

Impact of microplastic on a marine diatom under environmentally relevant conditions

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Microplastic (MP), commonly known as plastic debris smaller than 5 mm in diameter, are widely distributed in the global ocean. Considering such wide distribution of MP in marine environment and their high availability to marine biota, concerns have raised about their toxic effects to marine life. The growth of marine diatoms, being at the basis of the marine food web, may be impaired by MP contamination. To date, some studies are available that have examined the growth-inhibitory effect of MP on marine microalgae. However, few of them utilized environmentally relevant MP concentrations. In the present research, we assessed the effect of MP on the marine diatom *Phaeodactylum tricornutum* under environmentally realistic conditions. In a lab-based experimental design, we exposed the diatom in a standardized seventy-two hours growth inhibition test (ISO 10253:2016) to a mimicked size frequency distribution of MP present in the Southern Part of the North Sea. To do so, we used polyethylene (PE) microbeads (10-125 μm) at the exposure concentrations of 1.25×10^2 particles/ L to 1.25×10^4 particles/ L. Algae cell density (cells/mL) was quantified using optical density measurement. The results show that virgin PE microbeads up to 1.25×10^4 particles/L do not alter the growth of *P. tricornutum*. Future work should make use of MP harvested from the environment instead of using virgin PE microbeads.

Reference

ISO, 2016. ISO 10253-Water quality – Marine algal growth inhibition test with *Skeletonema* sp. and *Phaeodactylum tricornutum*. Geneva, Switzerland.

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