
The Genotoxic Effects of Microplastics in Aquatic Organisms

Ghada Tagorti*¹ and Bülent Kaya¹

¹Department of Biology, Akdeniz University – Antalya, Turkey

Abstract

Microplastics (MPs) are anthropogenic contaminants, distributed in the entire ecosystem. However, the impact of MPs on the biota, humans, and the environment is still uncertain. Recent studies have overemphasized the occurrence, characterization, and cytotoxicity effects of MPs but deciphering the genotoxic potential of these substances is not yet clear. Thus, we provided a review to address the genotoxic effects of MPs in aquatic organisms. Several genotoxic endpoints were implicated, including the frequency of micronuclei (MN), nucleoplasmic bridge (NPB), nuclear buds (NBUD), DNA strand breaks, and the percentage of DNA in the tail (%Tail DNA). In addition, the mechanism of MPs-induced genotoxicity seems to be closely related to reactive oxygen species (ROS) production, inflammatory responses, and DNA repair interference. Further, future research was suggested to present environmentally relevant conditions. Moreover, the long-term effects of MPs should be addressed, and assessing the genotoxic effect in terrestrial ecosystems need to be taken into account.

Keywords: DNA damage, Microplastics, Oxidative stress

*Speaker