

## 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 ( $26.53 \pm 0.19$  g/100g FAME) and highest unsaturated fatty acids ( $73.47 \pm 0.19$  g/100g FAME) and *E. hirta* had the highest total gas production ( $49.10 \pm 8.97$  ml), rate of gas production ( $2.05 \pm 0.37$  ml/h). All herbal plants studied have their own potential as animal feed supplements.

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