

**ANALYSES OF THE CONTENT OF PRODUCTS OF LIPID PEROXIDATION  
IN LIVER HOMOGENATE OF BANK VOLE UNDER CONDITIONS OF  
ENVIRONMENTAL POLLUTION BY HEAVY METALS**

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**Introduction.** Man-caused chemical pollution of ecosystems is an actual problem at the present. Intensive production results in releasing of considerable

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amounts of heavy metals that extend in atmosphere and involve in circulation of elements. Kyiv region is one of the most contaminated in Ukraine. 443 industrial plants are the sources of air pollution in Kyiv region. The presented research involves the integral assessment of biochemistry indexes of nature populations of voles under conditions of environmental pollution by heavy metals.

**Aims & Methods.** The goal of the research is definition of basic biochemical indicators in an organism of the bank vole under conditions of environmental pollution by heavy metals.

Researches were conducted on nature population of bank vole (*Myodes glareolus* Schreber, 1780), on territories with different level of anthropogenic pollution. Three areas with different level of anthropogenic loading were chosen for comparative analysis: Kaniv Nature Reserve (Cherkassy region, Ukraine); National Nature Park «Holosiivsky» (Kyiv, Ukraine); region of impact of Tripillya Thermal Power Plant (TPP) (Obuchiv district, Kyiv region, Ukraine). Field methods of collecting material; physical-chemical methods of determination of content by heavy metals; spectrophotometric and spectrofluometric methods of determination of concentration of products of lipid peroxidation; mathematical and statistical methods were used.

**Results.** The raised content of mobile forms Pb, Cd, Cr, Ni, Co, Cu and Zn in soil was revealed on distance of 500 m to the South-West from Tripillya TPP. That's considerably (up to 3–8 times) exceeds levels on territory of Kaniv Nature Reserve. Territory of National Nature Park «Holosiivsky» characterized by rather increased content of active form of investigated heavy metals especially Pb. Increase of the content of the investigated heavy metals in green phytomass of species-edificators (*Carpinus betulus*) of hornbeam forest in region of impact of Tripillya TPP, in comparison with Kaniv Nature Reserve.

Increase of the concentration of diene conjugates (up to 7–10 times) and thiobarbituric acid (TBA) active compounds (up to 2–3 times) in bank vole liver polluted by heavy metals has been discovered. Insignificant increasing of content of Schiff basis in liver homogenate of voles in region of impact of Tripillya TPP (in 2 times in spring and in summer, in autumn – in 3 times) was detected. Seasonal dynamics of the maintenance of lipid peroxidation has been revealed.

**Conclusion.** Thus exceeding the levels of maximum permissible concentrations for soil was not detected in investigated territories but biochemical features of disturbance in organism of bank vole from the natural populations were observed. Conformity of chemical composition of soils to the maximum permissible concentrations was not conforms to condition of prosperity of animal organism existence of which was concerned with paedosphere. Therefore it may conclude about absolute content of heavy metals in soil is not a marker of ecological conditions of environment. The registered changes of biochemical

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indicators can be an indicator of ecological-biochemical stress in an organism of the bank vole in the district of influence of Tripillya TPP.