SCI-CONF.COM.UA

PERSPECTIVES OF WORLD SCIENCE AND EDUCATION

ABSTRACTS OF VII INTERNATIONAL SCIENTIFIC AND PRACTICAL CONFERENCE MARCH 25-27, 2020

OSAKA 2020

PERSPECTIVES OF WORLD SCIENCE AND EDUCATION

Abstracts of VII International Scientific and Practical Conference

Osaka, Japan

25-27 March 2020

Osaka, Japan

2020

UDC 001.1
BBK 79

The 7th International scientific and practical conference "Perspectives of world science and education" (March 25-27, 2020) CPN Publishing Group, Osaka, Japan. 2020. 719 p.

ISBN 978-4-9783419-8-3

The recommended citation for this publication is:
Ivanov I. Analysis of the phaunistic composition of Ukraine // Perspectives of world science and education. Abstracts of the 7th International scientific and practical conference. CPN Publishing Group. Osaka, Japan. 2020. Pp. 21-27. URL: http://sci-conf.com.ua.

Collection of scientific articles published is the scientific and practical publication, which contains scientific articles of students, graduate students, Candidates and Doctors of Sciences, research workers and practitioners from Europe, Ukraine, Russia and from neighbouring coutries and beyond. The articles contain the study, reflecting the processes and changes in the structure of modern science. The collection of scientific articles is for students, postgraduate students, doctoral candidates, teachers, researchers, practitioners and people interested in the trends of modern science development.

e-mail: osaka@sci-conf.com.ua
homepage: *http://sci-conf.com.ua*

TABLE OF CONTENTS

SOCIAL JUSTICE: CURRENT PERSPECTIVE

Artiukh Viktoriia
Candidate of Philology Sciences, Docent/PhD
Specialist in Management of Organizations and Administration
Poltava University of Economics and Trade
Poltava, Ukraine

Introductions. According to the definition given in Investopedia: "Social justice is a political and philosophical theory which asserts that there are dimensions to the concept of justice beyond those embodied in the principles of civil or criminal law, economic supply and demand, or traditional moral frameworks. Social justice tends to focus more on just relations between groups within society as opposed to the justice of individual conduct or justice for individuals." [1] Although there is much written and researched concerning both the concept and its reality in the modern world, still there are issues to be tackled and estimated concerning realization of personal potential of each and every individual in the international community. The author, thus, suggests to consider some reflections concerning the issue of social justice.

Aim. The objective of the given work is to assess in which way social justice can to be achieved and what aspects influence the imbalance of egalitarianism that can result in social injustice and a person's failure. The cause and effect chain of the dichotomy of social responsibility/irresponsibility or social justice/injustice is in focus of the prognosis of the international community development and the whole humankind as such.

Materials and methods. The descriptive approach is the main tool employed in this particular actual study that is the framework of the research analysis and background for the findings proposed where theories of social justice [1], product life cycle [4], Maslow's pyramid [3], egalitarian justice doctrine [2], law of social cycle [5] are important to make some tentative observations and conclusions.

Results and discussion. It is well-known that in the developed, developing and emerging economies humans are assessed according to their achievements and social image. Those can be attained if an individual is given those opportunities at his/her different life stages. If we apply the marketing product life cycle theory [4], the introduction stage presupposes the infant years where a person makes his/her first steps and primarily familiarizes with the world using the sensory organs where tactile feelings formulate his/her perception and subsequent reaction to the people, and events.

At the stage of growth, a person reaches his/her teen age when he/she learns to adjust his/her behavior according to the social norms and standards to match those with his/her social environment. At this very stage starts his/her adjustment/adapting or disharmony/nonconformity to the opportunities offered by the society within the social groups of his/her environment.

At the stage of maturity, if not having achieved the utmost of what is considered, the indicator of a certain social status, a person can respond to the social standards either in a constructive way where he/she shows a strong understanding of the social values and responsible social behavior or vice versa in a destructive way, i.e. irresponsible social behavior where justice becomes a target to be achieved in the way that a person considers not gained due to the absence of justice which, thus, can be attained through the subjective approaches that lead at worst cases to crimes known throughout the whole world.

Stage of decline is assessed by a person from the retrospective point of view as to his/her contribution into the development of society and personal development that can be objectively estimated considering person's level of satisfaction with his/her achievements; at worst, a person can feel either underestimated or overestimated considering all the levels of Maslow's pyramid.

The given reflections lead to the concept of egalitarianism which is of prime importance for realizing of human rights where a person has access to opportunities and equality which is though can be interpreted in different ways where different understandings and interpretations can either bring positive or negative effects. We

side with the viewpoint where egalitarianism is considered "… a morally required component of justice, but in considering arguments against a version of egalitarianism, it is worthwhile keeping in mind the possibility that the norm in question is morally desirable but not morally mandatory." [2]

And that is where the problems can arise as a person is free to interpret the notion of social justice that could result in social injustice, disparity. Observations of different kinds of social injustice bring forth:

– age, appearance, status (family, social, medical), gender, legislation and law, education, religion, culture, job discrimination;

– mobbing/bullying;

– crimes;

– protests, demonstrations, strikes, rebellions, war conflicts etc.

Such an outcome of social imbalance can be mended through the commonly accepted norms and regulations that are not contrary but rather complementary which can result in further comprehensive approach of social progress on the whole. Here we side with Sakar's viewpoint who suggests within the modern theories: "…**Law of Social Cycle** social progress is defined in terms of a new vision of human progress by placing an emphasis on human spiritual development." [5] This approach requires a high level of spiritual inner world. It is to correlate with the spiritual values which are to come first.

Conclusions. There is no universal recipe to "cook a social dish" that can be served to every person and society but an international myriad of field specialists who can join their efforts to find new ways, transform what has not been transformed yet in all spheres of life.

Analysis and synthesis of different findings, compiling the database with the findings and particular case solutions can provide a launch pad for the discussion and relevant decision making. Analytical work in this realm is a key to finding the touchpoints, intersection points, and nonintersecting lines of bringing peace and harmony into soul of every person and society/community.

The solution is at the heart of every society and community on every level of managing and governing multiple social processes. There is much to be done by different sociological groups and agencies to find out needs and wants to regulate the economic processes that will suggest different issues at angles to be looked at.

REFERENCES

1. Chappellow J. Social Justice [Electronical resource]. - Access mode: https://www.investopedia.com/terms/s/social-justice.asp
2. Egalitarianism / Oxford Encyclopedia of Philosophy. *First published Fri Aug 16, 2002; substantive revision Wed Apr 24, 2013* [Electronical resource]. - Access mode: https://plato.stanford.edu/entries/egalitarianism/
3. Freeman J. Printable Maslow's Pyramid Diagram/Maslow's Hierarchy of Needs Chart [Electronical resource]. - Access mode: https://www.edrawsoft.com/maslows-pyramid.html
4. Raymond V. Product Life Cycle [Electronical resource]. - Access mode: https://www.toolshero.com/marketing/product-life-cycle-stages/
5. Social Cycle Theory [Electronical resource]. - Access mode: https://en.academic.ru/dic.nsf/enwiki/1085467/Social_cycle_theory

UDC 811.111:81’42(089.3)

METHODOLOGY OF RESEARCH OF APHORISM IN PRAGMA-STYLISTIC AND COGNITIVE ASPECTS WITH THE APPLICATIONS OF SYNERGETIC TOOLS

Anastasieva Oksana Anatoliyivna
PhD in Philology, associate professor
Kharkiv Petro Vasylenko National Technical University of Agriculture
Kharkiv, Ukraine

Summary: This paper is devoted to the comprehensive study of English language aphorism in pragma-stylistic and cognitive aspects with application of the concepts of linguosynergetics.The methodology of its study has been developed. The problems of pragmatic aspect of English aphorisms have been observed. The concept of pragmatic attitude is closely linked with the notion of pragmatic function as a focused use of language units aimed to achieve a certain effect on the recipient, which facilitates conventional contact between the author and the recipient through appropriate verbal and non-verbal means, the use of which implements a pragmatic attitude of the author.

Key words: aphorism, pragmatic attitudes, pragma-stylistics, cognitive aspect.

Aphorism has always attracted the attention of representatives of different fields of science and has been repeatedly analyzed from the standpoint of linguistics. At the same time, with the change of scientific paradigm, approaches to the study of this phenomenon have changed. During the heyday of structural linguistics, scientists studied the lexical, grammatical, stylistic features of aphorisms, classified them by topic, built semantic-syntactic models of aphoristic expressions. Aphorism was the object of study as a literary genre, as phraseologism, as a sign, as a culture; aphorism was studied as a feature of individual style. The study of aphorism in the pragmatic aspect is of particular interest. The functional and pragmatic aspects of aphorisms in

particular types of discourses, in particular, in political discourse, have attracted the attention of researchers.

The study of units of text generally involves solving the following tasks: separating units of related text, finding criteria for their isolation; providing definition of their status, nature and characteristics; determining the linguistic design of these units, the interphase connections between them the study of the pragmatic aspect, that is, how the author's attitude to objective reality and content material in the segmentation of the text is manifested [18, p. 113].

Given the state of study of English language aphorisms, insufficient coverage of its pragma-stylistic and cognitive characteristics, we choose a particular strategy. The analysis of the linguo-pragmatic, linguo-stylistic and linguo-cognitive aspects of aphorism should be carried out in unity, since the pragmatic precepts of discourse and text are realized through the style; linguistic and stylistic tools, for their part, are capable of providing the author's pragmatic attitude. The research methodology also involves a synergistic approach using the concepts and concepts of stylistics, pragmatics and cognitive science, which allows to analyze the mechanisms of self-organization of discourse. The proposed scheme clearly demonstrates the complex application of the theoretical foundations of linguistics, linguo-pragmatics, linguo-cognitive and linguosynergetics for a comprehensive study of English aphorism as a type of text and discourse (Fig. 1).

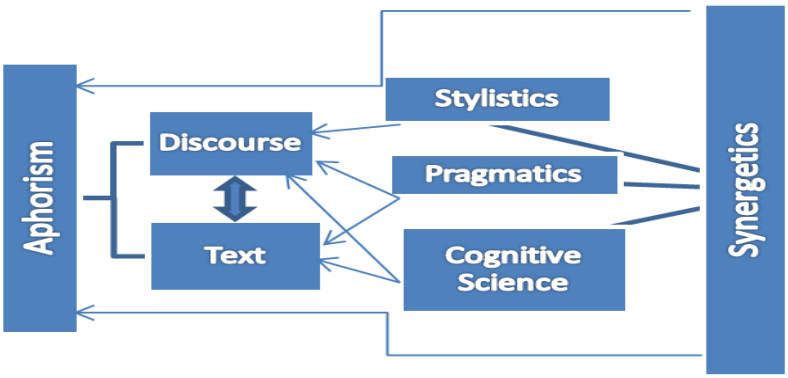


Fig. 1. Scheme of complex application of the apparatus of linguistics, linguo-pragmatics, linguo-cognitivistics and linguo-synergetics in the study of English language aphorism

The complexity of the issue, the multidimensionality of English language aphorism, and the variety of linguistic means used in the texts of this genre, require several methods of analysis. The main method used is the method of linguistic interpretation, which is based on the principle: 'the meaning is determined by the interpreter, not contained in the linguistic form' [4, p. 368–377].

Herewith, the interpretation refers to the philological technique, which is represented by a set of techniques, means, methods of finding values, meaning, content of the text. Forms of interpretation are the translation of as detailed a detailed presentation of the content of the text, summary, abstract, abstract, intertextual dialogue as the use of source text to create a new one through critical analysis, approval and controversy (comment, review, critical article, etc.) [16, p. 190].

The strategy of research of the English language aphorisms in the pragma-stylistic aspects is gradually implemented in the following sequence:

I: Analysis of the pragmatic functions of English speaking aphorism.

For the study of pragmatic functions, it is advisable to use a functional approach based on the study of the effectiveness of information in the communication process and to determine how and whether the speech unit fulfills its purpose in the speech process.

II: The analysis of the pragmatic attitudes of aphorism is carried out using the method of pragmatic analysis of the artistic texts by Ye.S. Aznaurova. According to this technique, linguistic objectification of pragmatic attitudes includes ways of organizing text, presenting a system of artistic images and aesthetic evaluations, as well as selecting relevant neutral or stylistically and pragmatically marked units. In this case, these tools are used in a comprehensive and systematic manner, they are distributed throughout the text and are signals of the implementation of pragmatic guidelines. In order to identify the system of these techniques, it is necessary to comprehend the actual, subtextual and conceptual information contained in the text [1, p. 105].

The pragmatic analysis of English language aphorism texts makes it possible to explore the means of encoding and decoding information in the text and selecting the

appropriate means of speech implementation of pragmatic atitudes. On the basis of the linguistic analysis of the texts of aphoristic expressions, we first distinguish the following pragmatic attitudes inherent in English-speaking aphorisms: 1) statement, summarization; 2) parrying; 3) narrowing; 4) warnings, threats; 5) exposure, reproach; 6) complaints; 7) (self) justification; 8) (self) humiliation; 9) justification; 10) calm; 11) motivation to act; 12) advice; 13) appeal to the authority of the author; 14) the slogan; 15) aesthetic influence; 16) shocked by unexpected argument; 17) cognition. Particular attention should be paid to the fact that pragmatic attitude in certain types of texts is capable of performing various pragmatic functions. Therefore, an important aspect of the pragmatic aspect of the study of English-language aphorisms is the analysis of the relationship between its pragmatic functions and attitudes.

III: Analysis of stylistic features of aphorisms and their speech implementation. To determine the specificity and style of the English language aphorism it's also expedient to rely on the method of analysis according to stylistic features, which was proposed by E.G. Riesel and found its further development in the works of the linguists [8; 11; 12; 15; 19; 20]. The concept of stylistic features is widely used to solve the problems of pragma-stylistic research. The aphorism style features are closely related to the language means of achieving the communicative goals. Aphorisms are inherent in universality, expressiveness, informative density, implicitity, intentionality and axiomaticity. The aforementioned characteristics of the aphorism, their substantive essence and specific analysis of the texts served as a basis for distinguishing stylistic features and their nomination.

Another important area in the complex study of English aphorisms is the analysis of their cognitive aspect. Such an analysis is considered appropriate based on an understanding of the particular nature of the phenomenon of aphorism. At this stage, we apply a conceptual analysis method, within which we explore the structure of the conceptual sphere of English aphorisms and the speech implementation of its key concepts.

In our study, we understand the concept as a multidimensional mental formation, in which the image-perceptual, conceptual and value components are distinguished [3, p. 7; 6, p. 73; 9, p. 110; 14, p. 55], therefore, an analysis of the key concepts that make up the conceptual sphere of English-speaking aphorisms necessarily requires a description of these components.

According to V.A. Maslova, the method of conceptual analysis is determined by the structural features of the concept. In particular, the concept core is formed by the dictionary meanings of certain lexemes, and the periphery is the subjective experience, pragmatic components of the lexemes and connotations [10].

The object of the study, namely the English language aphorism, necessitates the use of the so-called 'textual approach', which involves the analysis of the concept in the text [2; 18]. Within this approach, the analysis of the verbalization of key concepts of English aphorisms should begin with a semantic analysis of the word as a name of a concept. To identify the concept, research its specificity is determined by various lexical-semantic, lexical-thematic, associative groups, as well as keywords, paradigm and syntagmatics. Therefore, to identify the specifics of the concepts that make up the conceptual sphere of English aphorisms, we consider it advisable to conduct a multidimensional conceptual analysis to the following extent:

–analysis of the concept's name's etymology;

– analysis of the synonymic and antonymic rows of the concept name;

– semantic analysis of the meanings given in the dictionaries;

–semantic analysis of meanings that are not represented in dictionaries but are actualized in aphorisms;

–analysis of the associative, connotative and axiological components of the concept that are objectified in aphorisms.

In addition, for the analysis of the conceptual sphere of English aphorisms in our study, we apply a functional analysis and interpretative method, and also rely on the concept of precedent texts [7; 17]. We consider the English-speaking aphorism as an example of a precedent text that forms a concept characterized by multidimensionality and value. We consider it expedient to use the conception,

according to which the concepts are subordinated to the ‘top’ concept, namely the megaconcept [5, p. 46].

In our opinion, the use of synergistic tools for the analysis of English aphorisms is fruitful. The self-organization of each discourse from the point of view of synergetics is provisionally divided into three stages: cognitive, pragmatic and linguistic-stylistic [13, p. 91]. Cognitive analysis of aphorisms enables us to analyze the order parameter as the most moving parameter of their self-organization, which manifests itself as the ability to freely choose a concept and its main attributes to compare with the target concept and its peripheral attribute. The manifestation of this order parameter occurs in a matrix: at all levels of the composition of aphorism, as well as vertically – at the cognitive, pragmatic and linguistic levels. At the same time, the same order parameter at these levels finds its object differently.

With regard to English-language aphorisms, an attempt was made to apply such synergistic concepts and tools as self-organization of text, sense enhancement, and fractality; the peculiarities of self-organization of English-speaking aphorisms are analyzed, the fractal nature of aphorisms by their compositional, syntactic, semantic organization and the self-similarity property of aphorism structure are investigated.

With regard to the English language aphorisms, an attempt was made to apply such synergistic concepts and tools as self-organization of text, sense enhancement, and fractality; the peculiarities of the self-organization of English-speaking aphorisms are analyzed, the fractal nature of aphorisms by their compositional, syntactic, semantic organization and the self-similarity property of the aphorism structure are investigated.

Recently, the perspective of aphorisms research in the cognitive aspect, through the prism of linguoculturology and linguoaxiology (aphorisms are investigated as value-marked statements, which is an important component of the description of linguocultural concepts), has emerged. However, the methodology for such studies cannot be considered sufficiently developed. The object of research is usually the individual concepts that are verbalized in aphorisms. Not enough attention is paid to

exploring the relationship between concepts that form the conceptual sphere of aphorisms. All these issues form the prospective for the future research.

REFERENCES

1. Азнаурова Э. С. Прагматика художественного слова. – Ташкент: Фан, 1988. – 122 с.
2. Болотнова Н. С. Поэтическая картина мира и её изучение в коммуникативной стилистике текста // Сибирский филологический журнал. – Новосибирск : НГУ, 2003. – С. 198–207.
3. Воркачев С. Г. Вариативные и ассоциативные свойства телеономных лингвоконцептов. – Волгоград : Парадигма, – 2005. – 214 с.
4. Демьянков В. З. Прагматические основы интерпретации высказывания // Изв. АН СССР. Сер. литературы и языка. – 1981. – Т. 40. – № 4. – С. 368–377.
5. Кагановська О. М. Текстові концепти художньої прози. – К. : КНЛУ, 2002. – 292 с.
6. Карасик В. И. Этноспецифические концепты // Введение в когнитивную лингвистику / отв. ред. М. В. Пименова. – Кемерово : Кузбассвузиздат, 2005. – С. 61–105.
7. Караулов Ю. . Роль прецедентных текстов в структуре и функционировании языковой личности // Научные традиции и новые направления в преподавании русского языка и литературы. Доклады советской делегации на VI конгрессе МАПРЯЛ. – М. : Русский язык,1986. – С. 105–126.
8. Кожина М. Н. Стилистика русского языка: учебник. – М. : Флинта: Наука, 2008. – 464 с.
9. Красавский Н. А. Эмоциональные концепты в немецкой и русской лингвокультурах. – Волгоград : Перемена, 2001. – 495 с.
10. Маслова В. А. Лингвокультурология : учеб. пособие для студ. высш. учеб. заведений. – М. : Академия, 2001. – 208 с.
11. Піхтовнікова Л. С. Синергія стилю байки: німецька віршована байка 13–20 ст. : [монографія]. – Х. : Бізнес Ін форм. – 1999. – 220 с.

12. Піхтовнікова Л. С. Еволюція німецької віршованої байки (13–20 ст.): жанрово-стилістичні аспекти : дис. ... доктора філол. наук : 10.02.04; 10.01.05 / Піхтовнікова Лідія Сергіївна. – К., 2000. – 427 с.

13. Пихтовникова Л. С. Самоорганизация речевых произвдений: информационно-когнтивный аспект // Синергетика в филологических исследованиях: коллективная монография / под общ. ред. проф. Л. С. Пихтовниковой. – Х. : ХНУ им. В. Н. Каразина, 2015. – С. 102–135.

14. Приходько А. М. Концепти і концептосистеми в когнітивно-дискурсивній парадигмі лінгвістики. – Запоріжжя : Прем'єр, 2008. – 332 с.

15. Ризель Э. Г. Полярные стилевые черты и их языковое воплощение // Иностранные языки в школе. – 1961. – № 3. – С. 96–103.

16. Селіванова О. О. Сучасна лінгвістика. – Полтава : Довкілля, 2006. – 716 с.

17. Слышкин Г. Г. Лингвокультурные концепты прецедентных текстов. – М. : Academia, 2000. –140 с.

18. Тураева З.Я. Лингвистика текста. – М. : Просвещение, 1986. – 128 с.

19. Riesel E. Deutsche Stilistik: учебник [для студентов ин-тов и фак. иностр. яз.]. – М. : Высшая школа, 1975. – 315 с.

20. Riesel E. Theorie und Praxis der linguostilistischen Textinterpretation: учеб. пособ. [для студентов ин-тов и фак. иностр. языков]. – М. : Высшая школа, 1974. – 184 с.

UDK 631.11: 631.526.3

VARIABILITY OF QUANTITATIVE TRAITS OF WINTER WHEAT DEPENDING ON THE VARIETY

Bahan Alla
Candidate of Agricultural Sciences
Associate Professor
at the Department of Selection, Seed Science and Genetics
Yurchenko Svitlana
Candidate of Agricultural Sciences
Associate Professor
at the Department of Selection, Seed Science and Genetics
Pysarenko Oleksii
Master of the 2nd year of study
Poltava State Agrarian Academy

Abstract: Variability of quantitative traits of winter wheat varieties has been established. The effect of the variety on the yield level and quality indicators of soft winter wheat grain has been investigated. The best winter wheat varieties for introduction into production in the conditions of the central forest-steppe of Ukraine have been identified according to the investigated traits.
Keywords: winter wheat, variety, quantitative traits, yield, grain quality indicators.

Modern agricultural production, domestic and foreign market place high demands on the traits and properties of new winter wheat varieties. They must be characterized by high stability and productivity, complex resistance to unfavourable environmental factors, diseases and pests, response to high agrophones, adaptability to the industrial mechanized cultivation technologies and high quality of commodity products [1. 2].
Among these requirements, in addition to the yield, a special place is occupied by the grain quality. The quality of grain determines the nutritional and commercial value of

new winter wheat varieties as well as their competitiveness. The quality of crop production depends to a large extent on the soil and climatic conditions, the characteristics of the variety, the cultivation technology, transportation, storage, etc. Therefore, the evaluation of its quality is not limited to one indicator, but take into account the combination of requirements [3. 4].

Quantitative traits characterize the most important indicators of the cultivated plants, in particular, size and quality of the yield. But, they have not been genetically studied yet, although information from this area is widely represented in the studies of many scientists. These traits are characterized by considerable variability and dependence on the environmental factors [5].

Therefore, investigations on the variability of yield and quality of winter wheat depending on the varietal properties remain relevant.

The object of the research was to determine the variability of winter wheat quantitative traits depending on the variety. The subject of the research was winter wheat varieties Sahaidak, Orzhytsa, Samurai, Epokha odeska, Lisova pisnia, productivity, grain quality indicators. Variety Sahaidak was accepted as standard.

The sowing of the studied winter wheat varieties was carried out in the conditions of Poltava region (Forest-Steppe zone of Ukraine) during the period of 2016-2018. The forecrop was peas. Harvesting during the period of 2017-2019 was carried out by the method of direct combining. Yield analysis and grain quality indicators were determined by generally-accepted methods.

Mathematical analysis of the research results was performed by the dispersion and variational analyzes according to the methods of B.A Dospehov [6].

Yield is considered to be the main indicator of economic and biological value in the study of almost all cultivated plants, including winter wheat.

On the whole, this trait was higher in 2018, which had more favorable weather conditions, and lower in 2019. Thus, the studied indicator varied as follows: in 2017 – 4.26-5.44 t/ha, in 2018 – 4.88-6.43 t/ha, in 2019 – 3.72-4.68 t/ha.

According to the average values of productivity, it is possible to distinguish winter wheat varieties Samurai and Orzhytsa (5.52 and 5.27 t/ha, respectively), which are valuable for obtaining high and stable yields (Table 1).

Table 1

Quantitative traits of winter wheat (average, 2017-2019)

Indicator	Variety				
	Sahaidak (st)	Epokha odeska	Lisova pisnia	Samurai	Orzhytsia
Yield, t/ha	4.89	4.29	4.56	5.52	5.27
Grain-unit, g/l	793.0	742.0	757.0	776.7	799.3
Weight of 1000 grains, g	42.0	39.0	40.2	46.7	43.5
Glassiness, %	71.0	80.3	84.0	61.0	67.3
Protein content, %	13.4	14.3	13.7	11.9	12,7
Gluten content, %	30.4	33.2	32.0	26.9	28.4
Gluten quality, units	74.0	86.0	90.7	83.7	78.7
Falling number, s	359.0	315.3	277.3	294.0	379.7

Important indicators of the quality of winter wheat grain are: grain-unit, weight of 1000 grains, glassiness, protein content, gluten content and quality, falling number.

According to the variational analysis, indicators of grain quality of winter wheat varieties had a small coefficient of variation (V = 3.5-9.2%) during the period of 2017-2019. The average degree of traits variation (V = 13.5-14.2%) was observed only in glassiness and falling number.

During the research years, the indicator of grain-unit of winter wheat varieties accordingly was: in 2017 – 739-798 g/l; it was the largest at a level of 760-817 g/l in 2018; it was the lowest at a level of 727-783 g/l in 2019. According to the investigated trait, the winter wheat variety Orzhytsia (799.3 g/l) has been distinguished, and variety Epokha odeska was characterized by the lowest value – 742.0 g/l.

Weight of 1000 grains in the studied varieties varied similarly: in 2017– 38.7-46.9 g; in 2018 – 40.5-47.8 g; in 2019 – 37.8-45.3 g. Winter wheat variety Samurai (46.7 g) was characterized by large and evened grain, and variety Epokha odeska provided the smallest weight of 1000 grains – 39.0 g.

Tha trait of glassiness of winter wheat varieties during the research years was the lowest at the level of 55-79% in 2017, it was 60-84% in 2018 and it was the largest (68-89%) in 2019. Winter wheat variety Lisova pisnia showed the highest indicator of grain glassiness (84.0%), and variety Samurai showed the lowest indicator (61.0%).

The protein content in winter wheat grain varied over the years as follows: in 2017 – 11.3-13.9%; in 2018 – 11.9-14.3%; in 2019 – 12.4-14.8%. Wheat variety Epokha odeska has been distinguished according to this trait (14.3%), and variety Samurai was characterized by the lowest protein content – 11.9%

Gluten content is closely correlated with protein content. Therefore, a similar situation was observed. Thus, gluten content was 25.6-31.7% in 2017; 26.7-33.2% was in 2018; 28.4-34.8% was in 2019. Winter wheat variety Epokha odeska was characterized by the highest content of gluten (33.2%), and variety Samurai showed the lowest indicator of this trait (26.9%).

The quality of gluten during the research years varied in the range: in 2017 – 78-98 units; in 2018 – 74-90 units; in 2019 – 70-84 units. The variety standard was characterized by the best quality of gluten (74.0 units), and variety Lisova pisnia was characterized by the worst quality of gluten (90.7 units).

The indicator of falling number of winter wheat varieties was accordingly: in 2017 – 265-356 seconds; in 2018 – 278-378 seconds; in 2019–289-405 seconds. Winter wheat variety Orzhytsia showed the highest indicator of falling number (379.7 seconds), and variety Lisova pisnia was characterized by the lowest value of this indicator – 277.3 seconds.

Thus, winter wheat varieties Samurai and Orzhytsia had the highest productive potential of grain production. According to the quality indicators of winter wheat grain, the following varieties have been distinguished: Orzhytsa – by the nature of the

grain and falling number; Samurai – by weight of 1000 grains; standard Sahaidak – by gluten quality; Lisova pisnia – by glassiness; Epokha odeska – by the content of protein and gluten.

REFERENCES:

1. Bazalii V. V. Principles of adaptive selection of winter wheat in the Southern Crimea. Kherson: Ailant, 2004. 244 p.
2. Shelepov V. V., Havryliuk M. M., Chebakov M. P., Honchar O. M. Selection, seed production and variety study of wheat. Myronivka, 2007. 405 p.
3. Orliuk A. R., Honcharova K. V. Adaptive and productive wheat potential: monograph. Kherson: Ailant, 2002. 276 p.
4. Ulich O. L. New generation of winter wheat varieties. *Proposition*. 2006. № 7. P. 46–49.
5. Bahan A. V., Yurchenko S. O., Shakalii S. M. Offspring variability of the different morphological parts of an ear of winter wheat by the quantitative traits. Poltava: *Herald of Poltava State Agrarian Academy*, 2012. № 4. P. 33-35.
6. Dospekhov B. A. Methods of field experiment. Moscow: Kolos, 1985. 336 p.

SPEECH DEVELOPMENT OF PRESCHOOLERS IN DESIGN ACTIVITY

Berdalieva Gulasal Abduqunduzovna
Head of the Department of Preschool
Primary and Special Education Methods
Doctor of Philosophy (PhD) in pedagogical sciences
associate professor
Syrdarya regional center for training and training
of public education workers
Uzbekistan

Design technology is innovative in the work of preschool organizations. This method allows the child to experiment, synthesize the knowledge gained, develop creative abilities and communication skills, thereby providing him with high readiness for schooling. The design process increases the competence of teachers, acts as a means of ensuring cooperation, co-creation of children and adults, strengthens relationships with parents, makes the learning process interesting and exciting. The project method is a way of implementing a personality-oriented approach in education.

A project is understood as an independent and collective creative completed work that has a socially significant result. The project is based on a problem, for its solution a research search is needed in various directions, the results of which are generalized and combined into a single whole.

Designing is a complex activity, the participants of which automatically, without a specially proclaimed didactic task on the part of the organizers, master new concepts and ideas about various areas of life. The educator is the organizer of children's productive activities, a source of information, a consultant, an expert. He is the main project manager, while he is a partner and assistant to the child in his self-development. Motivation is enhanced by the creative nature of children's activities, the child gets acquainted with various points of view, has the opportunity to express and justify his opinion [2].

A project is understood as an independent and collective creative completed work that has a socially significant result. The project is based on a problem, for its solution a research search is needed in various directions, the results of which are generalized and combined into a single whole.

You can identify the main components of the project activities of the pupils as a didactic method:

- the presence of a socially significant task (problem) - research, information, practical (work on the project is the solution to this problem);
- implementation of the first stage of work on the project as planning actions to solve the problem, in other words - designing the project itself;
- the mandatory presence of information retrieval activities, which will then be processed, comprehended and presented by the project team members;
- the presence of a significant product (project output) as a result of work on the project;
- Presentation (presentation) of the product and its social significance at the last stage of work on the project.

N.E. Veraksa, A.N. Veraksa believes that one of the main tasks that the teacher is called upon to solve during the course of the project activity is to create a problem situation and maximize the space of possibilities for its transformation. The authors also emphasize that the space of opportunities can expand both due to the statements of a group of children, and due to the variety of options proposed by one child. The teacher’s behavior strategy should be as follows: track the occurrence of a problem situation and the possibility of its transformation, keep preschoolers in the problem field, make sure that all children “see” the space of opportunities and begin to act in it, offering their own ideas and repeating other people's ideas [1].

Speech and communication accompany all types of activities of children (play, work, cognitive research, productive, musical and artistic, reading) and are their integral part. Therefore, the teacher has great opportunities for constant work on the development of children's speech in any intersubject project.

A modern study of design activities as a form of speech development of senior preschoolers is presented in the works of A.M. Verbenets, S.I. Maximova, E.O. Smirnova, O.N. Somkova, O.V. Solntseva, L.L. Timofeeva and others

The authors of the program “Childhood” recommend mono-projects whose content is limited by the framework of one educational area “How is a book born?” (development of children's speech creativity); “Is it hard to be polite?” (mastering the rules of etiquette, the ability to use them in everyday communication) and interdisciplinary (or integrated) projects that solve problems from different educational areas of the program (“Mathematics in Art”, “Big and Small in Nature”).

The most important direction of the teacher’s work in the new conditions with the aim of developing communication and speech of children is the organization of children of different ages. HE. Somkova notes that “this becomes possible in the context of organizing children's project activities when implementing a single project for all groups of a kindergarten and a joint project with an elementary school” [4]. The project makes it possible to solve many pedagogical problems: to show children ways to search for new information, teach them how to plan collective activities, conduct research (put forward assumptions, check them, summarize the results), apply their knowledge and skills in various, including new, situations develop the ability to present the resulting product. Participation in the project involves a combination of collaboration with peers and individual activities, which fosters children's responsibility, the ability to work in a group, while showing individual abilities and creativity.

Work on the implementation of the project consists of stages during which the tasks of speech development of preschoolers are solved:

At the first, motivational stage of the project, the research problem is being formulated, the interest of children in studying it is stimulated, the experience of children on the topic of the project is updated, children put forward hypotheses and suggestions for studying the problem posed. This stage of the project allows you to solve a lot of communicative (the ability to negotiate, listen and hear each other, accept someone else's point of view), speech (development of dialogic and

polylogical speech: the ability to pose questions and answer them, participate in a collective conversation, observing the rules of collective communication), cognitive tasks [4].

At the second, problem-activity stage, the development of research skills of preschoolers is underway: an independent search for information, its processing and use in conjunction with peers. The content of this stage of the project allows us to solve the problems of enriching and activating the vocabulary of children by mastering the names of emotions and feelings, shades of mood, searching for epithets characterizing the personal qualities of a friend and friendly cooperation; the development of coherent speech (children make descriptive and narrative stories, describing the contents of collages, albums; retell read works, stories); the development of the planning function of speech, as well as the development of all groups of children's communicative skills (informational, regulatory, and affective).

At the third, creative stage of the project, a generalization and design of the collective product of children's activities and its public presentation are underway. The teacher continues to develop children's business cooperation skills in the course of pair and subgroup interaction, the skills of public self-presentation. The tasks of developing children's speech creativity, expressiveness of speech, persuasiveness and evidence of statements are being solved. [4].

N.I. Levshina, E.G. Karpova, O.V. Ponamareva offer, for example, the Victory Day project, where the main idea is: creating a unified space for the upbringing and development of children in preschool education and in the family to form a sense of respect for children traditions of our country, respect for the older generation, respect for the memory of the past, communicative experience, learn to communicate, the ability to give in, respect the interests of other people. The motivation for the child in this project is the desire for social ways of interacting with other people; need for love, approval, communication; the need to retain mastered actions through their regular reproduction, the need for familiarization with the outside world. In the course of the project, to intensify speech activity, the following are used: a competition of poem readers about the army, victory, heroes; memorial evening with

an invitation from grandparents “Meeting with veterans”, inventing mini-essays about the heroes of the Great Patriotic War, compiling a group “Magic book of essays”, a contest “Letter to a soldier” about home traditions, a report on children's television preschool educational organization (PEO) (winner of the contest “Letter soldier ”reads it in the studio on the air) [2].

Using the project method in preschool education as one of the methods of integrated learning for preschoolers can significantly increase the independent activity of children, develop creative thinking, children's ability to independently, in various ways find information about an object or phenomenon of interest and use this knowledge to create new objects of reality, contributes to enrichment and activating the vocabulary of children, the development of coherent speech, the development of the planning function of speech. It also makes the educational system of a preschool educational institution open to the active participation of parents.

REFERENCES

1. Veraksa, N.E. Diagnosis of mental development and the problem of abilities / N.E. Veraksa, A.N. Veraksa // Modern preschool education. Theory and practice. - 2007. - No. 1. - S. 22 - 27.

2. Levshina N.I. Using the project method when interacting with parents of pupils of a preschool educational institution / N.I. Levshina, E.G. Karpova, O.V. Ponamareva // Management DOU-M: 2013, No. 6, p77 -89.

3. Mirjalilova S. S. Project activity - as a means of developing cognitive initiative [Text] / S. S. Mirjalilova // Young scientist. - 2012. - No. 11. - S. 458-459.

4. Somkova O.N. New approaches to the organization of work on the development of speech of preschool children // Kindergarten: theory and practice. - 2012. - No. 3. - S. 6 - 17.

UDC 615.03

MAGNESIUM IN CLINICAL PRACTICE OF DISEASES OF THE NERVOUS SYSTEM

Berezniakov Andrii
Yaremenko Vitaliy
PhD, AsP
Bereznyakova Natalia
Doc. of pharm. sci., professor
Drugovina Valentina
PhD, AsP
National University of Pharmacy
Kharkov, Ukraine

Abstract: To date, a large number of publications are devoted to the study of the action of magnesium in clinical practice for the prevention and treatment of pathologies of various systems and organs. Particular attention of the world scientific community is drawn to the role of magnesium as one of the key factors in the treatment of diseases of the nervous system. It has been established that this circumstance is directly related to the deficiency of this macroelement in most neuropsychiatric disorders, including depressive and anxiety states, stroke, convulsive syndromes, and also autonomic dysfunction syndrome.

Keywords: magnesium, macronutrient deficiency, nervous system, nervous system pathology, depression

Magnesium affects the functional state of almost all organs and systems. Moreover, in clinical practice, the doctor often faces the negative consequences of a lack of magnesium in the body, which are expressed in a particular disease of the nervous system.

An analysis of a number of studies [1, p.122] is devoted to the use of magnesium-containing drugs for various pathologies, which were accompanied by a subjective feeling of anxiety and chronic stress. The intake of magnesium in 46 patients over the age of 70 years at a dose of 500 mg per day for 2 months significantly reduced the concentration of cortisol and an increase in the concentration of renin in the blood serum, as well as significantly reduced the severity index of insomnia, which convincingly proves the positive effect of magnesium in anxiety states.

The research results show the ability of magnesium in brain injuries to affect all the primary elements of the post-traumatic pathophysiological cascade, including sharp depolarization of neurons, the release of exciting neurotransmitters, ionic shifts, and changes in cerebral blood flow [2, p.152].

Despite significant progress in the treatment of depressive conditions, known in the modern world as the diagnosis of a depressive episode, resistance to traditional treatment is growing annually. Modern antidepressants have a positive therapeutic effect in only half of patients, and this is without taking into account side effects and the development of drug dependence. Numerous data confirm that in many cases the incidence of depressive and neurological disorders, such as myopathies and neuropathies are directly related to magnesium deficiency [3, p.412], Which forces clinicians to turn their attention to this macroelement again [4, p.551].

In the studies of Tarleton et al. [5] demonstrated the results of the use of the oral form of the magnesium preparation for 6 weeks in patients with mild or moderate depression. The authors noted the effectiveness of action and good tolerance of magnesium, which indicates an improvement in the symptoms of the disease by 5.5 points according to the results of PHQ-9 (Patient Depression Questionnaire-9) and a decrease in the manifestations of anxiety disorders by 4 points on the scale of Generalized Anxiety Disorders-7. It is established that after the end of the drug, the effect persists for 2 weeks.

Randomized placebo-controlled studies demonstrate the effectiveness of intravenous administration of magnesium sulfate in ischemic stroke, which reduces the severity of its manifestations and limits the focus of brain damage [6, p.413]. According to the

results of C. Yang studies conducted among 17133 patients who died from a stroke in the period 1989-1993, it was noted that an insufficient amount of magnesium in drinking water leads to an increased incidence of stroke.

Magnesium has established itself as an effective drug for diseases of the peripheral nervous system. In the studies of O.V. Novikova showed a significant effect of magnesium orotate when stopping night cramps in the leg muscles [7, p.91]. During the study, 23 out of 25 patients who used magnesium orotat in the complex treatment of neurological diseases recorded a decrease in the severity of manifestations of irritative muscular-tonic syndromes along with improved sleep. Orotic acid, as an endogenous metabolite in our body, is a precursor of the pyrimidine bases necessary for the synthesis of nucleic acids and ATP. Therefore, the use of organic magnesium salts allows not only to enhance the positive effect of this combination, but also to reduce side effects. In a number of works, the neuroprotective, anabolic, and detoxifying effects of orotic acid are noted, which contributes to the improvement of such cognitive functions as the memory and learning process [7, p. 92, 8, p.1271].

The results of a clinical meta-analysis of 603 patients who took magnesium orotat at a dose of 1878 ± 823 mg / day for 4-6 months allow us to reliably judge a decrease in the frequency of dizziness by 72%, the development of autonomic dystonia syndrome by 92%, headaches, including the number of morning ones by 84%. These facts allow us to argue about the undeniable effectiveness of magnesium orotate in the treatment of pathology of the autonomic nervous system and open up broad prospects for its use in neurological practice [8, p.1272].

Thus, a deficiency or disturbance of magnesium metabolism in the body leads to the development of numerous complications, including the appearance of neuropsychiatric diseases. Numerous publications with the results of clinical studies indicate a positive effect after taking magnesium preparations in the treatment of diseases of the nervous system.

REFERENCES

1. Boyle N.B., Lawton C.L., Dye L. The effects of magnesium supplementation on subjective anxiety // Magnesium Research. – 2016. – 29(3). – P. 120-125. – doi:10.1684/mrh.2016.0411.

2. MacFarlane M.P., Glenn T.C. Neurochemical cascade of concussion // Brain Injury. – 2015. – Vol. 29(2). – P. 139-153.

3. Petroianu A., Barquete J., Plentz E.G. Acute effects of alcohol ingestion on the human serum concentrations of calcium and magnesium // J. Int. Med. Res. –1991 Sep-Oct. – 19 (5). – P. 410-413.

4. Serefko A., Szopa A., Wlaź P., Nowak G., Radziwoń-Zaleska M., Skalski M., Poleszak E. Magnesium in depression // Pharmacol. Rep. –2013. – 65(3). – P. 547-554. – PMID: 23950577.

5. Tarleton E. K., Littenberg B., MacLean C. D., Kennedy A. G., Daley C. Role of magnesium supplementation in the treatment of depression: A randomized clinical trial // PLoS One. – 2017. – 12(6). – doi: 10.1371/journal.pone.0180067.

6. Yang C.Y. Calcium and magnesium in drinking water and risk of death from cerebrovascular disease // Stroke. – 1998. – V. 18 (8). – P. 411-414.

7. Новикова О.В. Магнерот® в лечении неврологических заболеваний // Международный неврологический журнал. – 2009. –1(23) – С. 91-92.

8. Aslanyan S., Weir C.J., Muir K.W., Lees K.R. Magnesium for treatment of acute lacunar stroke syndromes: Further analysis of the images trial // Stroke. – 2007. – № 38. – P. 1269-1273.

UDC 658.5

ADAPTATION OF REQUIREMENTS OF TOYS SAFETY INDICATORS TO INTERNATIONAL STANDARDS

Demydchuk Liudmyla Bohdanivna
Ph.D., Associate Professor
Sapozhnyk Dmytro Ivanovych
Ph.D., Associate Professor
Yagelnitska Julia Sergiyivna
Search Bachelor
Department of Commodity Science and Expertise in Customs
L'viv University of Trade and Economics (LUTE), L'viv, Ukraine

Annotation: The issue of adaptation of state normative documents of Ukraine regarding the safety indicators of children's toys to the requirements of international and European standards is considered.
Regulatory indicators of toy safety, their grouping and nomenclature, information support and adaptation process are analyzed.
Keywords: toy, baby toy, indicator, safety, standard, regulatory document.

Introduction. Buying a toy, most, not knowing what to look for, is guided only by its external attractiveness. However, there are a number of serious safety requirements for toys and a variety of children's entertainment. First of all: compliance with mechanical, chemical, fire, radiation, electrical and noise safety standards, which must be taken care of by the manufacturers first. And no matter in what country they made the children's entertainment (Ukraine, Russia, China, Poland, Turkey ...) – compliance with the quality and safety requirements is required along the way of the toy from the conveyor to the consumer. In this case, control is carried out both at the enterprise and at the subsequent transportation of the product, passing customs and appearing directly in the trading network. Protects certificate of conformity and

hygienic conclusion of state sanitary and epidemiological examination against counterfeiting and smuggling.

The majority of toys sold in our country are produced abroad, the share of domestic toys in the Ukrainian market is no more than 12%. China is the absolute leader in the import of toys to our country. Most Chinese toys are manufactured in violation of technical and health standards, so they are dangerous to the health of the child. Laboratory studies of toys show that the colors of these toys do not conform to hygienic standards. Therefore, the first thing when buying a toy is to pay attention to its safety [1].

In the recent years, as part of the program of preparation for Ukraine's accession to the European Economic Community, work has been carried out on the translation and implementation of European standards EN 71, which define the basic requirements for the safety of toys (Table 1).

Table 1

Objects of study

Marking	Name
DSTU EN 71 – 1:2006	Safety of toys. Part 1. Mechanical and physical properties
DSTU EN 71 – 2:2005	Safety of toys. Part 2. Flammability
DSTU EN 71 – 3:2005	Safety of toys. Part 3. Migration of certain elements
DSTU EN 71 – 4:2005	Safety of toys. Part 4. Sets for chemical experiments and similar classes
DSTU EN 71 – 5:2005	Safety of toys. Part 5. Toy kits, except chemical test kits
DSTU EN 71 – 6:2005	Safety of toys. Part 6. Age warning graphic symbol
DSTU EN 71 – 7:2008	Safety of toys. Part 7. Fingers inks. Requirements and test methods
DSTU EN 71 – 8:2006	Safety of toys. Part 8. Swing, sloping gutters and similar household toys for outdoor and outdoor pursuits

The aim. The purpose of the study was to consider the issue of adaptation of state normative documents of Ukraine regarding the safety indicators of toys to the

requirements of international and European standards; analysis of the regulatory safety indicators of toys, their grouping and nomenclature, the possibilities of information support and adaptation.

Results and discussion. It should be noted that the requirements of EN 71 are considered less stringent than the requirements of similar state regulations. Now there are claims even for the quality of baby cubes, traditional toys of many generations, because often for their manufacture manufacturers use the cheapest raw materials - spruce whip and the like. The cubes turn out rough, with grooves. Inflatable toys for water games are also often lacking. The requirements relate to the strength and tightness of the seams and the tightness of these toys at an excess pressure of 0.02 MPa. Unfortunately, for many products, these requirements are not met - products are just torn.

Toys and various children's entertainment have a number of stringent requirements for their safety. First of all, the manufacturers are responsible for compliance with mechanical, chemical, fire, radiation, electrical and noise standards. And no matter in what country made the children's entertainment (Ukraine, Russia, China, Poland, Turkey ...) – compliance with the requirements of quality and safety is required along the way toys from the conveyor to the consumer. In this case, control is carried out both at the enterprise and during the subsequent transportation of the product, passing customs and appearing directly in the trading network. Protects certificate of conformity and conclusion of state sanitary and epidemiological expertise of the Ministry of Health of Ukraine against counterfeiting and smuggling [2].

Toys are included in the List of products subject to mandatory certification in Ukraine [3]. This involves testing the toys for compliance with the requirements set by the interstate safety standard GOST 25779 "Toys. General safety requirements and methods of control" [4]. The requirements of this standard are harmonized with the international standard on safety of toys. It covers toys that are designed for children under 14 and sets safety requirements and research methods.

For the manufacture of toys, only non-harmful materials that are free of toxic substances and easily cleanable and disinfectant should be used, attention should also

be paid to the weight and size of the toy, which must be appropriate to the strength of the child and the size of his or her hands, to eliminate the possibility of injuries and injuries [5]. Ideally, each toy should be accompanied by a certificate of conformity, but now in the toy market of Ukraine the situation is that only about 10% of toys are certified [2].

In general, a child's toy must meet the following requirements [6], in particular to be safe for the life of the child. The safety of the toy is subject to the following conditions:

- no odor;
- strength. Strong toys that can break off parts can injure the baby or cause harm. therefore, the reliability of all fastenings and connections is checked. Soft toys very often open their eyes - a small baby can take them to his mouth;
- construction safety. Absence of sharp corners and burrs, narrow crevices and holes where fingers can be inserted. for the least dangerous, toys with long ropes (more than 15 cm);
- color safety. Very bright, cutting eye coloring can have a negative effect on a child's eyesight and mental state;
- sound security. A toy with a loud, high-pitched, sharp sound can damage the baby's hearing;
- size security. The toy and its components must be large enough to prevent the young child from swallowing them. Toys usually indicate at what age it is recommended for a baby - if it has a "from 3 years" sign, it means it may contain very small details;
- weight safety, ie the ratio of the weight of the toy and the baby;
- hygiene (the ability to wash and wash the toy).

Of great importance is the information support, ie the labeling of the toy, which must be affixed in the state language, easy to read and not flush. The following must appear on the product label: the trademark of the manufacturer or its representative; the address of the manufacturer or its representative; age category of children intended for the toy; warning labels (for example, "Not intended for children under 3

years – contains small details!", "Beware! Flammable!", etc.). In the vast majority of cases, toys should bear the following signs on the packaging (Table 2). The presence of the CE marking badge indicates that this product complies with all EU standards but is not a guarantee of safety. A conditional picture of a child with a number attached to it indicates the age of the toy.

Table 2

Conditional safety symbols on toys

Symbol	Content of information
	indicates the age of the child, which may be dangerous to the toy due to its design and performance characteristics. In addition to the sign, a specific safety requirement for the toy is usually indicated. For example, "Use under adult supervision", "Wash with soapy water", etc.
	this label is affixed to EU manufacturers on their toys to show that the products are manufactured in accordance with the requirements of the Toy Safety Directive. It is optional and is not a mark of quality or safety. It is this information sign which is, in a way, a passport for the toy and ensures its free transportation across the European Union.
	The "Lion Badge", developed by the British Games and Hobbies Association, indicates the quality and safety of the toy. It is intended for consumers directly and is a guarantee that the manufacturer has complied with all the safety rules of the toy.
	"Confirmed Lion Sign" indicates that the toy has passed the Safety Standard Tests of Toys that contain fairly stringent requirements for toys.
	a mark of compliance. He says that the toy has passed a number of necessary safety tests. However, it is not yet a guarantee of safety for every child of all ages.

As mentioned above, the adaptation of state regulatory documents to the requirements of international standards, which in our opinion is not always appropriate, also concerns the issues of their classification and grouping. In the future, in our opinion, it is advisable to develop documents on the classification of toys and requirements for their safety, which will outline the guidelines for the conformity of their characteristics to a particular childhood.

In particular, additional requirements for toys for children under the age of 3 should be introduced. The document will need to contain the characteristics of products that

should not be considered as toys at all, but which may be mistakenly identified by such a child.

The new requirements for toy safety standards must be tailored to the intellectual and mental development of children and to the potential sources of "childhood dangers".

The requirements should be that toys for children under 3 should be:

– safe for an unattended child in a crib or playpen;

– strong enough to exclude injections, cuts, etc.;

– designed so that the child cannot tear, dismantle or bite them; be free from rough surfaces and sharp edges.

In addition, they should not have the potential to get into the throat and respiratory tract or twist around the neck. Products that can be mistaken for toys should be able to identify them by means of specialized indicators.

The most important of the features is the game purpose. The following are dimensional characteristics. If the product does not clearly fit these characteristics with anthropometric data of a child of a certain age, then the product cannot be identified as a toy. Excessive detailing of the grouping features may also indicate that the product is for adults. Packaging and marking can also say a lot.

Yes, toys are not: decorative and gift items (products for wedding, birthday, etc., vintage music boxes, sophisticated stationery kits, metal badges, magnets for hanging on refrigerator doors; educational items (puzzles, strategy games in a set) rules, calculators designed by cartoon characters), baby-friendly thermos, toys for pets, puppet dolls, inflatable pools (with a maximum height of water level of 0.4 m, depth of 0.5 m, diameter 1.8 and volume 2.3 m^3), children's books and periodicals of documentary value, comics, key charms, souvenirs etc..

It is determined that products for use in role-playing games are considered as toys, and "products for early learning" (musical instruments, mini-machines and mini-sewing machines) are no longer toys.

Conclusion. In summary, it should be noted that the greatest danger for the child is the materials from which the toys are made. The number of hazardous substances they may contain include toxic components of paints, formaldehyde, phenol and the

like. According to practice, in some toys, the level of these dangerous substances may exceed 30%, and the purchase of a poor quality toy that does not meet the requirements, threatens the child the following:

– possible poisoning of toxic substances;

– allergic manifestations, as poor-quality products may contain toxic chemicals - allergens, including poisonous formaldehyde, in certain quantities;

– traumatic injuries (small and poorly secured small parts can get into the baby's respiratory tract);

– fire hazard.

REFERENCES

1. Основні вимоги до дитячих іграшок. Вибираємо дитині іграшки. – www.URL: http://i-medic.com.ua/index. php?newsid=16852.

2. Загрозливі іграшки. – www.URL: www.pohlyad.com.

3. Україна. Державний комітет України з питань технічного регулювання та споживчої політики. Наказ Про затвердження Переліку продукції, що підлягає обов'язковій сертифікації в Україні: від 01.02.2005 р. № 28. – www.URL: http://zakon2.rada.gov.ua/laws/show/z0466-05.

4. ГОСТ 25779-90. Игрушки. Общие требования безопасности и методы контроля. – www.URL: http://vsegost.com/Catalog/73/7386.shtml.

5. ДСТУ ISO 8124-1-2003. Безпечність іграшок. Частина 1. Аспекти безпеки, що стосуються механічних та фізичних властивостей (ISO 8124-1:2000, IDT). – www.URL: http://document.ua/bezpechnist-igrashok.-chastina-1.-aspekti-bezpeki-sho-stosuy-std10426.html.

6. ДСТУ 3216-95. Іграшки. Номенклатура показників якості). – www.URL: http://document.ua/igrashki.-nomenklatura-pokaznikiv-jakosti-nor8889.html.

372.881.111.1

PECULIARITIES OF SCIENTIFIC AND TECHNICAL TEXTS TRANSLATION

Dobrovolska Svitlana
Candidate of Economics (PhD), Head of Foreign Languages Department
Panchyshyn Svitlana
Senior Lecturer, Foreign Languages Department
Lviv National Agrarian University
Dubliany, Lviv region, Ukraine

Summary: Nowadays significant changes are taking place in all spheres of modern society, especially in the fields of science and technology, especially in construction. That's why the necessity for high-quality translation of scientific and technical literature is constantly growing. Terminology translation is one of the most complex issues in the field of linguistics and translation studies, so the problem of terminology which is used in the field of science, technology and construction is more relevant than ever.

Key words: professional translation, terminology, transliteration, interpretation, construction texts, polysemy, synonyms.

Introduction. The need for professional translation in the modern world is ne evident in all spheres of life, and construction is no exception. High-quality translation of texts on construction is necessary for owners of construction companies and for ordinary people who want to read the competent translation of technical documentation. Interpretation is even more in demand in the construction industry. Often, interpretation is necessary during business negotiations, with it, the process of signing contracts becomes much easier.

Problem setting. The purpose of this research is to explore the peculiarities of scientific and technical texts translation, especially in the field of construction, and to suggest ways to improve the understanding of texts.

Basic material. Nowadays translation of construction texts becomes widely required due to the economic development and attraction of foreign investors in the field of construction. Technical translators working in various foreign companies, due to the increasing volumes of translations, are forced to solve various problems arising while translating. These difficulties are caused by the fact that the level of knowledge in the given theme does not correspond to the desired, particularly, lexical features of construction texts translation have not been investigated enough. In this respect, studying the peculiarities of construction texts translation as one of the types of informative translation is of current importance. Nearly 70 per cent of translators work with scientific and technical texts. Translation of such kind of literature is wide-spread and highly demanded. For this reason, an in-depth theoretical study of the specific features of scientific and technical translation is an urgent problem of translation theory.

A great number of scientists researched and investigated features of translation of construction texts. A.V. Feodorov points out that there are two general aspects of all kinds of translating activity: 1) the purpose of translation is to convey to the reader (or the listener), who does not know the special language, the given text as closely as possible (or with the content of an utterance); 2) to translate means to express truly and completely by means of one language what has been expressed earlier by means of another language [2, p.26-30]. V.N. Komissarov suggests two basic classifications of translation types: the first is based on the character of the texts translated, and the second on the character of speech actions of the translator during the process of translating [4, p.56-59]. L.K. Latyshev distinguishes three types of texts: pragmatic texts (focused on the content), texts focused on addressing or appealing and artistic texts (focused on the form) [5, p.32-37].

Different researchers define the language of the texts focused on the content differently: the science language, special language, language for special purposes, professional language, etc.

In the field of construction, pragmatic texts (focused on the content) of scientific-technical and official styles are used. Within the limits of each functional style, there are some language features which considerably influence on the process and result of translation.

For example, lexical and grammatical features of scientific-technical materials and, first of all, terminology and special vocabulary in scientific-technical style. The style of business documents has definite purposes of communications, general for the given style laws and language characteristics. First of all, the specific terminology and phraseology prevail, and the characteristic feature is the academism of means of expression which accelerates the process of phraseological units formation, which are typical for this style. Academism of means of expression underlies other feature of English official documents, i.e. presence of a significant amount of archaic words and expressions.

In translation of scientific and technical texts, especially construction texts, the main task is to identify the idea or situation described in the original. The translator should understand the context in order to translate properly. The predominance of the referential function is a great challenge to the translator who must have a good command of scientific, technical and construction terms and a sufficient understanding of the subject matter to be able to give an adequate description of the situation even if this is not fully achieved in the original. The translator is also expected to be aware of and follow the stylistic requirements of scientific and technical materials to make text acceptable to the specialist.

It is appreciated when translators are aware of the peculiarities of the sphere in which they work. To translate scientific and technical properly, it is necessary to read scientific and technical literature not only in the source language, but also in the target language.

Nowadays a person cannot master all the information accumulated in science, technology and construction, particularly, that have become complicated and developed. That is why translators who work with scientific, technical and construction texts have to specialize in the fields of production, study regularly the special construction literature, be aware of the novelties in this sphere and use the experience of specialists and highly qualified translators.

The texts of science and technology have specific lexical means known only to the building engineers and scientists working in the particular sphere. On the other hand, engineers who do translations sometimes do not have a good command of foreign languages. Consequently, translation should be done by a professional translator, and then it should be checked by a specialist in a corresponding field of science or technology.

The translation of special literature should conform to the standards in the target language. In this genre of translation there cannot be any change of the fact of the source text. In the process of the phrase translation it is important to render a thought as clearly and exactly as possible. Consequently, the sense of the whole may not change if a translator divides a sentence into parts, replaces its parts, or joins parts.

The peculiarity of written scientific speech is that texts may contain not only verbal information, but also different formulae, symbols, tables, diagrams. It is mainly typical of the texts of such sciences as mathematics, physics, chemistry, etc. Any scientific text may contain graphic information. Translating headings in drawings the latter should be redrawn and headings should be written in Russian on the copy.

It is also important to point out that translation should be laconic. Descriptions of machines, equipment, instruments or processes of production should be illustrated in translation.

To sum up, the quality of scientific, technical and construction texts translation is highly affected by several factors: 1) translator's knowledge of the scientific speech style (both in the source and target languages); 2) ability to choose corresponding equivalents in the target language taking into consideration their functional and stylistic peculiarities; 3) general translation skills.

Scientific and technical literature is characterised by the use of terminological units. Hundreds of thousands of words and word-combinations (word-groups) belong to the terminological systems of science, technology, construction, trade, law, sports, the arts, etc. These linguistic units are not used or even understood by people outside the particular speciality. Every field of science or activity has its specialized vocabulary.

Term, as traditionally understood, is a word or a word-combination which is specifically used within a particular branch of science, technology, building construction, trade, law, sports or the arts to convey a concept peculiar to this particular field. For instance, the lexical units reinforced concrete and workability belong to the sphere of building construction. Terms always come in clusters, which form the system of names for the concepts of study when taken together. It should also be pointed out that terms do not contain any emotional or subjective connotations.

In modern linguistics there are several controversial problems concerned with terminology. The first is the puzzling question of whether a term loses its terminological status when it comes into common usage. The expansion of technique and general education also lead to the passing of terms into common literary vocabulary. It is quite natural that under the circumstances numerous terminological units pass into general usage, though they do not lose the connection with their specific domains.

The first point of view is expressed by the linguists who believe that only those words which have retained their exclusiveness and are not used, known or recognized outside their specific sphere may be regarded as terms. According to the opposite point of view, any terminological system is supposed to include all the linguistic units conveying concepts peculiar to a particular branch of knowledge, regardless of their exclusiveness. Modern research of various terminological systems has shown and proved that there is no impenetrable wall between terminology and the general language system. On the contrary, terminologies seem to follow the same rules and laws as the units of language for general purposes. Hence, exchange between

terminological systems and the “common” vocabulary is quite a normal phenomenon, and it would be wrong to consider a term as something “special” and isolated.

Terms are generally associated with a definite branch of science, serving the needs of a highly developed technology of construction. But it should be pointed out that due to the rapid dissemination of scientific and technical ideas, particularly in the construction, it is possible to observe the process of “de-terminization”, that is, some scientific and technical terms begin to function outside the narrow field they belong to and eventually begin to develop new meanings. However, the overwhelming majority of terminological units do not undergo the process of de-terminization and circulate only in scientific domain. Thus, such terms begin to be used, may develop new terminological meanings, and pass out of usage within one particular sphere. The necessity to penetrate deeper into the essence of things and phenomena gives rise to new concepts, which require new words and word-combinations to denote them. As a rule, a term makes more direct reference to an object or phenomenon than a descriptive explanation, a non-term. The rapid creation of new terms in any developing field of study is evident.

It is necessary to mention that the general vocabulary used in scientific literature conveys its direct referential meaning, that is, words and word-groups used in scientific literature always tend to be used in their primary logical meaning. A word used in scientific prose is unlikely to be polysemantic, in contrast to the belles-lettres style. Furthermore, terms do not tend to depend on the context. As a rule, the possibility of ambiguity is generally avoided. Moreover, terms are coined so as to be self-explanatory to the greatest possible degree. However, despite this a new terminological unit in special literature is usually explained. Likewise, neutral and common literary words employed in scientific literature are explained, even in case their meaning is only slightly changed, either in the context or in a foot-note.

The exchange of terms between various fields of study is a typical phenomenon for modern scientific prose. The most interesting and topical scientific problems appear at the intersection of disciplines of two or more sciences. Their special languages become closer, enrich each other, exchange terms and produce new terms.

Collaboration of specialists in related sciences has proved successful in many spheres. As languages of the disciplines possess their own, unique features, the exchange of terminology may be regarded as a natural result of this collaboration.

Two other controversial problems in the field of terminology are *polysemy* and *synonymy* of terminological units.

There are linguists in whose opinion an "ideal" term should be monosemantic (i.e. it should have only one meaning). Polysemantic terms may cause misunderstanding, and that is a serious problem in professional communication, as well as in translation of special discourse. On the one hand, this requirement seems quite reasonable. On the other hand, facts of the language do not meet it. Different terminological systems abound in polysemantic terms. The adequacy of their translation is wholly dependent on the context. In the terminology of construction, the term building may denote *a structure made of a strong material such as stone or wood that has a roof and walls* and, at the same time, *the process of building houses, factories, office buildings*.

Another controversial problem of terminology concerns synonyms. As far as some linguists are concerned, terms should not have synonyms because, consequently, scientists and other specialists would name the same objects and phenomena in their field by different terms and it would not be possible to come to any agreement. Nevertheless, there are many terms in different spheres, which do possess synonyms. For instance, *engine – motor, plaster – stucco*.

The following features of scientific and technical texts distinguish the translation in the field of construction:

1) use of scientific and technical terminology and the so-called special vocabulary;

2) words and phrases that do not have the property of a term to define concepts and objects in a certain area, but are used almost exclusively in this area of communication, selected by a narrow circle of experts, ordinary for them, allowing them not to think about the way of expressing thoughts and concentrate on the topic;

3) prevalence of clichés;

4) not only the terminological and special vocabulary is used in scientific and technical materials. There are many common words used in any functional style.

Translating such lexical units, the translator of scientific and technical literature faces the same difficulties and applies the same methods to their overcoming as translators working in other fields.

In the broadest sense of the word “construction” is a kind of human activity, aimed at creating buildings, technical structures (bridges, roads). In our time, construction represents a difficult and multifaceted process combining technical, economic, legal, and social aspects. The main stages of construction are the allocation of land, development, coordination of the project, the process of building the building, putting it into operation. Experts who participate in the development and implementation of construction projects must create effective mechanisms for planning, budgeting, document circulation, timely supply of building materials, logistics, safety at work, etc. In addition, it is necessary for them to take into account the environmental consequences of the work.

Based on the purposes and plans of construction, translation of the following types of texts is necessary in the field of construction:

1) Organizational part of construction: contracts, correspondence with contractors and supervising bodies, reports of meetings, the HR department documentation (duty regulations, resumes, explanatory notes), formal notices and management orders; feasibility reports;

2) Technical part of construction: specifications, drawings, rules and descriptions of an order of work, method statements, operational manuals of monitoring instruments, installation of heating systems, ventilation, air-conditioning;

3) Material support of construction: orders for delivery, descriptions of products and materials, including safety passports, reports of inspectors, audit and test plans, and punch lists;

4) Health, safety and environment: materials for courses and instructing of the personnel, rules and instructions, safety rules; projects on estimation of environmental influence, descriptions of actions for preservation of the environment, correspondence with supervising bodies;

5) Construction as a technical science: scientific and popular scientific articles and books, textbooks.

Hence, special language of construction is a verbal language with use of non-verbal means (pictures, drawings, schemes and etc.); language with a constant, traditional tendency to its internationalization which carries out epistemic, cognitive and communicative functions [6, p.305-308].

Within the limits of the translation process description, translation transformations are considered to be ways of translation. Translation transformations are subdivided into lexical and grammatical. Besides, there are complex lexical and grammatical transformations where transformations either concern lexical and grammatical units of the original simultaneously, or they are interleveled, i.e. carry out transition from lexical units to grammatical and in the reverse order.

Thus, lexical transformations are applied to achieve a higher degree of equivalence in the translation of texts on construction. The peculiarities of lexical transformations in the translation of texts on construction topics are caused by the stylistic genre functions of such texts that belong to the informative text category and reflect the specifics of scientific, technical and official styles.

Conclusions. The main tips for improving the accuracy of translation are: the high level of knowledge of the language, the compulsory knowledge of the translator of all terms relating to a specific technical field of translation, qualification not only in linguistics, but also in technical disciplines , the style of the original document must be maintained with a high-quality technical translation, translation of values into a more understandable format, maintenance of knowledge and skills in an appropriate condition, practice and improvement of skills.

REFERENCES:

1. Danylenko V.P. Linguistic problems of scientific and technical terminology. – M.: Vyshcha Shkola, 1970. - 288 c.

2. Foedorov A.V. Fundamentals of general translation theory / – M: Vyshcha Shkola, 1983. – 115 p.

3. Kazakova T.A. Theory of translation. - SPb: Soyuz, 2000. - 296 p.

4. Komissarov V.N. Theory of translation. - M: Vyshcha Shkola, 1990. - 253 p.

5. Latyshev L.K. Course on translation (translation equivalence and ways of its acheiving). - M: Mezhdunarodniye otnosheniya, 1981.-247 p.

6. Mentrup V. To the problem of lexicographical description of the nationwide language and professional languages: Translated from English. // News in foreign linguistics. Issue XIV. Problems and methods of lexicography / Edited by Gorodetsky B.Y. - M: Progress, 1983. - pp. 301 - 333.

УДК 13058

DIAGNOSIS OF CONCOMITANT ABDOMINAL INJURIES IN CASE OF PANCREATIC TRAUMA

Honcharova Natalia
Doctor of medical science, associate
Professor of surgical department №2
Teslenko Sergij
Doctor of medical science, associate
Professor of surgical department №2
Somkina Yelyzaveta
Belous Oksana
Samchenko Kateryna
Suprunova Veronika
Students
Kharkiv National Medical University
Kharkiv, Ukraine

Abstract: Traumatic injuries of pancreas by the difficulty in the diagnosis and choice of treatment tactics are some of the most difficult traumatic lesions of the abdominal organs. The aim of the research is to improve the diagnostic results of combined abdominal injuries in case of pancreatic injury. The work is based on the analysis of the results of examination and surgical treatment of 220 patients with combined damage to the abdominal organs in case of pancreatic injury from 2000 to 2019 years. The features of the topographic and anatomical location of the pancreas mainly explain the absence of pathognomonic symptoms, the abrasion of the clinical picture in case of its trauma. Among 220 patients with concomitant injury from additional methods for studying the abdominal cavity, diagnostic laparocentesis was used in 148 (67,3%) patients, ultrasound in 52 (23,6%), and diagnostic laparoscopy in 20 (9,1%). Screening in patients with "futile" laparotomy has established that the diagnostic

value of each method studied is far from optimal and does not allow confirming or canceling the presence of damage to abdominal organs requiring immediate surgery.
Keywords: pancreas, concomitant injury, diagnostic methods, laparotomy, laparoscopy, ultrasound.

Introduction. Traumatic injuries of pancreas by the difficulty in the diagnosis and choice of method of therapeutic tactics are some of the most difficult traumatic lesions of the abdominal organs [1, p. 242; 2, p. 95]. Most often, the pancreas is injured in a direct hit in the epigastric region during traffic accidents or in criminal situations. Due to the outside retroperitoneal location, the pancreas is damaged less frequently than other organs, the proportion of its damage in the structure of abdominal injury does not exceed 11 - 15% [3, p. 52; 4, p. 159]. The features of the topographic and anatomical location of the pancreas for the most part explain the erasure of the clinical picture in case of its trauma, which leads to the late start of treatment as well as to a number of complications [2, p.101]. Mortality according to different authors with this pathology can reach 73% [4, p. 160; 5, p. 856]. Damage is often characterized by a severe course, primarily due to traumatic pancreatitis, the development rate of which reaches 87,5% [5, p. 855]. Concomitant injury - the most severe form, which consists of the defeat of some anatomical and functional systems of the body at the same time. As a rule, the combination of injuries is accompanied by the development of the mutual burden phenomenon, which complicates timely diagnosis and worsens the prognosis [1, p. 241]. Currently, the incidence of severe concomitant injury in the overall structure of severe complications reaches 36,5% [4, p. 156]. Mortality from a combined injury with pancreas damage is from 10 to 60% [3, p. 49]. This negative statistics is largely determined by untimely or incorrect diagnosis of intra-abdominal complications. Physical examination of patients with concomitant injury of the abdominal cavity with a pancreas injury often allows us to suspect a catastrophe in the abdominal cavity, but impairment of consciousness, traumatic brain injury, and traumatic damage of the chest or of the large bone structures “camouflages” the symptoms. It makes the surgeon doubt the fidelity of his

thoughts about the nature and size of the lesions and look for ways of their objective confirmation [3, p. 52]. To clarify the indications for laparotomy (LT) in emergency surgery, the following methods are used: diagnostic laparocentesis (DLC), ultrasound (US) and diagnostic laparoscopy (DLS) [4, p.158; 5, p. 858].

Materials and methods. The work is based on a retro- and prospective analysis of the results of the examination and surgical treatment of 220 patients with concomitant injury of the abdominal organs with pancreatic injury from 2000 to 2019; according to the Injury Severity Score (ISS) system - ISS = 18,3 ± 8 points. 144 (65,5 %) men and 76 (34,5 %) women were added to the research study. The age of patients ranged from 18 to 76 years (on the average 42,3 ± 10,3 years). Patients primarily complained of general weakness, dizziness, nausea and abdominal pain. In 148 (67,3%) patients, a closed injury of the pancreas was observed, of which 112 were household trauma (a strong hit to the abdomen, falling from a height on the stomach or back), and 36 - as a result of a car accident. Open injury of the pancreas was observed in 72 (32,7%) patients (stab and gunshot wounds). The average time from injury to hospitalization is 75,7 ± 35 minutes. To clarify the indications for LT or to exclude an abdominal injury, DLC, US, DLS were used. Clinical and laboratory studies with generally accepted methods were performed in all victims.

The positive results of DLC, US and DLS were considered to identify such symptoms that forced the surgeon to determine the indications for emergency surgery. For DLC, it was an intensive staining of the flushing fluid with blood, for US - the presence of free fluid in the saclesser omental sac or in the abdominal cavity, a blurred circuit of the pancreas and for DLS - hemoperitoneum, the presence of extraperitoneal hematoma or saclesser omental sac hematoma. The result was negative, which did not give grounds for performing emergency surgical intervention. The diagnostic value of each method was determined by calculating sensitivity, specificity and overall accuracy.

Results and discussion. Specific abdominal symptoms were not detected in patients with damage to the pancreas with a combined injury, however, 2–4 nonspecific signs of damage were observed in each victim, regardless of severity.

In the victims after hospitalization, only blood test parameters differed from the normal level: hemoglobin content (106,2 ± 1,7) g/l, red blood cell count (2,8 ± 0,1) $x10^{12}$/l, which characterized the presence of anemia. Most laboratory indicators of biochemical and clinical blood tests were within the physiological norm, it was hematocrit, white blood cell count, amylase activity, ALT, AST, glucose, urea, creatinine, endogenous creatinine quotient, total bilirubin, total protein, potassium, sodium, calcium and chlorine in the blood serum.

DLC was performed in 148 (67,3%) patients. A positive result of the determination was recorded in 75 (50,7%) cases: in 73 patients, the results of the method were confirmed intraoperatively, in 2 patients the surgical intervention canceled the result of DLC and defined as “false positive”. From 73 (49,3%) negative results, 69 were really negative, in 4 patients the results were canceled during surgery or autopsy and were defined as “false negative”. The sensitivity of this method was 83%, specificity – 92%, overall accuracy - 93%, the percentage of "futile" LT - 2%. The ISS value in this group of patients was 19,5 ± 6,5 points.

From the 52 (23,6%) patients who underwent abdominal US, a positive result was recorded in 21 (40,4%). In 19 patients of this group, this examination result was confirmed by LT, in 2 patients, the result was considered as “false positive”. From the 31 (59,6%) negative results of abdominal US, 28 were truly negative, in 3 patients with further observation, the result was regarded as “false negative”. It was confirmed by surgery and autopsy. The sensitivity of the US was 76%, the specificity – 95%, the overall accuracy – 93%, and the percentage of “futile” LT – 4,8%. The ISS value in this group was 17,2 ± 10 points.

From 20 (9,1%) patients who underwent DLS, a positive result was recorded in 17 (85%). This result was confirmed intraoperatively in 16 patients, in 1 case the result was considered as “false positive”. Among the 3 negative results of DLS, there were no “false negative” ones. The sensitivity of DLS was 99%, specificity - 86%, overall accuracy - 95%; percentage of "futile" LT – 5,5%. The ISS value in this group was 13,5 ± 6,3 points.

Comparison of the results of DLC, US, DLS with operational data cast doubt on the need for surgical interventions in some patients. In these patients, closed wound of pancreas, damage to the organs of the abdominal cavity or of the retroperitoneum were found and did not require urgent surgical intervention (minor tears of the organ parenchyma or small hematomas of the mesentery of the intestine, etc.). As the analysis showed, the “futile” LT performed as a result of an erroneous interpretation of the results of diagnostic methods significantly worsens the prognosis, was an additional factor reinforcing the phenomenon of mutual burdening in patients with combined damage in pancreatic injury. From 5 patients with "false positive" results, which was performed "futile" LT, 2 patients died. At the same time, a direct dependence of the growth of mortality rates on the growth of the ISS value was noted.

Conclusions. Improving the treatment and diagnostic tactics, that consists of the introduction of modern instrumental diagnostic methods and their use in surgical tactics, lead to a significant reduction in mortality in pancreatic injuries. In most cases, methods of radiation diagnostics allow us to identify indirect signs of damage to internal organs, and their use allows us to reduce the examination time and clarifies indications for surgical interventions.

REFERENCES

1. Lahiri, R., and S. Bhattacharya. "Pancreatic trauma." *The Annals of The Royal College of Surgeons of England* 95.4 (2013): 241-245.
2. Singh, K. J., et al. "Pancreatic Trauma." *GI Surgery Annual*. Springer, Singapore, 2017. 93-115.
3. Girard, Edouard, et al. "Management of splenic and pancreatic trauma." *Journal of visceral surgery* 153.4 (2016): 45-60.
4. Ball, Chad G., and Elijah Dixon. "Pancreas Trauma Hemorrhage: So Much Trouble from this Small Organ." *Treatment of Ongoing Hemorrhage*. Springer, Cham, 2018. 157-161.

5. Siboni, Stefano, et al. "Isolated blunt pancreatic trauma: a benign injury?." *Journal of Trauma and Acute Care Surgery* 81.5 (2016): 855-859.

THE ESTABLISHMENT OF THE SCHOOL THEATRE IN UKRAINE IN THE GENERAL EUROPEAN CONTEXT OF THE DEVELOPMENT OF EDUCATION AND SCHOOLING

Hirnyak Svitlana Petrivna
Doctor of Philology, associate professor
Lutsiv Svitlana Ihorivna
Candidate of Pedagogical Sciences, associate professor
Drohobych Ivan Franko State Pedagogical University
Drohobych, Ukraine

In the article it is found out that the establishment of the school theatre in Ukraine took place in the general European context of the development of education and schooling. A leading role in the establishment of the school theatre in Ukraine was played by brotherhood schools, Ostroh educational and cultural center and later Kyiv-Mohyla Academy, which borrowed some forms of school life organization and teaching methods from their opponents, Jesuits and Protestants. Among them school drama and school theatre with a strong educational and propaganda character played a prominent role.

Key words: theatre; school theatre; school drama; education; brotherhood school; Protestant school; Jesuit educational institution.

Defining the problem. An important source of enrichment of the content of education and upbringing in modern school is the research of the historical experience of the organization of schooling in Ukraine in the XVII – XVIII centuries, since it is the era of Ukraine's spiritual revival. During this period our education acquired distinctive organizational, meaningful and systemic features, simultaneously developing in a single Eastern European dimension (brotherhood schools, collegiums, Ostroh Academy, Kyiv-Mohyla Academy). Brotherhood, Protestant and Jesuit

educational institutions had many analogies, which is explained by their common nature, the similarity of didactic and social functions.

The analysis of recent research and publications. In the historical and pedagogical works of the interwar period school theatre and school drama were highlighted in the context of studying the activities of brotherhood schools and Kyiv-Mohyla Academy. Some authors paid attention to the publishing activities of brotherhoods, the printing houses organized by them and the relationship between their publishing and pedagogical activities [7, p. 82]. In addition, in a thorough study of the development of Kyiv-Mohyla Academy, M. Demkov emphasizes that it copied the school system of Jesuit educational institutions with all their external and internal rules [2, p. 142]. The scientist also paid much attention to the study of pedagogical activity of F. Prokopovych and D. Tuptal and their influence on the development of Russian education. In this context it should be emphasized that M. Demkov considers school theatre as a purely school phenomenon, which was intended to teach oratory arts.

O. Selikhanovych, a well-known philosopher and educator of the late XIX – the first half of the XX century, also studied the development of the Ukrainian educational system of the XVI – XVIII centuries in close connection with western schools, their organization and the content of teaching. An important fact in his research was that he analyzed these educational systems in a general European social and cultural context. That is why he regarded school dramas and school theaters of Ukraine as an integrated part of the Western European Jesuit school system, which had a powerful educational potential [8, p. 184].

In his works a famous researcher P. Berkov highlighted the issue of the formation and development of folk Russian drama of the XVII - XX centuries, which differed from school drama by a variety of repertoire and advanced democratic character. P. Berkov believed that the intermedia of school dramas gave a push to the development of Russian folk drama [1, p. 49]. The studies of another well-known scholar of the outlined period V. Kuzmina were built in the same aspect. She was engaged in studying intermedia and early comedies, which reflected the «nationality» of early drama most clearly.

The purpose of the article is to reveal the basics of school theatre formation in the educational institutions of Ukraine of the XVII – XVIII centuries.

The outline of the main material. School theatre as a mass phenomenon in European pedagogical practice was formed in the second half of the XVI century during the period of violent struggle of religious ideas and aggravation of inter-denominational and socio-cultural problems of European society.

The school theatre was used in the educational process of various religious denominations, communities and brotherhoods. Even Protestants, who kept to strict religious orders, had a favorable attitude to theatrical performances in school practice. Martin Luther, the founder of Protestantism, emphasized the important educational value of theatrical performances, with the help of which students could learn Latin, train memory and become more familiar with public life. Despite the prohibition of singing and theatrical rites during church liturgies, he emphasized that «Christians do not need to completely avoid comedies due to the fact they have rude jokes and obscenities, otherwise because of similar trifles they would have to refuse from reading the Bible» [6, p. 74].

It is important that by the second half of the XVI century the development of the school theatre took place in the general development of the religious theatre of the Middle Ages. In the early Middle Ages church officials condemned the theatre as a false form and forbade to stage plays. Only in the X century they understood the role of the theatre as an important instrument of the influence on faithful Christians and reintroduced it to the church liturgy. The development of Christian theatre, whose primary purpose was to help uneducated people in understanding the truth of faith, was greatly influenced by the philosophical thought of Thomas Aquinas, who was the first from Latin clergy to introduce Aristotle's philosophy into the Catholic faith defining the theatre as a form of rest, fun and entertainment. At the same time he recognized only such theatre which «does not allow any illicit words or actions» [13, p.57]. In the Renaissance period there was a reconsideration of a human’s role in the world, his attitude to himself and people surrounding him, to God and the Christian dogmas [11, p. 267].

The flourishing of school drama and school theatre in the West takes place, as we have noted, in the second half of the XVI century. Since the beginning of the Reformation, the educational system in European countries has undergone qualitative changes. Substantial reforms took place in secondary and higher schools. For example, by the efforts of a well-known teacher and educator Johannes Sturm a new type of gymnasium was created, where not only the humanities but also the natural sciences were studied. The transition from the junior class to the senior one was made by exams, which often took the form of public speaking. At Strasbourg Gymnasium, where Johannes Sturm was the principal, students' performances became the part of the teaching system. The educator himself recognized theatre as an important element of humanistic education [12, p. 95].

The theatre in Rzeczpospolita, which at that time comprised the majority of Ukrainian territories, developed in the similar way as the church and school theatre of Western European countries but in a more limited and simplified form. Soon Jesuits began to introduce their own schools in Poland, as well as in Ukraine and Belarus, which were incorporated into the Grand Duchy of Lithuania to Poland (1569). Theatre occupied a significant place in the curricula of these schools [4, p. 85].

Most Jesuit collegiums programs used stage exercises in the field of eloquence and the ability to conduct discussions. Participation in the performances, according to Jesuits' principles, had to develop in students an appropriate taste, to form interest, love to the country and virtuous life, to bring up well-educated young people. The performances at the Jesuit theatre covered school works, biblical and historical dramas, which were included in the curricula and which dealt with choosing the way of life, leading a pious lifestyle, faithful service to the royal authority and the Catholic Church [5, p. 9].

Regarding the establishment and the development of the Ukrainian school theatre, it should be noted that it imitated the organization of the Jesuit theatre and was based on the theoretical and practical experience of Polish teachers and playwrights [3, p. 34]. This similarity is primarily caused by the territorial proximity as well as historical and cultural boundary of both nations.

Though it may seem paradoxical, but the establishment and the development of the Ukrainian school theatre was held through the intermediary of Polish school. Primarily, it concerned the emergence of new types of schools in which humanistic education encompassed learning ancient literature, Latin and Greek, poetics, rhetoric, philosophy and theology. That is why the school theatre, as an unconventional means of teaching with a powerful educational function, has found its proper place in Ukrainian Orthodox schools and collegiums. The school theatre was closely connected with the church because it was included in the curriculum of spiritual schools. Therefore, it had to express religious content, despite its secular form.

It should be noted that the appearance of the theatre within the walls of the school increased its authority and prestige. Thanks to school performances, the school made contacts with the community and parents. For example, students' progress in learning, their behavior and the benefits of school for personal development were reported in prologues and epilogues during school speeches [9, p. 39]. This technique was often used in the school theatres of different denominations to increase the number of students and receive patronage aid.

So, the Ukrainian school theatre of the XVII – XVIII centuries became the center of the development of Eastern Slavic theatre art. It absorbed the best achievements of the Polish school theatre, which served as a prism for the penetration of advanced ideas of the western European school theatre tradition.

REFERENCES

1. Берков П.Н. Русская народная драма XVII – XX веков: Тексты пьес и описания представлений. М.: Исскуство, – 1953, – 360 с.

2. Демков М.И. Курс педагогики, Ч. II. М., – 1918, – 690 с.

3. Лихачев Д.С. Поэтика древнерусской литературы. М.: Наука, – 1979, – 372 с.

4. Луців С. Риторична майстерність майбутнього вчителя початкових класів через призму історико-педагогічного досвіду // Молодь і ринок. – 2014. – № 8. – С. 84-88.

5. Гірняк С., Луців С. Становлення шкільного театру в навчальних закладах України XVII – XVIII ст. // Молодь і ринок. – 2019. – 10 (177). – С. 6-12.
6. Мартин Лютер Время молчания прошло. Избранные произведения 1520 - 1526 гг. Харьков. – 1992. – 352 с.
7. Родников В. История педагогики общей и русской. К.: Изд-во кн. магазина И. Я. Оглоблина. – 1916. – 575 с.
8. Селиханович А. Б. История педагогики на Западе и в России. Петроград – Киев : Издательство «Сотрудник» . – 1917. – 272 с.
9. Софронова Л. Старинный украинский театр. М. : РОССПЭН. –1996.- 352 с.
10. Титов Хв. Стара вища освіта в Київській Україні XVI–XVII ст. К. - 1924. – 347 с.
11. Berthold M. Historia teatru. Warszawa: Wydawnictwa Artystyczne i Filmowe / - 1980, 425 s.
12. Dziechcinska, H. Publiczno?c literacka i teatralna w dawniej Polsce. Warsyawa – Lodz. - 1985, 348 s.
13. Nicoll A. Dzieje teatru. Warszawa: PIW. - 1977. - 286 s.

УДК (378.147 (09) (477.54/.62)

THE ORGANIZATION OF STUDENTS' INDEPENDENT WORK WHEN SHARED AND INTERACTIVE WRITING

Karasova Olena
Candidate of the Pedagogical Sciences
Associate Professor
the National University of Pharmacy
Kharkov, Ukraine

Summary: The mastering of students' independent work organization when teaching interactive writing has been analyzed. The leading approaches, forms and methods of students' independent work organization have been outlined. The methods of organizing students' independent writing have been shown.
Key words: interactive writing, methods, organization, students' independent work, strategies

Nowadays the education is based on the development of creative skills and abilities of future specialists, able to analyze the situation, results, and make conclusions. For successful preparation of independent thinking specialists and creation of a successful society we are searching the new forms and methods of developing independent abilities and skills. Students' independent work organization when shared and interactive writing can be useful to achieve the best results solving the above mentioned.

In the pedagogical and methodological literature of today the works of Gibson A., Gear J., Gear R., Callella T. & Jordano K., and others are devoted to the issues of students' independent interactive writing and outline the methods and approaches of students' independent work.

The task of the article is to reveal the ways of students' independent work organization with the help of forms and methods of shared and interactive writing.

The analyses of the studied materials [1, 2, 3] showed that teachers using shared and interactive writing can organize students' independent work with the of such methods as helping of instructions; giving prompts and cues to encourage students to apply new skills and strategies; asking questions that help students to use high-order independent thinking skills; demonstration of the development of students' independent writing skills.

The analyses of the studied materials by Callella T. & Jordano K. have showed that there are three stages of effective writing such as Before Writing, During Writing, After Writing. It has been revealed that on the first stage, teachers get the students interested in doing students' independent work using and organizing such method as open discussion, focusing on pre-writing activities or independent writing skills. On the second stage the teacher activates students' independent work and creative thinking with the method of representing his own ideas and asking students to share with their own: he encourages students' oral participation and idea generation by every student and scribes their suggestions or invites students to have a turn scribing a portion of the text. The teacher and students reread the written text to make suggestions for improvement. On the third stage the method of independent discussion how to strengthen the text students after read the collaborative composition, and the method self-assessment are used. Teachers set students up for relevant application, extension, or independent activities [1, p.6].

The analyses of the Strategies of the Teaching Writing by Sharan A.Gibson, from San Diego, California, showed that students' independent work can be well-organized and well-planned by the teacher which offers the ways how to organize students' independent work in small groups using such methods as demonstration, modeling the structures, creating a draft.

For example, the author offers such method of independent work as applying new learning, writing a letter to a local newspaper or writing directions for a new game the students have developed. Also, such methods as writing a text using chart paper or document viewer while requesting input from students regarding aspects of the writing where they most need to expand their expertise; during the writing

demonstration of how to say a word, write the sounds, prefixes, suffixes, what to add or what to delete are used to organize students' independent work. The draft of the text is posted in a way the students could read it using for self-training over several weeks [2, p.1].

The analyses of works written by Jonele Gear and Robert Gear showed that students' independent work can be well-organized. They give recommendations how to organize students' independent work effectively. The author offers to be familiar with the organization of an effective essay, study the questions carefully, to organize the ideas into a logical progression by using a mind map or a traditional outline, write cohesively and concisely. They offer students to budget their time to be able to complete and correct essay, pay attention on grammar and sentence structures [3, p. 387].

So, in conclusion, such methods as instructions, giving prompts and cues; asking questions; demonstration of the development of students' independent writing skills; writing a text using chart paper; representing own ideas and asking students to share with their own are the approaches of students' independent work organization which can help us organize, control and develop students' independent work when writing, stimulate motivation and success

REFERENCES:

1. Callella, T. & Jordano, K. (2000). Interactive Writing: Students and Teachers "Sharing the Pen" to Create Meaningful Text. Huntington Beach, CA: Creative Teaching Press, available at: https://schools.edu.ky/Documents/Teacher%20Resources%20Literacy/Writ

2. Sharan A. Gibson (2020), the Strategies of the Teaching Writing, San Diego, California, available at: https://schools.edu.ky/Documents/Teacher%20Resources%20Literacy/Writ

3. .Gear, J. Gear R. Cambridge preparation for the TOEFL Test (2014), available at www. cambridge. Org

UDK 342

FEATURES OF CONSTITUTIONAL AND LEGAL RESPONSIBILITY

Kozhemiako Nataliia Volodymyrivna
Candidate of Pedagogical Sciences
Yeremenko Anna Yurievna
Student
Irpin State College of Economics and Law
c. Irpin, Ukrain

Annotation: This article explores the problems of defining the concept and content of constitutional-legal responsibility, compares the concepts of "constitutional-legal responsibility", "legal responsibility", "constitutional responsibility", on the basis of which a general conclusion is drawn regarding the definition of "constitutional-legal" responsibility in the modern science of constitutional law. **Keywords:** constitutional liability, national representation, legal liability, lawful conduct, subjects of liability, state legal liability.

In a democratic society, any branch of law, including constitutional law, cannot properly play its part without such an important factor in the functioning of the state as accountability. As a specific form of social connection of the individual with other people and society in general, responsibility is one of the important social and legal institutions of a modern civilized state and "... is one of the primary fundamental principles of social life" [1, p. 28].

In the new political and legal conditions the study of the problems of constitutional legal responsibility is actualized, which is an important guarantee of the protection of the Constitution of Ukraine, law and order, rights and freedoms of man and citizen.

Constitutional legal responsibility has been dealt with by many scholars, both jurists and political scientists, philosophers, and sociologists. In spite of this, the problem still remains relevant and little researched. Available in Ukraine scientific research as general (L.R. Nalyvaiko, V.F. Pogorilko, V.L. Fedorenko, Y.M. Todyk, O.V.

Batanov, O.O. Maidannik, A.O. Chervyatsova and etc.), as well as institutional (A.J. Ivansky, L.T. Kryvenko, O.V. Krasnikov, O.V. Melnyk, V.I. Polevy, etc.) problems of constitutional and legal responsibility indicate the undoubted necessity its legalization at the constitutional level as an independent type of legal responsibility.

Constitutional responsibility is a constituent of the leading institutions of constitutional law (institute of foundations of constitutional order, institute of citizenship, institute of rights and freedoms and responsibilities of the person and citizen, institute of direct and representative democracy, institute of the President, etc.).

There are many approaches to defining the concept and content of constitutional liability. Proponents of one of the concepts understand under the constitutional responsibility of a measure of state coercion, which is based on the legal and public condemnation of the offense and are expressed in the establishment of certain negative consequences for the offender [4]. A similar point of view is observed by national constitutional scientists [8].

Therefore, V.Kravchenko defines constitutional liability as a special type of legal liability that has a complex political and legal nature, comes after committing a constitutional-legal tort and which finds in the envisaged constitutional-law special adverse consequences for the subject of a constitutional tort [3].

N. Kolosova rightly states that it is difficult to agree that constitutional and legal responsibility is a type of political responsibility, as well as that constitutional and legal responsibility combines political, moral and legal responsibility [5, p. 86]. That is, no one has openly expressed doubts about the existence of constitutional legal responsibility.

The same opinion is expressed by V. Lazarev: "Legal responsibility is the duty of a person to suffer certain deprivation of state power in accordance with the law for committing an offense" [2, p. 240]. On the other hand, legal liability is the application to the offender of the legal norms of state coercion stipulated by the sanction in the form of “deprivation” of personal, organizational or property character [7, p. 5].

Legal claims of citizens are transformed into legal actions due to the fact that they are inseparably linked to their respective responsibilities. The inseparability property indicates that a subject cannot have an action (that is, he cannot be a subject of a right) unless he has an obligation corresponding to that engagement [6, p. 87].

Constitutional responsibility is characterized by all the general features of legal liability, which are characteristic of other types of legal liability. Also, constitutional liability has specific features that distinguish it from other types of legal liability (grounds, subjective and objective composition, the level of constitutional liability, the presence of specific constitutional and legal sanctions).

Therefore, there are two aspects of constitutional liability: positive: subjects are all subjects of constitutional-legal relations, manifested in the conscientious attitude of subjects to the fulfillment of their constitutional duties, effective fulfillment of them. In addition, positive accountability is linked to accountability, competence in a particular area; negative: is a special measure of influence due to the misconduct of subjects of constitutional law. There are two meanings of negative constitutional and legal responsibility: broad meaning - encompasses one's own constitutional responsibility in a narrow sense, administrative, criminal responsibility for violations of constitutional law; narrow meaning - the type of legal responsibility provided by the rules of constitutional law. Has specific subjects, mechanism of implementation, sanctions and more. [9]

Conclusion

Thus, summarizing all the above constitutional and legal responsibility can be defined as an independent type of legal responsibility and a subspecies of social responsibility, defined by the rules of constitutional law, which provides for encouragement by the state of positive action of the subject of constitutional and legal relations, the consequences of which exceed the requirements of constitutional and legal requirements (positive aspect) or a negative reaction of the state to a constitutional tort, which implies that a subject of constitutional offense is determined sanctions within current constitutional legislation.

LIST OF REFERENCES

1. Venediktov V.S. Legal liability of employees of law-enforcement bodies of Ukraine: monograph / VS. Venediktov. - H., 2003. - 60 p

2. General theory of state and law: Educ. tool. / Edited V.V. Kopeychikova. - K, 1997.

3. Kravchenko V.V. Constitutional Law of Ukraine / V.V. Kravchenko: Educ. tool. - Kind. The four, corrected. and additions - K .: Attica, 2006. - P.28.

4. Kutafin O.E. The subject of constitutional law / O.E. Kutafin. - M .: Lawyer, 2001. - P.387.

5. Nalyvayko L. Problems of definition of concept, specific features and functions of constitutional responsibility // Law of Ukraine. - 1999. - № 10. - P. 45-50.

6. Plakhotnyi A.F. Freedom and responsibility (social aspect of the problem) / A.F. Plaid. - H., 1972. - 159 p.

7. Stetsyuk N. Constitutional and Legal Responsibility in Ukraine: Concepts, Features, Subjects // Problems of State Formation and Protection of Human Rights in Ukraine: Mater. XI Regional Scientific and Practical Conference. - 2005. - P. 145-146.

8. Todika Yu.N. The Constitution of Ukraine: Problems of theory and practice / Yu. N. Todyk: Monograph. - X.: Fact, 2000. - P. 188-189; Noble P.P. Constitutional Law of Ukraine / PP Shlyakhtun: Textbook. - K .: Education of Ukraine, CST, 2008. - P.32.

9. https://lexinform.com.ua/dumka-eksperta/konstytutsijno-pravova-vidpovidalnist-praktychni-aspekty/.

UDC 544.182.2

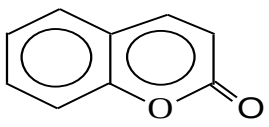
BIOLOGICAL ACTIVITY OF COUMARINE AND ITS DERIVATIVES

Korotkova Irina
PhD in Physical Chemistry, Docent
Professor of the Department of Biotechnology and Chemistry
Poltava State Agrarian Academy
Poltava, Ukraine

Abstract. The biological features and the most important areas of application of some representatives of natural coumarins are considered. The experimentally established spectral and photophysical properties of coumarin derivatives was confirmed theoretically by quantum chemical methods.

Keywords: coumarin, dicumarol, scopoletin, warfarin, anticoagulant, quantum-chemical calculations

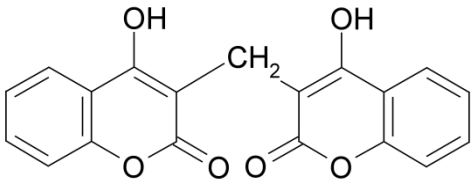
Substances of natural origin, including coumarin derivatives, have recently been of great interest to biologists, pharmacologists, and toxicologists due to their wide range of biological activity, low toxicity, and the absence of side effects. Coumarin itself (2H-Chromen-2-one) is an important natural oxygen containing heterocycle which was isolated for the first time from tonka seeds in 1820 [1].



Later in 1868 an English chemist William Henry Perkin synthesized coumarin from salicylic aldehyde and acetic anhydride [2]. Since then, coumarin derivatives have been widely used in many fields. Natural coumarin is found in cinnamon and lavender oils, berries (blueberries, cloudberries), green tea, chicory, soy (soy protein), mushrooms (Tricholoma matsutake), chamomile, perennial yarrow, gerbera. Most coumarins are widely distributed in plants, and have auxin activity.

Moreover, coumarin and its derivatives have demonstrate numerous antitumor and antiproliferative effects. Coumarin compounds have been shown to inhibit proliferation of particular human malignant cell lines in vitro, as well as affecting tumor activity against several in vivo tumor types. These compounds have some activity against prostate cancer, malignant melanoma, and metastatic renal cell carcinoma [3].

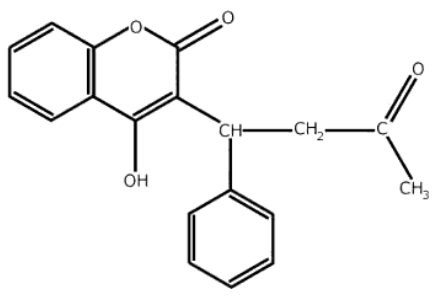
Some of them - dicumarol (3,3'-Methylenebis[4-hydroxycoumarin) - are biologically active substances which have the anticoagulant and antitumor properties. At the first



time dicumarol was obtained from sweet clover (*Melilotus alba*).

Well known the pyruvatedehydrogenasekinase 1 (PDK1) is overexpressed in ovarian cancer and thus is a promising anticancer therapeutic target. It was shown the coumarin compounds in particular dicumarol are potential inhibitors of PDKs, and they could inhibit ovarian cancer through targeting PDK1 [3]. In addition, it was found that dicumarol inhibits NAD(P)H: quinone oxidoreductase and, thereby, causes cell death and oxidative stress in pancreatic cancer [4].

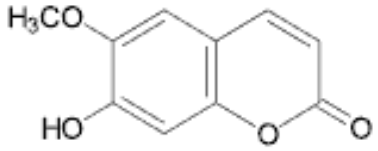
Mycobacterium tuberculosis is one of most pathogenic microorganisms in the world. Previously, the bifunctional enzyme GlmU with glucosamine-1-phosphate acetyltransferase activity and N-acetylglucosamine-1-phosphate uridyltransferase activity has been suggested as a potential drug target; therefore, discovering compounds targeting on inhibiting activity of GlmU acetyltransferase is necessary. Among such compounds dicumarol was tested. It was founded that dicumarol exhibit inhibitory effects on GlmU acetyltransferase, with a concentration of 4.608 μg/ml [5].



Among the effective anticoagulants, a coumarin derivative, warfarin (Wisconsin Alumni Research Foundation, WARF), first synthesized in 1948 by Karl Paul Link, should be distinguished. The effect of warfarin is associated with the inhibition of vitamin K, which is necessary for the functioning of a number of coagulation factors. Warfarin is

the most extensively recommended anticoagulant for the prevention and management of thromboembolic complications [6].

Among coumarin derivatives, scopoletin (7-hydroxy-6-methoxycoumarin) is important natural substance. Scopoletin is widely found in nature, for example, in several Artemisia species, as well as in the rhizomes of Iris swamp (Iris pseudacorus L.).



Currently, an actively developing area in medicine is the creation of antitumor drugs. Natural products are a valuable source for the development of drugs, which include coumarin and its derivatives. Several natural products such as coumarin and its derivatives have been found to exhibit immense pharmacological and biological properties including molecular interventions in carcinogenesis. The ability of these compounds to bind a variety of protein domains and folding motifs makes them effective modulators of cellular processes such as immune responses, signal transduction, mitosis and apoptosis. It was founded that coumarin inhibited the growth of HeLa cells and cholangiocarcinoma cells, and scopoletin exhibited significant pharmacological activities including antitumor, against tumor cells with ABC-transporter expression [7,8].

Over the past two decades, a number of studies have been carried out, as a result of which it was shown that coumarin is characterized by significant species differences, which is largely due to the characteristics of its metabolism in the human body. Previously, such studies were performed by us with the well-known natural carcinogen benzpyrene [9,10]. It is possible to study the properties of coumarin metabolites by comparing their spectral characteristics. Since experimental data are not available for many compounds, we used quantum chemical methods for calculating the electronic structure. The ground-state geometries of these compounds were optimized using the Density Functional Theory (DFT) methods. The lowest singlet excited state was optimized using Time-Dependent Density Functional Theory [TD-B3LYP/6-31G(d)]. On the basis of ground-and excited state geometries, the absorption and emission spectra have been calculated using the TD-DFT method. All

the calculations were carried out in gas phase. The results show that the absorption maxima and fluorescence emission maxima calculated using the TD-DFT method is in good agreement with the available experimental results. Based on the correlation dependencies, conclusions are also drawn about the toxic nature of the formed coumarin metabolites, which are in good agreement with the results of a study of benzpyrene metabolites and the methodology for predicting their carcinogenesis [9]

REFERENCES

1. Vogel A. Darstellung von Benzoesäure aus der Tonka-Bohne und aus den Meliloten - oder Steinklee - Blumen //Ann Phys. – 1820. – 64(2). – P.161–166.
2. Perkin W.H. On the Artificial Production of Coumarin and Formation of its Homologues. //J Chem Soc. – 1868. – 21. – P.53–63.
3. Zhang W., Su J., Xu H., Yu S., Liu Y., Zhang Y., Sun L., Yue Y., and Zhou X. Dicumarol inhibits PDK1 and targets multiple malignant behaviors of ovarian cancer cells//PLoS One. 2017. – 12(6): e0179672. doi: 10.1371/journal.pone.0179672
4. Lewis A., Ough M. Li.L., Hinkhouse M.M., Ritchie J.M., Spitz D.R. and Cullen J.J. Treatment of Pancreatic Cancer Cells with Dicumarol Induces Cytotoxicity and Oxidative Stress// Clinical Cancer Research. – 2004. – V. 10. –P.4550–4558. doi: 10.1158/1078-0432.CCR-03-0667.
5. HanX., Chen C., Yan Q., Jia L., Taj A. and Ma Y. Action of Dicumarol on Glucosamine-1-Phosphate Acetyltransferase of GlmU and Mycobacterium tuberculosis//Front. Microbiol. – 2019. – V.10. doi.org/10.3389/fmicb.2019.01799
6. Tolou-Ghamari Z., Mazdak H. Review of Warfarin; A Cytochrome P450 Metabolizing Drug, in Clinical Practice, Jentashapir //J Cell Mol Biol. – 2016. – 7(3):e32641. doi: 10.17795/jjhr-32641.
7. Seo Ean-Jeong, Saeed M, Law B.Y.K., Wu A.G., Kadioglu O., Greten H.J., and Efferth T. Pharmacogenomics of Scopoletin in Tumor Cells // Molecules. 2016. – 21(4). – 496. doi: 10.3390/molecules21040496

8. Md. Ali Asgar, Senawong G., Sripa B. and Senawong T. Scopoletin potentiates the anticancer effects of cisplatin against cholangiocarcinoma cell lines//Bangladesh J Pharmacol. – 2015. – 10. – P. 69-77. doi:10.3329/bjp.v10i1.21202

9. Короткова І., Шаповаленко Н., Сівкова Н., Степаненко Л.,Сахно Т.. Бензпірен як фактор ризику виникнення онкологічних захворювань// Медицина транспорту України. – 2010. – № 1. – С. 72-76.

10. Короткова І.В. Теоретична оцінка канцерогенної природи бензпірену та його метаболітів/ Кол. монографія / за ред. П.В. Писаренка, Т.О. Чайки, О.О. Ласло. – Полтава: Видавництво «Сімон», 2016. – С. 111-125.

UDK 663.03 : 641.1/3

ON THE REGULATION OF CHLOROPROPANOL CONTENT IN SOY SAUCE

Kondratiuk Natalia
Head of the Department of Food Technologies, Candidate of Engineering Sciences, Associate Professor
Suprunenko Kateryna
Assistant of the Department of Food Technologies
Sytnyk Kateryna I.
Student
Oles Honchar Dnipro National University

Abstract: The problem of the quality and safety of soybeans associated with the content of the carcinogenic compound 3-MCPD (chlorpropanol) is outlined. Acid hydrolysis causes the formation of chloropropanol. The necessity of searching and analysis of alternative technologies in which carcinogenic compounds are not formed is substantiated.

Key words: soy sauce, 3-MCPD, carcinogenic compounds, fermentation, acid hydrolysis.

The main purpose of nutrition is to obtain energy, and the supply of substances essential for the existence of the human body is a secondary task. However, the diet should be varied, so it is very important to consume different product groups. However, it should be remembered that such technological processes as frying, drying, baking and smoking produce harmful substances-carcinogens, which adversely affect the human body. Considering that the duration and intensity of the culinary processing of the raw material components affect the quality and safety of the finished product (the final dish), it should be noted that during the chemical reactions, the formation of flavoring and colored substances may produce half-decay

or toxic substances: oxymethylfurfurol, amides, benzopyrene, nitrosamines and the like. Their synthesis can be slowed down, using modern equipment, and the proper organization of the technological process. However, unfortunately, there are processes that cannot be controlled, but products are very popular with the general public around the world.

Soy sauce is a product of long-term processing of soy beans by fermentation (classic technology) or acid hydrolysis (modified accelerated technology).

The use of high-quality soy sauce made by fermentation, compensates for the lack of protein in the diet, contributes to improving the taste of food and improve digestion. But making a natural product for enzymatic fermentation using Aspergillus fungi can take a long time: from 40 days to 3 years. Soy beans are boiled in water or steamed to a soft state, fried barley or wheat flour is added to the mixture, placed in a closed container and left to ferment without oxygen. The taste, color, consistency of the final product depends on the fermentation time [2].

The demand for soy sauce is increasing every year. And in order to meet the needs of the population, manufacturers have invented a new method - acid hydrolysis of vegetable proteins without fermentation, which reduces the time of preparation of the product to three days. It is known that during the accelerated process, 3-chloropropane-1,2-diol (3-MCPD) and 1,3-dichloro-2-propanol (1,3-DCP) are formed as by-products of hydrolysis [4]. This method of manufacture is used more often because it is more budget-friendly, but it slowly and wholly encourages the human body to form cancer cells.

The International Agency for Research on Cancer attributed 3-MCPD to group 2B, "possibly carcinogenic to humans". 3-MCPD has neurotoxic, teratogenic effects and contributes to the development of anemia. European Union experts have determined a safe level of 3-MCPD in the amount of 0.002 mg / kg body weight throughout life [3]. It has been proven that overuse of foods high in 3-MCPD can lead to infertility in women, diseases of the genitourinary system, kidney failure, epithelial hyperplasia.

Therefore, it is important to develop soy sauce production technology by accelerated fermentation without acid hydrolysis. This approach was implemented by Vesta-

Leader LLC of Ukraine. The developed technology makes it impossible to form 3-MCPD. Finished products have high taste properties and quality indicators. However, the problem of imported soy sauces containing chloropropanol, which, unfortunately, is not regulated in Ukraine, as there is a lack of methods for its qualitative determination, certified laboratories and approved methods of analysis, is urgent.

At the Department of Food Technologies of Oles Honchar National University, the process of development and implementation of the method of determination of 3-MCPD by gas chromatography is underway, and the possibility of carrying out an analogous technique, using the method of electrophoresis is also. This will solve an important problem for the population and producers of Ukraine: accurate and regulated determination of the content of 3-MCPD in the composition of foodstuffs, which will allow the goods of domestic producers to successfully export, in particular we are talking about products of oilseed processing.

REFERENCES

1. Berketova LV, Zakharova AD Carcinogenic s' compounds, obrazuyuschyesya pyschevh products in action pod thermal obrabotku // Bulletin of science and practice. Electron. . 2017. №2 (15). P.115-120.

2. Putu Virgina Partha Devanthi, Konstantinos Gkatzionis Soy sauce fermentation : Microorganisms, aroma formation, and process modification Food Research International. 2019. Vol. 120. P. 364-374 Science direct: web site. URL: https://www.sciencedirect.com/science/article/abs/pii/S0963996919301541 (hit date: 12.03.2020)

3. Norms and rules on the Reduction CONTENT 3- monohlorpropan -1,2- Diol in protsesse production kyslotnh hydrolyzatov rastytelnh proteins and soderzhaschyh s of products (CAC/RCP 64-2008) URL: http://www.fao.org/home/ru/ (date of treatment: 12.03.2020)

UDC 372.853

FEATURES OF INTEGRATION OF INFORMATION TECHNOLOGIES IN TEACHING THE SUBJECT OF PHYSICS

Nazarov Shakhzod Erkinovich
Teacher of the Department of Information Technology
Bukhara State University
Khakimova Nasiba Khidirovna
The teacher of Bukhara region specialized art boarding school
Bukhara, Uzbekistan

Annotation: The article discusses the ways and signs of the effective use of information technology in the system of higher and secondary specialized education, as well as provides methodological tips and recommendations for teachers on the productive use of information technology.

Keywords: teaching style, physical processes, modern pedagogical technologies, educational activities, visual information, individual research work, computer modeling, teaching effectiveness.

With the advent of computers in educational institutions of higher and secondary specialized vocational education of the Republic of Uzbekistan, the teaching style began to change, and the design form of educational activity began to be used more and more. A computer with a special software package helps the student conduct experiments, process the results, really see the physical processes that are taking place with their graphic display, and during the experiment, acquire the skill of reading graphic information.

The topic is relevant and important. Physics is an experimental science, and for its full study it is necessary to conduct experiments. But modern physics has also become computer science: the physicist - experimenter uses the computer as an integral part of the research setup, the physicist - theoretician works with him to

simulate the phenomena studied - both of them turn to computer databases. Therefore, a full study of physics involves the inclusion of a computer in the educational process.

The use of computers in teaching and extracurricular activities in high school looks quite is natural about the terms of the student and is one of the effective ways to increase motivation and individualization of his teaching, the development of creative skills and create a safe emotional background. Each lesson causes students an emotional upsurge, even lagging students are willing to work with a computer. A computer lesson enriches the feedback between all participants in the pedagogical process and the interaction of all its components, promotes differentiation and individualization of instruction, motivates students' learning activities, promotes the development of self-education, makes learning material more accessible, and facilitates the solution of many didactic tasks in the lesson.

Using a computer in the classroom should lead to the following positive results:

− increasing the amount of visual information significantly improves the quality and effectiveness of teaching physics;

− computer capabilities attract students, activate their creative potential;

− the colorfulness of computer graphics also attracts students, allows you to better develop visual-figurative thinking;

− the process of employment corresponds to the nature of modern labor (work with a computer);

− students are able to process a huge stream of information that they receive, and the desire for independence;

−students are given the opportunity of individual research work with a computer model, during which they can independently experiment, quickly test their hypotheses, establish patterns;

−students are provided with an individual pace of learning;

−students acquire the skill of optimal use of a personal computer as a learning tool;

− learning process effectiveness;

– the teacher frees up time for individual work with students (especially those with lagging behind), during which he can adjust their learning process;

Computer technology is based on the use of some formalized model of content, which is represented by pedagogical software tools stored in the computer's memory and the capabilities of the telecommunication network. Computer learning tools are called interactive, they have the ability to respond to the actions of the student and teacher, to "enter" into dialogue with them.

The effectiveness of using the latest information technologies in the educational process largely depends on the successful solution of tasks of a methodological nature related to the information content and the way in which automated training systems are used in the educational process. There is a close relationship between existing teaching methods (pedagogical techniques) and the methodological content and pedagogical purpose of the program-methodological complex.

The modern capabilities of new information technologies aimed at maximum unification, at the level of software and hardware, allow you to create software and methodological training complexes as a set of training fragments combined by algorithmic means that define the learning path.

Accompaniment of the lecture material with a dynamic image, high-quality static graphics, texts with various styles, sound, is carried out with the help of copyright information systems, helps the teacher in explaining this material.

Computer simulation allows you to illustrate physical experiments and phenomena, reproduce their subtle details, which may be unnoticed by the observer in real experiments. For computer modeling, programs like Adobe Flash CS 3 and Autodesk 3ds Max 8 are used. In Adobe Flash CS 3, 2 D illustrations are simulated , and Autodesk 3ds Max 8 can be used to simulate 3 D illustrations. Using computer models and virtual laboratories provides us with a unique opportunity to visualize a simplified model of a real phenomenon. At the same time, it is possible to gradually include additional factors that gradually complicate the model and bring it closer to a real physical phenomenon. In addition, the computer allows you to simulate situations that are not experimentally implemented in the physics cabinet, for

example, the operation of a nuclear installation . Students working with computer models and virtual laboratories are extremely useful, as they can do numerous experiments and even conduct small studies. Interactivity opens up enormous cognitive opportunities for students, making them not only observers, but also active participants in the experiments.

Thus, the process of computer modeling for students of academic lyceums and professional colleges is exciting and instructive, since the result of modeling is always interesting, and in some cases, can be very unexpected. By creating models and observing them in action, students can get acquainted with a number of physical phenomena, study them at a qualitative level, and also conduct small studies. The work of students with computer models is useful because, due to the possibility of varying widely the initial conditions of experiments, computer models allow them to perform numerous virtual experiments. Some models allow simultaneously with the course of experiments to observe the construction of the corresponding graphical dependencies, which increases their visibility. Such models are of particular value, as students usually experience significant difficulties in constructing and reading graphs.

To expand the effectiveness of the educational process, a central place in personal education and providing students with knowledge is necessary for a teacher with excellent training who is constantly working on himself, consolidating the experience gained , using modern pedagogical technologies and interactive methods in practice. In order for the teacher to use the learning time as efficiently as possible, he needs to arm himself with all the achievements of modern pedagogical technologies, interactive methods, and knowledge. The teacher must know the psychology of students and master the practice of communication, know the various methods of pedagogical technologies and be able to use them in practice.

A computer can be used at all stages of the learning process .

When presenting new material, the computer allows you to accompany it with dynamic illustrations, computer models, texts and video clips. Computer models enliven the presentation of the material, provide a demonstration of what cannot be shown in a natural experiment and is difficult to perceive in static drawings. Some

models allow simultaneously with the progress of experiments to observe the construction of the corresponding graphical dependencies. Such models are of particular value, as students, as a rule, experience significant difficulties in constructing and reading graphs. It would seem that (video) films have the same opportunities. But the film, no matter how good it is, is devoid of interactivity, i.e. does not allow the teacher to change the model parameters in accordance, for example, with the question that arose: “What will happen if ...?” In my lessons I use created computer presentations. I draw on computer literate students to develop them.

In a demonstration experiment, a computer is used as part of the installation, or as an auxiliary device, allowing to demonstrate to the whole class such phenomena that usually can only be observed with a microscope (for example, Brownian motion). In addition, the computer allows you to speed up the processing of experimental results in cases where the demonstration experience needs to be processed.

When solving problems, the computer is used to present task texts, verify answers, and automate calculations. Another, less traditional way of using a computer is to verify a solution to a problem using a computer model of the “task situation”. The teacher can offer students for independent solutions in the classroom or as homework tasks, the correctness of the solution of which they can verify by putting computer experiments. Independent verification of the results using a computer experiment enhances the cognitive interest of students, makes their work creative, and in some cases brings it closer to scientific research in nature. Tasks of a creative and research nature significantly increase students' interest in studying physics and are an additional motivating factor.

Results:

– improving the quality and effectiveness of teaching physics;

– increasing cognitive interests in the subject;

– increasing the level of independence;

– the ability to conduct individual research with a computer model, during which students can independently experiment, quickly test their hypotheses, and establish patterns.

Problematic learning is an indispensable feature of a modern lesson; it is a way of developing students' creative thinking. According to psychologists, intellectual development is carried out only in the conditions of overcoming obstacles, intellectual difficulties. These difficulties lie in the fact that the student cannot complete the task in ways known to him and must find a new way to solve the learning problem. The problem tasks presented by the teacher, problem situations in the lesson, as a rule, cause great interest and serve as motivation for the cognitive activity of students.

LIST OF SOURCES USED:

1. Григорьев И.М., Филиппова И.Я. "Некоторые аспекты использования информационных технологий в процессе преподавания в средней школе". Сборник трудов 2-Международной электронной научной конференции "Новые технологии в образовании", Воронеж, 2000, с. 5-6.

2. Водопьян Г.М., Филиппова И.Я. "Использование информационных технологий на уроках физики". Газета "Физика" издательского дома "1 сентября", 2003, №22, с. 22-25.

3. Назаров Э.С., Хакимов Дж.Б. Эффективное использование инновационных технологий в образовании. International scientific conference «Global science and innovations 2019: Central Asia». Nur-Sultan. Kazakhstan. May 9-13th 2019. pp.72-74.

4. Кавтрев А.Ф. «Компьютерные модели в школьном курсе физики». Журнал «Компьютерные инструменты в образовании», № 2, с. 41-47, Санкт-Петербург, Информатизация образования, 1998.

5. Соболева Н.Н., Гомулина Н.Н., Брагин В.Е., Мамонтов Д.И., Касьянов О.А. Электронный учебник нового поколения // Информатика и образование. М.: №6/2002. - С. 67 -76.

УДК 636.2.034.082.2:575.113.

ASSESSMENT OF DIFFERENT METHODS OF REPRODUCTION IN DAIRY CATTLE

Ruban Sergey Yurievich
doctor of agricultural sciences, professor
corresponding member of NAAS of Ukraine
Danshin Victor Oleksandrovich
candidate of agricultural sciences
Litvinenko Tamara Valentinovna
assistant professor
Kyrii Anatolii Anatolievich
graduate student.
National University of Life and Environmental
Sciences of Ukraine
Kyiv, Ukraine

Annotation. The purpose of the research was to analyze the effectiveness of the application of four methods of reproduction of heifers and cows using traditional artificial insemination with cryopreserved semen (group 1), artificial insemination with cryopreserved sexed semen (group 2), transplantation of freshly-washed-up embryos (group 3) and transplantation of frozen embryos (group 4). The experiment showed a tendency of decrease of the number of inseminations per conception in groups of animals where sexed semen (1.2 inseminations), freshly-washed-up embryo transplantation (1.1 inseminations) and frozen embryos transplantation (1.0 inseminations) were used, compared to using traditional artificial insemination with cryopreserved semen (1.3 inseminations). Days open was the lowest in the groups where the embryo transplantation was used. Analysis of variance showed significant impact of season, service bull, method of reproduction and age at insemination on the number of inseminations per conception. Thus, certain advantages of traditional

artificial insemination with cryopreserved semen as well as sexed semen were revealed. Application of the method of margin income showed high efficiency of transplanting freshly-washed-up embryos, which made it possible to make a profit (under conditions of sale of pregnant heifers at a fixed price of 3.6 US dollars for one kilogram of live weight). To cover the costs of frozen embryos transplantation, the minimum price should be within the range of 4.8 – 6.0 US dollars per kg of live weight of the calf, or 2680 US dollars per head.
Keywords: dairy cattle, embryo transfer, insemination, sexed semen, reproduction efficiency**.**

Genetic improvement of farm animals, including dairy cattle, plays a significant role in raising the profitability of the livestock industry [1, p.249]. Very important is the use of biotechnological methods, first of all use assisted reproductive technologies, such as artificial insemination, multiple ovulation and embryo transfer (MOET) and others [2, p.12]. Without the effective use of such technologies, it is impossible to accelerate the genetic progress in modern conditions. Recently ART technologies are expanding their capabilities by performing a number of important functions that are related to methods of breeding value estimation and the guaranteed generation of next generation animals with predefined characteristics. For most dairy cattle breeding enterprises, the question of choosing ART methods is constantly raised, where the main criterion for evaluating efficiency is the guarantee of obtaining a valuable offspring with a minimum cost. According to some authors [3, p.394] the number of fertilized embryos produced *in vitro* has grown rapidly in recent years [4, p.2]. The number of embryos worldwide obtained by *in vitro* technology was significantly higher than those produced *in vivo*. Optimizing the collection and use of gametes in puberty, effective use of sexed semen [5, p. 4499], improvement of cultures and methods of embryo production and cryopreservation are of constant commercial interest in the implementation of large-scale programs of dairy cattle breeding.

The purpose of the research was to analyze the effectiveness of four methods of reproduction of dairy cows according to the final reproduction (conception) rates and the financial costs.

The studies were conducted in the POSP “Zhadkivske” of the Ichnyansky district of Chernihiv region in the period 2016-2020. At the beginning of 2020, there were 454 cows in the farm, of which by breed: Montbeliard (import from France) - 84 heads; Holstein-Friesian (own reproduction) - 109 heads; Simmental - 207 heads; crossbred cattle - 54 heads.

The total sample for the study with data on performance and reproduction from birth to the end of the second lactation included 302 heads. Milk yield per cow in 2019 was 7280 kg with a fat content of 3.84% and protein content of 3.39%, and the average live weight of mature cows was 620-710 kg. The average days open in the herd was 138 days.

According to the methods of reproduction four research groups were defined, which formed the general scheme of the experiment.

Artificial insemination with cryopreserved semen (group 1) was performed on heifers of mating age or up to 110 days after calving of cows under conditions of spontaneous heat. Only clinically healthy animals were inseminated (no manifestation of metritis, endometritis etc.). If after 110 days the animal was not in heat or fertilized, re-diagnosis was performed and, in the absence of diseases, synchronization of heat was performed using schemes of incomplete (Pre-Synch) or complete (Ovsynch) stimulation using drugs of the prostaglandin group.

Artificial insemination of cryopreserved sexed semen (group 2) was performed only on clinically healthy heifers after 14 months of age and after reaching the standard live weight and without the use of estrus synchronization schemes.

The method of transplantation of freshly-washed-up embryos (group 3) was performed only with synchronization of donors and recipients (cows and heifers) using the Ovsynch scheme. For donors, drugs such as 'Estrofan', 'PridDelta' and 'Tetravit' were used. For stimulation of superovulation FSH "Foltropin" or "Foligon" and for improvement of engraftment "Horulon" (analog of "Surfagon") were used.

The scheme of recipients involved the use of "PridDelta", then on the eighth day "Estrofan" and after 7 days of embryo implantation.

The method of transplantation of frozen embryos (group 4) included the synchronization of recipients similarly to group 3.

Statistical analysis of the data was performed using the general linear model procedure of program SPSS 17.0.

The following linear model was used for the analysis:

$y_{ijkl} = \mu + a_{1i} + a_{2j} + a_{3k} + b_1x_1 + b_2x_2 + e_{ijkl}$,

where y_{ijkl} - observation (days open, number of inseminations per conception);

μ – overall mean of the sample;

a_{1i}- effect of season i;

a_{2j} – effect of service bull j;

a_{3k} – effect of method of reproduction k;

x_1 – age at insemination;

x_2 – milk yield in 305 days;

b_1 and b_2 –coefficients of regression;

e_{ijkl} - residue.

The economic efficiency of various biotechnological methods was assessed on the basis of marginal income (M), when the difference between sales revenue excluding VAT and excise duties and variable costs were taken into account using the formula:

M = S - V,

S - revenue from the sale of products (in our case money received from the sale of a breeding heifer (pregnant heifer);

V - the cumulative variable costs that included the cost of insemination.

In table 1 means of reproduction and performance traits across research groups are presented. A characteristic trend is decrease in the number of inseminations per conception in groups of animals where sexed semen (1.2 inseminations), freshly-washed-up embryo transplantation (1.1 inseminations) and frozen embryos transplantation (1.0 inseminations) were used, compared to using traditional artificial insemination with cryopreserved semen (1.3 inseminations). Days open was the

lowest in the groups where the embryo transplantation was used (118.0 and 76.8 days, respectively). Some differences in milk yields of primiparous and especially in animals of the second group are seen.

Table 1

Summary statistics of reproduction traits of research groups

Trait		Research group				Total sample (n = 302)
		1 (n = 272)	2 (n = 7)	3 (n = 13)	4 (n = 10)	
Age at insemination, days	Mean	705.4	638.2	599.9	524.3	694.5
	Standard error	8.708	33.86	28.40	55.03	8.73
	σ	206.6	107.1	130.15	252.21	208.14
Number of inseminations per conception	Mean	1.30	1.20	1.10	1.00	1.28
	Standard error	0.030	0.133	0.066	0.001	0.028
	σ	0.717	0.422	0.301	0.001	0.693
Milk yield in 305 days, kg	Mean	5003	7147	5107	5304	5050
	Standard error	59.82	272.33	227.82	221.86	57.23
	σ	1362.7	817.0	966.5	941.2	1359.3
Days open, days	Mean	130.39	168.71	118.00	76.80	128.97
	Standard error	3.73	23.46	11.63	6.26	3.50
	σ	61.64	62.07	41.94	19.80	60.94

Table 2 shows the pairwise mean differences between the research groups by days open with corresponding significances. Only in two cases differences were significant, namely between the first and fourth groups and between the second and fourth groups ($\alpha<0,01$).

Table 2

Differences between means of days open of research groups

Groups	Mean difference	Standard error	Significance
1-2	-39.692	23.104	0.087
1-3	10.128	17.285	0.558
1-4	51.929	19.484	0.008**
2-3	49.820	28.228	0.079
2-4	91.621	29.660	0.002**
3-4	41.802	25.321	0.100

Note: ** $\alpha<0,01$.

The analysis of variance (table 3) allowed to estimate the influence of the main factors (season of the year, service bull, method of reproduction, age of insemination and milk yield in 305 days of lactation) on the reproduction traits (number of inseminations per conception and days open).

Table 3

Influence of factors on reproduction traits of dairy cows

Factor	η^2, %	F	Significance
Number of inseminations per conception			
Season	2.9	4.484	0.004**
Service bull	5.5	26.815	0.000***
Method of reproduction	3.7	8.757	0.000***
Age at insemination	8.9	44.420	0.000***
Milk yield in 305 days	0.8	3.804	0.052
Days open			
Season	4.7	4.009	0.008**
Service bull	0.1	0.058	0.810
Method of reproduction	1.5	1.893	0.153
Age at insemination	0.6	1.532	0.217
Milk yield in 305 days	0.3	0.795	0.373

Note: **$\alpha<0.01$, ***$\alpha<0.001$.

All factors, except for milk yield in 305 days of lactation, significantly influenced the number of inseminations per conception with η^2 from 2.9% (season of the year) to

8.9% (age at insemination), while η^2 of the reproduction method was 3.7%. As to days open, only the season of the year had a significant impact on this trait with η^2 of 4.7%.

Results of assessment of the effectiveness of the methods of reproduction are presented in table 4.

Table 4

Efficiency of methods of reproduction

Method of reproduction	Number of inseminations per conception	Total costs per conception, US dollars	Days open, days
Insemination with cryopreserved semen (group 1)	1.30	5.02	130.39
Insemination with cryopreserved sexed semen (group 2)	1.20	35.17	168.71
Transplantation of freshly-washed-up embryos (group 3)	1.10	22.25	118.00
Transplantation of frozen embryos (group 4)	1.00	561.64	76.80

For the correct economic evaluation of the four biotechnological methods of calf production, the method of marginal income was used [6, p.148]. For this purpose, under the conditions of the POSP "Zhadkivske" of the Ichnyansky district of the Chernihiv region, we regulated the constants, which may be characteristic of most Ukrainian farms: 1) obtaining bull calves with subsequent fattening is not profitable; 2) the market price of 1 kg of live weight of a pregnant heifer (at the beginning of 2020) is 3.6 US dollars; 3) probability of birth of a heifer calf in groups 1, 3 and 4

(table 5) is 0.5 and in group 2 (use of sexed semen) 0.9, i.e. heifer output are 50% and 90%, respectively; 4) costs of insemination in groups with probability of receiving heifer calves of 50% increase twice as they are not covered by losses from the birth of bull calves (point 1); 5) the average live weight of a pregnant heifer at sale is 480 kg. Such conditions made it possible to calculate the cost-effectiveness of studied biotechnological methods on the basis of marginal income (table 5).

Table 5

Economic assessment of methods of reproduction

Economic parameter	Insemination with cryopreserved semen (group 1)	Insemination with cryopreserved sexed semen (group 2)	Transplantation of freshly-washed-up embryos (group 3)	Transplantation of frozen embryos (group 4)
Revenue from sale of pregnant heifer (S)*, US dollars	1728	1728	1728	1728
Costs per conception, US dollars	5.02	35.17	22.25	561.64
Probability of heifer calf birth	0,5	0,9	0,5	0,5
Costs per conception accounting for probability of heifer calf birth, US dollars	10.05	39.08	44.50	1123.28
Total costs (V)*, US dollars	1066.04	1095.08	1100.44	2179.28
Profit (M)*, US dollars	661.96	632.92	627.48	-451.28

Note: * symbols from the formula of marginal income

Thus, certain advantages of the method of traditional artificial insemination of cryopreserved semen and sexed semen were revealed. In the farm where the experiment was conducted, the high efficiency of freshly-washed-up embryo transplantation was noted, which made it possible to get profit from the sale of pregnant heifers at a fixed price (3.6 US dollars per kilogram of live weight). To cover the cost of transplanting frozen embryos, the minimum price should be in the range of 4.8 - 6.0 US dollars per kg of live weight of a pregnant heifer, or 2680 US dollars per head.

REFERENCES

1. Mitioglo L.V., Fedota O.M., Kirii A.A., Ruban S.Y., Khomenko M.O. Directions of organization of efficient reproduction in dairy cattle. //Proceedings of International scientific conference «Goals of sustainable development of the third millennium. Challenges for universities of life sciences». NULES of Ukraine, Kyiv. – 2018. - p.249—251.
2. NiemannH. And C.Wrenzyski. Animal Biotechnoloy 2. Emerging breeding technologies. Springer, 2018. 306pp.
3. Sanches B. V., Zangirolamo A.F., Seneda M.M. Intensive use of IVF by large-scale dairy programs. //Proceedings of the 33rd Annual Meeting of the Brazilian Embryo Technology Society (SBTE); Ilhade Comandatuba, BA, Brazil, August 15th to 19th. - 2019. - p.394-401.
4. Sirard M. 40 years of bovine IVF in the new genomic selection context. //Reproduction. - 2018. - 156:R1-R7.
5. Cottle DJ, Wallace M, Lonergan P, Fahey AG. Bio-economics of sexed semen utilizationin a high producing Holstein-Friesian dairy herd. //J DairySci. - 2018. - 101: 4498-4512.
6. Ruban S.Y., O.M. Fedota, V.O.Danshin, L.M.Mitiohlo. Experience and perspectives of milk pricing (Ukraine and world tendencies). //Vinnytsa National agrarian university. ,,Agricultural science and food technologies". - 2017. - Issue 1 (95) - P. 148-158.

УДК 582.5 (477)

PARTICIPATION OF SYNANTHROPIC SPECIES IN THE FLORA ALONG THE HIGHWAYS OF THE KHMELNYTSKY REGION

Rudka Yulia Oleksandrivna
Student
Bondarenko Olena Yuriivna
Cand.biol.sc.
Ilya Mechnikov Odessa National University, Ukraine
Odessa, Ukrainia

The results of studying the participation of synanthropic species in flora along highways of international importance in the vicinity of Volochysk are presented. They are found to represent 84.21% of the species noted. The predominance of the species of the aboriginal fraction was found to be 1.45 (relative to the species of the adventitious fraction). Most apophytes are evapophytes (40.62%). Among the adventitious species epecophytes predominate (31.25%).
Keywords: synanthropic plants, roadsides, Khmelnitsky region

The level of human impact on modern natural landscapes has only increased over time. This trend is common to individual territories, to Europe, and globally. Anthropogenic ecotope transformation is accompanied by the disappearance of some species of flora and fauna and the appearance of others. Of course, synanthropic plant species cause a number of problems for the regional natural complex. However, with their participation, restoration processes are underway at the transformed sites [1, p. 14-15; 2, p. 34-44; 3, 129-155; 4, 192 p. and al.].

Roadside, in particular highways, are one of the key elements in the emergence, spread and successful naturalization of synanthropic plants in new regions. Aboriginal plants with a wide ecological amplitude are also available here. In recent decades, aspects of the naturalization and adaptation of plant species have been the

subject of much research by scientists from different countries. In Ukraine, these issues are devoted to the works of V. Protopopova, M. Shevera, R. Burda, T. Vasilyeva and others[5, p. 31-32].

The purpose of this work was to establish the participation of syntanthropic species in the flora along the highways. The specificity of the growth conditions of plants on the roadsides is related to the coating. The international highway involves a solid surface, compacted by road mixtures or stone materials [6, 104 p.].

Road of the international highway M12 (Stryi - Znamyanka, length 746.2 km) was selected for the study, near Volochysk, Khmelnytsky region [5, p. 31-32]. The selected section is part of the European route E50 (originates in Brest (France) and ends in Makhachkala (Russia)). By geobotanical zoning the territory belongs to Volochys'ka-Antoninsk geobotanical area [7, 326 p.].

Flora (more than 3 km) was studied during 2018 and 2019, with a recurrence in the spring-autumn period, by the route method. Determination of plants was made in [8, 548 p.]. The systematic distribution of plants and the taxonomic features of the species were adopted in [9, 345 p.].

To identify synanthropic species, as well as to distribute species into appropriate fractions and groups, depending on the degree of naturalization or adaptation, was used the work of V. Protopopova [4, 192 p.] with elements of reference literature [10, 44 p.].

On the roadside we have seen plants of 38 species from 15 families. This is a relatively small proportion of the flora of the region's highest vascular plants - 2.53% [11, 22 p.]. It is dominated by representatives of the A*steraceae* family (16 species), *Fabaceae* and *Poaceae* (3 and 4 species, respectively). The families *Lamiaceae, Convolvulaceae* and *Plantaginaceae* contain two species.

Synanthropic species are 84.21% (32 species) [4, 192 p.]. Types of aboriginal (apophytic) fraction predominate (Table 1).

Table 1

The spectrum of groups of synanthropic flora plants sideways

Fractions of synanthropic plant species	**Number of species**	
	The absolute number	**%**
Adventitious	**13**	**40,63**
ergasiophytes	2	6,25
epecophytes	10	31,25
hemiepecophytes	1	3,13
Apophitic	**19**	**59,37**
Hemiapophytes	5	15,63
Evapophytes	13	40,62
random apophytes	1	3,13
Synanthropic species	**32**	**100,00**

Thus, the apophytic fraction of the sinanthropic flora is represented by evapophytes, species that have partially or completely "migrated" to transformed growth areas: *Polygonum aviculare* L., *Linaria vulgaris* Mill. etc. Their share in the studied area is 40.62% of the total number of marked commensal species.

Hemiapophytes (plant species that actively propagate in anthropogenically transformed ecotopes, but retain their position in the regional flora) are 15.63% of the found synanthropic species.

40.63% of synanthropic species originate from outside Ukraine. The degree of naturalization in the transformed areas is dominated by epecophytes: *Echinochloa crusgalli* (L.) Beauw., *Urtica urens* L., and others. They are fully naturalized on anthropogenic ecotopes.

Groups of ergaziophytes and hemiapophytes are represented by a relatively small number of species (Table 1).

Thus, in the flora of roads of international importance in the vicinity of the city of Volochisk, Khmelnytsky region, 32 species of syntantropic plants were recorded. The predominance of species of apophytic fraction was found (59.37%). Their ratio to the species of the adventitious fraction is 1.46. This is obviously a sign of the specificity of such ecotopes, since in Ukraine's flora a similar indicator is, on the contrary, 1.33 with the predominance of species of allochthonous fraction [4, 192 p.]. In both fractions, the largest number of species are represented by groups that characterize plants that successfully adapt or naturalize on transformed ecotopes (epecophytes and evapophytes). Together, these species make up 71.87% of the observed synanthropic plant species.

REFERENCES

1. Burda, R. I, Tokhtar, V. K. (1992). Invasion, distribution and naturalization of plants along railroads of the Ukrainian south-east // Ukr. botan. zhyrn. T. 49, № 5. C. 14 -18.
2. Burda, R.I. (2003). Zastosuvannya metodyky otsinky antropotolerantnosti vydiv vyshchykh Roslyn pry stvorenni “Ekoflory Ukrainy” / R. I. Burda, Ya. P. Didukh // Ukr. fitotsen. zb. Seriya : C. Vyp. 1 (20). Kyiv, C. 34-44. [in Ukrainian].
3. Protopopova, V. V., Mosyakin, S. L., Shevera, M. V. (2003). Vplyv adventyvnykh vydiv Roslyn na fikobiotu Ukrainy // Otsinka I napryanky zmenshennya zahroz bioriznomanittyu Ukrainy / vidp. red. O. V. Dudkin. K : Khimdzhest, C. 129-155. [in Ukrainian].
4. Protopopova, V. V. (1991). Sinantropnaia flora Ukrainy i puti eyo razvitiia. K.: Nauk. dunka, 192 s. [in Russian].
5. Rydka, Yu. O., Bondarenko, O. Yu. (2019). Suchasnyi stan flory uzbich avtomobilnykh shlyakhiv mizhnarodnogo znachennya Khmenychchyny / Ekolohichni nauky : naukovo-praktychnyi zhurnal. K : DEA, № 3(26). S. 31-34. [in Ukrainian].
6. Avtomobilni dorohy. Chastyna I. Proektuvannya : DBN V.2.3-4 : 2015. [chynnyi vid 2016-04-01]. K: DP “Ukrarkhbydinform”, 104 s. [in Ukrainian].

7. Heobotanichne raionuvannya Ukrainskoi RSR. (1977). K.: Nauk. dumka, 303 s. [in Russian].
8. Opredelitel vysshikh rastenii Ukrainy. (1987). [Dobrochaeva D.N., Kotov M.I., Prokudin Yu.N. i dr.] ; pod red. Yu.N. Prokudina. K.: Nauk. dumka, 548 s. [in Russian].
9. Mosyakin, S. L., Fedoronchuk M. M. (1999). Vascular Plants of Ukraine. A nomenclature Checklist. Kiev, 345 p.
10. Kotsun, L. O., Kuzmishyna, I. I. (2017). Metodychni rekomendatsii do laboratornykh robit dlya magistriv biolohichnoho fakultetu z kursu “Synantropni zminy flory ta fitoindykatsiya”. Lutsk : Ldruk PP Ivanuk V.P. 44 s. [in Ukrainian].
11. Lyubinska, L. H. (2017). Flora Khmelnychchyny : navchalnyi posibnyk / L. H. Lyubinska, L. S. Yuhlichek. Khmelnytskyi : TzOV “Polihrafist”, 220 c. [in Ukrainian].

FEATURES OF THE USE OF INFORMATION AND COMPUTER TECHNOLOGIES IN THE STUDY OF THE LATIN LANGUAGE

Rizhniak Oksana Leonidivna
Candidate of Philological Sciences, Associate Professor
Krasnoshchok Victoria Valeriivna
Candidate of Philological Sciences, Senior Lecturer
Karmazina Komila Bakhodyrivna
Senior Lecturer
Donetsk National Medical University
Kropyvnytskyi, Ukraine

Annotation. The article discusses the methodological aspects of the use of computer-aided translation in the study of the Latin language by students of various specialties in Ukraine, analyzes the typical errors that occur when using computer translation .
Keywords : technical means of translation, computer dictionaries, online translation , plugins.

Introduction. Unable to once again prove the leading importance of Latin as the most important means of forming an educated person (Non tam praeclarum est scire Latinae, quam turpe nescire “It ’s not so honorable to know Latin as it is shameful not to know it, ” - Cicero), we will dwell on some modern features of its study by students of various specialties in Ukraine . Among the many deficiencies of Soviet educational system heritage, one of the most important is the underestimation of classical education in general and , in particular, of the Latin language. And this applies not only to philologists of all levels (from students of linguistic gymnasiums to young scientists). It is known that Latin is necessary for doctors, pharmacists, lawyers and many other specialists. The programs of many specialties of most Ukrainian universities offer a short Latin course for first-year students who already study the state and English languages. It is even more difficult for foreigners having

specialized subjects that are taught in different languages . As a result, instead of the expected help, Latin transforms the student's life into chaos. We see several possibilities for resolving the problem - the integration of linguistic courses into a single subject such as "Special terminology in a comparative aspect" and, of course, the maximum optimization of the educational process through the use of the latest computer technologies.

A quick review of related publications. Features of the use of information resources in the modern education system is one of the most important problems of linguodidactics. Not only the most of scientific conferences of recent years, [1 ; 3; 5] are devoted to this problem but also practically all working sessions of all departments of Ukrainian universities, starting from Academic Chairs and ending with the Academic Council. The agenda includes the creation of online courses, electronic educational and methodological programs and programs for the optimization of the educational process, the use of cloud services, machine translation , the prohibition and, conversely, the use of smartphones in the classroom for a specific didactic purpose, and many other pressing issues related to general computerization society.

Purpose . Now it makes no sense to argue about the possibility or impossibility of students using technical means in the translation. This is already a given . It is safe to admit that almost every student has a free non-stop access to the Internet, its online dictionaries, using the site and support services. That is why modern teachers develop computer programs of their course, are engaged in the introduction of distance education, and master new technologies. It is precisely because of the possibility of using of such teaching aids that classroom hours are constantly being reduced, because such technologies can significantly save time, usually it goes to search operations. All this requires from us not to ban or neglect computer dictionaries, but to determine their advantages and also shortcomings for the purpose of its eliminating .

Materials and methods.

Consider the pros and cons of online translators, that is, programs that translate texts from one language to another. Such programs are divided into local ones, which are installed on the user's computer and independent of the availability of the Internet in the classroom, and web services, plug-ins that perform text conversion online. Considering that in recent years almost all institutions of higher education have introduced free access zones to the Internet in their classrooms and dormitories, students give preference to such means of translation.

So what is an online translator? Any search engine for this question immediately gives us several hundred of links to such programs and plug-ins. We will consider this as an advantage of web translation, as well as the extreme simplicity of its use. It is enough to choose the language of translation and the necessary text, transfer this part to the appropriate window in the body of the plug-in, and click the "Translate" button. In most systems, this service is provided completely free of charge. There are sites where online synchronists have in their arsenal the option to choose the specialization of the text by topic (education, medicine, business and others), time, etc. Perhaps the benefits end there. And then the flaws. Rather, the biggest one it is quality. A well-known experiment, when one and the same sentence, "I am sure that I will need the knowledge of the language " was given for translation into different services and one received different translations, in some cases, even a set of words instead of the expected proposals. Therefore, it is necessary to carefully check the quality of each service. In addition, all online systems have a sufficient number of thematic databases. In many translation systems, only common topics are freely available. These are, so to speak, objective shortcomings associated with the difficulties of translating of modern common languages. Particular difficulties arise when translating from Latin. Firstly, such a translation is practiced relatively recently, and secondly, the Latin language has its own specific features. Let us dwell on these issues in more detail.

It is known that since 2010, Latin has received the official status of the fifty-eighth language proposed by Google Translate for direct and reverse translation. Since that

time, a voice translation function has also been proposed to help users with pronunciation. The company motivates its decision by the fact that every year hundreds of thousands of American schoolchildren pass the Latin exam. The new service is primarily aimed at students and scientists involved in philosophy, medicine, literature, philology and other sciences, traditionally using the knowledge of the Latin language. It is emphasized that thousands of books have already been printed and continue to be printed in Latin now. The Fast Company warns that although millions of texts that have already been translated into modern languages have been used to form the system, it must be borne in mind that we still have access to many works (especially artistic ones) only in the original language.

The developers of the blog made an announcement in Latin "Veni, Vidi, Verba Verti", paraphrasing the famous expression of Caesar. With automatic translation of an expression into English and other analytical languages, an adequate and correct translation is proposed. When we try to get a translation of this expression using the service in Ukrainian (or Russian), it appears that text is structured grammatically incorrectly - "I came, I saw, translated the words." Google admits the difficulty of translating a "dead language" and therefore warns in advance of the likelihood of various errors, suggesting that students and schoolchildren take into account the limitations of the program and not to expect good grades for the translation if it is done exclusively with the help of an online translator. Therefore, in the arsenal of each teacher of the Latin language there are many examples of unexpected students translations obtained in this way. A few examples. Instead of the classic translation “Of arms and the man I sing”, Google Translate transforms the famous beginning of the glorious “Aeneid” of Virgil Arma virumque cano as “I sing weapons”, and students translate the sentence from the fable about the outbreak of the Trojan War Mercurius imperio Jovis advolavit as “Hanging mercury the engine flew a command ”, or how“ Mercury flew out on Thursday ”, depending on the site used for translation. How do such errors arise and, most importantly, what to do to eliminate them and further prevent them. After all, our students from school are used to constantly use online dictionaries when translating into English, German, Russian.

Why do students often get unsatisfactory results when translating from Latin? To answer this question, let's recall the well-known comic translation from Russian Зеленая зелень зелено зеленеет English Green Green Green is green. The fact is that, firstly, in its grammatical structure, Latin is a synthetic language of inflective type, and, secondly, the vocabulary notation of a noun and a verb in Latin and native languages are significantly different. This is precisely the main information that the teacher must convey to the student who decided to use the technical means of translation.

It is known that according to the program acquaintance with Latin grammar begins with the second topic. As a rule, in addition to general acquaintance with parts of speech, this practical lesson already examines in detail nouns of the first declension. After mastering the general concepts and training group work under the guidance of a teacher, it is very important that each student fulfills a number of independent individual tasks to find examples of nouns of different declensions in the dictionary (remember that the declension indicator in Latin is the ending of the genitive case, which is necessarily provided in the dictionary after initial form), the definition of their gender, especially for those cases when it does not coincide with the native language, like via, ae f - "way"; vita, ae f - "life"; silva, ae f - "forest", arena, ae f - "sand" and others. Examples should include lexemes that do not have the corresponding singular or plural forms (singularia et pluralia tantum), general nouns, exceptions of the first declension of masculine, etc. At the same time, it is desirable that the individual tasks are of the same type, so that the teacher has the opportunity to explain typical mistakes, make the necessary generalizations and conclusions.

Traditionally, when studying this topic, the first acquaintance with the verb begins, more precisely with the features of the conjugation of the verb-connective *esse* in the present tense. A more detailed analysis of grammatical forms, categories and the entire paradigm of the Latin verb will take place in the following practical classes. But the first explanations of the peculiarities of the conjugation and translation of the Latin verb into the native language must be done ay once. This means, first of all, the difference between the vocabulary notation - the title form for -o 1 person of the

present tense in the Latin dictionary instead of the traditional infinitive (amo, veto, credo, which literally requires the addition of the personal pronoun "I") secondly, the presence of 4 basic forms (amo amavi amatum amare instead of one “ to love” infinitive); thirdly, the absence of personal pronouns in the verb paradigm (cf.: sum studiosa - “I am a student,” literally translated as “am a student”). Understanding the discrepancy between the syntactic constructions of this type of two languages makes it possible to go to more complex issues in the next classes, such as the correlation of personal and gender forms of the verb in the paradigms of the first language and the native language, the peculiarity of the translation of passive or perfect forms, etc.

Results and their discussion. The peculiarity of such a computer translation leads to the fact that most students cannot independently use ordinary dictionaries, determine grammatical and initial forms, basic meanings and so on. Therefore, at this stage of learning a new language, when students still do not have a complete picture and the idea of it, its grammatical categories and forms, features of the lexical system and syntactic constructions, the use of technical means instead of great benefit can do great harm, since the student does not have time or does not want to learn certain information, to form the necessary skills and skills of grammar analysis, to get acquainted with the rules, techniques and methods of self-translation.

So, should we abandon modern teaching aids when studying the disciplines of the linguistic cycle? In no case. After all, the content of education and its purpose are not dependent on the form of training. However, the use of computer tools requires a different form of knowledge representation, the organization of cognitive activity of students and the choice of teaching methods, shifting the emphasis to the student's independent work, stimulating this activity and increasing its effectiveness and quality, all this changes the role of the teacher in the educational process. The possibility of getting knowledge not only from the teacher and even without the teacher (distance education) dramatically changes the functions of the teacher, reduces them to the functions of managing the educational process, which, in its turn, increases the requirements for the professional competence of the teacher. Recall the etymology of this word and its original meaning: a pedagogue in ancient Rome was a

name of a slave who accompanied the child to school from pes, pedis "foot, foot." Similarly, the teacher of nowadays accompanies the student on his journey to knowledge.

Conclusions . Translation errors have been, are and will always be. After all, even Saint Jerome, who is considered the saint patron of translators, was not sinless (remember how many centuries his version of the "horned" Moses existed). Therefore, the main task of the teacher is to teach students to work creatively with all kinds of dictionaries, combining the capabilities and advantages of each of them, constantly improving their skills - Saepe stilum vertas - “Turn your style often”.

REFERENCE

1. Actual questions of distance education and telemedicine 2018: materials of the All-Ukrainian science-methodical video conference with international participation (25-26 April 2018, c.Zaporizhzhia). - Zaporizhzhia, 2018 .-- 171 p. ISBN 978-966-417-177-8
2. Gusev V.S. Google : effective search. Quick start guide. - M.: Williams Publishing House, 2006. - 240p .: ill.
3. O.L. Rizhnyak Features of the use of information and computer technologies in the study of Latin // Scientific notes. - Issue 153 - Series: Philological Sciences (Linguistics) - Kirovograd: RVV KSPU V. Vinnichenko, 2017. - 754 p. –C 689-693
4. Samoilov D.V. About the translation of a medical text. Publishing house "Practice", 2005.
5. Rizhnyak OL, Krasnoschok VV, Karmazina KB, Mazurenko OO Linguistic training of foreign students of medical higher education and information computer technologies // International scientific and practical conference "Issues of modern philology in the context of the interaction of languages and cultures": conference proceedings , December 27–28, 2019. Venice: Izdevnieciba “Baltia Publishing”

УДК 504.75:574:614.253.81

РИЗИКОРІЄНТОВАНА ІДЕНТИФІКАЦІЯ ДЖЕРЕЛ ЗАБРУДНЕННЯ ҐРУНТІВ ВАЖКИМИ МЕТАЛАМИ

Рибалова Ольга Володимирівна
канд. техн. наук, доцент, доцент
Бригада Олена Володимирівна
канд. техн. наук, доцент, доцент
Сарапіна Марина Володимирівна
канд. техн. наук, доцент, доцент
Шароватова Олена Павлівна
канд. пед. наук, доцент, доцент
Національний університет цивільного захисту України
м. Харків, Україна

Анотація: В роботі проаналізовано природні та антропогенні джерела надходження важких металів у грунт. Показано небезпечний вплив лісових пожеж на екологічний стан ґрунтів. За новою методикою дана оцінка екологічного ризику забруднення ґрунтів внаслідок лісових пожеж. Визначення причин забруднення ґрунтів важкими металами є важливим завданням для прийняття необхідних управлінських рішень щодо впровадження превентивних природоохоронних заходів з метою мінімізації негативних наслідків.

Ключові слова: екологічний ризик, важкі метали, ґрунти, лісові пожежі, екологічна небезпека

З розвитком сучасної урбанізації та індустріалізації, забруднення навколишнього природного середовища важкими металами визначено однією з основних проблем у сучасному суспільстві. Інтенсифікація сільськогосподарського землекористування і зміни в агротехніці поряд з технічним прогресом призвели до забруднення ґрунту важкими металами.

Концентрації металів у ґрунті ростуть загрозливими темпами та впливають на ріст рослин, безпеку харчових продуктів і розвиток ґрунтової мікрофлори. Токсичність металів має прямі наслідки для флори, яка є невід'ємною частиною екосистем. Змінюються біохімічні, фізіологічні та метаболічні процеси в рослинах, які ростуть у регіонах з високим рівнем забруднення металами. Накопичення важких металів може привести до значного токсичного впливу на компоненти довкілля і здоров’я людей.

Ґрунт займає в біосфері особливе місце, найбільшою мірою забезпечуючи біологічну продуктивність біосфери. У той же час він зазнає найбільший антропогенний вплив і є найбільш небезпечною ланкою циркуляції забруднюючих речовин [1].

Забруднення важкими металами є головною екологічною проблемою, яка загрожує рослинам, тваринам і здоров'ю людини, а також якості навколишнього середовища. Важкі метали можуть повільно потрапляти в рослини, тварини і людини через повітря, воду, а також розвиток харчового ланцюга протягом певного періоду часу [2]. Сучасні методи ведення сільського господарства за рахунок розширення застосування агрохімікатів і неорганічних добрив викликали забруднення ґрунтів важкими металами, що веде до деградації екосистем [3]. Застосування в землеробстві осадів стічних вод, органічних відходів, гною, промислових відходів, і зрошення стічними водами є основними джерелами надходження важких металів в ґрунти [4,5]

Причиною надходження важких металів в ґрунти є природні та антропогенні чинники.

Вивітрювання порід є найбільш важливим фактором надходження важких металів. Процес вивітрювання залежить від характеру гірських порід і кліматичних умов [6]. Вулканічні виверження і вітер також є джерелом надходження важких металів. Високі концентрації заліза, марганцю, цинку, хрому, нікелю і свинцю приходить від вітру, який дме з пустелі. Морські вітри та лісові пожежі також сприяють надходженню важких металів [7].

Природна рослинність вносить свій внесок важких металів у навколишнє середовище через вилуговування, розкладання і випаровування. Крім того, океанічні види продуктів та аерозолі моря вносять вклад важких металів в прибережних районах [8].

Серед антропогенного забруднення ґрунтів важкими металами важливе місце займають сільськогосподарські джерела їх надходження.

Основним джерелом потрапляння важких металів в сільськогосподарські ґрунти є неорганічні добрива, а також вапнування, зрошення і розміщення осадів стічних вод [5].

Дослідження [9] встановили, що накопичення кадмію в рослинах має особливе значення, так як він осідає у високій концентрації на листках, які можуть бути використані для харчування тварин або людей. Осад стічних вод, гній є також причиною надходження кадмію. Використання осадів стічних вод в землеробстві є одним з головних джерел надходження важких металів в ґрунти [4,10].

Причиною високого вмісту важких металів в сільськогосподарських ґрунтах є використання фосфатних добрив [11,12] Деякі пестициди є значним джерелом забруднення важкими металами сільськогосподарських полів [7,13]. Зрошення стічними водами є також великим джерелом забруднення важкими металами [4,5]. Таким чином, концентрація або кількість важких металів в сільськогосподарських ґрунтах залежать від характеристик ґрунтів і їх складу, внесення неорганічних добрив, пестицидів, стічних вод, або осадів стічних вод.

Різні види промислової діяльності, особливо видобуток корисних копалин, підприємства нафтопереробної промисловості, металургії, хімічної промисловості, електростанції також є причиною забруднення ґрунтів важкими металами [12].

В методичних вказівках щодо оцінки ступеня небезпеки забруднення ґрунту хімічними речовинами МУ 4266-87 [14] представлена класифікація джерел забруднення ґрунтів важкими металами (табл.1).

Таблиця 1

Накопичення хімічних елементів в ґрунтах у зоні впливу промислових підприємств і інших джерел забруднення [14]

Джерела забруднення	Тип виробництва	Кратність перевищення концентрацій забруднюючих речовин над фоновими	
		Більш 10	від 2 до 10
Кольорова металургія	Виробництво кольорових металів безпосередньо з руд і концентратів	Свинець, цинк, мідь, срібло	Олово, вісмут, миш'як, кадмій, сурма, ртуть
	Вторинна переробка кольорових металів	Свинець, цинк, олово, мідь	Ртуть
	Виробництво твердих і тугоплавких кольорових металів	Вольфрам	Молібден
	Виробництво титану	Срібло, цинк, свинець, бор, мідь	Титан, марганець, молібден, олово, ванадій
Чорна металургія	Виробництво легованих сталей	Кобальт, молібден, вісмут, вольфрам, цинк	Свинець, кадмій, хром, цинк
	Залізорудне виробництво	Свинець, срібло, миш'як	Цинк, вольфрам, кобальт, ванадій
Машинобудівний металообробна промисловість	Підприємства з термічною обробкою металів (без ливарних цехів)	Свинець, цинк	Нікель, хром, ртуть, олово, мідь
	Виробництво свинцевих акумуляторів	Свинець, нікель, кадмій	Сурма, Свинець, Сурма, цинк, вісмут
	Виробництво приладів для електротехнічної й електронної промисловості		
Хімічна	Виробництво суперфосфатних добрив	Стронцій, цинк, фтор	Рідкі землі, мідь, хром, миш'як
	Виробництво пластмас	-	Мідь, цинк, срібло

Промисловість будівельних матеріалів	Виробництво цементу		Ртуть, стронцій, цинк
Поліграфічна промисловість	Шрифтоливарні заводи, друкарня		Свинець, цинк, олово
Тверді побутові відходи великих міст, використовувані в якості добрив		Свинець, кадмій, олово, мідь, срібло, сурма, цинк	Ртуть
Осади каналізаційних стічних вод		Свинець, кадмій, ванадій, нікель, олово, хром, мідь, цинк	Ртуть, срібло
Забруднені поливальні води		Свинець, цинк	Мідь

Значним джерелом забруднення ґрунтів важкими металами є лісові пожежі [15]. В роботі [16] представлена нова методика оцінки ризику для здоров'я населення від забруднення ґрунтів важкими металами. Ризик для здоров'я населення від впливу забруднення ґрунтів важкими металами на територіях, які не використовуються для вирощування сільськогосподарської продукції, пропонується визначати за формулою [16]:

$$\Pr obit = -1{,}32 + 1{,}45 \lg \frac{C_i}{C_{фоні}}, \qquad (1)$$

де $C_{фон}$ – фонова концентрація і-ої забруднюючої речовини в ґрунті, мг/кг.

Ризик для здоров'я населення визначається для кожної забруднюючої речовини. Для території, що досліджується, визначається сумарний ризик за правилом множення ймовірностей, де як множник виступають не величини ризику здоров'ю, а значення, що характеризують ймовірність його відсутності [16]:

$$Risk_{сум} = 1 - (1 - Risk_1)(1 - Risk_2)..(1 - Risk_n), \qquad (2)$$

де $Risk_{сум}$ – ризик комплексного впливу забруднення ґрунтів важкими металами на здоров'я населення;

$Risk_1$,..., $Risk_n$ – ризик впливу кожної окремої забруднюючої речовини.

Рівень небезпеки від забруднення ґрунтів важкими металами пропонується визначати за табл. 2 [16].

Таблиця 2

Характеристика ризику для здоров'я населення від забруднення ґрунтів важкими металами [16]

Значення ризику для здоров'я населення (Risk)	Клас небезпеки	Характеристика ризику
0,01 – 0,19	1	Незначний ризик для здоров’я населення
0,20 – 0,39	2	Підвищений ризик для здоров’я населення
0,40 – 0,59	3	Значний ризик для здоров’я населення
0,60 – 0,79	4	Високий ризик для здоров’я населення
0,80 – 1,00	5	Небезпечний ризик для здоров’я населення

За методикою [16] дана оцінка ризику для здоров’я населення від забруднення ґрунтів важкими металами внаслідок лісової пожежі (табл. 3).

Таблиця 3

Ризик для здоров’я населення від забруднення ґрунтів важкими металами внаслідок лісової пожежі

Назва речовини	Одиниці виміру	Концентрація (С)	ГДК /фон	С/ГДК	lg (С/ГДК)	Probit	Risk
До пожежі							
Стронцій	мг/кг	40,2	169	0,24	-0,62	-2,22	0,015
Мідь	мг/кг	24,1	19,3	1,25	0,10	-1,18	0,119
Свинець	мг/кг	11,2	20	0,56	-0,25	-1,69	0,046
Цинк	мг/кг	65,1	53	1,23	0,09	-1,19	0,117
Risk сум							0,270
Після пожежі							
Стронцій	мг/кг	112	169	0,66	-0,18	-1,58	0,058
Мідь	мг/кг	80,4	19,3	4,17	0,62	-0,42	0,337
Свинець	мг/кг	65,9	20	3,30	0,52	-0,57	0,285
Цинк	мг/кг	73,9	53	1,39	0,14	-1,11	0,134
Risk сум							0,613

Як показують розрахунки після лісової пожежі ризик для здоров’я населення внаслідок забруднення ґрунтів важкими металами відповідає 4 класу небезпеки.

Забруднення ґрунтів важкими металами становить серйозну загрозу для навколишнього середовища в глобальному масштабі. Токсичність важких металів призводить до зниження продуктивності і врожайності, руйнує клітинні структури рослин, порушує нормальне функціонування екосистем і негативно впливає на здоров'я населення. Тому дослідження рівня екологічної небезпеки забруднення ґрунтів важкими металами є дуже актуальними.

Наступним етапом після оцінювання ризику для здоров'я населення є управління ризиком, тобто прийняття необхідних управлінських рішень щодо досягнення рівня прийнятності екологічного ризику і збереження ґрунтів як важливого компонента навколишнього природного середовища.

СПИСОК ЛІТЕРАТУРИ

1. Рибалова О. В. Особливості визначення екологічного ризику забруднення ґрунтів [Текст]: зб. наук. праць / О. В. Рибалова, Є. О. Варивода, В.А. Скиба // Вісник Національного технічного університету "ХПІ". Тематичний випуск: Нові рішення в сучасних технологіях. - Харків: НТУ "ХПІ". - 2011. - No. 58. - С. 64-70
2. Nagajyoti, P. C., Lee, K. D., and Sreekanth, T. V. M. (2010). Heavy metals, occurrence and toxicity for plants: a review. Environ. Chem. Lett. 8, 199–216.
3. Malik, Z., Ahmad, M., Abassi, G. H., Dawood, M., Hussain, A., and Jamil, M. (2017). "Agrochemicals and soil microbes: interaction for soil health," in Xenobiotics in the Soil Environment:Monitoring, Toxicity and Management, ed M. Z. Hashmi (Cham: Springer International Publishing), 139–152
4. Sharma, B., Sarkar, A., Singh, P., and Singh, R. P. (2017). Agricultural utilization of biosolids: a review on potential effects on soil and plant grown. Waste Manage. 64, 117–132.
5. Woldetsadik, D., Drechsel, P., Keraita, B., Itanna, F., and Gebrekidan, H. (2017). Heavy metal accumulation and health risk assessment in wastewater-irrigated urban vegetable farming sites of Addis Ababa, Ethiopia. Int. J. Food Contam. 4:9.

6. Abdu, N., Agbenin, J. O., and Buerkert, A. (2011). Geochemical assessment, distribution and dynamics of trace metals in urban agricultural soils under long-term wastewater irrigation in Kano, northern Nigeria. J. Plant Nutr. Soil Sci. 173, 447–458.

7. Ross, S. M. (1994). Toxic Metals in Soil–Plant Systems. Chichester: Wiley, 4

8. Monge, G., Jimenez-Espejo, F. J., García-Alix, A., Martínez-Ruiz, F., Mattielli, N., Finlayson, C., et al. (2015). Earliest evidence of pollution by heavy metals in archaeological sites. Sci. Rep. 5:14252.

9. Niassy, S., and Diarra, K. (2012). "Effect of organic inputs in urban agriculture and their optimization for poverty alleviation in Senegal, West Africa," in Organic Fertilizers: Types, Production and Environmental Impact, ed R. P. Singh (Hauppauge, NY: Nova Science Publisher), 1–22

10. Araújo, A. S. F., de Melo, W. J., and Singh, R. P. (2010). Municipal solid waste compost amendment in agricultural soil: changes in soil microbial biomass. Rev. Environ. Sci. Biotechnol. 9, 41–49.

11. Carnelo L. G. L., de Miguez, S. R., and Marbán, L. (1997). Heavy metals input with phosphate fertilizers used in Argentina. Sci. Tot. Environ.204, 245–250.

12. Verkleij, J. A. (1993). "The effects of heavy metals stress on higher plants and their use as bio monitors" in Plant as Bioindicators: Indicators of Heavy Metals in the Terrestrial Environment, ed B. Markert (New York, NY: VCH), 415-424

13. Marrugo-Negrete, J., Pinedo-Hernández, J., and Díez, S. (2017). Assessment of heavy metal pollution, spatial distribution and origin in agricultural soils along the Sinú River Basin, Colombia. Enviro*n. Res.* 154, 380–388.

14. Методические указания по оценке степени опасности загрязнения почвы химическими веществами. МУ 4266-87 (утв. заместителем Главного государственного санитарного врача СССР от 13 марта 1987 г. № 4266-87)

15. Рибалова, О.В. Забруднення ґрунтів внаслідок лісових пожеж / Рибалова О.В., Бригада О.В., Сарапіна М.В., Коробкіна К.М. // The 6 th International scientific and practical conference "Perspectives of world science and education" (February 26-28, 2020) CPN Publishing Group, Osaka, Japan. 2020. p. 711-718

16. Рибалова, О.В. Новий метод оцінки ризику для здоров’я населення від забруднення ґрунтів важкими металами / О.В. Рибалова, О. В. Бригада, О.О. Бондаренко, Є.О. Макаров // Проблеми надзвичайних ситуацій. − 2019. − № 1(29) − С. 79-99