https://doi.org/10.70200/RX202401047Y

MEDITERRANEAN MUSSELS (*MYTILUS GALLOPROVINCIALIS*) UNDER SALINITY STRESS: EFFECTS ON ANTIOXIDANT CAPACITY

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Estuarine and intertidal bivalve mollusks frequently experience salinity fluctuations that may drive oxidative stress (OS) in the organism. Here we investigated OS markers and histopathological changes in gills and hemolymph of Mediterranean mussels *Mytilus galloprovincialis* acclimated to a wide range of salinities (6, 10, 14, 24, and 30 ‰). Mussels were captured at the shellfish farm with the salinity of 18% and then acclimated to hypo- and hypersaline conditions in the laboratory at the speed of 1.5±0.5‰ per day. Indicators of redox balance in hemocytes (intracellular reactive oxygen species (ROS) levels, DNA damage) and gills (thiobarbituric acid reactive substances (TBARS), protein carbonyls (PC), activity of catalase (CAT), superoxide dismutase (SOD) and glutathione peroxidase (GPx) were measured. The results revealed induction of OS in tissues and cells of mussels for both experimental increase and decrease salinity modeling. Hemocytes showed higher sensitivity to oxidative damage from salinity stress compared to gills, as DNA damage and elevated ROS levels were observed in all experimental groups except 14‰. A decrease in environmental salinity to 10 ‰ was likely within the physiological norm for mussels, as minor oxidative damage was noted. At a salinity of 6 ‰, the most significant signs of redox imbalance, including DNA damage, increased ROS production levels in hemocytes, and suppressed activity of SOD in gills were observed, along with elevated PC levels. An increase in environmental salinity up to 30 ‰ led to the enhancement of the activity of antioxidant enzymes in the gills, which may be attributed to the high capacity of the antioxidant system in this organ. The study provides new insights into the effects of salinity stress on the tissue and cellular redox balance of bivalves, which is crucial for better understanding the potential consequences of the global transformation of coastal ecosystems.