

SUMMARY

Biological sciences

Bugara A.M., Kabuzenko S.N., Omelchenko A.V. **The influence of preparation «Geoplus» on stability of corn plants to saliniration and drought on early stages of ontogenesis** // Uchenye zapiski Tavricheskogo Natsionalnogo Universiteta im. V. I. Vernadskogo. Series «Biology, chemistry». – 2006. – V.19 (58). – №1. – P. 3-7.

The influence of the preparation «Geoplus» on stability of corn plants to saliniration and drought on early stages of ontogenesis was investigated. It was revealed that preparation «Geoplus» has positive action on energy of germination and germination of corn seeds at action of chloride saliniration, increases hydrophylyty and waterkeeping ability of soil, decreases transpiration of plants.

Keywords: fertilizers «Geoplus», corn, saliniration, hydrophylic substances, transpiration.

Bugara A. M., Chmeliyova S. I., Sidiyakin A. I., Panov D. A., Rabotyagov V. D. **Callus cultures of *Clematis vitalba* L. as producent of triterpene glycosides** // Uchenye zapiski Tavricheskogo Natsionalnogo Universiteta im. V. I. Vernadskogo. Series «Biology, chemistry». – 2006. – V.19 (58). – №1. – P. 8-13.

Some features of callusogenesis in vegetative organs culture of *Clematis vitalba* L. were studied and the callus cultures were tested on the content of triterpene glycosides there. It was found that callus cultures contain wide spectrum of triterpene glycosides, which is typical for intact plants. Fractions of triterpene glycosides, which were not found in intact plants were detected in callus cultures.

Keywords: *Clematis vitalba* L, callus cultures, triterpene glycosides.

Gidulyanova K.V., Konoshenko S.V. **Influence of oxidizing stress on fatty-acid composition of membranes of erythrocytes in conditions *in vitro*** // Uchenye zapiski Tavricheskogo Natsionalnogo Universiteta im. V. I. Vernadskogo. Series «Biology, chemistry». – 2006. – V.19 (58). – №1. – P. 14-20.

By method of gas-liquid chromatography it is established that the changes in the contents of the fat acids are found in membranes erythrocytes under the conditions of initiation oxidizing reactions *in vitro* (Fenton medium). In particular the greatest decrease undergo fat acids of family $\omega 3$. The changes have less expressed character in families $\omega 6$ and $\omega 9$. It is traced close correlations between a level of the contents of fat acids and concentration of hydroperoxides and TBA-active products in membranes of erythrocytes.

Keywords: membrane erythrocytes, fatty-acid composition, oxidizing stress.

Grabovskaya E.Yu., Malygina V.I. **Peculiarities of behavioral adaptation of rats with constitutional traits to action of variable magnet field of extremely low frequency** // Uchenye zapiski Tavricheskogo Natsionalnogo Universiteta im. V. I. Vernadskogo. Series «Biology, chemistry». – 2006. – V.19 (58). – №1. – P. 21-27.

The research that carried out touches upon the effects the variable magnetic field influence of extreme low frequency on the behavioral adaptation of rats with various levels of motion activity and emotionality. It was discovered that variable magnet field with 8 Hz frequency and 5 mTl induction reinforced inhibition processes in the central nervous system for animals with middle and high motor activity. At the same time, if an animal has low motor activity, variable magnetic field leads to the inert stream of the excitative processes and the reinforcement of the processes.

Keywords: variable magnet field, motor activity, central nervous system, behavioral adaptation, individual sensibility.

Djeldubaeva E.R., Chuya E.N. Comparative research of anesthetic action of low intensity electromagnetic field of extremely high-frequency and analgin at tonic pain in rats // Uchenye zapiski Tavricheskogo Natsionalnogo Universiteta im. V. I. Vernadskogo. Series «Biology, chemistry». – 2006. – V.19 (58). – №1. – P. 28-39.

Comparative research of efficiency of anesthetic action of low intensity electromagnetic field of extremely high-frequency (EMF EHF) and analgin is conducted for rats in the conditions of experimentally caused tonic pain. It is shown that a single influence of EMF EHF has a similar antinociceptive effect with intraperitoneal injection of solution of analgin in a dose of 8 mgs/kg. However the solution of analgin in a greater degree influences on flowing of the second tonic phase of «formalin test», while the preliminary action of EMF EHF substantially changes the dynamics and reduces duration of the first sharp phase, even in a greater degree, than solution of analgin in a dose of 12 mgs/kg.

Keywords: electromagnetic radiation of extremely high-frequency, analgin, tonic pain, sharp phase and tonic phase of «formalin test».

Yolkina N.M., Kazzkova V.V. Metabolic changes in erythrocytes under cerous of liver // Uchenye zapiski Tavricheskogo Natsionalnogo Universiteta im. V. I. Vernadskogo. Series «Biology, chemistry». – 2006. – V.19 (58). – №1. – P. 40-42.

It has been shown that metabolic state of erythrocytes is changed under cerous of liver: the glycolytic reactions and activity of membrane ATP-ase are increased and activity of some reduction enzymes is lowered.

Keywords: erythrocyte metabdism, glycolysis, activity of enzymes, pathology.

Ibragimova A.A. Influence of airtechnogenic pollution of environment on the reproductive organs of fruit plants // Uchenye zapiski Tavricheskogo Natsionalnogo Universiteta im. V.I. Vernadskogo Series «Biology, chemistry». – 2006. – V.19 (58). – №1. – P. 43-49.

The state of organs of masculine reproduction of fruit plants growing in the area of intensive motion of motor transport was explored, where increased maintenance of heavy metals was (lead and zinc) found out. An increased level of sterile pollen production by reproductive organs of the studied vegetable organisms is marked.

Keywords: pollen, sterility, fertility, spontaneous, induce, reproductive, ecotoxicity,

pollution, heavy metals

Kabuzenko S.N., Omelchenko A.V. The dynamics of accumulation of active sodium in sprouts of corn-plants which are distinguished by degree of stability // Uchenye zapiski Tavricheskogo Natsionalnogo Universiteta im. V. I. Vernadskogo. Series «Biology, chemistry». – 2006. – V.19 (58). – №1. – P. 50-56.

The dynamics of saline ions of sodium in organs of corn-plants of salt-stable hybrid Shalanda MV and less salt-stable sort of Odesskaya 10 was defined. It was shown that in plants of more salt-stable hybrid sodium is accumulated more in the root than in the upperground part. Consequently, the barrier role of root appears at income of «salinization» ion in plant. The role of free area of tissues in accommodation to extreme salinity was shown.

Keywords: chloride salinity, free area, sodium.

Kotov S.F., Galdak S.N., Simagina N.O. The influence of humidity, salinity, competition and allelopathic interactions between plants on vitality and growth Suaeda in halophyte communities of Crimea // Uchenye zapiski Tavricheskogo Natsionalnogo Universiteta im. V. I. Vernadskogo. Series «Biology, chemistry». – 2006. – V.19 (58). – №1. – P. 57-67.

The coenopopulations of *Suaeda* occupy ecotype with the maintenance of chloride ion about 1%. The competition oppresses growth of plants and reduces speed of accumulation of organic substance in 2,5 times. Allelopathic influence of halophytes-perennials reduces vitality of *Suaeda*, real seed efficiency and reproductive effort.

Keywords: *Suaeda acuminata*, *S. prostrata*, salinity, humidity, competition, allelopathy, Crimea.

Omelchenko S.O., Zalevskaya I.N. Content of toxic elements in the tissues of cloth neogobius melanostomus from aquatories of the Black and Azov Seas // Uchenye zapiski Tavricheskogo Natsionalnogo Universiteta im. V. I. Vernadskogo. Series «Biology, chemistry». – 2006. – V.19 (58). – №1. – P. 68-72.

Content of toxic elements in cloth widely spreader specie - neogobius melanostomus from the Black and Azov Sea littoral aquatories was investigated. Significant differences in content of toxicants in tissues of бычка-кругляка from the Black and Azov Seas depend on place of catching and peculiarities of ecological state of aquatories.

Keywords: neogobius melanostomus, marine areas, Black and Azov Seas, toxic elements.

Oturina I.P., Zacepina B.V. Dynamics of sensitivity to antibiotics of the bacteria Klebsiella pneumoniae // Uchenye zapiski Tavricheskogo Natsionalnogo Universiteta im. V. I. Vernadskogo. Series «Biology, chemistry». – 2006. – V.19 (58). – №1. – P. 73-79.

The dynamics of sensitivity to the different groups antibiotics of the cultures *Klebsiella pneumoniae*, sown in Feodosiya from people, with the use of diffusion in agar method is investigated. The necessity of the systematic monitoring of sensitivity *Klebsiella* to antibiotics is shown.

Keywords: *Klebsiella*, sensitivity, antibiotics.

Palyonaya Yu.V., Filonenko T.G., Kazakova V.V. Morpho-biochemical changes in the small intestine in ionizing radiation // Uchenye zapiski Tavricheskogo Natsionalnogo Universiteta im. V. I. Vernadskogo. Series «Biology, chemistry». – 2006. – V.19 (58). – №1. – P. 80-85.

The investigation revealed changes in balance of protease-antiprotease system, of endotoxic level and morphological disturbance in the wall of intestine. One notes disturbance of balance in proteolytic enzymes and their inhibitors, increased concentration of middle molecules. In the early stage vascular reaction of tissue was revealed and chronic inflammation was noted in the next stage after radiation.

Keywords: small intestine, ionizing radiation, proteolysis, endotoxycosis, morphology, inflammation.

Pogodina S.V. Age features of reactions of intimately respiratory system of the swimmers during adaptation to specific physical loadings // Uchenye zapiski Tavricheskogo Natsionalnogo Universiteta im. V. I. Vernadskogo. Series «Biology, chemistry». – 2006. – V.19 (58). – №1. – P. 86-92.

In clause the age changes of reactions of intimate - respiratory system of the swimmers on physical loadings of various capacity are discussed. The given features are recommended to be taken into account at drawing up of the long-term programs of employment at the swimmers.

Keywords: adaptation, physical loadings, age features, intimate - respiratory system, communication inside system.

*Teplitskaya L.M. Modulation of symbiosis in culture of *Cephalanthera damasonium* (Mill.) Druce *in vitro* // Uchenye zapiski Tavricheskogo Natsionalnogo Universiteta im. V. I. Vernadskogo. Series «Biology, chemistry». – 2006. – V.19 (58). – №1. – P. 93-100.*

The clean culture of endomycorrhiza fungus of *C. damasonium* (Mill.) Druce species of Crimean orchids was obtained in the results of our research work. The nutrient media and cultivation conditions *in vitro* were selected, base biotechnological characteristics of the colony were shown: speed of growth, physical and chemical factors of cultivation, morphological parameters of fungus *in vitro* and in the plant were described. All of this parameters could characterize physiological condition of fungus and stages of his development.

Keywords: Orchidaceae, mycorrhiza, symbiosis, culture *in vitro*.

Chuyan E.N., Makhonina M.M., Zayachnikova T.V. Modifying action hypokinetic stress on change of a parameter of synthetic activity lymphocytes blood of rats at influence low intensity UHF EMF // Uchenye zapiski Tavricheskogo Natsionalnogo Universiteta im. V. I. Vernadskogo. Series «Biology, chemistry». – 2006. – V.19 (58). – №1. – P.

By method of the luminescent microspectral analysis are carried out researches of change of a parameter of synthetic activity lymphocytes blood of rats at consecutive with

hypokinetic action low intensity electromagnetic field of extremely high frequency (UHF EMF). It is shown, that as a result of development hypokinetic stress there is a decrease in a parameter of synthetic activity lymphocytes, that grows out decrease in functional activity of these cells. Action UHF EMF on the animals which are preliminary being conditions hypokinetic of stress, leads to less expressed increase of a parameter of synthetic activity lymphocytes to blood of rats, than at animals which before influence UHF EMF remained sample used as control. Obtained data are the certificate of that change of a parameter of synthetic activity lymphocytes blood of rats depends on an initial condition of an organism.

Keywords: hypokinetic, synthetic activity of lymphocytes, electromagnetic field of extremely high frequency.

Fazylov A.R., Bugara A.M., Yurkova I.N., Gordenko S.L. Callus culture from the ivy ordinary (Hedera helix L.) as a source triterpen glycosides // Uchenye zapiski Tavricheskogo Natsionalnogo Universiteta im. V. I. Vernadskogo. Series «Biology, chemistry». – 2006. – V.19 (58). – №1. – P. 101-104.

It was shown that a process of callus biomass formation depends on type and concentration of exogenous growth regulators in a nutrient medium. It was shown that callus cultures induced from the embryos of ivy of usual contained basic fractions of triterpen glycosides was similar to those from the intact plants.

Keywords: ordinary ivy, callus cultures, triterpen glycosides.

Yurkova I.N., Bugara A.M. Cultivation in vitro callus tissue of cyclamen - the source of biologically active substances // Uchenye zapiski Tavricheskogo Natsionalnogo Universiteta im. V. I. Vernadskogo. Series «Biology, chemistry». – 2006. – V.19 (58). – №1. – P. 113-117.

Are obtained actively growing callus cultures *Cyclamen persicum*. It is shown that the composition of glycosides of callus cultures and tubers of intact plants is close. The conducted investigations show that the cultures of the callus cultures *Cyclamen persicum* can be promising alternative of the sources of pharmacologically active triterpene glycosides.

Keywords: callus cultures, cyclamen, biologically active substances.

Chemical sciences

Aleksashkin I.V., Gorbunov R.V., Temnaya T.G. Processes of sorption ions of cadmium on soil samples // Uchenye zapiski Tavricheskogo Natsionalnogo Universiteta im. V. I. Vernadskogo. Series «Biology, chemistry» - 2006. – V.19 (58). – №1. – P. 118-124.

In a paper the processes of an adsorption of ions of cadmium on soil of lake Sasyk-Sivash are reviewed. Influencing values pH on processes of a self-cleaning of grounds is learnt.

Keywords: cadmium, adsorption, soil of Sasyk-Sivash

Baevsky A.M., Baevsky M.Y., Prichodko I.M. Synthesis and reactionary ability 3-methyl-2,3,4,5-tetrahydro-1H-1,5-benzodiazepin-2-one. // Uchenye zapiski Tavricheskogo Natsionalnogo Universiteta im. V. I. Vernadskogo. Series «Biology, chemistry». – 2006. – V.19 (58). – №1. – P. 125-129.

By interaction 1,2-phenylenediamine with 2-methylacrylic acid it is received 3-methyl-2,3,4,5-tetrahydro-1H-1,5-benzodiazepin-2-one. Influence of conditions of condensation on an output of a target product is considered. Reactions alkylation and acetylation 3-methyl-2,3,4,5-tetrahydro-1H-1,5-benzodiazepin-2-one are investigated.

Keywords: 3-methyl-2,3,4,5-tetrahydro-1H-1,5-benzodiazepin-2-one, 1,2-phenylenediamine, 2-methylacrylic acid, boric acid, alkylation, acetylation.

Gusev A.N., Shul'gin V.F. The space-armed copper(II) dimers based on the acylbishydrazones of the 2-hydroxyacetophenones // Uchenye zapiski Tavricheskogo Natsionalnogo Universiteta im. V. I. Vernadskogo. Series «Biology, chemistry». – 2006. – V.19 (58). – №1. – P. 130-140.

Results of the investigations of the weak-long range exchange interaction between paramagnetic ions in the binuclear complexes of copper(II) with acylbishydrazones of the 2-hydroxyacetophenones by EPR method are presented. The reasons that influence on exchange intensity are analyses and probable mechanisms of this phenomena are discussed.

Keywords: copper (II) complexes, acylbishydrazones, EPR, HFS, spin-spin interaction.

*Dovgiy I.I., Grishkovets V.I. Using NMR-spectroscopy methods for structure determination of triterpene glycosides from *Cussonia paniculata* leaves // Uchenye zapiski Tavricheskogo Natsionalnogo Universiteta im. V. I. Vernadskogo. Series «Biology, chemistry». – 2006. – V.19 (58). – №1. – P. 141-146.*

The using of different one- and two-dimensional Nuclear magneticresonance spectroscopy methods for structure determination of triterpene glycosides is described in the article.

Keywords: triterpene glycosides, Nuclear magneticresonance spectroscopy, *Cussonia paniculata*, *Araliaceae*.

Obuh A.I., Shul'gin V.F., Larin G.M. The binuclear copper(II) complexes with acylbishydrazones of the phthalaldehydic acid // Uchenye zapiski Tavricheskogo Natsionalnogo Universiteta im. V. I. Vernadskogo. Series «Biology, chemistry». – 2006. – V.19 (58). – №1. – P. 147-151.

The binuclear copper(II) complexes $[Cu_2L_nPy_mSolv]$ with acylbishydrazones of the phthalaldehydic acid (H_4L), where coordination polyhedrons are connected by polymethylene chain (from 1 to 5 links) have been investigated. Four lines of HFS with constant $\approx 50 \cdot 10^{-4} \text{ cm}^{-1}$ were observed in EPR spectra liquid solution of the complexes, what exhibit on independent behaviour the paramagnetic centres.

Panov D.A., Grishkovets V.I., Kirsanova M.A., and Krivorutchenko Yu.L. Antifungal and hemolytic activity's of triterpene glycosides from Kalopanax septemlobum // Uchenye zapiski Tavricheskogo Natsionalnogo Universiteta im. V. I. Vernadskogo. Series «Biology, chemistry». – 2006. – V.19 (58). – №1. – P. 152-155.

Antifungal and hemolytic activities of triterpene glycosides from *Kalopanax septemlobum* has been studied. A minimum inhibitory concentration as respects to museum culture of *Candida albicans* and the concentration which calling erythrocytolysis (HC_{50} value) has been defined. The most active glycosides are 3-O- α -L-rhamnopyranosyl-(1 \rightarrow 2)-O- α -L-arabinopyranosides of hederagenin, oleanolic acid and echinocystic acid.

Keywords: triterpene glycosides, antifungal activity, hemolytic activity, *Kalopanax septemlobum*.

Pospelova N.V., Kopytov J.P., Nekhoroshev M.V. Simple way of sample preparation for the analysis of heavy metal content in system "a suspension - mussels - biodeposits" by an atomic absorption method // Uchenye zapiski Tavricheskogo Natsionalnogo Universiteta im. V. I. Vernadskogo. Series «Biology, chemistry». – 2006. – V.19 (58). – №1. – P. 156-160.

The technique of sample preparation for the analysis of a heavy metal content (Zn, Cd, Cu, Pb) in system "a suspension - mussels - biodeposits" by method AAC ETA is developed. A suspension is collected on nuclear filters. As preliminary sample preparation for the analysis an acid decomposition is used. Similar sample preparation is economical on time and the charge of reactants, and also creates soft conditions of decomposition of organic substance. Concentration of cadmium, cooper and zinc in soft tissues of mussel *Mytilus galloprovincialis* Lam. is directly ratio to each element contents in the suspension. Practically in all samples among the investigated metals zinc and cooper quantitatively prevails. Similarity between microelement structure of mussels, a suspension and biodeposits is observed, also significant concentrating of zinc, cadmium and cooper in biodeposits is shown in comparison with soft tissues of mussels.

Keywords: atomic absorption spectroscopy with electrothermal atomization, marine culture.

Rubtsova S.I., Burdian N.V., Belyaeva O.I. Aerobic-anaerobic processes of the self-purification of contact zones "land – sea" in water area of the Sevastopol bays // Uchenye zapiski Tavricheskogo Natsionalnogo Universiteta im. V. I. Vernadskogo. Series «Biology, chemistry». – 2006. – V.19 (58). – №1. – P. 161-169.

It has been taken data of number heterotrophic, thiobacteria, oil-oxidizing and sulphatereducing bacteria in the littoral line deposits of Sevastopol region. The dependences of number of bacteria on the chemical characteristic of bottom sediments, storm drain are analysed. The attempt of an estimation of the self-purification of ability of water area in aerobic and anaerobic conditions in a contact zone "land- sea" is made.

Keywords: coastal sediment, aerobic and anaerobic bacteria, oil hydrocarbons.

Surova N.A., Krymova V.V. Investigation of heavy metals pollutions of the Karagag's reserve water system by the invertional voltamperometry method //

Uchenye zapiski Tavricheskogo Natsionalnogo Universiteta im. V. I. Vernadskogo. Series «Biology, chemistry». – 2006. – V.19 (58). – №1. – P. 170-172.

Has shown an opportunity of application of a method invertional voltammetry for the analysis of heavy medals of ecological systems of natural reserve Karadag. Dynamic of distubution of pollutions in ecosystem has been shown.

Keywords: invertional voltammetry, maximum permissible, heavy metals

Yurkova I.N., Bugara A.M. **Interaction of organic-mineral humic preparation "Geoplus" with the heavy metals** // Uchenye zapiski Tavricheskogo Natsionalnogo Universiteta im. V. I. Vernadskogo. Series «Biology, chemistry». – 2006. – V.19 (58). – №1. – P. 173-178.

Interaction of the "Geoplus" humic preparation with cadmium and lead in solutions and soil was investigated. Decreasing of cadmium and lead free ions concentration from 10 to 40 times was shown in soil. The application of the "Geoplus" preparation on soils polluted by heavy metals will contribute to their sanitation.

Key words: humic preparation, heavy metals, cadmium, lead, sanitation of the soil.

Yakovishin L.A., Rubinson M.A., Kuznetsova A.L., Grishkovets V.I., Korzh E.N. **Molecule complex of triterpene glycoside α -hederine and sildenafil (viagra)** // Uchenye zapiski Tavricheskogo Natsionalnogo Universiteta im. V. I. Vernadskogo. Series «Biology, chemistry». – 2006. – V.19 (58). – №1. – P. 179-182.

In this paper the obtaining complex of triterpene glycoside α -hederine and sildenafil (viagra) is described. The complex's formation is confirmed by infrared spectroscopy.

Keywords: complex, triterpene glycosides, α -hederine, sildenafil, viagra, infrared spectroscopy.