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Dietary habits and health conditions associated with microplastics in human feces

Sara A. M. Silva^{1,2,*}, Tony R. Walker³ and Joana C. Prata^{1,2}

¹ UCIBIO - Applied Molecular Biosciences Unit, Translational Toxicology Research Laboratory, University Institute of Health Sciences (1H-TOXRUN, IUCS-CESPU), 4585-116 Gandra, Portugal

² Associate Laboratory i4HB - Institute for Health and Bioeconomy, University Institute of Health Sciences - CESPU, 4585-116 Gandra, Portugal

³ School for Resource and Environmental Studies, Dalhousie University, Halifax, NS B3H 4R2, Canada

* Correspondence: a38989@alunos.cespu.pt

Abstract

Background: Microplastics (MPs) are emerging environmental contaminants that have been detected in various human biological samples, raising concerns about their potential health impacts [1]. Given the increasing presence of MPs in food, beverages, and the environment, understanding exposure pathways and human health effects is crucial. **Objective:** This review aims to evaluate recent epidemiological studies on MP contamination in human feces, focusing on the potential association with dietary habits and health conditions. **Methods:** A literature review was conducted in March 2025 on Web-of-Science, Scopus and Google Scholar with variations of keywords “microplastics”, “feces”, “human” and “diet”, spanning from 2018 to 2025. Five studies were identified. **Results:** MPs were consistently detected in human feces, with concentrations varying based on dietary habits and environmental exposure [2,3]. Higher MP levels were observed in individuals with frequent consumption of packaged and take-out foods. One study found a significant correlation between MP concentrations and inflammatory bowel disease (IBD) severity, suggesting a potential role in disease progression. Additionally, MPs were linked to alterations in gut microbiota, metabolic disruptions, and increased body mass index (BMI), highlighting their possible role in obesity development. Of the five studies, four found a positive correlation between the consumption of packaged foods and the presence of MPs in human feces. **Conclusions:** Reviewed studies collectively indicate ubiquitous contamination of human feces with MPs, with potential implications on gut health, inflammation, and metabolic disorders. However, causality remains uncertain, and further research is necessary to determine whether MPs actively contribute to metabolic changes or are merely a byproduct of dietary habits. Indeed, consumption of foods and drinks packaged in plastic seem to contribute to human exposure. Further research on exposure and toxicity mechanisms is essential for developing effective public health strategies.

Keywords: microplastics; plastic packaging; epidemiology; human exposure

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