
Methodology for microplastics quantification in clams

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Abstract

The accumulation of microplastics (MPs) on seafood has sparked scientific and popular concern since it may endanger human health. Clams are particularly dangerous for human exposure since they are swallowed whole.

The purpose of this study was to create a simple methodology for extracting MPs from a widely exploited clam, *Ruditapes decussatus*, such that they could be detected using the fluorescent dye Nile Red (NR) and subsequently characterized with micro-Raman spectroscopy. Several digestion procedures (e.g., Fenton, alkalis, bleach, among others) were tested in fresh or lyophilized (further crushed) biological samples.

The alkalis digestion with 10% KOH for 24 hours followed by an oxidizing agent (10% H₂O₂) for 24 hours and extraction with ZnCl₂ (1.6 kg/L) on lyophilized (pulverized) samples was the best approach for tissue digestion. The use of this approach indicated a high digesting efficacy with increased weight loss of biological tissues, reduced filtering time consumption, reduced interference of leftover organic matter with Nile Red staining and provided high-quality pictures for the quantification of suspected MPs. Using NR for detecting MPs, such particles might be spotted and characterized more readily when using micro-Raman spectroscopy.

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