



€ Oral communication

€ Poster

Human health risk assessment for consumption of microplastics and plasticizing substances through marine species

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Abstract:

A special characteristic of MP (microplastics) in the ocean is they may act as carriers of additives specific to the plastic materials used in their manufacture, such as plasticizers, among which Bisphenol-A (BPA), bis (2-ethylhexyl) phthalate (DEHP), dybutyl phthalate (DBP). Both MP as the plasticizers were searched in composite samples of mangrove cockle (*Anadara tuberculosa*), Stolzmann's weakfish (*Cynoscion stolzmanni*) and arched swimming crab (*Callinectes arcuatus*). Extraction of MP was done through physical-chemical techniques and identification was carried out employing the techniques of light microscopy, energy dispersive spectrometer (EDS), scanning electron microscope (SEM) and Raman spectroscopy; the sizes of MP obtained were between 0.5 μm and 106 μm , the following average results being obtained: for Arched swimming crab 4.0 ± 1.0 MP/g; mangrove cockle 3.3 ± 2.9 MP/g; and for Stolzmann's weakfish, the average was 2.4 ± 1.3 MP/g; the most observed shapes were fibers and irregular segments; the most identified MP was polyethylene terephthalate (PET). Regarding extraction and quantification of plasticizers, the extraction stage was carried out using QuEChERS tubes; and the identification and quantification with gas chromatography coupled to a mass spectrometer (GC-MS). Regarding the plasticizing substances, DEHP was found in detectable levels in all the samples; BPA was found in 84% of the composite samples analyzed; DBP was found in 50% of them, of the analyzed samples 34% were positive for the 3 analytes. The dietary exposure of people to plasticizers was calculated and for BPA the exposure obtained was compared with respect to the TDI (tolerable intake dose) for pregnant women and the new TDI proposed by EFSA in 2021 according to the estrogenic effect of this substance in the fetus. The objective of the work was to determine if a relationship could be established between both PM and plasticizers, which gave a positive relationship.

Keywords: Bisphenol-A (BPA); Bis (2-ethylhexyl) phthalate (DEHP); Dybutyl phthalate (DBP); Microplastics; Scanning electron microscopy; Dietary exposure.