{rokbox title=|S. aurata microplastics intake :: Image: Authors| thumb=|images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-csic-quantification-tissue-biomarker-responses-microplastic-ingestion-sparus-aurata-capo-et-al-2022-thumb.jpg|}images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-csic-quantification-tissue-biomarker-responses-microplastic-ingestion-sparus-aurata-capo-et-al-2022.jpg{/rokbox}

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Quantification of differential tissue biomarker responses to microplastic ingestion and plasticizer bioaccumulation in aquaculture reared sea bream *Sparus aurata*
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Abstract: Marine aquaculture is considered a potential source of microplastics (MPs). MPs can induce oxidative stress and damage in marine species. In this study we evaluated the impact of MPs intake in the commercial fish, *Sparus aurata*, from aquaculture facilities and the antioxidant response associated to this MPs ingestion in caged specimens for 120 days. Sampling was carried out at the beginning of the study (T0), at 60 days (T60) and at 120 days (T120). At each sampling stage, gastrointestinal tract, blood, plasma, liver and muscle samples were obtained to analyse MPs intake (gastrointestinal tract), oxidative stress markers (blood, plasma and liver) and plasticizers bioaccumulation (muscle). Fish sampled at T60 presented the highest MPs intake and plasticizers accumulated in muscle over time, but with a different pattern according to type: bisphenols and phthalates. This indicates MPs ingestion induces a differential tissue response in *S. aurata*.
Similarly, stress biomarkers presented a differential response throughout the study, depending on the analysed tissue. In the case of oxidative damage markers, for malondialdehyde (MDA) an increase throughout the study was observed both in liver and blood cells but with a progressive decrease in plasma. In the case of phase I detoxifying enzyme activities in liver, 7-ethoxyresorufin O-deethylase (EROD), 7-benzyloxy-4-[trifluoromethyl]-coumarin-O-debenzyloxylase (BFCOD) and carboxylesterases (CE), showed a comparable decrease at T60 with a slight recovery at T120. In contrast, glutathione-S-transferase (GST) activity was significantly enhanced at T60 compared to the other sampling stages. In conclusion, MPs ingestion occurs in aquaculture reared seabream

where potentially associated plasticizers accumulate in the muscle and both could be responsible for plasma and liver oxidative stress damage and alterations on detoxifying biomarkers responses.

Keywords: Aquaculture, Oxidative stress, Microplastics, Plasticizers, Seabreams, Bioaccumulation, Biomarkers