



ABSTRACT

Title of Abstract : Effectiveness of *Hermetia illucens* Chitosan as a Biocoagulant to Reduce Turbidity and TDS

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Background : Limboto Lake is experiencing pollution that has led to increased turbidity and Total Dissolved Solids (TDS), deteriorating water quality and posing health risks to the surrounding communities. Domestic wastewater flowing into the lake is the primary source of this contamination. One approach to addressing this issue is water treatment using chitosan derived from *Hermetia illucens* pupal shells, which has active amino groups acting as a natural biocoagulant. Chitosan was selected for its eco-friendly, biodegradable properties and its effectiveness in coagulation and flocculation processes.

Objective : This study aims to evaluate the effectiveness of chitosan in reducing turbidity and TDS levels in water samples from Limboto Lake.

Research Methods/ Implementation Methods : The research method employed was a laboratory experiment with a pre-test and post-test control group design, involving chitosan concentrations of 50, 100, and 150 ppm.

Results : Results indicated that the highest reduction in turbidity occurred at a 100 ppm concentration, from a pre-treatment level of 14.14 NTU down to 1.79 NTU, or about 87.34%, meeting clean water quality standards. Furthermore, the highest TDS reduction was also observed at 100 ppm, from 68.93 mg/L pre-treatment to 41.3 mg/L, a reduction of approximately 40.08%, remaining within safe limits as per Ministry of Health Regulation No. 2 of 2023.

Conclusion/Lesson Learned : Based on these findings, it can be concluded that *Hermetia illucens* chitosan is effective as a natural biocoagulant in reducing turbidity and TDS in lake water. The use of chitosan holds potential as an eco-friendly alternative solution for water treatment.

Keyword : *hermetia illucens*; chitosan; biocoagulant; turbidity; total dissolved solids.