

## ABSTRACT

Rifqa Adib Khairani. 2402022014001781. **Antibacterial Activity, Enzymatic Test, and Molecular Identification of Freshwater Sponge Symbiont Bacterial Isolates *Eunapius carteri* Against Pathogens *Vibrio vulnificus* and *Vibrio harveyi*.** Under the guidance of Anto Budiharjo and Arina Tri Lunggani.

Marine fisheries cultivation that is being developed in Indonesia due to high consumer demand is often hampered by fish diseases such as gastrointestinal diseases, wound infections, and septicemia. Bacteria such as *Vibrio vulnificus* and *Vibrio harveyi* are pathogens that attack marine fisheries and shrimp farming. Biological agents, including bacteria, can be used to eradicate diseases in fish. Bacteria that are symbiotic with freshwater sponges can produce antibiotic compounds and hydrolytic enzymes that are useful in defense against pathogens and fish growth in helping fish digestion and absorption of nutrients. This study was conducted to test the potential antibacterial and enzymatic activities of *Eunapius carteri* sponge symbiont bacteria. The methods used were the antibacterial test of disc paper diffusion; amylase, lipase, cellulase, and protease enzyme tests; salt tolerance test; and molecular identification. The results obtained were 2 selected isolates with codes BSEC-53 and BSEC-57 which produced antibacterial compounds against the pathogens *Vibrio vulnificus* and *Vibrio harveyi* and showed enzymatic activities of amylase, lipase, cellulase, and protease. A salt tolerance test was carried out to determine the growth of freshwater sponge symbiont bacteria in high salinity media, because the bacteria will be applied to marine fisheries cultivation. The test results showed good growth at salinity 0-3,5%. The selected isolates BSEC-53 and BSEC-57 are gram-positive bacillus bacteria. In molecular identification, the selected symbiont bacteria with code BSEC-53 showed the closest kinship with *Bacillus subtilis* which has the potential to synthesize antibacterial compounds and hydrolytic enzymes, while bacteria with code BSEC-57 has the closest kinship with *Bacillus velezensis* which has the potential to synthesize antibacterial compounds and hydrolytic enzymes.

*Keywords: probiotics, vibriosis, salinity test, hydrolytic*