



Встановлено, що у хворих на ВЗАІТ має місце значна активація процесів пероксидного окиснення – рівень МА в еритроцитах у хворих I групи був вірогідно вищий (на 23,3%) ніж у донорів. Відмічено також зростання (на 21,8%) у них активності ОМБ. У хворих дослідної групи, після одноразового введення берлітіону, рівень МА був вище лише на 11,4%, а ОМБ – на 14,3%. Виявлено, що у хворих на ВЗАІТ активність ферментів антиоксидантного захисту вірогідно знижувалася: активність ЦП – на 11,2%, ГП – на 3,6% та КТ – на 8,2%. Одноразове введення берлітіону призводило до високовірогідного (на 11,5%) зростання активності ЦП. Активність КТ при цьому зменшувалась на 8,9%, а ГП – майже не змінювалась.

Проведені дослідження свідчать, що у хворих на вузловий зоб на фоні автоімунного тиреоїдиту має місце активація процесів пероксидного окиснення та зниження функціональної спроможності ферментів антиоксидантного захисту в крові та тканині щитовидної залози. Включення в комплексне лікування таких хворих берлітіону спричиняє зниження активності процесів пероксидного окиснення та активації систем антиоксидантного захисту в крові та тканині щитоподібної залози, сприяє більш швидкому відновленню функції щитоподібної залози.

СЕКЦІЯ 8 ГІГІЄНА СЕРЕДОВИЩА І ВИВЧЕННЯ НОВИХ АНТИМІКРОБНИХ РЕЧОВИН В ЕКСПЕРИМЕНТІ І КЛІНІЦІ

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USAGE OF DIFFERENT DOSAGES OF ALPHA-LIPOIC ACID IN CASE OF SUBACUTE SILVER DECAHEDRON NANOPARTICLES POISONING IN RATS

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Numerous experimental and clinical studies proved efficiency of treatment with alpha lipoic acid-containing drugs in diseases, in which pro- and antioxidant balance is disrupted. Also alpha lipoic acid appears to be able to bind and mobilize heavy metals from tissues. So it is often used in case of heavy metals poisonings. We have studied its protective properties in the case of harmful effect of silver nanoparticles.

Aim of the work was to research prophylactic effect of Alpha lipoic acid in case of subacute nanosilver poisoning of 4 month laboratory rats. First group of rats was biological control. Two other groups of rats were treated with nanosilver decahedrons (45 nm) and two different doses of alpha lipoic acid (12,5 and 25 mg/kg) for two weeks. Rats got Dialipon two hours after the 5 mg/kg of decahedron silver nanoparticles treatment (intraperitoneal way of injections). The animals were observed for 14 days. Criteria of harmful effect were biochemical changes in blood and liver of experimental rats (by means of pro- and antioxidant balance, alkaline phosphatase and cholesterol).

We have learned the state of indicators of free radical oxidation of lipids and enzymes activity of pro- and antioxidant protection, which reliably changed after the insertion of 5 mg/kg of decahedron silver nanoparticles. Thus, 12,5 mg/kg of Alpha lipoic acid treatment leads to 15 % decreasing of malonic aldehyde of blood ($p < 0,05$) and 12 % of malonic aldehyde of liver. 25 mg/kg of Alpha lipoic acid treatment leads to 22 % decreasing of malonic aldehyde of blood ($p < 0,05$) and 19 % of malonic aldehyde of liver. Catalase activity of rats blood of both research groups decreases almost to control level up to 9-10 % ($p < 0,05$). Catalase activity of liver reliably increased up to 28 % ($p < 0,05$) in 12,5 mg/kg of Alpha lipoic acid group and 22 % ($p < 0,05$) in 25 mg/kg of Alpha lipoic acid group. Glutathione peroxidase index reliably increased up to 31 % ($p < 0,05$) and 22 % ($p < 0,05$) respectively in blood of rats. Glutathione peroxidase of liver tissue decreased up to 15 % ($p < 0,05$) after the 12,5 mg/kg and 13 % ($p < 0,05$) after the 25 mg/kg of Alpha lipoic treatment. Besides that, it was observed 0,5 times decreasing of alkaline phosphatase activity ($p < 0,05$) in both groups and 2 times of cholesterol ($p < 0,05$) content of rats blood of 12,5 mg/kg of Alpha lipoic acid group and 1,5 times of cholesterol ($p < 0,05$) content of rats blood of 25 mg/kg of Alpha lipoic acid group.

So, prophylactic usage of alpha lipoic acid in doses of 12,5 and 25 mg/kg resulted in normalization of prooxidant-antioxidant balance of blood and liver tissue of the examined rats, helped to reduce the level of cholesterol and alkaline phosphatase activity. Thus, the assessment of protective effect of alpha lipoic acid shows the possibility of the usage of the smaller dosage of Dialipon (12,5 mg/kg) aimed on prevention of harmful health effects of nanosilver.

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PECULIARITIES OF SENSITIVITY TO ANTIBIOTICS THE *S.AUREUS* STRAINS, OBTAINED IN THE ENT ORGANS PATHOLOGY

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In recent years the growth of the etiological role of opportunistic microorganisms and increasing antibiotic resistance of that strains in the structure of infectious diseases of ENT organs is observed. Etiology of ENT organs infections depends on microbiological conditions, specific to each biotop. *S.aureus* is isolated in diseases of the throat,



nose and ears with different frequencies. The most often - from the mucous membrane of the nasal passages and the mucous palatine tonsils, and the least from the external auditory passage.

The object of this study was to investigate the sensitivity to antibiotics of *S. aureus* strains isolated from diseases of ENT organs.

The selected strains identification was performed on the base of morphological, tinctorial, and biochemical properties, given at Bergey's Manual of Systematic Bacteriology and by the USSR Health Ministry Order "On the Microbiological (Bacteriological) Methods Unification of the Research Used in Clinical and Diagnostic Laboratories of Therapeutic and Prophylactic Institutions" dated April 22, 1985, No. 535. The sensitivity of purified strains to antibiotics was determined by the disc diffusion method in accordance with the MI 9.9.5-143-2007 "Determination of microorganism sensitivity to antibacterial preparations".

The results of the determination of sensitivity to antibiotics of *S. aureus* strains isolated from the palatine tonsils and the mucous membrane of the nasal passages are presented in the table.

Table

Sensitivity to antibiotics of *S. aureus* strains isolated from mucous membranes of the palatine tonsils and nasal passages. %

| Name of antibiotic | Relative number of strains, isolated from the mucous membranes of the tonsils. (n 211) | | | Relative number of strains, isolated from the mucous membrane of the nasal passages. (n 18) | | |
|--------------------|--|------------------------|-----------|---|------------------------|-----------|
| | sensitive | intermediate resistant | resistant | sensitive | intermediate resistant | resistant |
| Benzylpenicillin | 35,89 | 0 | 64,11 | 27,78 | 0 | 72,22 |
| Oxacillin | 62,68 | 3,35 | 33,97 | 44,44 | 5,56 | 50,00 |
| Vancomycin | 90,43 | 0 | 9,57 | 100,00 | 0 | 0 |
| Gentamicin | 97,61 | 1,91 | 0,48 | 100,00 | 0 | 0 |
| Amikacin | 87,56 | 6,70 | 5,74 | 88,89 | 5,56 | 5,56 |
| Ofloxacin | 97,13 | 2,39 | 0,48 | 100,00 | 0 | 0 |
| Ciprofloxacin | 95,65 | 3,86 | 0,48 | 100,00 | 0 | 0 |
| Levofloxacin | 99,52 | 0,48 | 0 | 100,00 | 0 | 0 |
| Azithromycin | 70,53 | 17,87 | 11,59 | 77,78 | 0 | 22,22 |
| Clarithromycin | 92,75 | 0,48 | 6,76 | 94,44 | 0 | 5,56 |
| Clindamycin | 97,57 | 1,46 | 0,97 | 94,44 | 0 | 5,56 |
| Doxacycline | 83,50 | 8,50 | 8,00 | 100,00 | 0 | 0 |

High percentages of strains resistant to beta-lactam antibiotics and macrolides were detected in both groups. Vancomycin-resistant strains were found among strains from the tonsils. It should be noted that among the strains isolated from the nasal mucosa, a number of strains, resistant to benzylpenicillin, oxacillin, azithromycin and clindamycin was higher than that of strains isolated from the palatine tonsils mucosa. At the same time, no resistant to aminoglycosides, fluoroquinolones, lincosamides, tetracyclines was found among the strains isolated from the nasal mucosa. The greatest sensitivity of examined strains was detected to ofloxacin, ciprofloxacin, levofloxacin.

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HISTORICAL ASPECT OF SPREADING PENICILLIN RESISTANT *S. AUREUS* IN THE WORLD AND THE CHERNIVTSI REGION

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It is known that the rapid increase in the number of bacteria resistant to antimicrobial drugs is due to the irrational use of them, the adding of such drugs in animal feeds, as growth stimulators, easy moving in a separate geographic region and beyond its borders.

The aim of this research was to study the dynamics of spreading penicillin resistant *S. aureus* strains in the Chernivtsi region.

The materials of research by Yu. L. Volyansky (1971), own investigation (1997-2004; 2015-2016), literary sources were used in this paper. Data on the prevalence of penicillin-resistant strains of *S. aureus* among bacterial carriers, were selected for comparison from the studied materials.

Antibiotic penicillin was discovered by Alexander Fleming in 1928, and in 1940, several years before its use in medical practice, colleagues of the scientist Abraham, E. P., and E. Chain, discover in bacteria the enzymes of penicillinases presence, capable of destroying this antibiotic. At the same time with the penicillin use starting in clinical practice, the first strains of staphylococci resistant to it were identified (Rammelkamp CH, Maxon T., 1942). Finding bacterial penicillinases before the wide use of the antibiotic, proves the presence of resistance gene to antibiotics in the natural populations of microorganisms. The methicillin introduction, in 1959, carried hope for reliable protection against penicillinase. However, three years later, new variants of resistant golden staphylococci - methicillin-resistant (MRSA) appeared. They are simultaneously characterized by resistance to several antibiotics, and increased virulence. Since 1961, the number of MRSA has increased rapidly, and the presence of this indication in the isolated strains of staphylococci is considered to be a sign of multi-resistance to antibiotics. The percentage of staphylococci resistant to methicillin becomes approximately the same among clinical isolates and among the *S. aureus* strains isolated with the healthy carrier.