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Toxicological impact of microplastics on the aquatic environment and interaction with other pollutants

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Abstract

Background: Microplastic (MP) pollution is a growing concern all over the world. MPs are derived from various petroleum compounds with a particle size of less than 5 mm [1]. The occurrence of MPs in the aquatic environment come from different sources as land water runoff, rivers and wastewater treatment plants (WWTPs) [2]. Due to their ubiquity and difficult removal, MPs can be consumed and enter trophic levels [3]. Plastics can absorb many types of toxic compounds, including organic pollutants and trace metals. Chemicals absorbed to plastic particles can enter food chains through different pathways, enhancing bioaccumulation and/or biomagnification efficiencies [4]. **Objective:** This study aims to assess the toxicological impact of MPs in the aquatic environment and their interaction with other pollutants. **Methods:** This research was based on publications available in the ScienceDirect and Scopus databases. **Results:** As MPs are detected in plankton, invertebrates and vertebrates, meaning that aquatic organisms from different hierarchies of the food chain are exposed to contamination by MPs. A study was carried out with MPs associated with zinc showed the increase of the toxicological effects. Several studies have investigated the effects of MPs on marine invertebrates. Adverse effects were also shown in earthworms, after exposure to MPs, as fibrosis, congestion and inflammatory infiltration, organ blockage, physical damage and metabolic disturbances [2]. **Conclusions:** The toxicity of MPs in aquatic organisms and their entry into trophic levels has been reported with different organisms, although according to some studies this toxicity can be altered in the presence of other contaminants.

Keywords: microplastics; aquatic environment; water pollutants

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