EFFECTS OF ENVIRONMENTAL MICROPLASTICS INGESTION IN FISH

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Ingestion of microplastics can pose a health risk to fish, especially due to the associated chemical contaminants. In the present study, we have designed an experiment to determine whether there is trophic transfer of chemical contaminants from environmental microplastics (EMPs) to the liver of sea bass (*Dicentrarchus labrax*) by testing two different feeding treatments with realistic concentrations (in the worst-case scenario) of virgin MPs, and with EMPs. Fish were fed for 60 days with three treatments: Control (feed), MP (feed with 10% virgin microplastics) and EMP (feed with 10% environmental microplastics), being the first study to evaluate long-term accumulation of contaminants due to ingestion of environmental microplastics in fish. Polybrominated diphenylethers (PBDEs), polychlorinated biphenyls (PCBs) and dichlorodiphenyltrichloroethane (DDT) were analyzed in the EMP, feed and liver.

Our results show that PBDEs present in EMPs bioaccumulated in the liver after 60 days of treatment with a diet consisting of feed plus 10% microplastics collected from beaches. In the case of contaminants that were found adsorbed to microplastics, such as DDT and PCBs that are ubiquitous in all environments, these contaminants also appeared in control diet and

diet with virgin MPs, but for both contaminants bioaccumulation was significantly higher in the liver of sea bass fed 10% EMPs with the diet, so ingestion of microplastics in the environment may increase exposure to these contaminants, adding to that of the surrounding water and diet.

Key words: Microplastics, marine pollution, environmental microplastics, chemical pollutants, POPs, additives.

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