

SUMMARY

BIOLOGICAL SCIENCES

Arkhangelskaya E.V., Grabovskaya E.Yu., Konovalchuk V.N. **Effect of natural heliogeomagnetic fluctuations on bioelectric activity of brain in man** // Uchenye zapiski Tavricheskogo Natsionalnogo Universiteta im. V. I. Vernadskogo. Series «Biology, chemistry». – 2006. – V.19 (58). – № 3. – P. 3-8.

Heliogeomagnetic activity influenced bioelectric activity of human brain. Significant changes of correlation interrelations between the background EEG rhythms and heliogeomagnetic activity fluctuations discovered.

Keywords: electroencephalogram, electromagnetic field, heliogeomagnetic activity, interhemispheric asymmetry.

Bukov Y.A., Alpeyeva A.V. **Respiratory training in activating the mechanisms of homeostatic regulation and adaptive abilities of preschool age children respiratory system** // Uchenye zapiski Tavricheskogo Natsionalnogo Universiteta im. V. I. Vernadskogo. Series «Biology, chemistry». – 2006. – V.19 (58). – № 3. – P. 9-14.

The influence of respiratory training on regulation of gas homeostasis of preschool age children organism was studied. Correcting effect of the proposed system became apparent in the optimization of pattern of breathing, hyperventilation decrease, enlargement of adaptive abilities of external respiration system. Regulation properties of ventilation reactions for dosed impact of physical activity found.

Keywords: respiratory training, preschool age children, gas homeostasis, adaptive abilities of external respiration system.

Bukov Yu. A., Markina I.V. **Respiratory system reserves and metabolic response properties in children with muscular hypotonia** // Uchenye zapiski Tavricheskogo Natsionalnogo Universiteta im. V. I. Vernadskogo. Series «Biology, chemistry». – 2006. – V.19 (58). – № 3. – P. 15-18.

Functional reserves of respiratory system and energy metabolism in children with muscular hypotonia studied. Muscular hypotonia turned out to decrease functional resources of children respiratory system. Anaerobic glycolysis intensification was observed at the time of physical loading whereas respiratory compensation of metabolic acidosis was inefficient. Administration of aerobic and respiratory exercises extended energy potential and ventilatory abilities.

Keywords: respiratory system, metabolic reactions, hypotonia.

Gurcovich E.I. **Clinical significance of modified albumin forms test in patients with juvenile rheumatoid arthritis** // Uchenye zapiski Tavricheskogo Natsionalnogo Universiteta im. V. I. Vernadskogo. Series «Biology, chemistry». – 2006. – V.19 (58). – № 2. – P. 19-24.

Serum modified albumins forms (mA) were found in 124 children patients with juvenile rheumatoid arthritis by electrophoresis on acetatecellulose films. There was a significant rise of mA in patients with juvenile rheumatoid arthritis. Such a rise was observed also in the remission stage, especially in patients with temporary artralgiias and rigidity. The latter fact was an evidence of constant intensity of the silent inflammatory process. High level of mA in patients with residual proteinuria was discovered.

Keywords: juvenile rheumatoid arthritis, modified albumins

Evstafyeva I. A. Reshetniak O.A., Evstafyeva H.V., Gruzevsryi V.A., Gruzevsrya V.F.
Interconnection between circulation system response properties and content of bioelements in organism of teenagers effected by physical loading // Uchenye zapiski Tavricheskogo Natsionalnogo Universiteta im. V. I. Vernadskogo. Series «Biology, chemistry». – 2006. – V.19 (58). – № 3. – P. 25-28.

Functional examination of cardiovascular system in 25 teenagers (boys) living in urbanized and polluted territories city carried out. The subjects underwent the test to find the content of arsenic, zinc, copper in their organisms. The following results were collected: significant positive correlation between the indices of cardiovascular system (mean blood pressure, total peripheral resistance) and Zn, correlation trend between differentiation reogramme amplitude and As, total peripheral resistance and Zn, cardiac activity (stroke volume, cardiac index, heartbeat) and Cu.

Keywords: cardiovascular system, teenagers, heavy metals.

Kulagin Y.I., Zaikin A.V., Ivanova N.M., Kulagina Y.Y.
Metabolic syndrome in arterial hypertension patients: contemporary pathogenesis and physical rehabilitation perspectives // Uchenye zapiski Tavricheskogo Natsionalnogo Universiteta im. V. I. Vernadskogo. Series «Biology, chemistry». – 2006. – V.19 (58). – № 3. – P. 29-36.

The review of the literature is conducted in the article about the questions of etiology and pathogenesis of metabolic syndrome – one of the dangerous and heavy disorders, which often accompanies arterial hipertensia. There were also considered the problems of medical treatment and physical rehabilitation of the patients with the given syndrome.

Keywords: metabolic syndrome, etiology, pathogenesis, medical treatment, physical rehabilitation

Melnichenko E.V., Mishin N.P., Yefimenko A.M., Snapkov P.V., Parkhomenko A.I., Mirnaya A.V.
Hemodynamic response under condition of traction in sportsmen with different types of blood circulation // Uchenye zapiski Tavricheskogo Natsionalnogo Universiteta im. V. I. Vernadskogo. Series «Biology, chemistry». – 2006. – V.19 (58). – № 3. – P. 37-42.

To study cardiohemodynamic response on parasympathetic activation in different initial types of blood circulation there was carried out a research on 20 sportsmen having traction of mezadermal mass in zones C₃ –Th₈. Dependency of cardiovascular system reactivity pattern on blood circulation type discovered: for hypokinetic type there is a

major decrease of diastolic arterial pressure and pulse frequency, for hyperkinetic type – major decrease of systolic volume, cardiac output, beat and heart indices.

Keywords: cardiohemodynamics, blood circulation types, traction.

Nikiforova E.A. Lyashenko V.P. Pasichnechenko O.N. Change of retroactive response of the isolated preparations of aorta at the unspecific loading with NaCl // Uchenye zapiski Tavricheskogo Natsionalnogo Universiteta im. V. I. Vernadskogo. Series «Biology, chemistry». – 2006. – V.19 (58). – № 3. – P. 43-47.

The possible mechanism of change of retroactive activity of the isolated preparations of aorta at the NaCl loading described. The response on vasoactive substances occurred to depend on the level of β -adrenal system activation.

Keywords: retroactive activity, smooth muscle complex, aorta, NaCl.

Rovnaya O.O. Mechanisms of respiratory system adaptation to training loads in qualified synchronized swimming sportswomen // Uchenye zapiski Tavricheskogo Natsionalnogo Universiteta im. V. I. Vernadskogo. Series «Biology, chemistry». – 2006. – V.19 (58). – № 3. – P. 47-52.

Mechanisms of movement regulation due to special adaptive changers in respiratory system in the synchronized swimming high-qualified sportswomen were studied. Respiratory system in this kind of sport is an outstrip excitation of efferent synthesis and plays a role of initial mechanism of movement activity.

Keywords: respiratory system, regulation of movement activity, synchronized swimming.

Safronova N.S. Factor analysis application as a means of estimation of an organism functional condition at use of the natural biological active supplements Chyawanprash and Stresscom // Uchenye zapiski Tavricheskogo Natsionalnogo Universiteta im. V. I. Vernadskogo. Series «Biology, chemistry». – 2006. – V.19 (58). – № 3. – P. 53-60.

The functional state of an organism at a stage of long-term adaptation to physical loading while taking the natural biological active supplements Chyawanprash and Stresscom was studied through use of the factor analysis. The administration of the natural biological active supplements rendered optimization of qualitative-quantitative mutual relation between the basic effectors of functional system responsible for adaptation to muscular activity in the students with a high level of daily motor activity.

Keywords: factor analysis, natural biological active supplements Chyawanprash and Stresscom, functional state of an organism, adaptation, functional system.

Severynovskaya E.V., Grygorova M.A., Kasymova K.I. Properties of HNA and bioelectric activity of rat brain under the chronic influence of low-intensity irradiation // Uchenye zapiski Tavricheskogo Natsionalnogo Universiteta im. V. I. Vernadskogo. Series «Biology, chemistry». – 2006. – V.19 (58). – № 3. – P. 61-70.

The properties of HNA and bioelectric activity of different areas of rat brain under the chronic influence of low-intensity irradiation in 0,25 Gy doze described.

Keywords: rats, chronic irradiation, behavioral reactions, bioelectric activity in different ares of brain.

Snegirev F.F. **The effect of the nutrition substance on some physiological and biochemical blood indices in 2 to 3 months old pigs** // Uchenye zapiski Tavricheskogo Natsionalnogo Universiteta im. V. I. Vernadskogo. Series «Biology, chemistry». – 2006. – V.19 (58). – № 3. – P. 71-75.

The effect of the nutrition substance on physiological and biochemical blood indices of pigs in feedings described. Some recommendations on using the nutrition substance presented.

Keywords: nutrition substance, pigs, blood, hemological and biochemical indices.

Sobyantina G.N., Bukov J.A. **The use of the methods of mathematical modeling while assessing the schoolchildren psychosomatic state** // Uchenye zapiski Tavricheskogo Natsionalnogo Universiteta im. V. I. Vernadskogo. Series «Biology, chemistry». – 2006. – V.19 (58). – № 3. – P. 76-82.

The article introduces the ways of mathematical modeling application to the research of statistical relations between the functional parameters of human body and adaptation potential of senior school teenagers studying by the innovative V.F. Bazarnov's method. The algorithm of diagnostics (executed with the multiple regression method) of the schoolchildren psychosomatic state under the influence of the vertical posture presented.

Keywords: structural equation modeling, multiple regression, psychosomatic state, innovational techniques, adjustment potential.

Chaus T.G. Lyashenko V.P., Lukashev S.N., Melnikova O.Z. **The changes of summary bioelectrical activity of hypothalamus in rat caused by application of amitriptylinum against the background of long-lasting stress** // Uchenye zapiski Tavricheskogo Natsionalnogo Universiteta im. V. I. Vernadskogo. Series «Biology, chemistry». – 2006. – V.19 (58). – № 3. – P. 83-90.

The changes of summary bioelectrical activity of front and back hypothalamic areas in rats under effect of long-lasting stress and application of amitriptylinum were studied. Bioelectrical activity of hypothalamic structures was essentially modulated in the animals being in stressful situation within 21 weeks. There were allocated the periods which differed by their electrographically indices and might reflect the various stages of stress-response in an organism. The application of amitriptylinum in rats, which were under stress situation, resulted in amplification of desynchronization effect of stress within the first weeks of experiment and synchronization of bioelectrical activity of hypothalamus within later period. Important role of monoaminergic brain systems in changes of functional activity of front and back hypothalamus areas under effect of long-lasting stress hypothesized.

Keywords: stress, bioelectrical activity, hypothalamus, amitriptylinum, monoaminoergic brain systems.

Chornaja V.N., Homjakova O.V., Koval C.J. **Effect of synthetic treonine on the processes of amino acids absorption in small intestine** // Uchenye zapiski Tavricheskogo Natsionalnogo Universiteta im. V. I. Vernadskogo. Series «Biology, chemistry». – 2006. – V.19 (58). – № 3 – P. 91-96.

The properties of interaction between the free amino acids treonine, lysine, metionine and triptofane while absorbing in small intestine described.

Keywords: amino acids, interaction, absorption in small intestine.

Chuyan E.N., Dzheldubayeva E.R., Postolnicova I.V., Mitrophanova N.N. **Dependency of analgesic effect of low intensity electromagnetic irradiation of extremely high-frequency on the individual properties of animals** // // Uchenye zapiski Tavricheskogo Natsionalnogo Universiteta im. V. I. Vernadskogo. Series «Biology, chemistry». – 2006. – V.19 (58). – № 3 – P. 94-107.

Dependency of analgesic effect of low intensity electromagnetic irradiation of extremely high-frequency (EMI EHF) on the individual properties of animals at the experimentally caused tonic pain studied. Maximal analgesic effect of EMI EHF in the «open field» test was observed in rats with low level of motor activity («ambidecstre»), and minimal effect – with high level of motor activity («left-handed»).

Keywords: electromagnetic irradiation of extremely high-frequency, formalin test, analgesic effect, motor activity, motor asymmetry.

Chuyan E.N., Zayachnikova T.V., Tribtat N.S. **Hypokinetic stress modifies pain sensitivity of rats while rendering experimental visceral pain** // Uchenye zapiski Tavricheskogo Natsionalnogo Universiteta im. V. I. Vernadskogo. Series «Biology, chemistry». – 2006. – V.19 (58). – № 3. – P. 108-120.

The modifying effect of hypokinetic stress on pain sensitivity of rats while rendering experimental visceral pain studied. Changes in painful and non-painful behavioral responses duration in the “bit test” observed.

Keywords: hypokinetic, visceral pain, stress.

Chujan E.N., Makhonina M.M, Kostjuk I.V. **Application of the luminescent microspectral analysis for the determination of catecholamines in a blood leucocytes under the different experimental influences** // Uchenye zapiski Tavricheskogo Natsionalnogo Universiteta im. V. I. Vernadskogo. Series «Biology, chemistry». – 2006. – V.19 (58). – № 3. – P. 121-130.

This work proved out application of the microspectral luminescent analysis for the determination of catecholamines concentration in leucocytes in a rats blood under the different experimental influences. It is shown, that dynamics of the catecholamines contamination in leucocytes is similar to the variation of this parameter in erythrocytes in a rats blood, that confirmed by correlation analysis ($r = 0,77$, $p < 0,001$). Application of the luminescent microspectral methodic for the determination of the catecholamines contamination in leucocytes is adequate for the symptoadrenal system activity definition.

Keywords: electromagnetic irradiation of extremely high-frequency, catecholamine, leucocytes, luminescent analysis.

CHEMICAL SCIENCES

Dovgiy I.I., Grishkovets V.I., Yakovishin L.A. **Molluscicidal activity of triterpene glycosides isolated from *Cussonia paniculata*** // Uchenye zapiski Tavricheskogo Natsionalnogo Universiteta im. V. I. Vernadskogo. Series «Biology, chemistry». – 2006. – V.19 (58). – № 3 – P. 131-134.

Molluscicidal activity of triterpene glycosides of *Cussonia paniculata* studied. Presence of molluscicidal activity of β -amyrine row triterpene glycosides and its absence in triterpenoids and glycosides of α -amyrine and lupane rows shown. The structural factors effecting the molluscicidal activity found.

Keywords: triterpene glycosides, molluscicidal activity, *Cussonia paniculata*, *Araliaceae*.

Pevzner N.S. **The copper(II), cobalt(II) and nickel(II) complexes of 3,4-dimethoxybenzoic acid hydrazides and 3,4,5-trimethoxybenzoic acid hydrazides** // Uchenye zapiski Tavricheskogo Natsionalnogo Universiteta im. V. I. Vernadskogo. Series «Biology, chemistry». – 2006. – V.19 (58). – № 3 – P. 135-139.

The complexes of 3,4-dimethoxybenzoic acid hydrazides (L^1) and 3,4,5-trimethoxybenzoic acid hydrazides (L^2): $[M(L^{1-2})_2(H_2O)_2](NO_3)_2 \cdot nH_2O$, where $M = Co^{2+}$, Ni^{2+} ; $n = 0$ (L^1); $n = 2$ (L^2), and $[Cu(L^{1-2})_2(H_2O)](NO_3)_2 \cdot nH_2O$, where $n = 0$ (L^1); $n = 1$ (L^2), have been prepared and characterised by elemental and thermogravimetric analysis, infrared and electronic spectra.

Keywords: copper(II), cobalt(II) and nickel(II) complexes, acid hydrazides.

Sheikh-Zade M.I. **Piruvic acids' intramolecular H-Bond energy estimation by IR-spectra** // Uchenye zapiski Tavricheskogo Natsionalnogo Universiteta im. V. I. Vernadskogo. Series «Biology, chemistry». – 2006. – V.19 (58). – № 3. – P. 140-143.

The infrared spectrum solutions of pyruvic acid in C_2Cl_4 were obtained in torsion and valency vibrations of OH-group in temperature interval of 25-115 °C. The identification of τOH and νOH bands has been made. From the analysis of concentration and temperature dependency of intensity of the νOH bands conclusion has been made about conformation of monomers of this acid. The potential function of the internal rotation of OH-group was calculated. The intramolecular hydrogen bond energy was estimated.

Keywords: infrared spectrum, pyruvic acid, internal rotation energy, intramolecular H-Bond.

Shul'gin V.F., Trush Yu.V., Gusev A.N., Alexandrov G.G., Eremenko I.L., Larin G.M. **Crystalline structure investigation of the copper(II) complex with isophthalic acid bis(salicylidenhydrazone)** // Uchenye zapiski Tavricheskogo Natsionalnogo

Universiteta im. V. I. Vernadskogo. Series «Biology, chemistry». – 2006. – V.19 (58). – № 3 – P. 144-150.

Binuclear copper(II) complex of 1,3-benzendicarboxylic acid bis(salicyledenhydrazone) (H_4L) [$Cu_2L \cdot 2Mrf \cdot MeOH$] has been synthesized and investigated by X-ray method. Crystals are three clinic, $a = 981.4(2)$, $b = 1296.6(3)$, $c = 1341.1(3)$ pm, $\alpha = 106.40(2)^\circ$, $\beta = 103.89(2)^\circ$, $\gamma = 99.08(2)^\circ$ Space group $P\bar{1}$. Copper(II) cations are disposed on 1029 pm and are nonequivalent. First copper cation coordination polyhedron are square and build by donor atoms (2N + O) of bis(salicyledenhydrazone) and morpholine nitrogen atom. Second copper cation are coordinated with methanol molecule and oxygen atom completed coordination polyhedron to square pyramid and disposed in axial position.

Keywords: copper(II) complexes, benzendicarboxylic acids, acyldihydrazones, crystalline structure.