## Abstract

*Staphylococcus aureus* is an opportunistic pathogen that commonly inhabits the human skin and can cause skin infection, especially in individuals with impaired immune systems when skin is damaged. Treatments usually involve the usage of antibiotics. However, antibiotic effectiveness is in danger due to the fast development of resistant microorganisms worldwide. As a result, there is a growing need for novel antimicrobial agents that can reduce the need for antibiotics and combat the emergence of resistance. The need to combat microbial resistance has led researchers to extract and discover novel bioactive compounds from plants. *Daun Gatal* is one of the promising candidates as an antimicrobial agent since prior studies show that this plant has antimicrobial activity against *Salmonella typhi*, *Escherichia coli*, and a few pathogenic yeasts. This current study aims to explore the antimicrobial properties of *Daun Gatal* (*Laportea decumana*) using methanol as a solvent against microorganisms that are responsible for skin infection, specifically the *Staphylococcus aureus* through the disc diffusion method. The ability of *L. decumana* methanol extract to prevent bacterial invasion toward keratinocytes was also assessed in this study. The extract showed significant antimicrobial activity against *S. aureus* and was able to prevent bacterial invasion in the co-culture of *S. aureus* and HaCaT in a dose-dependent manner. Furthermore, the effect of the extract on pro-inflammatory gene expression of HaCaT such as IL-6 and IL-8 was investigated using RT-qPCR. However, no amplification trace can be observed, therefore the result was inconclusive. Improvements in the methods and further investigation are needed. Regardless, based on the findings of this study, *L. decumana* methanol extract may be a promising option for use as a natural antibacterial agent.



**Keywords:** *Daun Gatal*; *Laportea decumana;* Antimicrobial; *Staphylococcus aureus*; gene expression; HaCaT cell