

Title : Antibacterial and antioxidant activities of *Cleistocalyx nervosum* var. *paniala* and *Carissa carandas* L. extracts against skin pathogenic bacteria

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ABSTRACT

Human skin infection by pathogenic bacteria can cause symptoms such as abscesses, rashes, swelling, and inflammation. In severe cases, these bacteria are resistant to commonly used antibiotics. Consequently, natural extracts have gained increasing attention as alternative treatment modalities. This study aimed to investigate the antibacterial and antioxidant activity of *Cleistocalyx nervosum* var. *paniala* (*C. nervosum*) and *Carissa carandas* (*C. carandas*) extracts. The plants were extracted using distilled water, 70% and 95% ethanol as solvent for extraction. The physical properties showed that color of extracts was from purple to dark brown. The highest extraction yield was obtained from *C. carandas* extracted with 70% ethanol. Moreover, 95% and 70% ethanolic extracts of *C. nervosum* showed the highest antioxidant activity of 14.813 ± 0.912 mg TE/g extract and 44.33 ± 4.37 mg GAE/g extract using the DPPH assay and ABTS assay. Moreover, the 70% ethanolic extract of *C. carandas* exhibited the highest total phenolic content of 44.33 ± 4.37 mg GAE/g extract. In contrast, the 95% ethanolic extract of *C. nervosum* demonstrated the highest total anthocyanin content of 37.18 ± 0.98 mg C3G/g extract. Then, the antibacterial activity of the extracts was tested against six skin pathogenic bacteria; *S. aureus*, *S. epidermidis*, *M. luteus*, *C. acnes*, *P. aeruginosa*, and MRSA by the agar well diffusion method. The results showed that all ethanolic extracts could inhibit skin pathogenic bacteria. Furthermore, the minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC) were determined. The ethanolic extracts of *C. nervosum* and *C. carandas* exhibited the strongest

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antibacterial activity. Therefore, this study revealed extracts of *C. nervosum* and *C. caranda* indicated potential as a promising antibacterial agent against skin pathogenic bacteria.

Keywords: Antibacterial activity, Antioxidant activity, *Cleistocalyx nervosum* var. *paniala*, *Carissa carandas* L.