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Effects of plastic wastes on fish health

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Plastic wastes can reach oceans via the municipal solid or sewage waste units, rivers and winds. Plastic wastes can stay in the oceans for decades and the degraded smaller particles can act as sponges that absorb toxins. The participation of microplastics into the food-web was previously detected in marine organisms but it's long-term effects are unknown. The aim of this preliminary study is the determination of microplastic presence in the stomach content of horse-mackerel (*Trachurus mediterraneus*) and mullets (*Chelon auratus*) caught in Istanbul Strait (The Bosporus) and their effects on fish health by using macroscopic, microscopic and histologic methods. Fish samples were examined externally and internally. Stomach content was precipitated in 10% formaldehyde and examined under light microscope. Tissue samples were embedded in paraffin blocks and stained with a modified haemotoxylin&eosin method. No clinical symptoms of bacterial or parasitic diseases were observed on fish samples. A polystyrene particle was detected in the digestive tract of a fish sample. Shiny, solid possibly plastic particles were observed in the stomach content of almost all mullet samples where they were relatively less in horse-mackerel samples. Melanomacrophage centers, hyperemia, and necrotic-focci were observed in the spleen, liver and heart tissues of mullets. It is thought that these fish samples of wild populations were exposed to various stressors for a long time. In conclusion, the results of this preliminary study revealed that microplastic particles may affect fish health and as they can include toxins, the microplastic pollution in the oceans should be avoided.

Keywords: Microplastics, stomach content, fish histopathology, pollution