

Feeding Rate of Mussels with Microplastics and Surfactants

Suspension-feeding mollusks (e.g., bivalves) play a key role in improving the water quality of coastal environments by filtering out suspended matter from the water column. Microplastics are becoming ubiquitous in the marine environment, so it is important to understand if these particles affect feeding processes of bivalves. Additionally, previous studies regarding the impact of microplastic on bivalve physiology have not independently tested for the effects of surfactants which are often added to commercially available plastic particles to prevent aggregation. We measured the clearance rate of mussels (*Mytilus edulis*) exposed to one type of microplastic and three common surfactants.

Mussels were given a dose of microalgal food (1×10^4 cells/mL) and 10-m polystyrene spheres (Polybead; 1×10^4 beads/mL). Experimental treatments tested were washed microspheres and microspheres coated with each of the following surfactants at a concentration of 2mg/L: triton X-100, benzalkonium chloride, and sodium dodecyl sulfate. These surfactants are nonionic, cationic, and anionic, respectively. Control mussels were given a microalgal diet only (2×10^4 cells/mL). Each mussel was placed in an individual 1-L chamber and exposed to one of the aforementioned treatments. Water samples were taken at the start of the experiment ($t=0$) and then every 10 minutes for 30 minutes to determine clearance rates. Particle concentrations were measured using an electronic particle counter (Coulter Counter) at an appropriate size range for the algae and microspheres. Our results indicate that microspheres with or without surfactant had no effect on clearance rates of mussel compared to those of the controls. Further, our research suggests that the use of polystyrene microspheres in future experiments without initial washing does not affect the clearance rate of mussels.

URL: <https://agu.confex.com/agu/os18/meetingapp.cgi/Paper/330117>

Session: **ED34A-2380**

Student Symposium III Posters

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Time: **Wednesday, February 14, 2018**

04:00 PM - 06:00 PM

- *Oregon Convention Center*
- *- Poster Hall*

Reference:

Flores, Y., V. Haynes & J.E. Ward. 2018 Clearance Rate of Blue Mussels (*Mytilus edulis*) Exposed to Surfactant-coated Microplastics. ASLO Ocean Sciences Meeting, Portland, OR