

ANTIEXSUDATIVE ACTIVITY OF A NEW ANTI-INFLAMMATORY GEL ON THE THERMAL INFLAMMATION MODEL IN MICE.

Bushyn P. I.

Supervisor: assoc. prof. Galuzinska L. V.
National University of Pharmacy, Kharkiv, Ukraine
ljubvgaluzinskaja@ukr.net

Introduction. Inflammation is a universal response to damage and occurs due to the effect on the body on various stimuli. The use of models of acute aseptic inflammation with a manifested exudation phase can establish the anti-inflammatory effect of the drug precisely at this stage.

Aim. The purpose of this study was to study the anti-exudative activity of a new anti-inflammatory gel on a model of thermal inflammation in mice.

Materials and methods. To evaluate anti-inflammatory activity, they were replicated by immersing the posterior right paw of the mice in hot water. Experimental animals were divided into 5 groups: Group 1 - control pathology; group 2 - animals that were applied the investigated gel for therapeutic purposes; group 3 - animals that were applied the psycho-balm for therapeutic purposes, group 4 - animals for which the gel was studied for therapeutic and prophylactic purposes, and group 5 - animals used for the treatment of psycho-balm with a therapeutic and prophylactic purpose. Inflammation was reproduced by immersing the posterior right paw of mice in hot water at a temperature of $66.5 \pm 0.5^{\circ} \text{C}$ for 4 s. 24 hours after the reproduction of thermal inflammation, the mice were withdrawn from the experiment by the dislocation of the cervical vertebrae under etheric anesthesia. The animals were cut off both hind legs at the level of the supraorbital joint, weighed on the torsion weights of the mark "VT-500" and determined the difference in weight between swollen and healthy legs. The anti-inflammatory activity of gels was estimated by decreasing the edema of the paw in animals with thermal burn as compared with the control group.

Results and discussion. During the simulation of pathology in animals, acute inflammation developed, which was manifested by hyperemia and edema of the paw. In the control group mice, the difference between the experimental and control paws was 70.8 mg. The treatment of swollen legs contributed to the suppression of the inflammatory process, which was manifested by decreased edema compared to control in all the experimental groups. At therapeutic and prophylactic application, the anti-exsudative activity of the gel studied was significantly higher than in the treatment. The effect of different types of application of the studied gel somewhat inferior to the drug comparison of psycho-balm.

Conclusions. Analysis of the results of anti-inflammatory activity in different types of application showed that the new anti-inflammatory gel has shown a fairly high efficiency (32% for therapeutic and prophylactic application and 25% for therapeutic application) and is useful for further research on different models of inflammation and at different stages of the inflammatory process.

HEPATOPROTECTIVE EFFECT OF APPLE POLYPHENOL EXTRACT IN RATS UNDER EXPERIMENTAL INSULIN RESISTANCE

Cathrine Mashaka Flavian

Scientific supervisor: assoc. prof. Krasilnikova O. A.
National University of Pharmacy, Kharkiv, Ukraine
Cathflavi3@gmail.com

Introduction. According to International Diabetes Federation, the number of patients with diabetes mellitus increased from 30 to 382 billion during last 40 years and 90% of them have diabetes mellitus type 2 (DM2). DM2 is preceded by the insulin resistance state (IR). IR is accompanied by a violation of glucose transport and utilization in cells. In these conditions hyperglycemia, dyslipidemia and insulin secretion disorders develop. Prolonged hyperglycemia and hyperlipidemia stimulate ROS production and oxidative stress development. ROS stimulate lipid peroxidation and plasma membrane damage, which in turn lead to the defeat of various cells and DM2 complications development. There has been an increasing appreciation and understanding of the link between dietary fruit and vegetable intake and improved health in humans.

The widespread and growing intake of apples fruits and their rich phytochemical profile suggest their important potential to affect the health of the populations consuming them.

Aim. The aim of our investigation is the study of antioxidant activity of apple polyphenols extract (APE) in rat liver and the activity of hepatospecific enzyme gamma-glutamyl transpeptidase (GGT) in rat serum under experimental IR.

Materials and Methods. The studies were conducted on female rats weighing 190 ± 15 g, kept under standard conditions in the vivarium NUPh. Insulin resistance was modeled by keeping animals on the high-fat diet enriched by fructose for 5 weeks. Polyphenol extract was administered from the 3rd week of the experiment intragastric for 14 days. Rats were decapitated, blood was collected for serum. TBA-reactants and glutathione (GSH) levels were determined in liver GGT activity was measured in rat serum. The data obtained were processed statistically.

Results and discussion. The development of experimental IR was accompanied by an increase in the content of TBA-reactive products in the rat liver in 1.83 times. GSH level was also reduced by a factor of 1.69 IR in comparison with intact animals. GGT activity was increased from 0.373 ± 0.024 (intact) to 0.672 ± 0.097 mkat/l (IR). APE administration to rats with IR normalized the GSH level, decreased TBA-reactive products level and GGT activity to 0.563 ± 0.086 mkat/l.

Conclusions. The results indicate that the analyzed polyphenols extract exhibits antioxidant and hepatoprotective activity and can be used for the correction of disturbances in liver insulin resistance and related pathologies

BIOLOGICAL ASPECTS OF BISMUTHUM

Deineka A. S.

Scientific supervisor: assoc. prof. Koval A. A.
National University of Pharmacy, Kharkiv, Ukraine
dviola9918@gmail.com

Introduction. Nowadays considerable attention is paid to the study of promising materials containing nanosized particles of Bismuthum and its oxide. Today, Bismuthum is a very important element that is used extensively in medicine and pharmacy.

Aim. The aim is investigation of Bismuthum and determination of the biological role of the element. The biological aspects should be described by studying scientific literature.

Materials and methods. It is an analysis of standard scientific publications, scientific literature and scientific works.

Result and discussion. One of the methods for obtaining nanosized metal particles is the thermal decomposition of the corresponding organic salts. In this regard, the use of precursors of bisulfite formates is relevant. Bismuthum has advantages over ordinary preparations (Bismuthum nitrate, Bismuthum subnitrate, etc.). The toxicity of nano-Bismuthum is several times lower than the toxicity of the corresponding salts. Particles injected into the body show prolonged action. Formation of qualitatively other responses to the introduction of nanoparticles of metals, unlike other chemical forms, is associated with the property of particles affect the cellular level, the level of biosystems (primarily the system of regulation of microelements) and at the molecular level. Bismuthum and its compounds have been used in various fields of science and technology, medicine and everyday life. It is quite promising to use Bismuthum as a part of pharmaceutical preparation. When applied on the skin and mucous membranes Bismuthumh sub-gallate forms a protective skin that protects the ending of sensitive nerves from irritation, which can reduce pain and prevent the edema. Bismuthum subnitrate in the form of ointments and deodorants is used as a protective and anti-inflammatory agent for dermatitis, erosions and ulcers of the skin. Preparations of Bismuthum have antibacterial action. Combined preparations, which include Bismuthum nitrate, have antacid and moderate mitigating effect. Compounds of Bismuthum are used for inflammatory diseases of the stomach and intestines, stomach ulcer and duodenal ulcer, diarrhea of various geneses.

Conclusions. We have described the biological aspects of Bismuthum, by studying scientific books, encyclopedias, websites. The most interesting fact is that Bismuthum is used to treat many diseases, and its compounds have many properties that make it unique (despite its toxicity).