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Carme Alomar, **Marina Sanz-Martín**, **Montserrat Compa**, **Beatriz Rios-Fuster**, **Elvira Álvarez**
,
Vincent Ripolles, José María Valencia,
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Microplastic ingestion in reared aquaculture fish: Biological responses to low-density polyethylene controlled diets in *Sparus aurata*

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Abstract: During the last years, ingestion of microplastics (MPs) has been quantified in marine species both with an ecological and commercial interest at sea and under experimental conditions, highlighting the importance to assess MP ingestion in commercially and aquaculture important species such as gilthead seabream (*Sparus aurata*) fish. In order to study the ingestion of MPs in a commercially valuable species, gilthead seabreams were exposed to an enriched diet with virgin and weathered low-density polyethylene (LDPE) pellets for three months followed by a detoxification period of one month of no exposure to MP enriched diets. Our results indicate that MP ingestion in these fishes increased with exposure time, and differences were found between treatments, showing the highest ingestion values after three months of exposure to MP enriched diets and in the weathered treatment. However, after one month of detoxification, no MPs were found in the gastrointestinal tracts of fish, reflecting no long-term retention of MPs in Sparus aurata digestive system. According to results from this study, exposure of fish to MP enriched diets does not affect fish size neither the Fulton's condition index as both parameters increased with time in all treatments (control, virgin and weathered). Both carbon and nitrogen isotopic signatures decreased with fish size in all treatments which could be related to an increase of nitrogen deposition efficiency in fish muscle with a high protein assimilation during the first months of
Sparus aurata
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Keywords: Stable isotopes analyses, Fish quality, Plastics, Gilthead seabream, Body condition