

# Nutritional evaluation of marula (*Sclerocarya birrea*) seed cake as a protein supplement for goats fed grass hay

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This study presents a comparative *in vivo* nutritional evaluation of oil-extracted marula (*Sclerocarya birrea* subspecies *caffra*) seed cake (MSC) as a protein supplement for goats fed a basal diet of mixed grass hay. MSC and commercial protein supplements (soya bean meal (SBM) and sunflower cake (SC)), were analysed for fibre (aNDFom and ADFom) and nitrogen (N) contents. SC had the highest ( $P < 0.05$ ) aNDFom (289.0 g/kg DM) and ADFom (216.8 g/kg DM) contents. N content was highest ( $P < 0.05$ ) in MSC (68.9 g/kg DM) and lowest in SC (56.6 g/kg DM). Grass hay intake, nutrient digestibility and N retention were measured in a nutrient balance trial in which goats were supplemented with MSC, SBM and SC. Goats on SBM had the highest ( $P < 0.05$ ) grass hay intake (232.2 g/d) and OM digestibility (650.3 g/kg DM). SC and MSC supplemented goats did not differ ( $P > 0.05$ ) in terms of grass hay intake and its digestibility. Digestibility of OM was low in MSC supplemented goats but did not differ ( $P > 0.05$ ) from SC supplemented goats. The same trend was observed with ADF digestibility which was lowest in the MSC supplemented group but did not differ ( $P > 0.05$ ) from the SC supplemented group. NDF digestibility was lowest in the MSC supplemented group and differed ( $P < 0.05$ ) from all other diets. Urinary N output did not differ ( $P > 0.05$ ) between SBM and SC supplemented goats but was lower ( $P < 0.05$ ) in the MSC supplemented group. However, the negative control group had the least urinary N output (2.1 g/day). MSC supplemented goats retained the most N (2.75 g/d) ( $P > 0.05$ ) compared to all other protein supplements. Unsupplemented and SC supplemented goats were in negative N balance of -0.64 and -0.81 g/day, respectively. It was concluded that MSC is as good as SBM, but better than SC as a protein supplement for goats fed grass hay as the basal diet.

Keywords: apparent digestibility; chemical composition; N retention; mixed grass hay, protein supplements.