

**МІНІСТЕРСТВО ОХОРОНИ ЗДОРОВ'Я УКРАЇНИ
НАЦІОНАЛЬНИЙ ФАРМАЦЕВТИЧНИЙ УНІВЕРСИТЕТ
КАФЕДРА НОРМАЛЬНОЇ ТА ПАТОЛОГІЧНОЇ ФІЗІОЛОГІЇ**



**V науково-практична internet-конференція
з міжнародною участю**

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

**17 ЛИСТОПАДА 2022
ХАРКІВ – Україна**

УДК 615.1:616 (043.2)

Редакційна колегія: Заслужений діяч науки і техніки України, проф. Котвіцька А. А., проф. Владимірова І. М., проф. Кононенко Н. М.

Укладачі: проф. Рибак В. А., Волохов І. В.

Посвідчення Державної наукової установи «Український інститут науково-технічної експертизи та інформації» № 595 від 02.08.2021 р.

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.

UDC 615.1:616 (043.2)

Editorial board: Honored worker of science and technology of Ukraine, prof. Kotvitska A. A., prof. Vladymyrova I. M., prof. Kononenko N. M.

Compilers: prof. Rybak V. A., Volokhov I. V.

Certificate of the State scientific organization «Ukrainian Institute of Scientific and Technical Expertise and Information» № 595 dated 02.08.2021.

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.

UDC 615.1:616 (043.2)

© NUPh, 2022

ЗМІСТ

Bardakhivska K.I., Sarnatskaya V.V., Paziuk L.M., Gerashchenko B.I. Melnik V.O., Nikolaev V.G. Mitigation of doxorubicin-induced cardiotoxicity in rats by activated carbon dots	15
Beschasnyi S.P. Carbon monoxide and tricarbonyldichlororuthenium (II) dimer reduce AQP3 expression after treatment of damaged skin	17
Bohachova O.S., Ken-Charles Cynthia Chizoba Systematic evaluation on gender and hygiene hypothesis: gender and hygiene hypothesis highlights girls to maintain hygiene better than boys	19
Boiko I.S., Kuznetsova M.O. Awareness of medical students of the diagnostic significance of fever as one of the first symptoms of COVID-19	20
Bondarenko L.B., Shayakhmetova G.M., Kalachinskaya M.M., Serhiichuk N.M. Comparative study of DNA fragmentation levels under various pathological conditions and anti-tuberculosis preparations administration.....	22
Gerashchenko B.I., Sarnatskaya V.V., Bardakhivskaya K.I., Kolesnik D.L. Activated carbon in tackling doxorubicin-induced myelosuppression: comparison of two administration models	25
Goroshko O.M., Zakharchuk O.I., Kostyshyn L.V., Sakhatska I.M., Ezhned M.A., Matuschak M.R., Drachuk V.M. Formation of public health from the student ranks	27
Grigoryan Kh.V., Giller D.I. Influence of “crosstalk” signaling on the efficiency of litokinetic therapy	29
Kovaltsova M., Miroshnichenko M. The effect of long-term mental and physical stress on the exocrine part of the pancreas of rats.....	31
Kucheriavchenko M. Effect of technogenic pollution of water supply sources on the organism	32
Kurhaluk N., Tkachenko H. Alterations in mitochondrial respiratory function in combined of LPS-induced septic hepatic injury and acute ethanolic intoxication in mice	34
Matuschak M.R., Zakharchuk O.I., Horoshko O.M., Ezhned M.A., Sakhatska I.M., Kostyshyn L.V., Mykhailiuk N.V. Marketing research of the pharmaceutical market assortment of drugs based on burdock	39
Stefanowski N., Tkachenko H., Kurhaluk N. Antibacterial properties of oak bark and celandine extract as commercial cosmetic raw material against some Gram-positive and Gram-negative bacteria	40
Stefanowski N., Tkachenko H., Kurhaluk N. Lipid peroxidation in the erythrocytes of rainbow trout (<i>Oncorhynchus mykiss</i> Walbaum) affected by ulcerative dermal necrosis treated in vitro by extracts derived from roots and stalks of great celandine (<i>Chelidonium majus</i> L.).....	44
Tishchenko I., Dubinina N., Filimonova N., Samadov B., Misiurova S. The key role of the microecology changes in the pathogenesis of infectious diseases	48
Titova I.S., Kopiika V.V., Shvets V.M. The state of lipid free radical oxidation and antioxidant system in patients with COVID-19 with concomitant coronary heart disease.....	50

THE STATE OF LIPID FREE RADICAL OXIDATION AND ANTIOXIDANT SYSTEM IN PATIENTS WITH COVID-19 WITH CONCOMITANT CORONARY HEART DISEASE

Titova I. S.*, Kopyika V. V.*, Shvets V. M.**

**Zaporizhzhia National University, Zaporizhzhia, Ukraine*

***Zaporizhzhia State Medical University, Zaporizhzhia, Ukraine*

irinairena98@gmail.com

Introduction. Stress is one of the main risk factors for cardiovascular diseases. This is due to the fact that the resulting hypoxia is one of the triggering mechanisms for changes in myocardial metabolism. Its characteristic manifestation is the stimulation of free radical oxidation of lipids and proteins in the heart and related changes in the structure and properties of cardiomyocyte membranes, modulation of the functioning of their ion transport systems, a decrease in the level of energy supply of myocardial cells, as well as changes in the rate of gene expression and protein synthesis. All these metabolic changes contribute to changes in myocardial excitability and contractility. Clarification of the state of the antioxidant system in patients with COVID-19 suffering from coronary heart disease will allow to form a more detailed idea of the pathogenesis of this disease and to propose effective methods of correction.

Objective. The aim of the study is to study the processes of free radical oxidation of lipids, and the state of the enzymatic system of cell protection against free radical damage in patients affected by COVID-19 and concomitantly suffering from coronary heart disease.

Materials and methods. The study was conducted on the basis of the Municipal Institution "City Hospital №6" . The study group consisted of 26 patients with coronary heart disease, which was divided into two subgroups according to the existing WHO classification and the presence of lipid metabolism disorders: 1) 15 patients (9 men and 6 women) with exertional angina; 2) 11 patients (5 men and 6 women) with rest angina. The control group consisted of 14 people without concomitant diseases, corresponding to the age of patients of the study groups (7 men, 7 women), who had laboratory confirmed COVID-19 infection. In the venous blood samples of patients of both groups were determined:

1) the level of lipid free radical oxidation markers.

The concentration of diene conjugates (DC) was determined in a spectrofluorimeter at 232 nm, according to the method of Stalnaya I.D., and expressed in $\mu\text{m} / \text{ml}$ of plasma.

The concentration of malondialdehyde (MDA) reacting with 2-thiobarbituric acid was determined by the Esterbauer H method by the formation of a colored complex with an absorbance maximum of 532 nm, the optical density of which is directly proportional to the MDA content. MDA content was expressed in mm/ml of plasma.

2) the level of the first line enzyme of antioxidant protection: superoxide dismutase (SOD). The method of determining the activity of superoxide dismutase in erythrocytes was carried out by the method of Cevari S.. The activity of superoxide

dismutase (SOD) was expressed in conventional units (mcat / (mgNv / min)), photometric at a wavelength of 540 nm.

Results and their discussion. Ischemic processes of any etiology are always accompanied by activation of free radical oxidation of lipids, oxidative modification of proteins, nucleic acids, oxidative damage to cell membranes, which leads to cardiac dysfunction and is a major factor in the formation of oxidative stress.

The results of the study showed that with the defeat of COVID-19 in patients suffering from angina, there is an intensification of free radical oxidation processes. Thus, the level of diene conjugates in patients suffering from angina pectoris increased by an average of 77.2%, and malondialdehyde - by 121.6%. At the same time, in patients with rest angina, the level of diene conjugates increased by 98.0%, and malondialdehyde – by 189.5%.

Antioxidant activity of SOD in patients with angina of tension and rest decreased by 37.8% and 51.9%, respectively. These results indicate partial depletion of superoxide dismutase and confirm the occurrence of oxidative stress and damage in cardiomyocytes, which indicates the possibility of deepening pathological changes in the myocardium.

Conclusions. In patients with angina pectoris with concomitant COVID-19, there is an intensification of free radical processes and a decrease in the effectiveness of antioxidant protection. In patients with rest angina, these processes are more pronounced compared to patients suffering from angina pectoris.

Keywords: COVID-19, lipid free radical oxidation, SOD, dyne conjugates, malondialdehyde, oxidative stress.