
SOFT-BENTHIC CNIDARIANS: POSSIBLE BIOINDICATORS OF MICROPLASTIC CONTAMINATION THROUGH PHTHALATE ESTERS DETECTION.

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Abstract

Microplastics (MPs) are pieces of plastics smaller than 5mm in size that can threaten marine life in different ways, like acting as vectors of plasticizers and contaminants adsorbed from the environment. Phthalates (PAEs) are common plastic additives blended with plastic polymers that, under certain conditions like the digestion process, can easily leach into the environments and become bioavailable to the marine organisms. A possible correlation between MPs exposure/ingestion and the presence of PAEs was highlighted in different marine organisms. Consequently, PAEs presence was proposed as marker to evaluate MPs contamination of marine environments. However, there are few data regarding rates of direct transfer of PAEs into marine organism's tissues based on microplastics exposure. BioSPME coupled with LC/MS is a methodology proposed as an alternative to quantify PAEs in marine invertebrates, offering an improved control on the background contamination compare to classical extraction procedures. Octocorals and anemones are benthic cnidarians with a world-wide distribution, similar physical traits and ecological role. Moreover, anemones were recently proposed as bioindicators of microplastic pollution. Aim of the work is to investigate the use of PAEs as an assessment index of their exposure to MPs both in laboratory and on-field. To this end, the capacity of the soft coral *Coelogorgia palmosa* to interact with MPs through ingestion and adhesion patterns was tested at 2 different microplastic experimental concentrations (0.01 g/L – 0.1 g/L). Then, we assessed PAEs occurrence in different soft coral species using bioSPME-LC/MS. For the on-field investigation, we propose sea anemones of the species *Anemonia viridis* (Forsskål, 1775) and *Actinia equina* (Linnaeus, 1758) as target organisms to measure PAEs concentrations in a Western Mediterranean area (Sinis Peninsula, Sardinia, Italy) and investigate the use of these plasticizers as an assessment index of their exposure to MPs.

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Keywords: Marine Litter, Pollution, Microplastics, PAEs, Bioindicators