Zinc is an essential trace metal, but many aspects of its toxicity remain unclear. In this study, we investigated zinc effects on oxidative stress parameters in four tissues (gill, liver, kidney, and white muscle) of teleost Fundulus heteroclitus. Possible protective effects of salinity were also studied. Killifish were exposed to sublethal level (500 µg L⁻¹) of waterborne zinc for 96 h in 0% (fresh water), 10% (3.5 ppt), 30% (10.5 ppt) and 100% sea water (35 ppt). Salinity per se had no effect on any oxidative parameter in the control groups. Zinc exposure clearly induced oxidative stress by increasing reactive oxygen species (ROS), Lipid peroxidation (LPO) and protein carbonyl. The responses were qualitatively similar amongst different tissues. Salinity acted as a strong protective factor, where in 0 ppt oxidative damage were observed and increase salinity until 100% sea water (35 ppt) has a protective effects against zinc toxicity. Increases in total oxidative scavenging capacity (TOSC) occurred at higher salinities, correlated with increases in the activities of superoxide dismutase (SOD) and glutathione-S-transferase (GST), as well as in tissue glutathione (GSH) concentrations. However, TOSC was depleted in zinc-exposed fish at 0 ppt, accompanied by decreases in SOD, GST and GSH. Our results confirm that sublethal waterborne zinc is an oxidative stressor in fish, and highlight the important protective role of higher salinities in ameliorating the oxidative stress associated with zinc toxicity in this model estuarine teleost.

Word Keys: metals, zinc, antioxidants
Supported by: CAPES