Evaluating Possible Effects of Polystyrene Sphere Ingestion on Brine Shrimp Hatchability, Longevity, and Length

Krostenko, Anastazja (School: John Adams High School)

The investigation aimed to determine how introducing micro-plastics into the habitat of brine shrimp affected their life processes. The hypothesis was that the brine shrimp would confuse microplastic for prey and ingest it and that there would be negative effects on hatchability, longevity, and elongation in brine shrimp exposed to microplastic. To test this, the experimental bottles had 1 ml of plastic solution added. The measurements taken were the percentage of hatched, unhatched, and hatching cysts, and live brine shrimp, as well as the lengths of the live brine shrimp. There were three phases to the experiment: Phase One, in which the plastic was 0.03um in width, Phase Two with 0.08um wide plastic, and Phase Three, with 0.173um wide plastic. Data was evaluated using the Student T-Test. The study showed that the presence of microplastic increased hatchability. It is possible that the presence of microplastics offset the pH of the water and was beneficial to the hatching of brine shrimp. The results were inconsistent, warranting further testing. There were no significant results for the longevity of brine shrimp. As for the length of brine shrimp, the study showed that for the two smaller sizes of plastic, the length of the brine shrimp in the experimental was significantly shorter than the length of the brine shrimp in the control. This could indicate that the brine shrimp consumed the plastic, felt false fullness, stopped feeding, and malnourished themselves. The study conclusively showed that brine shrimp elongation is negatively affected by the presence of microplastics. Thus, the data only partially supported the hypothesis, because only elongation was negatively affected.

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