

Cytotoxic and Antimicrobial Activities of Alkaloids from *Tabernaemontana corymbosa*

Muhammad Taher¹, Nur ‘Izzati Binti Mansor², Deny Susanti²

¹*Department of Pharmaceutical Technology, Faculty of Pharmacy, International Islamic University Malaysia, Jalan Sultan Ahmad Shah, 25200 Kuantan, Pahang, Malaysia.*

²*Department of Biomedical Science, Faculty of Science, International Islamic University Malaysia, Jalan Sultan Ahmad Shah, 25200 Kuantan, Pahang, Malaysia.*

Abstract

The investigations were made based on the fact that alkaloids from Apocynaceae family are potential for medicinal purposes. The aim of the study was to explore the potential cytotoxic and antimicrobial activities of alkaloids extracted from *T. corymbosa* and to provide scientific basis for further studies of *T. corymbosa*. The alkaloids were extracted from stembarks of *Tabernaemontana corymbosa* using maceration and acid-base extraction methods. Then, the extracts were tested for their cytotoxic and antimicrobial activities. The cytotoxic activity was studied *in vitro* using human non-small lung carcinoma (A549) and human cervical carcinoma (C33A). The cells were exposed to three crude alkaloid extracts of *T. corymbosa*. The cytotoxic effects of these crude alkaloid extracts were evaluated by MTT assay. In antimicrobial activity study, the crude alkaloid extracts of *T. corymbosa* were tested against four bacterial and two fungi species by using disc diffusion method. *Bacillus cereus* ATCC11778, *Pseudomonas aeruginosa* ATCC27853, *Staphylococcus aureus* ATCC25923, *Escherichia coli* ATCC35218, *Cryptococcus neoformans* ATCC90112 and *Candida albicans* ATCC10231 were used in the study. Cytotoxicity study showed that only crude B alkaloids exhibited cytotoxic effect against A549 and C33A cancer cells, giving an IC₅₀ as low as 7.81 µg/mL and 3.91 µg/mL, respectively. In antimicrobial activity, the zones of inhibition against the tested bacteria were found in the range of 7.00 to 14.75 mm, along with their MIC and MBC/MFC values ranging from 0.37-1.11 mg/mL and 3.33-10.00 mg/mL, respectively. Those results suggest that *T. corymbosa* contains alkaloids that active as cytotoxic and antimicrobial agents.

Keywords: *Tabernaemontana corymbosa*, Apocynaceae, Alkaloids, Cytotoxicity, Antimicrobial