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Nationality: Portuguese

Orientation: Integrated Management of the Sea

Specialization Area: Analysis and Environmental assessment

Research Area: 3.6 Pollution and environmental impacts

PhD project: Experimental assessment of microplastics impacts, alone or combined with copper, in zebrafish (*Danio rerio*) and blackspot seabream (*Pagellus bogaraveo*) neural development

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Summary: Microplastics, which are synthetic polymer particles with a size lower than 5 mm, are considered emerging environmental contaminants of high concern. Given its small size, microplastics are easily ingested by aquatic biota and have been found to cause significant harm, including neurotoxicity. Since nervous system is highly vulnerable to toxicants and is involved in a wide range of physiological functions, it is crucial to understand the mechanisms responsible for microplastics-induced neurotoxicity. Besides, in the aquatic environment, microplastics can sorb persistent organic pollutants and heavy metals. Therefore, when aquatic organisms ingest microplastics, chemicals desorption can occur, implying a greater bioavailability of these pollutants and higher toxicity. However, few studies on the toxicological interactions between microplastics and heavy metals were performed so far.

Considering the above, the present PhD project aims to fill some of these gaps of knowledge, addressing the following main goals: assess the microplastics and copper interactions effects in zebrafish (*Danio rerio*) and blackspot seabream (*Pagellus bogaraveo*) neuro and developmental toxicity; and investigate the long-term toxicological effects of microplastics and copper, alone or in combination, in neurogenesis of zebrafish adults.

The results of this work will be important to understand the mechanisms involved in the negative effects of microplastics and heavy metals.

