

ABSTRAK

Sarah Gladies Aurelia Sijabat, NIM 4163220033 (2021). Isolasi dan Seleksi Bakteri Symbion Spons Penghasil Enzim Ekstraseluler (Protease, Amilase, Selulase dan Lipase).

Penelitian ini bertujuan untuk isolasi dan seleksi bakteri yang bersimbiosis dengan spons *Phorbas* sp. sebagai penghasil enzim ekstraseluler yaitu protease, amilase, selulase dan lipase. Pada penelitian ini dilakukan uji aktivitas enzimatik, uji antibakteri terhadap bakteri patogen udang, uji antagonis antar bakteri symbion spons dan dilakukan pewarnaan gram serta pewarnaan endospora bakteri symbion spons. Pada uji aktivitas enzim protease digunakan media agar yang diperkaya susu skim (1%), pada uji aktivitas enzim amilase menggunakan media agar yang diperkaya amilum (1%), pada uji aktivitas enzim selulase menggunakan media agar yang diperkaya *carboxymethyl cellulase* (1%) dan pada uji aktivitas enzim lipase menggunakan media agar diperkaya Tween 80 (1%). Berdasarkan hasil penelitian, diperoleh 7 isolat bakteri yang bersimbiosis dengan spons *Phorbas* sp. Dari 7 isolat bakteri symbion spons tidak menunjukkan adanya aktivitas proteolitik, 6 isolat bakteri symbion spons potensial penghasil enzim amilase yaitu isolat bakteri symbion spons P7, P6, P5, P3, P4, P1, 7 isolat bakteri symbion spons potensial menghasilkan enzim selulase yaitu P6, P3, P5, P4, P1, P2, P7 dan 4 isolat bakteri symbion spons potensial menghasilkan enzim lipase P3, P2, P1, dan P6. Isolat bakteri symbion spons P4 memiliki aktivitas antibakteri terhadap bakteri patogen udang. Pada uji antagonis, 7 isolat bakteri symbion spons tidak menunjukkannya interaksi antagonis antar isolat bakteri.

Kata kunci: Bakteri symbion spons, enzim ekstraseluler, protease, amilase, selulase, lipase.



ABSTRACT

Sarah Gladies Aurelia Sijabat, NIM 4163220033 (2021). Isolation and Selection of Extracellular Enzyme-Producing Sponge Symbiont Bacteria (Protease, Amylase, Cellulase and Lipase).

This study aims to isolate and select bacteria that are symbiotic with sponges, *Phorbas* sp., as extracellular enzyme producers, such as protease, amylase, cellulase and lipase. In this research, the enzymatic activity test, antibacterial test against shrimp pathogenic bacteria, antagonistic test between sponge symbiont bacteria and Gram staining, as well as endospore staining of sponge symbiont bacteria were carried out. In the protease enzyme activity test using agar media enriched with skim milk (1%), the amylase enzyme activity test using starch enriched agar (1%), the cellulase enzyme activity test using agar media enriched with Carboxymethyl Cellulase (1%) and In the lipase enzyme activity test using agar media enriched with Tween 80 (1%). Based on the research results, 7 bacterial isolates were found to have a symbiosis with sponge *Phorbas* sp. Of the 7 isolates of sponge symbiont bacteria that did not show any proteolytic activity, 6 isolates of sponge symbiont bacteria had the potential to produce amylase enzymes, namely sponge symbiont bacteria isolates P7, P6, P5, P3, P4, P1, 7 isolates of sponge symbiont bacteria had the potential to produce cellulase enzymes, namely P6, P3, P5, P4, P1, P2, P7 and 4 isolates of sponge symbiont bacteria have the potential to produce lipase enzymes P3, P2, P1, and P6. P4 sponge symbiont bacteria isolate has antibacterial activity against shrimp pathogenic bacteria. In the antagonist test, 7 sponge symbiont bacteria isolates did not show any antagonistic interactions between bacterial isolates.

Keywords: Sponge Symbiont Bacteria, Extracellular Enzymes, Proteases, Amylases, Cellulases, Lipases.

