

Comparison of the presence of microplastics in different tissues of indicator organisms from the Adriatic Sea

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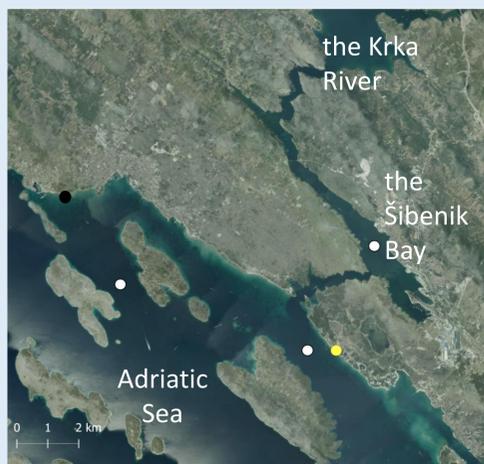
INTRODUCTION

- The presence of microplastics (MP) in the aquatic environments is particularly important, due to possibility to be ingested into organisms, and consequently to serve as a vector for the intake of other pollutants
- Data on the presence of MPs in different tissues of fish and bivalves are still rare, and depend on the tissue type, physiology and its role.

GOALS

- Isolation and determination of MPs from different tissues of aquatic organisms used in human diet
- Estimation of occurrence and intake of MPs to marine organisms from the Adriatic Sea, and consequently humans

SAMPLING AREA



- sea bream
- mussels

MATERIALS AND METHODS

BIOINDICATOR ORGANISMS

sea bream
(*Sparus aurata*)



intestine
muscle

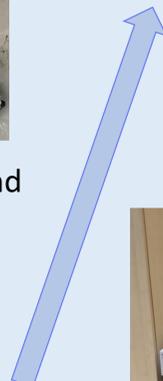


TISSUE DIGESTION by HNO₃ at 85 °C for 3.5 h in a dryer or by 10% KOH at 60 °C for 48 hours in the ultrasonic bath

mussels
(*Mytilus galloprovincialis*)



digestive gland
mantle



VACUUM FILTRATION over polyester and polycarbonate filters coated with gold of a pore size of 0.8 μm



IRTracer-100,
AIM-9000,
Shimadzu



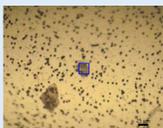
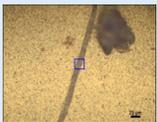
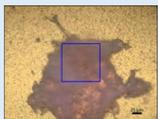
The procedure involved working in a protective cabinet to prevent contamination, and application of a "blank sample" to check the accuracy of the work.

RESULTS

SEA BREAM



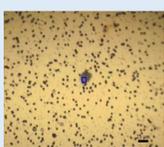
intestine



- poly(ethylene-co-acrylic acid)
- poly(ethylene-co-vinyl acetate)
- polyethylene
- nylon

Tissue with the highest occurrence of different MP types – dietary exposure

muscle



- polystyrene

Very low abundance of MP particles/fragments

MUSSELS



digestive gland



- poly(ethylene-co-acrylic acid)
- polyethylene
- nylon

Tissue with the highest occurrence of different MP types in mussels

mantle



- polymethylpentene

Very low abundance of MP particles/fragments

CONCLUSIONS

- The results indicated the presence of MPs in organisms from the Adriatic Sea and the importance of monitoring exposure and accumulation of MPs in aquatic organisms
- The data on occurrence, abundance, accumulation, and impacts of MPs in various organisms and environmental compartments enable development of strategies for the protection of aquatic ecosystems, but also human health



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