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інтернет-конференція

ПРОБЛЕМИ ТА ДОСЯГНЕННЯ СУЧАСНОЇ БІОТЕХНОЛОГІЇ

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**МІНІСТЕРСТВО ОХОРОНИ ЗДОРОВ'Я УКРАЇНИ
НАЦІОНАЛЬНИЙ ФАРМАЦЕВТИЧНИЙ УНІВЕРСИТЕТ
КАФЕДРА БІОТЕХНОЛОГІЇ**

**MINISTRY OF HEALTH OF UKRAINE
NATIONAL UNIVERSITY OF PHARMACY
DEPARTMENT OF BIOTECHNOLOGY**

**ПРОБЛЕМИ ТА ДОСЯГНЕННЯ
СУЧАСНОЇ БІОТЕХНОЛОГІЇ**

**PROBLEMS AND ACHIEVEMENTS
OF MODERN BIOTECHNOLOGY**

**Матеріали
IV міжнародної науково-практичної
Інтернет-конференції**

**Materials
of the IV International Scientific and Practical
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Збірка містить матеріали науково-практичної конференції, тематика якої охоплює такі напрями: фармацевтична та медична біотехнологія, перспективні біологічно активні речовини, харчова біотехнологія, продукти здорового харчування, екологічна біотехнологія, природоохоронні технології, біотехнологія у рослинництві, тваринництві та ветеринарії, сучасні біотехнології для народного господарства, розробка, виробництво, забезпечення та контроль якості лікарських засобів, мікробіологічні дослідження на етапах розробки, виробництва та контролі якості харчових продуктів, ветеринарних та лікарських препаратів, організаційно-економічні аспекти діяльності біотехнологічних та фармацевтичних підприємств у сучасних умовах, маркетингові дослідження у біотехнології та фармації, теорія та практика підготовки здобувачів вищої освіти спеціальності «Біотехнології та біоінженерія».

Для широкого кола науковців, магістрантів, аспірантів, докторантів, співробітників біотехнологічних та фармацевтичних підприємств та фірм, викладачів вищих навчальних закладів наукових і практичних працівників фармації та медицини.

Автори опублікованих матеріалів несуть повну відповідальність за підбір, точність наведених фактів, цитат, економіко-статистичних даних, власних імен та інших відомостей. Матеріали подаються мовою оригіналу.

acid bacteria biomass in the tested kefir was only 2 logarithmic orders – the tested product completely failed to meet the requirements of the FAO/WHO, therefore it should not be defined as kefir. In summary, out of the 6 kefirs tested, only one met the criteria for the presence and quantity of bacteria and yeast required for this type of product (kefir 5).

Modern methods for quality control of cosmetic and dermatological materials containing nanoparticles

**¹Rakhimova M.V., ²Bondarenko I.S., ¹Yaremenko V.D., ¹Sych I.A.,
¹Kobzar N.P., ¹Perekhoda L.O.**

¹National University of Pharmacy, Kharkiv, Ukraine

²Kharkiv National University of Radio Electronics, Kharkiv, Ukraine

rakhimovamv@gmail.com

Modern scientific discoveries have affected all spheres of life, including cosmetology and dermatology where nanotechnologies occupy a special place using particles with sizes from 1 to 100 nanometers, which are called nanoparticles. Nanoparticles can have completely different chemical, physical and biological properties than their conventional counterparts. These tiny particles can also easily enter the body through the skin or respiratory tract. Thus, the safety of nanoparticles, especially those used in daily cosmetics, is of significant concern.

Among the physicochemical methods for analyzing products containing nanoparticles, it should be noted methods that determine the concentration of nanoparticles without knowledge of which it is impossible to make a conclusion about the quality of cosmetic products and their safety.

The range of safety indicators and methods for their determination are clearly regulated by regulatory documents for products. Safety tests include physicochemical, microbiological and toxicological methods, which are currently still insufficiently developed, and sometimes there are no methods for determining a number of indicators of the quality and effectiveness of cosmetic products, which

makes their assessment impossible. One of the problems of analyzing the concentration of nanoparticles that must be solved for practical analysis of the quality of products with nanoparticles is the quantitative analysis of the content of nanoparticles. There are very few such works.

Until recently, the problem of determining the concentration of magnetic nanoparticles in the target region of the biological environment was solved using the method of magnetic resonance imaging (MRI). This method is not direct and has limitations both in terms of the maximum permissible level of the recorded concentration of nanoparticles and in the accuracy of its determination.

To solve this problem, the acoustic-magnetic method (AMM), developed by Bondarenko I.S. with the authors is promising (Patent of Ukraine, No. 137159, Bull. No. 19, 10/10/2019.), where is proposed method of the measurement of the concentration of magnetic nanoparticles in a biological environment in a wide range of concentrations (from 1 vol. % to 10^{-7} vol. %), The effectiveness of the method was confirmed in an experiments with a colloidal solution containing magnetite nanoparticles.

The object of study was a colloidal solution of nanoparticles based on Fe_3O_4 in a mixture of oleic acid and kerosene, which was a model sample of a cosmetic or dermatological product as a colloidal solution. The average particle size with magnetite was 50-150 nm, Size of Fe_3O_4 was much less. Oleic acid prevents powder particles from sticking together in solution, and kerosene provides the necessary viscosity⁴¹. For the biophysical applications it is recommended to use solution with a concentration of nanoparticles not more than 5%. In our experiments the weight concentration of the actual magnetite was no more than 0.15%. The viscosity of the suspension was chosen close to the viscosity of the blood (5×10^{-3} poise).

Unlike MRI, this new registration method is direct, and according to the authors of the method, it does not have the mentioned disadvantages of MRI.

The principle of the AMM technique is that directed oscillations of an ensemble of particles oriented (polarized) along the magnetic field cause the appearance of an alternating magnetic field in the surrounding space. The magnetic

flux of this field depends on the concentration of nanoparticles in the area under study and can be measured by a highly sensitive detector located outside this area.

To use AMM to determine the concentration of nanoparticles, it is necessary to obtain a colloidal solution of the test drug with nanoparticles. To assess the achievable characteristics of AMM in model experiments, calculated relationships were obtained connecting the physical parameters of ultrasound, magnetic nanoparticles, colloidal medium, magnetic detector and the concentration of nanoparticles in the studied medium, and the minimum detectable concentration of magnetic nanoparticles up to 10^{-7} vol % was assessed.

In addition, in practice, when determining the concentration of nanoparticles in a colloidal solution of a cosmetic or dermatological product, it is possible to use a magnetometer with lower sensitivity compared to the intended use in the case of nanoparticles in the blood of the human body, which will make the use of the technique accessible for practical application.

Multi-vector analysis of the market for drugs acting on the immune system

Sadikova G.E.

Organization of pharmaceutical work, Tashkent Pharmaceutical Institute,

Tashkent, Republic of Uzbekistan

guli85229@gmail.com

The work carried out a structural assessment of the range of medicines for marketing research of the pharmaceutical market of medicines affecting immunity. The results of the assortment analysis showed that 626 drugs were registered on the pharmaceutical market of the Republic of Uzbekistan; the structure of drugs by country of origin, origin, composition, and segmentation of the assortment by dosage forms of release were studied.

Immunity is a system of the body that performs a protective function: it is responsible for recognizing foreign elements and destroying them. External factors that pose a danger to humans are microorganisms and their metabolic products -

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Наукове електронне видання мережне

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*Відповідальна за випуск
Двінських Наталія Власівна*

*Комп'ютерний набір, оформлення обкладинки
Смєлова Наталія Миколаївна*

Національний фармацевтичний університет
вул. Г. Сковороди, 53, м. Харків, 61002