

ABSTRACT

Nisrina Kutratuain. 24020222140077. **Efficiency of Lead (Pb) Biosorption by *Kappaphycus* sp. Associated Bacteria at Various pH Levels** (under the guidance of Hermin Pancasakti Kusumaningrum and Agung Suprihadi).

*The marine resources of the Karimunjawa waters are vast, but these waters face serious pollution, particularly from heavy metals. One method for addressing heavy metal pollution is biosorption. Biosorption is a process for removing heavy metal pollution by utilizing biological materials, including bacteria, yeast, algae, and fungi. This study aims to obtain isolates from *Kappaphycus* sp. that are resistant to Pb, analyze the effect of pH variation on Pb biosorption efficiency, and identify the bacteria molecularly. The research methodology began with the isolation and purification of bacterial isolates from *Kappaphycus* sp., followed by macroscopic and microscopic characterization, testing for Minimum Inhibitory Concentration (MIC), Atomic Absorption Spectrometry (AAS), Fourier Transform Infrared Spectroscopy (FTIR), and molecular identification. The isolation results from *Kappaphycus* sp. yielded one type of isolate resistant to Pb, namely isolate Kal-1. Isolate Kal-1 showed a 92.94% Pb ion biosorption efficiency under varying pH conditions, while isolate Kst-1 showed 91.72%, with pH 7 as the optimum pH. Molecular identification of isolate Kal-1 revealed it to be *Vibrio*.*

*Keywords: Biosorption, *Kappaphycus* sp., Heavy Metals, Lead*