

Evaluation of nutritive value of local browses from drylands of Kenya

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Abstract

The nutritive value of ten indigenous browses including *Terminalia brownii*, *Grewia bicolor*, *Balanites aegyptiaca*, *Acacia brevispica*, *Berchemia discolor*, *Cordia sinensis*, *Tamarindus indica*, *Ziziphus mucronata*, *Boscia angustifolia* and *Maerua angolensis* from the semi-arid region of Baringo County were assessed for their potential as protein supplements. Rhodes grass (*Chloris gayana*) hay was used as the control. Amino acids profile and proximate composition including polyphenols and *in-vitro* gas production characteristics were determined. The crude protein (CP) content ranged from 51.4 gkg⁻¹dry matter (DM) in Rhodes grass to 203.7 gkg⁻¹DM in *Maerua angolensis*. Total extractable phenolics (TEPH) and condensed tannin (CT) ranged from 6.7 to 94.8 gkg⁻¹DM and 1.7 to 51.5 gkg⁻¹DM, respectively. *Maerua angolensis* had the lowest fiber content. The ether extract (EE) content range was from 17.7 gkg⁻¹DM in *Grewia bicolor* and 91.5 gkg⁻¹DM for *Tamarindus indica*. The organic matter (OM) content ranged from 872.7 gkg⁻¹DM in *Maerua angolensis* to 944.7 gkg⁻¹DM for *Berchemia discolor*. The NDF, ADF and ADL contents of *Chloris gayana*, was higher than in the indigenous browses. The macrominerals P, Ca, K and Mg were in the ranges of 1.3-5.7, 7.9-45.4, 6.1-28.5, and 2.9-12.2 gkg⁻¹ DM, respectively. Trace elements (mgkg⁻¹DM) varied in the range of Cu (71.3-141), Mn (0.04-65.1) and Fe (18.1-76.3). The browse species contained significant quantities of aspartic acid, glutamic acid and leucine. The nutritive values fall within the animal requirements as they had a CP of more than 70gkg⁻¹DM which is the minimum required for rumen function according to NRC. It is concluded that these indigenous browses can be utilized in dry season as supplement to improve animal nutrition in arid and semi-arid areas.

Keywords: crude protein, goats, multipurpose trees, Rhodes grass, semi-arid region, supplement