STRUCTURAL CHANGES IN THE POSTERIOR KIDNEY OF FISH EXPOSED TO MANCOZEB

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ABSTRACT
Fungicides, including mancozeb, are widely used in agriculture in the world. The low or very low concentrations of these pesticides are noted in surface waters - the main source for fish culture. They can influence fish inner organs causing pathological changes observed only on a cell's level. A kidney is an important organ secreting toxins metabolites. Fish posterior kidney have to different parts: haematopoietic tissue and renal parts (excretory tissue). The aim of the study was to get to know if the fungicide mancozeb cause the ultrastructural lesions in posterior kidney of fish.

Key words: fungicide, mancozeb, fish posterior kidney, ultrastructural changes

Material and methods
Carp Cyprinus carpio L. (mean weight ± sd, 50 ± 10 g) was exposed for 14 days, in aquaria conditions, to the fungicide mancozeb in concentration 1 mg L⁻¹. After exposure fish were transferred to the clean water for the next 30 days for a possible recovery. Kidneys were sampled after 14 days of exposure and at the end of the recovery period. Ultrastructural changes were studied by transmission electron microscopy.

Results
The fungicide mancozeb caused pathological lesions in carp kidney. After the exposure the most important lesions were observed in hematopoietic tissue. The maturing blood cells were separated from themselves. They had different, not natural shapes/forms because of the cell's fragmentation process. In the excretory part the epithelial cells adhesion could be seen. The structure of the most of mitochondria of the cells was correct. Only some of them were locally damaged or a process of deliquescence was observed.

After the recovery period (30 days) in the hematopoietic tissue the same lesions as noticed after exposure was observed. In epithelial cells increase of RER could be seen in relation to the RER observed after exposure to the fungicide. Intensive RER fragmentation process was observed, too. Numerous RER was pure in ribosomes. The recovery time was too short for the completely tissue repair.

The work has been financially supported by N N 304 279440