**THE EFFECTS OF INCREASED SALINITY ON ORGANISMS IN FRESHWATER ECOSYSTEMS: A CASE STUDY OF FRESHWATER MUSSELS**

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| ABSTRACT The melting of terrestrial glaciers, the expansion of the sea levels, and droughts due to global warming cause the increase of salinity levels in the freshwater. Notably, research on salinity in marine ecosystems is significantly higher than research in freshwater ecosystems. Freshwater mussels are an essential group of organisms that improve water quality by filtering the water body in which they are located. In addition, they are symbiotically related to other organisms in the feeding and reproduction cycle. These characteristics make freshwater mussels good model organisms. In this study, the effects of salinity increasing on total haemocyte levels (THCs) and lipid peroxidation by-product malondialdehyde (MDA) were investigated on freshwater mussels (*Unio delicatus*). After obtaining the freshwater mussels from local fishermen in Bursa (Türkiye), they were adapted to laboratory conditions for two weeks. Five freshwater mussels were placed in each aquarium and directly transferred to 12 ‰ salinity at a constant water temperature of 24 ºC for 1 hour and 24 hours in the experiment. There was also a positive control group. At the end of the exposure times, mussels were placed under ice anesthesia, and the hemolymph liquid, gill, and digestive gland tissues were taken. The THCs were investigated with the hemolymph liquid, and the levels of MDAs were calculated in gills and digestive tissues. The amount of THCs increased significantly at the end of 1 hour of salinity exposure but returned to the level of control group values at the end of 24 hours. According to the MDA results, levels in digestive and gill tissues did not change significantly within 1 hour after exposure but showed a tendency to increase during the rest of the exposure. It has been understood that mussels develop a rapid physiological and cellular response to salinity. The effects of salinity on freshwater mussels should be monitored using other parameters. |

# Keywords: Salinity, Freshwater Mussel, Total Hemocyte Counts, MDA