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PRACTICAL APPLICATION OF ANALYTICAL CHEMISTRY IN BIOLOGY

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PRACTICAL APPLICATION OF ANALYTICAL CHEMISTRY IN BIOLOGY.

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Abstract: *Analytical chemistry is of great scientific and practical importance, representing a set of methods for the study of substances and their transformations. It also plays an important role in the fields of science related to chemistry – mineralogy, geology, physiology, microbiology, as well as in medical, agronomic and technical sciences. Conducting many scientific studies is closely related to the use of methods in analytical chemistry. Less common medical studies include the search and identification of new markers of diseases, pharmacokinetics (the study of migration and changes of drugs in the body), doping control of athletes, DNA tests, etc.*

Key words: *interactive, discussion, brainstorming, work in small groups.*

ANALITIK KIMYONING BIOLOGIYADA AMALIY QO'LLANILISHI.

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Annotatsiya: *Analitik kimyo katta ilmiy va amaliy ahamiyatga ega bo'lib, moddalar va ularning o'zgarishini o'rganish usullari to'plamini ifodalaydi. Shuningdek, u kimyo bilan bog'liq fan sohalarida – mineralogiya, geologiya, fiziologiya, mikrobiologiya, shuningdek tibbiyot, Agronomiya va texnika fanlarida muhim rol o'ynaydi. Ko'pgina ilmiy tadqiqotlar o'tkazish analitik kimyoda usullardan foydalanish bilan chambarchas bog'liq. Kamroq tarqalgan tibbiy tadqiqotlar kasalliklarning yangi belgilarini izlash va aniqlash, farmakokinetika (migratsiya va organizmdagi dorilarning o'zgarishini o'rganish), sportchilarni doping nazorati, DNK testlari va boshqalarni o'z ichiga oladi..*

Kalit so'zlar: *interaktiv, munozara, aqliy hujum, kichik guruhlarda ishlash.*

ПРАКТИЧЕСКОЕ ПРИМЕНЕНИЕ АНАЛИТИЧЕСКОЙ ХИМИИ В БИОЛОГИИ.

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***Аннотация:** Аналитическая химия имеет большое научное и практическое значение, представляя собой совокупность методов изучения веществ и их превращений. Это также играет важную роль в областях науки, связанных с химией – минералогии, геологии, физиологии, микробиологии, а также в медицинских, агрономических и технических науках. Проведение многих научных исследований тесно связано с использованием методов аналитической химии. Менее распространенные медицинские исследования включают поиск и идентификацию новых маркеров заболеваний, фармакокинетику (изучение миграции и изменений лекарственных препаратов в организме), допинг-контроль спортсменов, тесты ДНК и т.д.*

***Ключевые слова:** интерактив, дискуссия, мозговой штурм, работа в малых группах.*

Analytical chemistry is of great scientific and practical importance, representing a set of methods for the study of substances and their transformations. It also plays an important role in the fields of science related to chemistry – mineralogy, geology, physiology, microbiology, as well as in medical, agronomic and technical sciences. Conducting many scientific studies is closely related to the use of methods in analytical chemistry.

Less common medical studies include the search and identification of new markers of diseases, pharmacokinetics (the study of migration and changes of drugs in the body), doping control of athletes, DNA tests, etc.

The aim is to summarize the available data on the analysis of biological tissues and fluids used in medicine, as well as to identify the main directions of development of this field of analytical chemistry.

Analytical chemistry has not paid attention to medical and biological objects for quite a long time. The methodological level of biomedical research that doctors or biologists were engaged in, from the point of view of a professional analyst, was (and sometimes remains) quite low. At the end of the XX century, more and more analytical laboratories were involved in medical research. This process is especially characteristic of the USA, where huge funds are allocated for biomedical research. During this time, new methods have been developed, first of all, the method of immunoassay. The number of publications devoted to the study of medical facilities is constantly growing in analytical chemistry journals.

Bioengineering (including biological systems engineering) is the application of concepts and methods of biology (and, secondly, physics, chemistry, mathematics and computer science) to solve urgent problems related to the sciences of living organisms and/or their applications, using analytical and synthetic engineering methodologies, as well as its traditional sensitivity to the cost and practicality of the solutions found.

Bioengineering extends from the creation of artificial organs using technical means or the search for ways to grow organs and tissues using regenerative medicine methods to compensate for reduced or lost physiological functions (biomedical engineering) and to the development of genetically modified organisms, for example, agricultural plants and animals (genetic engineering), as well as the molecular design of compounds with specified properties (protein engineering, engineering enzymology). In non-medical aspects, bioengineering is closely related to biotechnology.

Analytical chemistry methods allow us to answer many questions that arise when nucleic acids are deposited in an aqueous solution (it is often used in bioengineering), which is necessary to determine pure DNA, and then RNA. Let's consider the methods in full [1-2].

As we can see, analytical chemistry methods help in the separation of nucleic acids. We assess the situation using spectrophotometry.

This is a method of photometric analysis in which the content of a substance is determined by its absorption of monochromatic light in the visible, UV and IR spectral regions. In spectrophotometry, unlike photometry, monochromatization is provided not by

light filters, but by monochromators, which allow continuously changing the wavelength. Prisms or diffraction gratings are used as monochromators, which provide significantly higher monochromaticity of light than light filters, so the accuracy of spectrophotometric definitions is higher [3-4].

Spectrophotometric methods, in comparison with photolorimetric methods, allow solving a wider range of tasks:

- to carry out the quantitative determination of substances in a wide range of wavelengths (185-1100 nm);
- perform quantitative analysis of multicomponent systems (simultaneous determination of several substances);
- determine the composition and stability constants of light-absorbing complex compounds;
- determine the photometric characteristics of light-absorbing compounds.

The photometric method can also determine the components of a mixture of two or more substances.

Only in one long process (sequencing) We have established methods of analytical chemistry and physico-chemical methods of analysis:

Spectrophotometry [5].

As a result of the above, we can conclude about the importance of analytical chemistry methods, because in this process (sequencing), it is necessary to constantly monitor the process so as not to make a mistake and not to redo everything anew.

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