

Measurement of esterase activity (EA), total oxidant status (TOS) and total antioxidant capacity (TAC) measurement in gills, digestive gland and hemolymph of *Mytilus galloprovincialis*.

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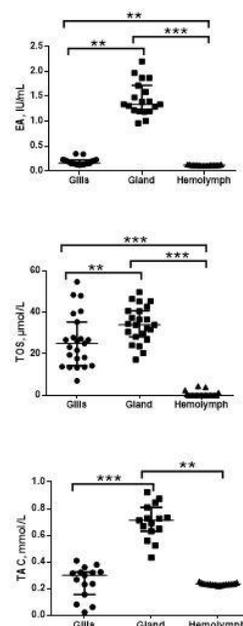
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The successful implementation of Union Water Framework Directive (Directive 2000/60/CE) requires the establishment and use of emerging and low-cost tool as part of monitoring programs. On this scheme, concentrations of pollutants and their derivate effects in the biota are one of the most important elements in the evaluation of aquatic environment.

Biomonitoring is a scientific technique for the assessment of environmental state, based on sampling and analysis of tissues and fluids [1]. Biomarkers were described as changes in a biological response which can be related to exposure to or toxic effect of environmental chemicals [2]. Pollutants promote the generation of reactive oxygen species which induces antioxidant defense mechanism in exposed organism, in order to prevent oxidative damage to biomolecules. Finally, wild mussels (*Mytilus galloprovincialis*) are widely accepted as bioindicators of marine pollution since they are abundant, sedentary, easy to sampling, and accumulation and resistance to environmental stress and pollution.

In the present study, three antioxidative biomarkers, esterase activity (EA), total oxidant status (TOS) and total antioxidant capacity (TAC), were measured in gills, digestive gland and hemolymph of wild mussels *Mytilus galloprovincialis* exposed to heavy metals. For analytical validation, recovery, intra and interassay coefficient of variations, and precision were calculated.

Results showed EA, TOS, and TAC methods to be precise and accurate when measured in gills and digestive gland extracts, while most of EA and TOS values were below the lower limit of detection in hemolymph, making it a not adequate tissue for the methods employed. When different tissues were compared, digestive gland showed the highest EA, TOS, and TAC while hemolymph activities were the lowest in all cases (Figure 1).



Referencias

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