EFFECT OF ANTIOSTEOPOROTIC ACTIVITY OF *Sargassum crassifolium* EXTRACT ON ANIMAL MODELS OF BONE LOSS

UNDERGRADUATE THESIS

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ABSTRACT

Osteoporosis is a bone disease characterized by a decrease in bone mass and an increase in bone fragility. Brown algae (*Sargassum crassifolium*) contain bioactive compounds with the potential as anti-osteoporosis agents. This study aimed to evaluate the anti-osteoporotic potential of brown algae extract *in vivo* through bone histopathology and *in silico* through the prediction of bioactive compounds. Twenty-five female Wistar rats were divided into normal, osteoporosis, two brown algae extract with doses of 350 mg/kg BW and 450 mg/kg BW, and alendronate group with doses of 5 mg/kg BW. Measurements of body weight and bone histopathology parameters, including cortical thickness, osteoblast count, medullary cavity diameter, and chondroid matrix area percentage, was conducted. The results showed that both 350 and 450 mg/kg BW brown algae extract doses significantly improved cortical thickness, osteoblast count, and chondroid matrix area percentage. However, they did not significantly affect the medullary cavity diameter. *In silico* analysis using PASS online identified 15 bioactive compounds with potential as anti-osteoporosis agents. In conclusion, both doses of brown algae extract were effectively increased cortical thickness, osteoblast count, and percentage of chondroid matrix area, with no significant difference observed between the two doses.

Keywords: *Antiosteoporosis, Sargassum crassifolium, glucocorticoid, histopathology*

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