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AQUATIC PHYTOTOXICITY OF HEAVY METALS: Cu, Cd AND Zn ECOTOXICOLOGICAL TESTS WITH DUCKWEED PLANTS (*Lemna minor*)

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Abstract

Heavy metals are common contaminants of freshwaters and they can produce toxic effects on aquatic fauna and flora. The ions of heavy metals existing in freshwaters are well known as toxicants for the aquatic organisms. Duckweed is an aquatic plant of small size that floats on fresh water surface of lakes and marshes. The small plants are highly exposed to aquatic pollutants and as a result they are very sensitive to the toxic effects. As consequence the duckweed plants are more and more frequently used as indicator for measuring the toxicity of the heavy metals as well as of other toxicants existing in natural freshwaters. The aquatic toxicity of heavy metals has been largely studied and the results are used for risk assessment. The risk connected to heavy metal contaminated sites can be assessed using ecotoxicological data obtained from standard tests made on standard species. We used duckweed plants for ecotoxicological tests using the standard method from the EC Guideline. Tests with heavy metals alone and in mixture have been made and the growth rate inhibition registered. The ecotoxicological indicators EC_{50} have been established from the concentration – effect diagrams plotted for different tested metals. Synergic and antagonistic features have been found in tests with mixture of heavy metals. The results indicate that the iron and zinc diminish the toxic effects of copper and cadmium.

Key words: duckweed, ecotoxicological tests, heavy metals, phytotoxicity

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