

Antioxidant response and oxidative damage in the bivalve *Pinna nobilis* to contamination in coastal waters of the Balearic Islands

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Anthropogenic contaminants may exert toxic effects to marine organisms induced by the presence of an excess of reactive oxygen species (ROS). An increase in the formation of ROS and/or a reduced function of the physiological antioxidant defense systems results in oxidative damage to cellular biomolecules. This work evaluated the antioxidant enzyme response and the oxidative damage in the gills of *Pinna nobilis* through the use of several biomarkers as superoxide dismutase (SOD), catalase (CAT), glutathione peroxidase (GPX), glutathione reductase (GR), and malondialdehyde (MDA). The specimens were collected in the Magaluf bay (Mallorca, Esp), a anthropic site and in a no take area of the Cabrera Archipelago National Park, (BI, Esp) as the control area. Mussels were collected at 8-10 m depth, measured and dissected on board in order to remove gills and immediately frozen. At the laboratory, tissues were homogenized, sonicated and centrifuged. Then, the supernatants were collected and used for the spectrophotometric analyses and Western blot. All enzymes CAT, SOD, GPX, GR, presented higher activities in Magaluf bay than in the control site. MDA concentration in gills, as a marker of lipid peroxidation, were also increased in the specimens sampled in Magaluf bay. We can conclude that human activity induces a biological stress the fan mussel *Pinna nobilis* evidenced by an increase in the antioxidant enzyme activities and in the lipid peroxidation.