

## Phytochemical analysis and antimicrobial activities of methanolic extracts of leaf, stem and root from different varieties of *Labisa pumila* Benth.

### ABSTRACT

A local herb, Kacip Fatimah, is famous amongst Malay women for its uses in parturition; however, its phytochemical contents have not been fully documented. Therefore, a study was performed to evaluate the phenolics, flavonoids, and total saponin contents, and antibacterial and antifungal properties of the leaf, stem and root of three varieties of *Labisa pumila* Benth. Total saponins were found to be higher in the leaves of all three varieties, compared to the roots and stems. Leaves of var. *pumila* exhibited significantly higher total saponin content than var. *alata* and *lanceolata*, with values of 56.4, 43.6 and 42.3 mg diosgenin equivalent/g dry weight, respectively. HPLC analyses of phenolics and flavonoids in all three varieties revealed the presence of gallic acid, caffeic acid, rutin, and myricetin in all plant parts. Higher levels of flavonoids (rutin, quercetin, kaempferol) were observed in var. *pumila* compared with *alata* and *lanceolata*, whereas higher accumulation of phenolics (gallic acid, pyrogallol) was recorded in var. *alata*, followed by *pumila* and *lanceolata*. Antibacterial activities of leaf, stem and root extracts of all varieties determined against both Gram positive (*Micrococcus luteus*, *Bacillus subtilis* B145, *Bacillus cereus* B43, *Staphylococcus aureus* S1431) and Gram negative (*Enterobacter aerogenes*, *Klebsiella pneumonia* K36, *Escherichia coli* E256, *Pseudomonas aeruginosa* PI96) pathogens showed that crude methanolic extracts are active against these bacteria at low concentrations, albeit with lower antibacterial activity compared to kanamycin used as the control. Antifungal activity of methanolic extracts of all plant parts against *Fusarium* sp., *Candida* sp. and *Mucor* using the agar diffusion disc exhibited moderate to appreciable antifungal activities compared to streptomycin used as positive control.

**Keyword:** Flavonoids and phenolics; Saponin content; HPLC analysis; Antibacterial activity; Antifungal activity.