Gut Content Analysis and Selective Feeding Behavior of the Asiatic Hard Clam Meretrix meretrix (Linnaeus, 1758) in Marudu Bay

ABSTRACT

This study investigated the feeding behavior of the Asiatic hard clam, Meretrix meretrix, an important species in the artisanal fishery and commonly found in Sabah's coastal waters. The study aimed to identify the clam's primary diet and the environmental parameters that influence its feeding selection in its natural habitat. Sampling was monthly conducted for ten months, during which clam samples, environmental parameters, water samples, phytoplankton, and zooplankton were collected. Gut content analysis of 250 clams revealed that phytoplankton and zooplankton were the main food sources, representing 80.9% and 19.1% of the total food particles, respectively. Diatoms were the most common food particles ingested by the clams, while dinoflagellates only contributed a minor proportion of the total phytoplankton. The results of the dendrogram similarity analysis indicated significant differences in phytoplankton composition between gut and water samples. The one-way ANOSIM analysis indicated significant differences for all months, with an overall average R of 0.717 and $P<0.001$. Furthermore, the PERMANOVA following DistLM revealed that phytoplankton cell density, phytoplankton diversity, chlorophyll-a, and salinity significantly influenced the clam's particle selection process ($P<0.05$). In conclusion, this study offers a comprehensive understanding of feeding behavior and the dietary preference that can be utilized for the conservation of fishing grounds and enhancement of aquaculture production of the clam.