

ABSTRACT

Kinanti Najwa Assyifa. 24020220140064. **Antibacterial Activity, Enzymatic Assay, and Molecular Identification of Bacterial Isolates Symbiotic with Freshwater Sponge *Eunapius carteri* Against Fish Pathogens *Aeromonas hydrophila* and *Pseudomonas fluorescens*.** Under the guidance of Wijanarka and Anto Budiharjo.

Aeromonas hydrophila and *Pseudomonas fluorescens* are gram-negative bacteria that cause losses in fish farming. The symbiont bacteria of the freshwater sponge *Eunapius carteri* have the potential to produce antibacterial compounds and the enzymes protease, amylase, cellulase and lipase. This research examines the effect of the symbiont bacteria of the freshwater sponge *Eunapius carteri* on the growth of the pathogenic bacteria *A. hydrophila* and *P. fluorescens* which infect fish. The method in this research was carried out by screening isolates of the freshwater sponge symbiont *Eunapius carteri* to inhibit the growth of pathogenic bacteria, and their ability to produce protease, amylase, cellulase and lipase enzymes, as well as molecular identification using the 16S rRNA coding gene. Based on the research results, it showed that 4 isolates of the freshwater sponge symbiont bacteria *E. carteri* were able to inhibit the growth of the pathogenic bacteria *A. hydrophila* but not *P. fluorescens*. BSEC-20 was the selected isolate to continue with enzymatic testing and molecular identification because it had an average clear zone of 2.72 mm. Isolates that could inhibit pathogenic bacteria were continued with enzymatic testing and the results obtained were that the four isolates could produce protease, amylase, cellulase and lipase enzymes. BSEC-20 isolate is the selected isolate to inhibit the pathogenic bacteria *A. hydrophila* and the selected isolate produces protease, amylase and lipase enzymes. BSEC-20 was molecularly identified with *Bacillus altitudinis* strain B16 with a present identity of 99.14%.

Keywords: Sponge symbiont bacteria, antibacterial, A. hydrophila, P. fluorescens, protease enzyme, amylase enzyme, cellulase enzyme, lipase enzyme, 16S rRNA gene