THE POTENTIAL OF *Zingiber zerumbet* EXTRACT IN ANTIBACTERIAL AND ANTIOXIDANT ACTIVITIES

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ABSTRACT

THE POTENTIAL OF *Zingiber zerumbet* EXTRACT IN ANTIBACTERIAL AND ANTIOXIDANT ACTIVITIES

Zingiber zerumbet (*Z. zerumbet*) is one of the Zingiberaceae species, the largest family of the plant kingdom. The local name is known as lempoyang or bitter ginger. In recent years, ginger has been found to possess biological activities, such as antioxidant and antibacterial activities. Among all the natural goods, *Z. zerumbet* is still undervalued. Ginger is widely used as a common ingredient in cooking. Instead, this lempoyang species does not contribute to the food industry because of the taste itself. It has a bitter taste that is not suitable as a flavourful ingredient. This study focuses on the extract the rhizomes of *Z. zerumbet* to analyze the antibacterial activity by using methanol against Gram positive (*Bacillus licheniformis*) and Gram negative (*Escherichia coli*) bacteria. This study also aims to detect antioxidant activity by using DPPH radical scavenging assay. Initially, the rhizome part of *Z. zerumbet* was extracted via the maceration method using methanol as a solvent. In this study, the percentage yield obtained was 6.5%. Moreover, the zone inhibition of *Z. zerumbet* was tested on three different concentrations which are 10%,30%, and 50%. Both bacteria showed the highest zone inhibition at 50% which were 18mm for *B. licheniformis* and 14mm for *E. coli*. *B. lichenformis* showed a larger zone of inhibition in all concentrations compared to *E. coli*. Thus, *B. licheniformis* was more susceptible than *E. coli* towards the rhizome extract. Last but not least, the methanolic extract of *Z. zerumbet* showed the highest inhibitory DPPH free radical reaching 81.54% at 10mg/ml. Overall, *Z.zerumbet* could served as a potential source of antibacterial and antioxidant agents.

Keywords: *Zingiber zerumbet*, Zingiberacea , rhizome extraction, antibacterial activity, antioxidant activity, DPPH radical scavenging , disc diffusion method.

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