

A12.24 EFFECTS OF A TRINOMIAL METAL MIXTURE OF CU, ZN AND CD ON BIOACCUMULATION AND IONOREGULATION IN COMMON CARP, *CYPRINUS CARPIO*

THURSDAY 4 JULY, 2019 POSTER SESSION

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The development of industry, mining activities and agriculture supported an increase of metal pollution in the aquatic system. Therefore a wide occurrence of mixtures of metal exists in the aquatic environment. When looking at individual metal exposures, 10% of the LC50 is often considered relatively safe, near the NOEC (No Observed Effect Concentration) or LOEC (Lowest Observed Effect Concentration). With this study we try to answer the question: "Can 10% of this LC₅₀ for Cu, Zn and Cd still be considered as a safe concentration when applied in a mixture?" Common carp were exposed to a mixture of Cu: 4.8 µg/L, Cd: 2.9 µg/L and Zn: 206.8 µg/L at 20°C for 1 week and we looked at fish survival, bioaccumulation, ionoregulation and metallothionein induction. Our results show a rapid increase in copper and cadmium in gills and liver with adverse effect on ion-homeostasis. A sodium drop was reported in the gills, liver and muscles. The loss in sodium content affected the whole body ionoregulation, while a decrease in potassium levels was only observed in the liver. A decrease in the gene expression for H⁺-ATPase and a decreased expression of the Na⁺-channel were observed after 1 day of exposure. We hypothesise that this increase in H⁺-ATPase and the subsequent recovery of the Na⁺-channel expression rates are an attempt to compensate for the reduced Na⁺ uptake due to competition between copper and sodium at the uptake site. In addition a strong stimulation of metallothionein gene expression was reported during the whole experiment.