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НАЦІОНАЛЬНИЙ ФАРМАЦЕВТИЧНИЙ УНІВЕРСИТЕТ
КАФЕДРА НОРМАЛЬНОЇ ТА ПАТОЛОГІЧНОЇ ФІЗІОЛОГІЇ

V науково-практична inernet-конференція
з міжнародною участю

«МЕХАНІЗМИ РОЗВИТКУ ПАТОЛОГІЧНИХ ПРОЦЕСІВ І ХВОРОБ ТА ЇХ ФАРМАКОЛОГІЧНА КОРЕКЦІЯ»

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Механізми розвитку патологічних процесів і хвороб та їх фармакологічна корекція : тези доповідей V науково-практичної інтернет-конференції з міжнародною участю (17 листопада 2022 р.). – Х. : Вид-во НФаУ, 2022. – 341 с.

Збірник містить матеріали V Науково-практичної internet-конференції з міжнародною участю «Механізми розвитку патологічних процесів і хвороб та їхня фармакологічна корекція». В матеріалах конференції розглянуто сучасні проблеми медицини і фармації: молекулярні основи патології, клітинні та гуморальні механізми розвитку захворювань; роль генетичних факторів у патогенезі захворювань; механізми розвитку патологічних процесів і хвороб; вікова патофізіологія; проблемні аспекти хвороб цивілізації; клінічна патофізіологія; питання викладання патофізіології; експериментальна терапія найбільш поширених захворювань; фармакологічна корекція патологічних процесів; проблеми та перспективи створення лікарських препаратів різної спрямованості дії (лікувально-косметичних, гомеопатичних, ветеринарних, екстемпоральних); інформаційні технології і автоматизація наукових досліджень з розробки лікарських засобів; створення нутрицевтичних засобів та виробів медичного призначення; маркетингові дослідження сучасного фармацевтичного ринку; нанотехнології у фармації; таргетна терапія захворювань людини; трансляційна медицина; новітні технології діагностики та лікування; біомедичні технології; вплив сучасних технологій на здоров'я людини; актуальні питання фізичної реабілітації та сучасні технології збереження здоров'я людини; ментальне здоров'я та інновації у медико-психологічній реабілітації військовослужбовців в умовах воєнного стану; глобальні проблеми громадського здоров'я.

Для широкого кола наукових і практичних працівників медицини та фармації.

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Mechanisms of pathological processes development and diseases, their pharmacological correction : collected papers of Vth scientific and practical internet-conference for the international participation (November 17, 2022). – Kh. : NUPh, 2022. – 341 p.

Collected papers includes the materials of Vth scientific and practical internet-conference for the international participation «Mechanisms of pathological processes development and diseases, their pharmacological correction». The modern problems of pathophysiology were considered the materials of the Conference: molecular basis of pathology, cellular and humoral mechanisms of disease development; role of genetic factors in the pathogenesis of diseases; mechanisms of pathological processes and diseases development; age-related pathophysiology; problematic aspects of the diseases of civilization; clinical pathophysiology; issues of pathophysiology teaching; experimental therapy of the most common diseases; pharmacological correction of pathological processes; problems and prospects for the development of medicines with different orientation of action (medical and cosmetic, homeopathic, veterinary, and extemporary preparation); information technology and automation of scientific research on drug create; development of nutraceutical drugs and products for medical purpose; marketing research of the modern pharmaceutical market; nanotechnology in pharmacy; targeted therapy of human diseases; translational medicine; the latest diagnostic and treatment technologies; biomedical technologies; impact of modern technologies on human health; current issues of physical rehabilitation and modern technologies for preserving human health; mental health and innovations in medical and psychological rehabilitation of military personnel under martial law; global public health issues.For a wide audience of scientific and practitioners of medicine and pharmacy.

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EFFECT OF TECHNOGENIC POLLUTION OF WATER SUPPLY SOURCES ON THE ORGANISM

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In connection with the current EU requirements for Ukraine on the need to implement the basin principle of protection of transboundary water supply regions of Ukraine, the task of substantiating and developing a concept of waste management, in which the problem of studying homeostasis in experimental animals under the influence of waste landfill filtrate. It was found that the filtrate of the landfill causes warm-blooded membrane sabotage radical pathology in the body. Its development is based on the formation of reactive oxygen species, stimulation of lipid peroxidation, oxidative modification of proteins, violation of oxidative-antioxidant interaction, bioenergetic processes that form functional disorders of membranes and the development of secondary manifestations of environmental pathology.

The cell and the organism can exist and adapt to such environmental conditions under which it is possible to establish a dynamic equilibrium flow of physicochemical processes in the biological system. The main role in ensuring homeostasis belongs, first of all, to the cellular membrane supramolecular complexes responsible for the entry and exit of energy, substrate and information flows from the cell. From these positions, the main cause of homeostasis may be structural and metabolic disorganization of membranes and, as a consequence, the formation of various pathological conditions and diseases. In this regard, the search for criterion-relevant and adequate indicators for assessing the state of homeostasis may be important in the pre-nosological diagnosis of premorbid conditions of the body with anthropogenic exposure to harmful factors.

Based on the results of research work, a comprehensive ecological and hygienic concept of protection of the upper reaches of the Seversky Donets River, public health and optimization of water supply of the regions of Ukraine from this water source was substantiated and developed.

A significant problem within the Kharkiv region is the unsatisfactory state of the organization of sludge disposal, which is formed at the biological treatment facilities of the city sewerage system, the accumulation of which reaches about 1.6 million m^3 / year.

An important factor is the lack of a drainage system for large waste landfills, which belongs to the sources of pollution of the Seversky Donets River basin. The most significant pollution of soil, groundwater, surface water and air in the Kharkiv region is the filtrate pollution of landfills.

Materials and methods of research. A subacute toxicological experiment was performed on adult white rats. The duration of the experiment was 2 months. There were 10 animals in the study and control groups. The filtrate was administered to the animals orally using a metal probe. The research program provided for the determination of diene conjugates, malonic dialdehyde in accordance with guidelines,

catalase activity, peroxidase, glutathione peroxidase according to methods, by the method described by V.S. Gurevich, 1990, determination of ceruloplasmin was carried out according to Ravin, reduced glutathione, free sulfhydryl groups by the method described by S.E. Severin and T.A. Solovyova. The percentage of phospholipid fractions in erythrocytes and hepatocytes was performed by two-dimensional chromatography. Biophysical methods such as biochemiluminescence and phosphorescence were also used to evaluate free radical processes, lipid peroxidation and oxidative modification of proteins.

Research results and their discussion. The analysis of the conducted researches testifies that the object of research - the filtrate of landfills of waste, at long receipt in an organism is capable to form development of membrane pathology. Diagnostic criterion-significant indicators of its detection were: activation of free radical processes, lipid peroxidation, oxidative modification of proteins, violation of barrier and matrix properties of membranes, violation of the activity of membrane-bound enzyme complexes, which were highly informative and sensitive.

The used set of clinical, biophysical and biochemical criterion-significant diagnostic indicators allowed to detect the presence in the body of warm-blooded, under the influence of waste landfill filtrate, membrane free radical pathology. Its development is based on the formation of reactive oxygen species, stimulation of lipid peroxidation, oxidative modification of proteins, violation of oxidative-antioxidant interaction, bioenergetic processes that form morphofunctional membrane disorders and the development of secondary manifestations of environmental pathology. Substantiated analysis of the dynamics of the studied indicators made it possible to determine the initial and reversible manifestations of membrane pathology, the degree of intoxication and the stage of morphofunctional disorders in the body, reflecting the failure of protective and adaptive mechanisms of homeostasis.

The current level of man-made pollution by harmful chemical, physical, biological factors requires in-depth study and multifaceted research aimed at obtaining medical, biological, hygienic and environmental characteristics of the modifying effects on the body of various anthropogenic factors. Characteristics of population health assessed by morbidity should be supplemented by new integrated highly sensitive methods for assessing homeostatic function based on the study of structural and functional activity of membranes. These methods include biochemiluminescence, phosphorescence, study of electrokinetic properties of cell nuclei, which can be used in mass surveys of the population, for pre-nosological diagnosis of the impact on the body of harmful anthropogenic factors.

Conclusion. The used set of clinical, biophysical and biochemical criterion-significant diagnostic indicators allowed to detect in the body of warm-blooded animals under the influence of the landfill filtrate, membrane free radical pathology. Pathogenetic links of this pathology are: formation of reactive oxygen species, stimulation of lipid peroxidation, oxidative modification of proteins, violation of oxidative-antioxidant interaction, bioenergetic processes that form functional disorders of membranes and the development of secondary manifestations.

Key words: landfills, filtrate, experimental animals, homeostasis disorders.