

The relationship of nitrogen and C/N ratio with secondary metabolites levels and antioxidant activities in three varieties of Malaysian Kacip Fatimah (*Labisia pumila* Blume).

ABSTRACT

Kacip Fatimah (*Labisia pumila* Blume), one of the most famous and widely used herbs, especially in Southeast Asia, is found to have interesting bioactive compounds and displays health promoting properties. In this study, the antioxidant activities of the methanol extracts of leaves, stems and roots of three varieties of *L. pumila* (var. *alata*, *pumila* and *lanceolata*) were evaluated in an effort to compare and validate the medicinal potential of this indigenous Malaysian herb species. The antioxidant activity determined by the 1,1-diphenyl-2-picrylhydrazyl (DPPH) assay, as well as the total amount of phenolics and flavonoids were the highest in the leaves, followed by the stems and roots in all the varieties. A similar trend was displayed by the ferric reducing antioxidant potential (FRAP) activity, suggesting that the *L. pumila* varieties possess high foliar antioxidant properties. At low FRAP activity concentrations, the values of the leaves' inhibition activity in the three varieties were significantly higher than those of the stems and roots, with var. *alata* exhibiting higher antioxidant activities and total contents of phenolics and flavonoids compared to the varieties *pumila* and *lanceolata*. The high production of secondary metabolites and antioxidant activities in var. *alata* were firmly related to low nitrogen content and high C/N ratio in plant parts. The study also demonstrated a positive correlation between secondary metabolite content and antioxidant activities, and revealed that the consumption of *L. pumila* could exert several beneficial effects by virtue of its antioxidant activity.

Keyword: Plant medicinal potential; Health promoting properties; DPPH; FRAP; Total phenolics; Total flavonoids.