

ABSTRACT

Wanda Samnovi Pramesti Wardani, 24020222140056. **Characterization and Bioactivity Test of Associated Bacteria in Seaweed from East Kalimantan Waters.** Under the supervision of Siti Nur Jannah and Lulu Adilla Latifah.

Seaweed is a potential marine biological resource rich in associated bacteria as producers of bioactive compounds. The high productivity of seaweed in East Kalimantan has the potential to support the diversity of associated bacteria as producers of antibacterial compounds. This study aims to characterize seaweed-associated bacterial isolates, test their antibacterial bioactivity and toxicity, and identify the content of these compounds. The study used a factorial Completely Randomized Design (CRD) with extract (E10, E18, E66, and E187) and concentration (positive control, 2, 5, and 10 mg/mL) factors with three replications, and the extract with the highest antibacterial activity was continued to the toxicity test. The study stages included rejuvenation of isolates; macroscopic, microscopic, and biochemical characterization; cultivation and metabolite extraction; antibacterial testing against *Staphylococcus aureus* via disc diffusion; Minimum Inhibitory Concentration (MIC) via liquid microdilution; toxicity testing against *Artemia salina* larvae via Brine Shrimp Lethality Test (BSLT); and compound identification via LC-HRMS. The characterization results showed that I10, I18, I66, and I187 were bacilli, motile, catalase-positive, and able to ferment glucose, sucrose, and maltose, with different Gram properties and other biochemical activities between isolates. Extract I66 showed the highest antibacterial activity against *S. aureus* at 10 mg/mL with an inhibition zone diameter of 7.83 ± 0.31 mm, an MIC value of 2.5 mg/mL, and an LC_{50} of 377 μ g/mL, classified as toxic. LC-HRMS analysis identified several compounds potentially contributing to antibacterial activity, with dominant components being Isophorone (20.33%) and Cyclo(phenylalanyl-prolyl) (17.62%).

Keywords: associated bacteria, seaweed, bioactivity, Kalimantan, secondary metabolites