

1. Kisrieva J.S., Petushkova N.A., Chernobrovkin A.S., Larina O.B., Trifonova O.P., Kuznetsova G.P., Samenkova N.F., Kashirceva V.N., Belayeva N.F., Karuzina I.I., Lisitsa A.V.

One-dimensional proteomic mapping of embryos danio rerio.

In the present study, a proteomic technology combining one-dimensional gel electrophoresis (1DE) with subsequent mass spectrometry (MALDI-TOF-PMF) has been successfully applied for revelation of changes in the protein profile of zebrafish (*Danio rerio*) 52 hpf embryos. Prior to 1DE separation of zebrafish embryonic proteins, the procedure for obtaining embryos homogenate was optimized by ultrasonic treatment. A total of 84 proteins, including 15 vitellogenins, were identified. It was shown that growing of zebrafish embryos in the medium with doxorubicin (DOX) stimulated Caspase-3 induction and promoted the disappearance of cardiac troponins, both these findings being consistent with literature data on doxorubicin-induced cardiotoxicity. The 1DE-based proteomic mapping approach proposed herein enabled not only to identify proteins but also to register those changes in embryos; proteomic profile that were caused by doxorubicin.

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2. Misharina T.A., Burlakova E.B., Fatkullina L.D., Terenina M.B., Krikunova N.I., Vorobjeva A.K., Erohin V.N., Goloshchapov A.N.

Influence of savory essential oil on the fatty acids composition in the brain and liver with age increasing of akr line mice.

Age-related alterations of fatty acid composition in liver and brain of AKR mice was investigated. The effect of savory essential oil (*Satureja hortensis* L.), added with drinking water on fatty acid composition in these organs and the processes of lipid peroxidation in erythrocytes were estimated. It was found that during aging the percentage of saturated fatty acids and polyunsaturated fatty acids decreased while monounsaturated fatty acids increased. The development of leukemia was accompanied by the increase of saturated and polyunsaturated fatty acids percentage and a decrease of monounsaturated fatty acids amount. In the liver aging caused the increase in the percentage of saturated fatty acids, the decrease of monounsaturated fatty acids, while the amount of polyunsaturated fatty acids was not changed. Leukemia (after 8 month) was accompanied by the increase of percentage of monounsaturated fatty acids and the decrease in the amount of oleic and docosahexaenic acids. The intake of savory essential oil was accompanied by intensification of polyunsaturated fatty acids synthesis in mice liver and reduction of lipid peroxidation products content.

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3. Lelevich S.V.

Comparative feature of the glucose metabolism in liver of the rats under acute alcohol and morphine intoxication.

The comparative analysis effect of acute alcohol and morphine intoxications on rats on hepatic glycolysis and pentose phosphate pathway was done. The dose-dependent inhibitory effect of ethanol on activity of limiting enzymes of these metabolic ways, as well as anaerobic reorientation of glucose metabolism was recognised with the increase of the dose of the intake alcohol. Morphine (10 mg/kg) activated enzymes of glycolysis and pentose phosphate pathway, but in contrast to ethanol it did not influence these parameters at the dose 20 or 40 mg/kg.

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4. Turashev A.D., Tischenko E.G., Maksimenko A.V.

Electrostatic interactions determine glycation of hyaluronidase derivatives with n-acetylhexosamines?.

Glycation of native hyaluronidase and its chondroitin sulfate modified form was studied with N-acetylglucosamine, N-acetylgalactosamine and their mixture, as well as hyaluronan fragments (n = 0-4) and their mixture. The modified form of hyaluronidase exhibited higher inactivation than native enzyme. The chondroitin sulfate modification of hyaluronidase altered its surface electrostatic potential, but this effect was not crucial for inactivation of hyaluronidase derivatives. The observed picture of the glycation action on hyaluronidase derivatives was opposite for glycation with mono- and di-saccharides. Such results give us the informative enzyme test for in vivo system in order to determine the dominant type of glycation agents in bloodstream and its origin.

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5. Gal L.N., Malachova M.Ya., Melenevskaya E.Yu., Podosenova N.G., Sharonova L.V.

Effect of water on silica gel adsorption with respect to human blood plasma components.

In this work, the study of properties of silica gel as an adsorbent for plasmadsorption has been performed. Investigations have been realized of the effect of silica gel preliminary treatment conditions and a period of plasma with silica gel contact on plasmadsorption characteristics of human blood plasma components, such as protein, triglycerides, cholesterol (high-density and low-density one). The results obtained can be used for variation of silica gel adsorption properties, in situ at the adsorbent preparation process. For explanation of the experimental concentration and kinetic (temporal) characteristics of plasmadsorption, the model of silica gel grains charging at the hydration was used.

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6. Mikaelyan N.P., Terentyev A.A., Gurina A.E., Smirnov V.V.

Disfunction membrane-receptor system blood cells in children suffering from diabetes type i and ii.

When metabolic failure in children and adolescents with diabetes, are violations of the structural and functional properties of membrane - the receptor apparatus of cells, accompanied by a decrease in ATP levels, inhibition of activity of membrane-bound enzyme Na⁺,K⁺-ATPase, a sharp decrease in insulin binding receptor activity and decrease glucose uptake by cells that indicates a decline in cell sensitivity to insulin. Diabetes in children and adolescents occurs with lipid disorders, activation of the processes of lipid peroxidation, manifested increasing concentrations of both primary and secondary products of lipid peroxidation, changes in structural and functional properties of erythrocyte membranes, as well as disturbances in the antioxidant defense system. Changes in the studied indexes depend on the type of diabetes and duration of the disease. Imbalance in the system LPO-AOD in the background shows the development of dyslipidemia, oxidative stress, particularly pronounced in type 2 diabetes.

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7. Radomskaya V.M., Zubova I.A., Yepifanova A.A., Gil''miyarova F.N., Gil''miyarov E.M., Ryskina E.A.

Phenotypic opportunities of some parameters of humoral immunity in patients with chronic generalized periodontitis with different groups of blood.

Interrelationships between parameters of humoral immunity with AB0 blood groups have been investigated. The highest content of IgA to transglutaminase was found in A(II) patients, while the lowest content was found in AB(IV) patients. The blood content on anti-gliadin IgA was higher in healthy donors. The oral liquid of periodontic patients contained anti-gliadin IgA and IgB lacking in healthy donors. It have been found that 47% of healthy people and 52.7% of patients are infected with *Helicobacter pylori*. In the group of periodontic patients A(II) individually predominated; they were characterized by the presence of antibodies to *H. pylori* in the oral liquid, these antibodies were absent in healthy donors. The pepsinogen level was higher in blood of periodontic patients than in healthy donors. B(III) patients had the lowest level of blood pepsinogen.

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8. Makarov V.K., Starikov S.V.

Blood serum phospholipids in patients with tonsillitis under combined alcohol-bacterial influence.

Blood serum phospholipids were investigated in alcohol abusing patients with tonsillitis. Most significant changes in phospholipids spectrum (low relative content of lysophospholipids and higher phosphatidylcholine and phosphatidyletanolamin) in alcohol abusing patients with tonsillitis were observed, compared with alcohol abusers. This may be attributed to the prevailing influence of bacterial infection.

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9. Smirnova L.P., Krotenko N.V., Grishko E.V., Krotenko N.M., Alifirova V.M., Ivanova S.A.

Antioxidant system state in patients with multiple sclerosis current in therapy.

Activity of erythrocyte glutathionperoxidase (GP), glutathionreductase (GR), glutathiontransferase (GT), glucose-6-phosphatdehydrogenase (G6PDH), catalase and superoxididysmutase (SOD), and also, the level of malonic dialdehyde (MDA) and total antioxidant activity of blood serum were studied in patients with different types of multiple sclerosis. Investigation of peripheral blood was carried out on first day of treatment and after standard therapy of copaxone. All MS patients had high level of MDA and activity of GP in erythrocytes in comparison with a control group. Other antioxidant enzymes of erythrocytes and total antioxidant activity of blood serum exhibited weak positive dynamics in patients with a relapsing remittance of multiple sclerosis (RRMS). Decrease of activity of antioxidant system in patients with secondary progression multiple sclerosis (SPMS) was more pronounced and remained unchanged after the treatment. This is consistent with the more severe clinical course of this disease.

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10. Shironin A.V., Ipatova O.M., Medvedeva N.V., Prozorovskiy V.N., Tikhonova E.G., Zakharova T.S., Sanzhakov M.A., Torkhovskaya T.I.

The increase of bioavailability and antiinflammatory effect of indomethacin included into phospholipid nanoparticles.

The ultrafine formulation on the base of plant phosphatidylcholine and antiinflammatory remedy indomethacin with nanoparticles less than 50 nm was obtained. Drug bioavailability after its peroral administration to rats was more than 2 fold higher as compared with free indomethacin. Increased antiinflammatory activity of indomethacin in phospholipids nanoparticles as compared with its free form was shown in two models of inflammation - adjuvant arthritis in rats and conconavalin A induced edema in mice. The increased bioavailability of indomethacin after administration of its phospholipid formulation allows to decrease a dose for achievement of therapeutic effect, that reduces risks of occurrence of collateral displays.

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11. Globa A.G., Alekseev Y.I., Varlamov D.A., Vishnevsky A.A.

The diagnostic value of RNA oncomarkers in evaluation of malignant breast tumors.

The levels of the RNA oncomarkers, telomerase (hTERT), cytokeratin-19 (CK-19) and mammaglobin (MAM) have been investigated in capillary blood of female patients with mammary ductal carcinoma. The study revealed overexpression of all three factors in patients with this pathology. This overexpression was not found in healthy donors and female patients with mammary fibroadenoma. Levels of the RNA oncomarkers return to the normal level within 10 days after successful tumor resection. These results have been used for the development of diagnostic kits, which may be applicable for differential diagnostics, screening and postoperation monitoring of patients with malignant breast tumors

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