Pharmingen). The study was conducted in the department of cryocytology of the Institute of Problems of Cryobiology and Cryomedicine of NAS of Ukraine.

**Results.** It was found that the investigated xenobiotics at a dose of 1/10 DL50 led to imbalance in the asymmetry of the distribution of phospholipids in the plasma membrane of hepatocytes, phosphatidylserine translocation from the inner layer into the outer layer. The most pronounced structural changes in the phospholipid bilayer of membranes were observed as a result of the action of polyethylene glycol. Phosphatidylserine is expressed in the outer layer in 24.87 ± 3.07% of hepatocytes (p<0.05 in comparison with the control). Almost the identical percentage of hepatocytes with phosphatidylserine in the outer membrane was observed for rats administered ethylene glycol and polypropylene glycol (15.21 ± 2.15% and 14.54 ± 2.93% respectively). In this study, we showed that after toxification of white rats with xenobiotics at a dose of 1/10 DL50, the rate of early apoptosis was higher compared with control animals.

**Conclusion.** It was found that in subacute toxicological experiment on rats the investigated xenobiotics caused a change in the plasma membrane of hepatocytes: phosphatidylserine translocation from the inner layer into the outer layer.

**THE DYNAMICS OF PLASMA AMINO ACIDS CONTENT**

**IN THE SUBACUTE EXPERIMENT UNDER**

**ETHOXYALKYL PHENOLS ACTION**

**Nakonechna O.A., Vishnitska I.A., Stetcenko S.A.**

*Kharkov National Medical University*

The researches was devoted to the studding of the biochemical mechanisms of protein metabolism violations under sub-acute effects of detergents on rats.

The group of surfactants "neonols" of brands APh9-6, APh9-10 and APh9-12 was chosen for the research. The term of subacute experience was 45 days. The research program included asub-acute toxicological experiment on mature white rat of WAG population, administered intragastrically of 1/10, 1/100, 1/1000 LD50 every morning before feeding. Average lethal doses (LD50) were determined at 4.2, 4.3, and 3.4(in g / kg body weight) levels respectively.

The obtained data proved that all types of neonols have a mediated action on protein metabolism dysfunction. The degree of influence depends on the dose of the substances. The most significant changes were observed in animals that were intoxicated by Neonol APh9-12 in 1/10 LD50. Dynamic changes of plasma amino acids pool are characterized by decreasing of Cys, Cystathionine, Gly, Thr, Ser, Ala, Met, Ile, Val, Tyr, Phe, Lys, Trp and Leu against increase of Asp, Asn, Glu, Gln, Arg, Pro, His and Hyp. The enhance of plasma free amino acids may indicate the prevalence of catabolic processes over anabolic ones, while reducing of their concentration may indicate the increasing in proteins synthesis. The results have showed that the neonol APh9-12 in doses 1/10 and 1/100 LD50 reduced a content of glycine by 54% and 32%; cysteine ​by 47.3% and 21%, cystathionine by 47.3% and 27.4%, threonine by 45.7% and 24.2%, serine by 36.7% and 15%, alanine by 41.13% and 19.2% in serum respectively. All of these amino acids are capable to be metabolized via pyruvate to the main fuel molecul - acetyl~CoA – intermediate of the Krebs cycle. On the other hand, these amino acids may serve as substrate in gluconeogenesis.

"Neonol" APh9-12 1/10 and 1/100 LD50 reduced plasma concentrations of methionine - 49.6% and 27.9%, of isoleucine by 54% and 31.8%, of valine - 63% and 41.6% of tyrosine - by 49% and 13.4%, of phenylalanine - by 51.2% and 27.4%, of lysine - by 46.5% and 20.85%, of tryptophan - by 48.7% and 21.8%, of leucine – by 42.5% and 18.9%, respectively to acting doses.

An increase of aspartate by 126.2% and 41.4%, of asparagine - by 99.8% and 60.2%, of glutamate - by105.8% and 53%, of glutamine - by 53.3% and 28.3%, of arginine - by 51.7% and 28.9%, of proline - by 100.7% and 57.6%, of histidine - by 79.2% and 48.9%, of hydroxyproline – by 141.8% and 80.4% was observed in plasma respectively to doses 1/10 and 1/100 LD50 of the "neonol" APh9-12 against a background of substantial reduction of the essential amino acids.

Analysis of the amino acid content has showed an increase in the pool of essential amino acids and decrease of non-essential plasma amino acids. This tendency reflects the reaction of protective and adaptive mechanisms and trophotropic function activation.

Reducing of the amount of sulfur-containing amino acids - cysteine, methionine, cystathionine may indicate a decrease in reserves and inhibition of antioxidant systems. We should expect a violation of redox processes, of intermediate metabolism, a decrease of the activity of many enzymes, hormones, proteins and peptides under such circumstances.

It should be noted that reduction of tyrosine and phenylalanine may be associated with impaired synthesis and exchange of such biologically active substances such as hormones - thyroxine and triiodothyronine, neurotransmitters - dopamine, norepinephrine, adrenaline. While lower levels of tryptophan could be explained by the exchange of biogenic monoamine serotonin, 5-hydroxyindoleacetic acid, of a hormone - melatonin, coenzyme form of NAD+ and with metabolism of other biologically active metabolites. Xenobiotics increased the content of proline and hydroxyproline that points to structural and metabolic dysfunction of the connective tissue and the violation of the extracellular matrix, according to opinion of many authors. The results of researches have showed the reduction of glucogenic (glycine, serine, threonine, alanine, cysteine) and ketogenic (lysine, leucine, isoleucine, phenylalanine, tryptophan) amino acides content in blood plasma which may be associated with increased synthesis of glucose and ketone bodies.

It should be noted that such amino acids as valine, methionine, isoleucine were significantly decreased in the blood plasma. The most likely cause of this trend is the strengthening of the processes associated with the synthesis of succinyl~CoA. Decreasing of named amino acids indirectly indicates the activation of the anaerobic type of bio-energy, and inhibition of cell respiration under the influence of xenobiotics. An increase of glutamine and asparagine in blood plasma confirms the violation of deamination of amides and detoxication of ammonia forming ammonium salts in kidneys.