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# MICROPLASTIC DEPURATION IN TWO COMMERCIALY FARMED OYSTER SPECIES FROM THE WEST COAST OF IRELAND

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## Abstract

Microplastics (MP) are recognised as emerging anthropogenic contaminants and have been observed in biota including commercial produced bivalve species, however only a few studies assess the efficacy of MP depuration in species from aquaculture production. This preliminary study assessed MP depuration efficacy in Pacific oysters (*Magallana gigas*, n=50) and European flat oysters (*Ostrea edulis*, n=50).

Four depuration times (24, 48, 72 and 96-h) were considered, with 10 individuals per treatment, and an additional 10 control organisms. Organic tissues were digested using a 10% KOH solution (40 C for 24-hours). Digested tissue was filtered to be subsequently observed for MP isolation. A subsample (109/539) was used for FTIR polymer identification. A forensic approach to cross-contamination was applied to minimise potential sources. Environmental MP concentrations in edible tissue of *M. gigas* were 0.6 MP g<sup>-1</sup> and 0.4 MP g<sup>-1</sup> for *O. edulis*. These were significantly reduced after a 96-hour depuration for both species: 0.2 MP g<sup>-1</sup> for *M. gigas* and 0.1 MP g<sup>-1</sup> for *O. edulis*, respectively. No statistically significant correlation between MP concentration and weight of edible tissue of oysters were identified. MP isolation retrieved mainly fibres and polymer identification revealed that 51.6% of these were natural.

Main outputs of this research showed that increasing depuration time to 96-hour can significantly reduce MP concentrations in edible tissues of farmed oysters. These findings aligned with similar depuration studies that show reduction; however, this is the first trial to demonstrate a significant decrease in MP concentrations over 96-h. These results provide important industry advice and can contribute to policy design, by providing valuable baseline information to stakeholders on MP reduction in bivalves intended for human consumption.

**Keywords:** farmed oysters, microplastics, depuration

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