

Nutritive assessment of four local herbal plants as animal feed supplements

ABSTRACT

Many local herbal plants are generally rich in secondary metabolites and contain high amount of essential nutrients. A study was conducted to evaluate the antioxidant content and antimicrobial activities of 4 selected herbal plants: *Andrographis paniculata* (Hempedu Bumi), *Orthosiphon stamineus* (Misai Kucing), *Euphorbia hirta* (Ara Tanah) and *Boreria latifolia* (Boreria) that are widely available in Malaysia. Proximate analysis, phyto-chemical determination and in vitro technique were used to evaluate nutritive value of the herbal plants. Fatty acid profile and 2,2-diphenyl-1-picrylhydrazyl (DDPH) free radical scavenging activity were also explored. *A. paniculata* had the highest content of crude protein ($18.13\pm 0.18\%$), calcium ($11.92\pm 1.66\%$), saponin ($18.73\pm 1.13\%$) and flavonoids ($1.25\pm 0.21\%$). while, *E. hirta* contained highest tannin ($0.24\pm 0.007\%$), phenol ($0.02\pm 0.004\%$) and antioxidant content ($9.22\pm 0.02\%$). For antimicrobial activity, *E. hirta*, *A. paniculata* and *O. stamineus* methanol extracts at 500 mg/ml concentration showed moderate antimicrobial activities. The methanol extracts of all herbal plants exhibited stronger antimicrobial activities against the test pathogens compared to the herbal water extracts. Among the 4 local herbal plants examined, *A. paniculata* contained the lowest total saturated fatty acids (26.53 ± 0.19 g/100g FAME) and highest unsaturated fatty acids (73.47 ± 0.19 g/100g FAME) and *E. hirta* had the highest total gas production (49.10 ± 8.97 ml), rate of gas production (2.05 ± 0.37 ml/h). All herbal plants studied have their own potential as animal feed supplements.

Keyword: Chemical composition; Antioxidant properties; Antimicrobial properties; In vitro technique