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***I.Bagmut, V.Zhukov, O.Nakonechna***

*Kharkiv Medical Academy of  
Postgraduate Education  
Kharkiv National Medical University*

**STRUCTURAL AND  
FUNCTIONAL STATE OF THE  
MEMBRANE UNDER  
INFLUENCE OF  
POLYETHYLENOXYDS IN  
EXPERIMENT**

Today, increased share of negative impact on the biosphere chemicals used in the national economy for plastics, polyurethanes, synthetic leather, lacquers, enamels, epoxies, hydraulic and brake fluids, etc.. Large volumes of production and considerable product range that goes from polyethylene oxide is potentially dangerous for people and for habitat. Manufacturers of chemicals annually synthesize tens of thousands of new chemicals that have not been used and no man to them evolutionary adaptation. In the opinion of many authors, a large number of chemical compounds able to modulate the radiobiological effects have membrane-acting action causes the body free radical pathology, suppresses cellular and humoral immunity by changing the immunological reactivity, which largely determines the duration and the end of many diseases. Like other chemical compounds, polyethylene oxide may lead to changes in the body's adaptation of warm-blooded animals, and natural formation of pathological conditions. Particular attention in the study of biological activity of new compounds shall study

toxicodynamics, biotransformation of xenobiotics and research on the structural and functional state of the membrane of target cells. The aim of the study was to investigate the impact of a new group of polyethylene oxide on the structural and functional state of membranes of erythrocytes, lymphocytes and hepatocytes in the subacute experiment.

Object and methods. Research subject polyethylene oxide group of regulated physicochemical properties. Objects of study were polyethylene MM 200 (L-202), polyethylene MM 1100 (L-1102-4-80), polyethylene MM 3000 (L-3003-2-60), polyethylene MM 4000 (L-4003-2-20). These substances are the parameters related to the toxicity of moderate and low-toxic compounds (3-4 class of danger), have skin-irritating properties, species and gender sensitivity. Effect of compounds on the state of biological membranes was evaluated in a subacute oral exposure to white polyethylene populations Wistar rats. Duration of the experiment was 45 days.

The evaluation of oxidant-antioxidant homeostasis positively proven method biological chemiluminescence. As is known from the literature, it can act as one of the most sensitive and integrated tests during the study lipid peroxidation, free radical oxidation and Molecular bioenergetics of cellular metabolism. Studies have shown that polyethylene in 1/100 and 1/1000 DL50 increased in intensity subacute experiment biohemilyuminestsentsiyi homogenates of internal organs and tissue content in liver and serum malondialdehyde (MDA).

Oral revenues in the body of white rats polyethylene oxide led to an increase in serum content Aldo and ketohidrazoniv, indicating stimulation of processes associated with oxidative modification of proteins. As in previous studies, dose 1/10000 DL50 had no effect on the rate.

General and specific in the structure of phospholipid fractions are increasing Lizoform phospholipids. This constitutes a violation of the structure of membranes of erythrocytes, leukocytes and hepatocytes, which accompanies the formation of highly toxic compounds.

During the studies found that the substance at the end of subacute experiment led to a decrease in cytoplasmic membrane fluidity of blood cells in comparison with the control group of animals.

This process to a greater extent pidverneni erythrocytic membrane, which revealed significant changes in the lipid bilayer and the area of protein-lipid contacts. Depending on the dose and duration of exposure polyethylene membrane fluidity decreased to 40%. Decrease in lymphocyte yield touched mainly lipid bilayer was maximal at a 1/100 DL50. Also determined that increased polyethylene and dive proteins in lipid bilayer membranes of erythrocytes and lymphocytes and erythrocytes to a greater extent, causing disrupted activity membranozv connected enzymes. At the same time, do not violate polyethylene percentage fosfatydlserinu in leukocytes, splenocytes, hepatocytes, although its content in erythrocytes significantly decreased. The biggest change in the ratio of phospholipids fractions typical

red blood cells that is linked of course to their low synthetic and reparative processes occurring in these `no nuclear blood cells. The most significant changes membrane fluidity and immersion in the lipid matrix protein in red blood cells compared with lymphocytes can also be explained by the fact that red blood cells have a low potential to repair damaged membranes, coupled with the lack of kernel thing anabolic catalysts.

Thus, the analysis of the research shows that polyethylene capable of unidirectional effect on the structural and functional state of the membrane, which is accompanied by changes in their physical and chemical properties - charge, permeability, viscosity, polarity, hydrophobic volume, which inevitably can lead to quantitative and qualitative changes in the activity of metabolic processes in the structural and functional units of cells and disintegration of the nuclear-cytoplasmic conditions. 1/10000 DL50 did not alter the physicochemical and metabolic properties of membranes.