
EXPOSURE OF SPARUS AURATA TO A MICROPLASTIC ENRICHED DIET UNDER LABORATORY CONDITIONS

Carme Alomar^{*1}, Marina Sanz¹, Vincent Ripolles¹, Beatriz Ríos¹, Ines Albertí¹, Montse Compa¹, Elvira Álvarez¹, and Salud Deudero¹

¹Instituto Español de Oceanografía (IEO), Baleares – Muelle de Poninete s/n, Spain

Abstract

During the last years, microplastic (MP) ingestion has been quantified in marine species both with an ecological and commercial interest at sea and under experimental conditions. Growing evidence indicates MP ingestion can produce both physical harm such as internal abrasion as well as chemical harm such as cancerinogenesis, endocrine disruption, amongst others, associated to chemicals that are added during manufacturing processes or sorbed to their surface once in the marine environment (Rochman et al., 2013). Moreover, enzymatic activation of Glutathione-S-Transferase (GST), which is used in the detoxification system of species, has been quantified in commercially important species exposed to plastic pollution (Alomar et al., 2017) confirming that there is a physiological effect related to MPs ingestion. Given the ubiquity of plastic polymers in the marine environment (Compa et al., 2018) and their susceptibility to sorbed contaminants with a potential of being transferred along the food chain, including humans, it is important to assess MPs ingestion in a commercially important species. For the purpose of this research, *Sparus aurata* (gilt-head (sea) bream) was exposed to an enriched diet with virgin LDPE and marinated LDPE over the course of three months. After this feeding period, gilt-head (sea) bream were exposed to a detoxification period of one month to investigate if *Sparus aurata* is able to recover after being fed with MPs. Preliminary results demonstrate that *Sparus aurata* are ingesting both virgin and marinated MPs but with no apparent effect in their body condition, however physical damage is observed due to this ingestion.

Acknowledgments: Laboratorio de Investigaciones Marinas y Acuicultura and J.M. Valencia. Research project ACUIPLASTIC, ref CTM2017-88332-R funded by the Programa Estatal de Investigación, Desarrollo e Innovación, Spanish Government.

References:

- Alomar, C. et al., 2017. Environmental Research, 159: 135–142. DOI: <https://doi.org/10.1016/j.envres.2017.07.043>.
- Rochman, C.M., et al., 2013. Sci. Rep. 3 (3263). <http://doi.org/10.1038/srep03263>

Keywords: physiological effects, LDPE, exposure

*Speaker