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BIOAUTOGRAPHY, COMBINATION EFFECTS AND PHOTO-ACTIVATED ENZYMATIC RESTRICTION INHIBITORY ACTIVITY OF ANTIMICROBIAL ALKALOIDS FROM GLYCOSMIS PENTAPHYLLA (RETZ.) DC

[Malaysian Journal of Science](#) • Article • Open Access • 2022 • DOI: 10.22452/mjs.vol41no3.1 Taib, Nurhaya Md^a ; Hassan, Norazian Mohd^a ; Kamal, Laina Zarisa Mohd^a ; Soe, May Khin^b ^a Department of Pharmaceutical Chemistry, Kulliyah of Pharmacy, International Islamic University Malaysia, Kuantan, Pahang, 25200, Malaysia[Show all information](#)

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Abstract

Glycosmis pentaphylla (Retz.) DC., locally known as nerapan, has long been used in Asian countries as a traditional remedy for ailments attributed to microbial infections. This study aims to isolate antimicrobial alkaloids from *G. pentaphylla*, to determine their combination effects with selected antimicrobial agents and to screen for their photoactivated enzymatic restriction inhibitory activity. Bioautography-guided isolation of antimicrobial alkaloids was performed by using column chromatography with *Staphylococcus aureus*, *Escherichia coli*, and *Candida albicans* as the indicator microbes. The antimicrobial effects of the alkaloids combined with selected antimicrobial agents, namely, ciprofloxacin, erythromycin, vancomycin, and ketoconazole, were determined by using a checkerboard assay. Photoactivated enzymatic restriction inhibitory activity was assessed by using agarose gel electrophoresis. Two antimicrobial active alkaloids were isolated and identified as arborinine and arborine. The antimicrobial activity of arborinine and arborine was determined to be in the range of 250 µg/ml and 1000 µg/ml. Partial synergy was observed for all arborine-antibiotics and arborinine-ketoconazole interactions against *S. aureus* and *C. albicans*, respectively. Arborine was relatively the strongest photoactivated enzymatic restriction inhibitor, particularly against EcoRI, PstI, and SalI. The results obtained are promising and encourage further research on the alkaloids as potential antimicrobial-enhancing agents. © 2022 Malaysian Abstracting and Indexing System. All rights reserved.

Author keywords

Alkaloids; Antimicrobial; Bioautography; Glycosmis pentaphylla; Photo-activated enzymatic restriction inhibition

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