

# THE EFFECT OF FOOD QUALITY ON IMMUNE AND OXIDATIVE STRESS BIOMARKERS OF WILD MUSSELS, *MYTILUS SPP.*

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Blue mussel (*Mytilus spp.*) is commonly used in pollution monitoring programs due to its sessile character, wide distribution and ability to accumulate contaminants in tissues. Natural and anthropogenic discharges encourage the increase of eutrophication process which promotes the proliferation of different algae's types which can influence the nutritional composition of marine organisms such as mussels, and may affect their biological responses to pollutant exposures.

The aim of this study was to evaluate the effect of food quality on mussel biomarker responses upon exposure to the polycyclic aromatic hydrocarbon (PAH) fluoranthene (FLU). For that purpose, a battery of cellular and biochemical biomarkers were considered in this study. Cellular biomarkers were hemocytes viability, phagocytosis and ROS production as a primary response of organisms to contamination, and biochemical biomarkers of oxidative stress, namely superoxide-dismutase (SOD), catalase (CAT), glutathione-S-transferase (GST), glutathione reductase (GR), and lipid peroxidation (LPO) as indicators of cellular stress and damage. Mussels were conditioned for 6 weeks with two different algae's species, the diatom *Chaetoceros gracilis* and the dinoflagellate *Heterocapsa triquetra*. After dietary conditioning, mussels were exposed to 30µg L<sup>-1</sup> of FLU for 7 days. Dietary conditioning resulted in differential cellular and biochemical responses to PAH exposure. Mussels fed with the diatom showed higher FLU accumulation in their tissues and, as a consequence, higher values of phagocytosis and ROS production as well as higher SOD and GR activities. Result of this study reveals diet can modulate mussel responses to pollutants and highlights the necessity to consider food composition in ecotoxicology studies carried out with mussels.

**Keywords:** MUSSEL, MONITORING PROGRAMS, BIOMARKERS, FOOD QUALITY, PAH EXPOSURE