V. CONCLUSION AND SUGGESTION

5.1 Conclusion

Based on the research that has been conducted regarding the exploration and identification of urease-producing bacteria isolated from Padayo Bat Cave, Padang as a candidate for immobilization of Lead (Pb) and Cadmium (Cd) via MICP, the following conclusions can be drawn:

1. Six bacterial isolates were obtained from cave water, bat guano, and limestone samples. Four isolates (CWB 2, BGB 1, LSB 1, and LSB 2) tested positive for urease activity, indicating their potential for MICP. Macroscopic, microscopic, and biochemical characterization revealed that these isolates belong to the genera Proteus (CWB 2), Streptococcus (BGB 1), Providencia (LSB 1), and Klebsiella (LSB 2).
2. Isolate CWB 2 was the most tolerant and most effective isolate in $CaCO_3$ precipitation with optimal growth at 0.8 g/L Pb and 0.6 g/L Cd, followed by LSB 2 and LSB 1. Isolate BGB 1 was the most sensitive isolate with inhibited growth at low concentrations (0.2-0.4 g/L).
3. The best isolate in immobilizing heavy metals Pb and Cd is CWB 2, which is indicated by the genus *Proteus*. Isolate CWB 2 exhibited the highest result in tolerance and produced the largest mass of carbonate precipitation.

5.2 Suggestion

Further research is recommended to optimize isolates with ureolytic potential and to identify bacteria molecularly, especially isolates with the best potential for Pb and Cd immobilization.