ABSTRACT&REFERENCES

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EVALUATION OF THE TOXIC EFFECT OF NANDROLONE AND ALBENDAZOLE ON FISH ACCORDING TO THE MORPHOLOGICAL PARAMETERS OF BLOOD

p. 4-8

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There were studied the morphological parameters of blood of carps at adding the hormone nandrolone and anthelmintic albendazole in water. Nandrolone even in the unessential concentration (0,1 mg/dm^3 of water) increases the content of hemoglobin, number of erythrocytes and SOE value, but decreases the number of eosinophils, segment-kernel neutrophils and doesn't influence the number of leucocytes, lymphocytes and monocytes in blood of two year aged carps. At the nandrolone concentration in water of an aquarium 0,5 mg/dm^3 and 1,0 mg/dm^3, that fishes of the second and thirds group were kept in, the influence of the hormone on the morphological parameters of blood increased that is testified by the change of the content of hemoglobin, SOE value, number of erythrocytes, leucocytes, eosinophils and monocytes at the stable value of lymphocytes.

The anthelmintic albendazole, added in water in the concentration 1,0 mg/dm^3 decreased the content of hemoglobin and number of erythrocytes and didn't influence the other morphological parameters of fish blood. The increase of the abendazole concentration in aquarium water up to 0,5 and 1,0 mg/dm^3 essentially influenced morphological parameters of fish blood, decreasing the content of hemoglobin, number of erythrocytes, leucocytes, eosinophils, neutrophils, at the same time increasing the number of lymphocytes and SOE value.

The influence of the anthelmintic albendazole on the morphological parameters of carp blood turned out to be more expressed that one of the nandrolone hormone

Keywords: *carp, blood morphology, hemoglobin, erythrocytes, SOE, leukogram, xenobiotics, nandrolone, albendazole*

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DYNAMICS OF FLORA IN THE OLD-FIELD ECOSYSTEM UKRAINIAN POLISSYA

p. 8-13

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Flora is an important component of ecosystems. Representatives of the old-field flora affect the direction and pace of ecosystem development. The old-field ecosystem is a unique place for research of its dynamics. Secondary autogenic succession occurs in the old fields of ecosystems. Here one can observe the influence of external factors on the course of succession, such as biotic, abiotic and anthropogenic factors. Therefore, the study of the old-fields flora is an important stage for the development of methods for forecasting the dynamics of ecosystems. Material of research can be used for phytoindication determination of ecosystem disturbances. The bioindicators the ratio between the different families of plants may be. However, the best indicator is the use of standard synphytoindication techniques. These data will allow building forecasts for the development of ecosystems in different environmental conditions
Keywords: *flora, dynamics, transitions, ecosystems, indicator, disturbance, Ukrainian Polissya, autogenic succession*

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ASSESSMENT OF THE EXISTING ECOLOGICAL AND BIOTIC CONDITIONS OF THE TERRITORY OF THE AGRO-TRANSFORMED STEPPE OF THE MYKOLAIV REGION

p. 14-19

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The paper reflects the results of the ecological studies of the mosaic landscape of the Mykolaiv region as an arena of existence of new-

formed steppe-field biotic complexes, appeared under conditions of the intensive agrogenic transformation of zonal steppes of the Northern Black Sea region. It was established, that their functioning in the agrolandscape directly depends on the level of its mosaic character that demonstrates the local specificity of the composition share and areas ratio of agrarian lands of different types. Their structure and season dynamics determine the natural (environmental) potential of biota's spontaneous existence – from floristic groups to faunistic ones.

The latter ones are secondary relative to vegetable ones that play the statial, fodder, protective and communicative role for animals and birds. Thus, it was established, that the optimal levels of the landscape mosaic character for steppe-field game is the ratio between primary landscapes and field ones on the limit 1:1–1:1,5. The level of the mosaic character of lands is not determining for wild hoofs (roe and wild boar), the statial capacity of the territory is limited for them by plots of the forest and water-boggy type.

The phenomenon of climate drying develops on the background of the strong anthropogenic destruction of steppe landscapes. In first turn it concerns biocenoses and agrocenoses of the Southern-Steppe subzone that exist on the critical limit of moisture support. The growth of average annual temperatures for 1961–2017 by +1,6 ℃ and decrease of annual precipitation by 200–150 mm became a selective factor as to the specific composition of "synthetic" biotic complexes of the new type that demonstrate a tendency to xerophitization during the last 15 years. The essential worsening of existing conditions of the natural steppe flora limits the statial-nest and migration-fodder capacity of the agrolandscape for settled and flying past birds.

The assessments of the landscape-biotic structure of the territory of the region are suitable for their direct usage in the system of organization of the natural protected fund, at elaboration and introduction of ecological-rational technologies of nature management and for regulation of hunting lands

Keywords: *Northern-Western Black Sea region, mosaic agrolandscape, natural steppe flora, landscape-statial conditions, dry steppe subzone, bio-climatic conditions of Steppe*

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INTRODUCTION POSSIBILITIES OF CONIFERS IN THE MICROLANDSCAPE DENDROCOMPOSITIONS OF KRYVYI RIH BOTANICAL GARDEN OF NAS OF UKRAINE

p. 20-25

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The aim of the study is to determine main effective microcompositional solutions with using conifers and shrubs in the Cryvyj Rih botanical garden of NAS of Ukraine. The tasks included the study of principles of the construction and taxonomic structure of microlandscape dendrocompositions, evaluation of living states, biomorphological characteristics and decorativeness of each variety and cultivar of coniferous introducents. The objects of the studies were coniferous introducents, used in microlandscape dendrocompositions of the collection fund of CBG. The evaluation of the living state of plants was realized by the methodology of V. T. Yarmishko (2002), decorativeness – T. G. Tamberg and T. N. Ulianova (1969), biomorphological analysis – by I. G. Serebriakov (1962), distribution by the crown form – by A. I. Kolesnikov (1974). There were separated 21 nature dendrocompositions, which taxonomic composition counts 13 varieties, 38 cultivars of 9 geni and 4 families. The main families in these compositions are Cupressaceae and Pinaceae. The Juniperus L. genus is the most widespread – 2 varieties and 14 cultivars. The tree living form is inherent to 28 taxons of conifers, bush – 23 taxons. At creating dendrocompositions, there were used ecological, system and physionomic principles. Our analysis divided them in pure coniferous (14) and mixed coniferous-foliar (7), mono-variant (4) and multivariant (17) of 2–4 varieties. The age of plants was 15–35 years. Conifers were divided in 7 groups by form: conic (49 %), spread (25 %), column-like (12 %), creeping (6 %), spheric (4 %), weeping (2 %), pillow-like (2 %). The following 3 groups wee separated by the needles coloration: green (43 %), yellow and yellow-motley (30 %), grey-blue (27 %). Among the whole number of studied coniferous plants the high living state level was observed in 80 % of units, and decorative one – in 74 %. All aforesaid microlandscape dendrocompositions of conifers are perspective for using in gardening of territories of settlements of the steppe zone of Ukraine of different destinations

Keywords: *conifers, microlandscape dendrocompositions, introduction, decorativeness, living state, gardening, prospectiveness, Kryvyi Rih region*

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NANOPARTICLES OF CERIUM DIOXIDE – AN EFFECTIVE ANTIVIRAL AGENT AND ADJUVANT OF BIOLOGICALLY ACTIVE MOLECULES

p. 26-30

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There was studied the influence of cerium dioxide nanoparticles on the cytokines production in the conditions of their application in the composition with interferon and as an independent drug. Applying the CDN in combination with IFN showed an increased interferon response of experimental mice compared with unmodified IFN. IFN-CDN nanobiocomplex does not increase the level of TNF production, which indirectly indicates the safety of the applying of such complex. There was studied the effect of CDN as a therapeutic agent on the cytokines production in the treatment of modeled herpes simplex virus-1 infection. It was found that CDN is able to increase IFN and TNF levels and prolong their effects. It was found that CDN is able to increase the level of IFN and FNP and prolong their effects. The application of CDN caused increasing of TNF levels and their prolonging action. There was shown the significant increasing (to three weeks) in IFN titers on the step of decreasing in TNF titers in the group, that was infected and then treated with CDN. In the non-treated group and in the aciclovir-treated animal group, IFN titers were significantly lower. The obtained results testify to the effectiveness of CDN as a modifying agent for interferon and as a promising agent for the treatment of systemic herpetic infection

Keywords: *nanoparticles of cerium dioxide, tumor necrosis factor, interferon, herpes simples virus-1*

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ANTIVIRAL AND APOPTOSIS MODULATING POTENTIAL OF FLUORINATED DERIVATIVES OF URACIL

p. 31-38

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The Epstein-Barr virus (EBV) is the first virus that has been classified as a human oncology virus. The ability of EBV to immortalize the cells of the human body is the highest among all known trans-

forming viruses. Fluorine-containing nucleoside analogs represent a significant class of the chemotherapeutics widely used in the treatment for a lot of diseases. They have been playing a major role in treating tumor and virus either as selective inhibitors of enzymes for cancer or viral replication or as nucleic acid chain terminators which interrupt the replication of cancer cells or a virus.

Aim. *The purpose of this study was to analyze the potential antiviral and apoptosis modulating activity of fluorinated derivatives of uracil by using in silico and in vitro methods.*

Materials and methods. *Two analogs (compound G26 and G27) on the base of 5-(p-tolilsulfonil)-6(polyfluoroalkyl)uracil were used in the study. The studies were conducted on cultures of Raji (latent infected EBV) and B95-8 (chronically producing virus) B-lymphoma cells. Trypan blue assay, MTT-method, neutral red uptake assay, PCR, flow cytometry, and web-servers PASS, PharmMapper were used.*

Results. *According to PASS prediction, all compounds may possess the antiviral activity and anticancer activity. The in vitro study let to reveal the low level of cytotoxicity of these uracil derivatives. Anti-EBV activity was observed for all compounds and EC_{50} values were 75 and 65 μg/ml. Using PharmMapper, it has been shown that the targets are enzymes necessary for the replication of viral DNA (protease, kinase) and proteins that provide an apoptotic cascade (MAPK, cytochrome). For compound G27, several peaks on the histogram were observed, which may be evidence of changes in the cell cycle of lymphoblastoid cultures.*

Conclusions. *In this way, the results of the present research shown an antiviral and apoptosis modulating activity of derivatives based on uracil. The data assumed by in silico methods can be used to model the relationship between the structure and activity of substance and predict possible targets of studied chemical compounds. These results can be applied to the further creation of new high-level antiviral agents*

Keyword: *Epstein-Barr virus, a fluorinated nucleoside analog, apoptosis, in silico and in vitro*

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THE NATURE OF THE SPREAD OF PORCINE CIRCOVIRUS TYPE 2 AS AN EMERGING IN UKRAINE DURING THE PERIOD FROM 2007 TO 2012

p. 39-44

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Pathogenic Porcine circovirus type 2 (PCV-2) is a causal agent of many PCV2assocciated diseases of pigs, including porcine multisystemic wasting syndrome. Those diseases have a harmful effect by pigs' production. Also, hotbeds of this infection are providing wide spread of this virus around the world. Ukraine is one of «hotspot» for PCV2assocciated infection, but has not enough information about distribution of this virus. Therefore, we have conducted a study to identify the causative agent of the mentioned disease. This article summarizes the results obtained by studying pathological material during the period from 2007 to 2012 by molecular diagnostics (PCR). Our results show that the distribution area for PCV-2 in Ukraine is mostly Ternopil' (80 %), Kirovograd (60 %), Vinnitsa (57 %), and Dnipropetrovs'k (52 %) regions. It is less common in Kharkov (35 %), Cherkassy and Zaporizhya (both 27 %), and Lviv (33 %) regions. Nevertheless, some regions – like Zhitomir, Ivano-Frankivsk and Luhansk regions and Volyn' – require a detailed study on the spread of the PCV-2

Keywords*: swine infection, Porcine circovirus type 2 (PCV-2), porcine multisystemic wasting syndrome, PCR*

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CHANGES OF MACRO- AND MICROELEMENT COMPOSITION OF THE LIVER IN RATS FOR ARTIFICIAL HYPOBIOSIS

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Surgeons throughout the world face numerous urgent questions as to alternative ways of anesthesia that don't need to switch on apparatuses: "artificial heart", "artificial lungs ventilation" at short-term surgical interventions. One of such ways can be just artificial hypobiosis. The main conditions for transferring to this stage are: hypoxia, hypercapnia, hypothermia. For using this method in surgical practice at short-term surgical interventions successfully in future, it is necessary to study a series of urgent questions, connected with its safety more detail. White usual male-rats with the mass 180–200 g, kept in standard vivarium conditions, were used in the study. The animals were divided in groups: control (intact animals) and experimental artificial hypobiosis state. The number of animals in each group n=8. The experiments were conducted, according to requirements of the "European convention about protection of vertebral animals, used with experimental and other scientific purposes" (Strasburg, France, 1985), according to general ethic principles of experiments on animals, accepted by the First national congress of bioethics of Ukraine (2001). As a result of the conducted studies there was demonstrated the essential increase of Potassium, Sodium and Ferrum, at the same time the Calcium content decrease. The growth of Potassium and Sodium in the organism can be explained by the delay of liquid in the organism, because flowability of liquids in the organism decreases at artificially-created hypobiotic conditions

Keywords: *hypobiosis, hypothermia, hypercapnia, hypoxia, heart, macroelements, microelements, ferrum, potassium, sodium*

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