Матеріали 98-ї підсумкової наукової конференції професорсько-викладацького персоналу ВДНЗУ «БДМУ»

Міністерство охорони здоров'я України
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МАТЕРІАЛИ

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У збірнику представлені матеріали 98 – ї підсумкової наукової конференції професорсько-викладацького персоналу вищого державного навчального закладу України «Буковинський державний медичний університет» (м.Чернівці, 13, 15, 20 лютого 2017 р.) із стилістикою та орфографією у авторській редакції. Публікації присвячені актуальним проблемам фундаментальної, теоретичної та клінічної медицини.

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body systems. It stimulates the immune system function including its non-intestinal portions (thymus, bone marrow, spleen, regional lymph nodes, blood, etc.). The characteristic of human microbiota is studied by means of microbiological investigations that enable to obtain results of the large intestine microbiota functional state and physiological impact on organs of practically healthy people. Bacteria that belong to the main autochtonous obligate anaerobic microbiota are constantly detected in all practically healthy people not depending from microbiota type.

The condition of the large intestine microbiota in practically healthy people with bacteroid microbiota type has not been studied specially, and no records are found concerning this microbial type in scientific literature. Among 181 practically healthy examined people, bacteroid large intestine microbiota type was detected in 31 (17,13 %) practically healthy people. The main microflora of practically healthy people comprises obligate anaerobic bacteria of *Bacteroides, Bifidobacterium, Lactobacillus, Peptostreptococcus* genus, as well as optional anaerobic and aerobic bacteria of *Escherichia* and *Proteus* genus. The additional large intestine microbiota of these people is manifested by yeast-like fungi of *Candida* genus. The same analytical, microecological indices are relevant for bacteria of *Bacteroides, Bifidobacterium, Lactobacillus* and *Escherichia* genus – constancy index 100 %, frequency of occurrence 0,15 e.u., Whittaker's generic variety index – 4,49 e.u., Simpson and Berger-Parker's generic domination index constitutes 0,25 and 1,00. *Peptostreptococcus* and *Proteus* possess slightly lower values of microecological indices.

For domination level identification of a certain microorganism species in a large bowel cavity of a practically healthy person the Simpson's and Berger-Parker's generic domination indexes have been calculated. The inhabitants' relationships in a large bowel cavity have been characterized with the help of Zhakkard's coefficient which is one of the most reliable indexes of microorganism relationships in association.

Among representatives of neutral flora of the large intestine content in practically healthy people with bacteroid type, the highest population level is detected in bacteroids (9,26±0,08 lg CFU/g). It has appeared to be 31,16 % lower in *Bifidobacteria, Lactobacteria* – 36,78 %, *Peptostreptococci* – 10,63 %, *Peptococcus* – 16,04 %, *Proteus* – in 2,44 times, *Staphylococci* - 90,14 %, yeast-like fungi of *Candida* genus – 90,13 %.

Rotar D.V.

PROSPECTS OF THE RESEARCH OF ANTIMICROBIAL ACTIVITY OF COLLOIDAL LIQUIDS OF CUPRUM NANOPARTICLES

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Despite rapid progress in the creation of drugs and the development of pharmaceutical technologies, infectious diseases caused by bacteria, remain one of the biggest public health problem throughout the world, affecting millions of people each year. Almost all organisms are able to resist pharmacotherapeutic intervention due to the rapid evolution of genetic mechanisms leading to the formation of resistance and makes it necessary to review the strategy and tactics of antibiotics. Nowadays the requirements have changed not only to antibiotics but also to antiseptic preparations, which have to be strong, be of long duration, active against resistant strains and do not violate skin microbiocenosis, especially the stability of the resident population of microbes. However, large pharmaceutical companies are losing interest in the development of new antimicrobial agents; they also invest their funds in much more profitable researches, reducing the appearance of new chemotherapeutists and antiseptics in the pharmaceutical market.

New nontraditional solutions are required to overcome these problems. In this connection, the operations based on nanotechnology arouse the interest. As it is known, physical and chemical properties of nanoparticles (NPs) are different from their macroanalogues owing to the increasing of the chemical potential of a large specific surface area and, consequently, high penetrating ability and adsorption activity. Such modification of properties provides a high damaging effect of nanoparticles of the substances which in the normal state have antimicrobial activity, moreover the severity of antimicrobial effects depending on the technology of synthesis of particles, their size, chemical nature of the coating, stability of derived systems, the type of microorganism, etc. Cu nanoparticles are characterized by such unique properties and can be used as antimicrobials, but with the access to air, colloidal solutions of copper nanoparticles are unstable in comparison with to nanoparticles of gold and silver.

The aim of the research is to find the ratio between output components for getting stable colloidal liquids of cuprum nanoparticles and installing the spectrum of their antimicrobial action.

Colloidal liquids of nanoparticles of copper were synthesized for the study by the recovery of copper salt ($CuSO_4$ - $5H_2O$) with tetrahidrobarate of natrium ($NaBH_4$) at temperature of 20°C, pH – 6.0. Absorption spectra have been recorded using a spectrophotometer USB-650 (Ocean Optics). Installation of antimicrobial properties has been conducted by micromethod of two-fold serial dilutions in polystyrene plates using Takachi's microtitrator.

Analysis of antimicrobial properties showed that the liquid №17 (Cys:Cu:$NaBH_4$ - 6,15:1:1.76) in a 1:16 dilution showed minimal fungistatic action, and in a dilution of 1:8 - minimum fungicidal action against 4- hour test culture *C. albicans*. The tested solution caused the violation the population level of test-culture *C. albicans*, which reduced 2.5 times from $2,8\times10^3$ CFU/ml to $1,17\times10^3$ CFU/ml (range of uncertainty ($M\pm2\delta$) – $1,17\times10^3+3,06\times10^2$).

The study showed the presence of expressed fungistatic properties in colloidal liquids of nanoparticles of copper (Cys:Cu:$NaBH_4$ - 6,15:1: 1.76) in a 1:16 dilution, that reflected in violation of population level of test-culture *C. albicans*.