will be the cutting of the end, for which we choose a cutting tool from the tool base, indicate the path of the cutter, specify the distance from the fast to the working feed from the surface of the part and choose the methods of approach and departure of the tool. After generation, we will see the trajectory of movement.

Dashed lines show the feeds at high speeds, and solid - the movement of the tool at the working feeds. When creating a machining, it is necessary to exclude the tool cutting into the part at high speeds, as well as the collision of the tool with the fixture and toolholders with the part.

For verification, enable visualization of processing, in the options enable collision control. Make sure there are no collisions before moving on to the new transition.

Turning the outer diameter will be carried out in 2 stages - preliminary and final turning. For finishing, leave an allowance according to the process. We indicate the processing path and after its auto-generation we see a breakdown of the overmeasure into the passes. Finishing the contour is set similarly to the cutting of the end.

Next, we make boring the inner diameter of the part in 2 stages, as well as turning the outer diameter.

The next transition will make the turning of the outer groove, using the special command "Slicing".

After reinstalling the parts, we trim the end face, external and internal turning.

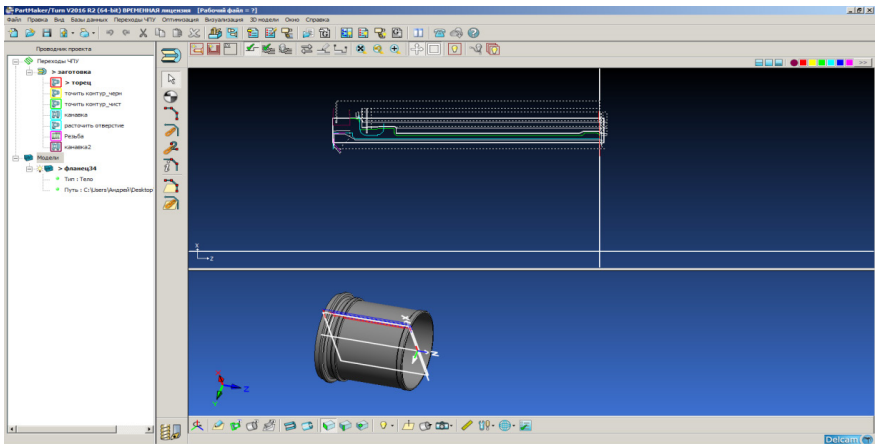
Cutting a thread with a cutter is the last one. As a result, we get the finished part. After checking for collision of all created transitions, load the post-processor under the selected machine and display the control program in G-codes.

To create the control program, a demo post-processor was used, which is included in the delivery package of the program.

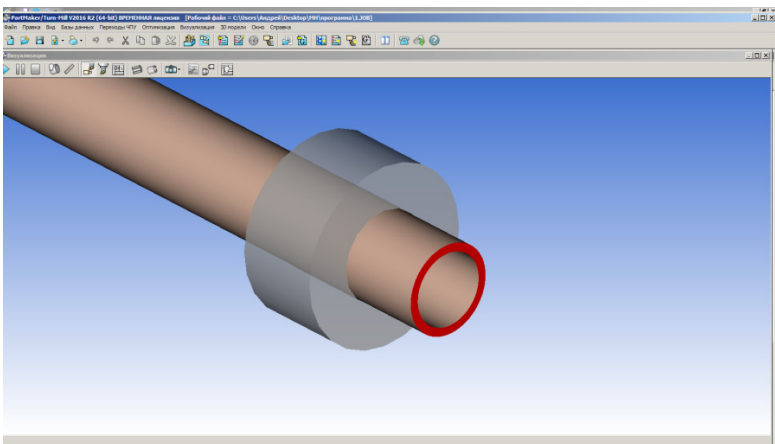
The text of the created control program with illustrations is shown in Figures 1 - 7.

The choice of the initial workpiece and the dimensions of the cylinder are specified through the coordinates of the main point and relative dimensions.

The main processing is performed in the coordinate plane XY. In the program heading, settings are set for the strategy and branch distances, processing paths shown in Figure 1.



**Figure 1 – The processing path of the adapter flange**



**Figure 2 – End trimming**

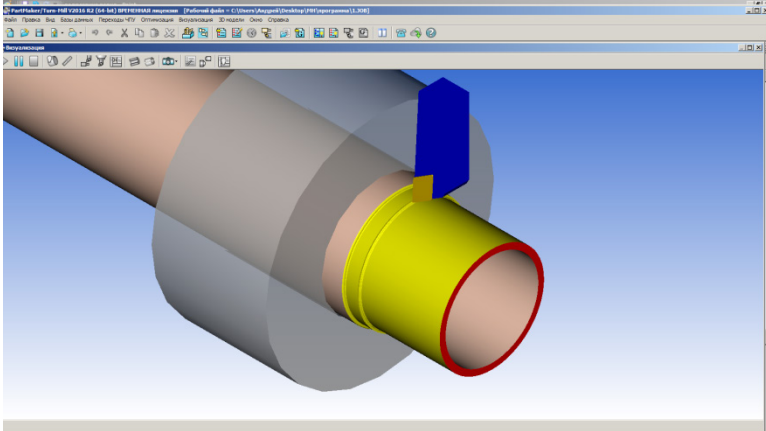


Figure 3 – Draft contour

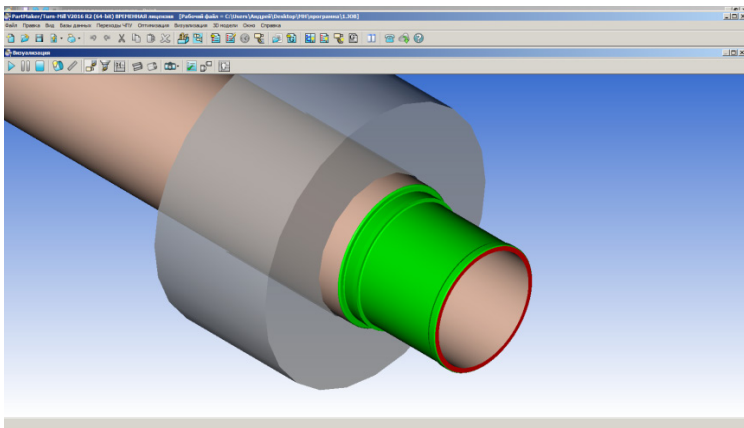


Figure 4 – Finishing contour

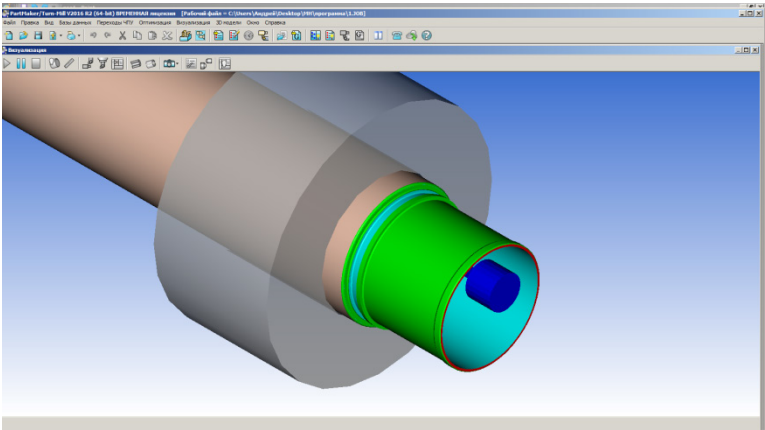


Figure 5 – Boring the hole

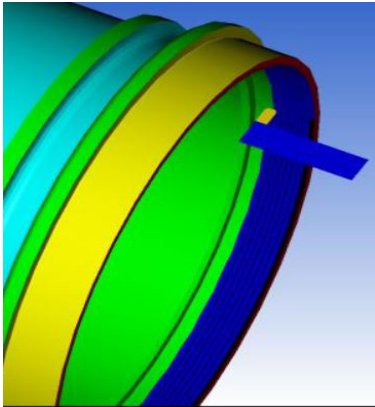


Figure 6 – Threading

# Process Management and Scientific Developments

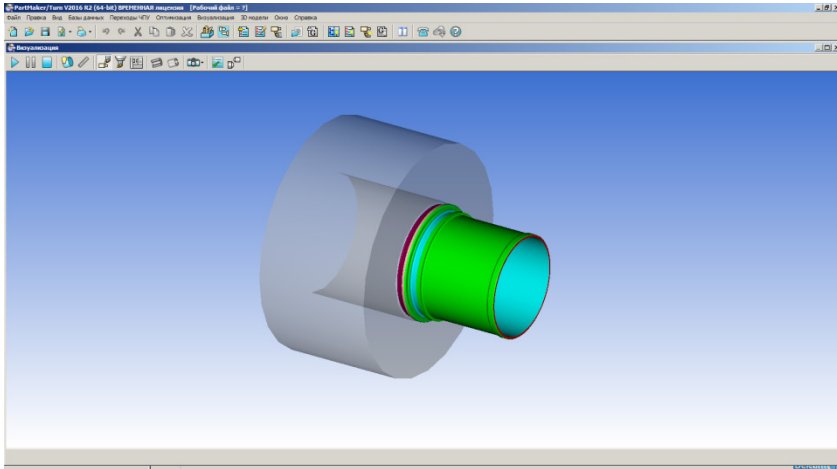


Figure 7 – The finished product

The processing program is presented in the screenshots in Figures 8-10.

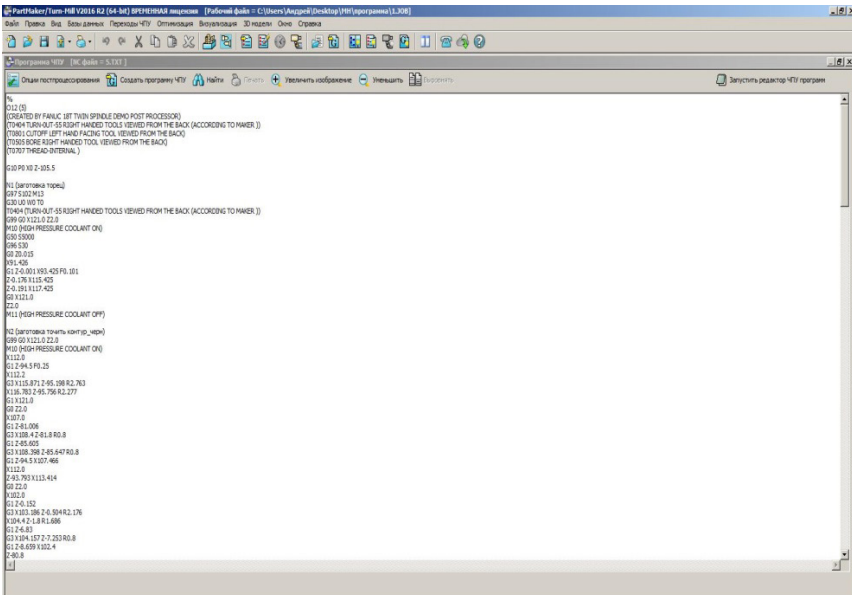


Figure 8 – The processing program



# Process Management and Scientific Developments

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PortMaker/Fore-HW V2019 R2 (64-bit) [RPT#HISAR неопредел.] [Рабочий стол - C:\Users\Anzuyev\Desktop\PHI (программа)_L1_208]
Файл | Правка | Вид | Сервис | Настройка | Программы | Оценки | Вспомогательные | Дополнительно | Опции | Справка
[Панель инструментов]
Программа NEW [К-Файл - 5.153]
Оценки настроено... | Создать программу NEW | Настройка | Правка | Увеличить изображение | Уменьшить | Справка
Запустить редактор NEW программы
NEW
M1 112 1.0 1.0 300
M1 1.0 1.0
M1 1.0 1.0 2 01.000 R0.8
M1 2.0 200 9 028.414
M2 22.0
M3 0.0
M4 0.0
M5 100.0 2.0 120 R2.176
M6 20. 355 103.454
M7 112.0
M8 112.0
M9 HIGH-PRESSURE COOLANT (OFF)
M10 (определить функцию)
M11 0.0
M12 0.0 12.0 22.0
M13 HIGH-PRESSURE COOLANT (ON)
M14 0.0
M15 94.5
M16 0.0
M17 117.0 2 96.9 R2.4
M18 22.0
M19 0.0
M20 0.0
M21 1.7 81.0 0.0
M22 1.0 0.0 2 01.8 R0.8
M23 0.0
M24 1.07 500 2 03.8 R2 R0.8
M25 94.5 203.0 0.0
M26 0.0
M27 203.113.414
M28 22.0
M29 0.0
M30 1.7 0. 0.0
M31 1.0 0.4 1.8 R1.8
M32 0.0
M33 1.03 10 7.7 224 R0.8
M34 1.8 103.103.0
M35 0.0
M36 1.03 2 41.0 R0.3
M37 1.03
M38 1.07 1.2 01.000 R0.8
M39 1.0 200 9 103.414
M40 22.0
M41 0.0
M42 0.0
M43 103.0 2.0 188 R1.8
M44 20.32 103.414
M45 112.0
M46 0.0
M47 HIGH-PRESSURE COOLANT (OFF)
M48 0.0 0.0 0.0 0.0
M49
M50 (определить функцию)
M51
```

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PortMaker/Fore-HW V2019 R2 (64-bit) [RPT#HISAR неопредел.] [Рабочий стол - C:\Users\Anzuyev\Desktop\PHI (программа)_L1_208]
Файл | Правка | Вид | Сервис | Настройка | Программы | Оценки | Вспомогательные | Дополнительно | Опции | Справка
[Панель инструментов]
Программа NEW [К-Файл - 5.153]
Оценки настроено... | Создать программу NEW | Настройка | Правка | Увеличить изображение | Уменьшить | Справка
Запустить редактор NEW программы
NEW
M1 (определить функцию)
M2 1.0 0.0 0.0 0.0
M3 1.0 0.0 0.0 0.0
M4 100.0 125.0 2.0 0.0
M5 HIGH-PRESSURE COOLANT (ON)
M6 0.0
M7 122.9 93
M8 0.0
M9 1.3 0.0 0.0 0.25
M10 0.0
M11 2.0 0.0
M12 1.0 0.0 0.0
M13 0.0
M14 122.9 93
M15 0.0
M16 0.0 0.0 0.0
M17 2.0 0.0 103.452
M18 0.0
M19 122.9 93
M20 0.0
M21 1.0 0.0 0.0
M22 1.0 0.0 0.0
M23 1.11 8 2 94.5 1.0
M24 1.11 8
M25 122.9 93
M26 0.0
M27 HIGH-PRESSURE COOLANT (OFF)
M28 0.0 0.0 0.0 0.0
M29
M30
M31
M32 (определить функцию)
M33 0.0 0.0 0.0 0.0
M34 1.0 0.0 0.0 0.0
M35 100.0 125.0 2.0 0.0
M36 HIGH-PRESSURE COOLANT (ON)
M37 0.0
M38 0.0
M39 0.0
M40 2.0 0.0 0.0 0.25
M41 0.0
M42 1.0 0.0 122.9 96.912 R0.4
M43 2.1 0.0 0.0 0.0 0.4
M44 0.0
M45 1.0 0.0 1.0 1.0 302
M46 0.0 96.9 96.9 0.0
M47 0.0
M48 0.0
M49 HIGH-PRESSURE COOLANT (OFF)
M50 0.0 0.0 0.0 0.0
M51
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