

Evidence of Microplastics Ingestion in Two Commercial Cephalopod Species: Octopus Vulgaris and Sepia Officinalis

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Abstract : Plastics pollution represents one of the most important threats to marine biodiversity. In the last decades, different species are investigated to evaluate the extent of the plastic ingestion phenomenon. Even if the cephalopods play an important role in the food chain, they are still poorly studied. The aim of this research was to investigate the plastic ingestion in two commercial cephalopod species from the southern Tyrrhenian Sea: the common octopus, *Octopus vulgaris* (n=6; mean mantle length ML 10.7 ± 1.8) and the common cuttlefish, *Sepia officinalis* (n=13; mean ML 13.2 ± 1.7). Plastics were extracted from the filters obtained by the chemical digestion of cephalopods gastrointestinal tracts (GITs), using 10% potassium hydroxide (KOH) solution in a 1:5 (w/v) ratio. Once isolated, particles were photographed, measured, and their size class, shape and color were recorded. A total of 81 items was isolated from 16 of the 19 examined GITs, representing a total occurrence (%O) of 84.2% with a mean value of 4.3 ± 8.6 particles per individual. In particular, 62 plastics were found in 6 specimens of *O. vulgaris* (%O=100) and 19 particles in 10 *S. officinalis* (%O=94.7). In both species, the microplastics size class was the most abundant (93.8%). Plastic items found in *O. vulgaris* were mainly fibers (61%) while fragments were the most frequent in *S. officinalis* (53%). Transparent was the most common color in both species. The analysis will be completed by Fourier transform infrared (FT-IR) spectroscopy technique in order to identify polymers nature. This study reports preliminary data on plastic ingestion events in two cephalopods species and represents the first record of plastic ingestion by the common octopus. Microplastic items detected in both common octopus and common cuttlefish could derive from secondary and/or accidental ingestion events, probably due to their behavior, feeding habits and anatomical features. Further studies will be required to assess the effect of marine litter pollution in these ecologically and commercially important species.

Keywords : cephalopods, GIT analysis, marine pollution, Mediterranean sea, microplastics

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