

ABSTRACT

Dian Nada Falihah, 24020222140061. **Polyphasic Identification of a Local Thraustochytrid Isolate from a Strong Current Marine Environment in Parangkusumo, Yogyakarta, Indonesia.** Supervised by Siti Nur Jannah and Dwi Susilaningsih.

Thraustochytrids are marine heterotrophic protists with significant potential as producers of Long-Chain Polyunsaturated Fatty Acids (LC-PUFAs), particularly docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA). Although Indonesia possesses exceptionally high marine biodiversity, the exploration of thraustochytrids from dynamic marine environments remains limited. This study aimed to identify a local thraustochytrid isolate from the coastal waters of Parangkusumo, Yogyakarta, using a polyphasic identification approach integrating morphological characterization, lipid accumulation analysis, and molecular determination based on the 18S rRNA gene. The study began with the collection of sediment, seawater, and seaweed samples, followed by isolation and purification of cultures. Morphological characterization was conducted using light microscopy, lipid accumulation was analyzed using Nile Red staining, and molecular identification was performed through amplification and sequencing of the 18S rRNA gene followed by phylogenetic analysis. The results successfully obtained a pure isolate designated Y-SW1-27, which exhibited morphological characteristics typical of *Botryochytrium* sp., including spherical vegetative cells with diameters ranging from 8–20 μm , the presence of ectoplasmic networks, and the formation of amoeboid cell structures. Nile Red staining revealed fluorescent signals within the cells, indicating intracellular lipid accumulation. Amplification of the 18S rRNA gene produced a DNA fragment of approximately 1,800 bp, while phylogenetic analysis showed that isolate Y-SW1-27 clustered within the same clade as *Botryochytrium* sp. TMR16-1 with a bootstrap value of 82 at the genus level. This study confirms the presence of the thraustochytrid genus *Botryochytrium* in the strong-current marine environment of Parangkusumo and demonstrates its capability to accumulate intracellular lipids.

Keywords: *Botryochytrium* sp., DHA, polyphasic identification, lipid.