## EFFECT OF ENVIRONMENTAL MICROPLASTICS INGESTION ON ZEBRAFISH (Danio rerio) METABOLISM

Ico Martínez<sup>\*1</sup>, Alexandro Autiero<sup>1,2</sup>, Alberto Navarro<sup>1</sup>, Arianna Bautista-Gea<sup>1</sup>, Rodrigo Almeda<sup>1</sup>, Theodore T. Packard<sup>1</sup>, May Gómez<sup>1</sup>, and Alicia Herrera<sup>1</sup>

<sup>1</sup>Marine Ecophysiology Group (EOMAR), IU-ECOAQUA, Universidad de Las Palmas de Gran Canaria – Campus Universitario de Tafira, Edificio de Ciencias Básicas, Las Palmas de Gran Canaria, Islas Canarias, Spain

<sup>2</sup>Laboratory of Histology and Embryology – Department of Microscopy, Institute of Biomedical Sciences Abel Salazar (ICBAS), University of Porto (U. Porto), Portugal

## Abstract

The problematic of microplastic pollution has been studied for years, so that their distribution, composition and the physical hazards they imply for marine organisms have been widely reported. Once all this has been well defined, it would be time to researching on polluted MPs' impact on marine organisms' metabolism. Potential damage at cellular levels as well as at different food-web levels should be investigated.

In this work, we have studied the effect of environmental microplastics (MPs) on vertebrate model organism, *Danio rerio* (zebrafish). MPs were collected from two beaches of Canary Island, Lambra-beach in La Graciosa, and Poris-beach in Tenerife. Zebrafish were exposed to four different diets during 60 days: a control diet (A), food with 10% virgin MPs (B), food with 10% Lambra-MPs (C), and food with 10% Poris-MPs (D). We sampled the organisms at the beginning of the experiment (T0), after 7 (T7), after 30 (T30), and after 60 days (T60). We measured *D. rerio*'s electron transport system activity (ETS), proteins (PROT), lipids (LIP), and carbohydrates (CARB) content and, in energetic terms, energy available (Ea), energy consumed (Ec), and the CEA index (a proxy to study the energy budget balance).

No significant differences (p< 0.05) were found between the different treatments, nor during the time-periods of each treatment. In terms of biochemical composition, proteins were the most prevalent energy-rich compound ( $_{82\%}$  Ea), followed by carbohydrates and lipids with similar percentages ( $_{9\%}$  Ea). These percentages remained stable over time and treatments, showing no change in composition in response to MP-ingestion.

We conclude that, under our conditions, and after 60 days, zebrafish are not significantly affected by microplastic ingestion.

Keywords: Microplastics, zebrafish, electron transport system, metabolism, CEA index

\*Speaker