{rokbox title=|Experimental design scheme :: Image: Authors| thumb=|images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-long-term-exposure-microplastics-induces-oxidative-stress-and-proinflammatory-response-sparus-aurata-solomando-et-al-2020-thumb.jpg|}images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-long-term-exposure-microplastics-induces-oxidative-stress-and-proinflammatory-response-sparus-aurata-solomando-et-al-2020.jpg{/rokbox}

Antònia Solomando, **Xavier Capó**, **Carme Alomar**, **Elvira Álvarez**, **Montserrat Compa**, José María Valencia, Samuel Pinya,
Salud Deudero
, Antoni Sureda, 2020.
Long-term exposure to microplastics induces oxidative stress and a pro-inflammatory response in the gut of *Sparus aurata* Linnaeus, 1758.
Environmental Pollution. Volume 266, Part 1, November 2020, 115295.
https://doi.org/10.1016/j.envpol.2020.115295

Abstract: Environmental pollution from plastic debris is a major global concern, being a potential threat to marine organisms and ecosystems. The accumulation of microplastics (MPs) in the oceans has notable ecological implications due to their long persistence, their potential ecotoxicity, and their ability to adsorb other pollutants and act as vectors of pathogens. Nevertheless, whereas the number of investigations documenting the presence of MPs in wild fish has increased, less studies have addressed the toxicological effects associated with the ingestion of MPs in long-term laboratory conditions. The aim of the present study was to assess the physiological response of gilthead seabream (Sparus aurata) exposed to low-density polyethylene (LDPE) MPs during a 90-day exposure followed by an extra 30 days of depuration through the application of oxidative stress biomarkers in the gut. No changes were observed in the Fulton condition factor of fish associated with MP intake. The activities of antioxidant enzymes and glutathione s-transferase and the levels of reduced glutathione progressively increased throughout the study in the MPs-fed group compared to the control group, reaching the highest values at 90 days. Similarly, the activity of the pro-inflammatory enzyme, myeloperoxidase, and the levels of oxidative damage markers -malondialdehyde and protein carbonyls- also increased after 90 days of exposure to an enriched diet with MPs. During the 30-day depuration period, all the biomarkers analysed tended to normalize, with the majority recovering values similar to those of the control group. In conclusion, MPs exposure during 90 days to *S. aurata* induced oxidative stress and a pro-inflammatory response in gut, and were able to recover after the exposure to MPs was removed.

Keywords: Microplastics, Oxidative stress, Toxicity, Low-density polyethylene, Gilthead seabream