Assessment of silage quality and acceptability of Spondias mombin by west African dwarf goats

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Abstract

Scarce forages and low digestibility are major challenges of dry season feeding for ruminants in the tropics. This can be overcome by excess forage conservation in times of abundance by ensiling with cheap and locally available materials containing high fermentable carbohydrates as additives. A study was conducted to investigate the potentials of Spondias mombin as a silage material. Leaves of Spondias mombin were ensiled with its fruits at varying inclusion levels: 0% (control, T1); 10% (T2); 20% (T3) and 30% (T4). After 30 days of ensiling, its quality and chemical composition were assessed and the products were fed to West African dwarf (WAD) goats in a cafeteria experiment, to determine its acceptability. The appearance, odour and texture of the silage had acceptable physical attributes with pH values ranging from 4.7 – 5.8. Crude protein was similar (P>0.05) in the S Spondias mombin silages ensiled with fruits while ether extract values were significantly (P<0.05) improved. Protein values ranged from 12.25 g/100g DM (Treatment 1) to 14.00 g/100g DM (Treatment 4). Anti-nutritional content of the ensiled S. mombin ranged between 3.78 – 6.75 mg/100g, 2.32 -4.09 mg/100g, 37.00 – 69.23 mg/100g and 0.26 – 3.06 g/100g for tannin, total phenols, phytate and flavonoids respectively. Tannin, total phenols and flavonoids of the silage diets increased with increasing levels of Spondias mombin fruits in the silage. Acetic and butyric acid contents (mg/100g) increased significantly (P<0.05) across the treatments, while lactic acid (mg/100g) increased with increasing level of fruit additive. Acceptability of silage improved with increasing Spondias mombin fruit inclusion, with the control diet rejected by goats. It was concluded that Spondias mombin leaves ensiled with its fruits, produced quality and palatable diets for WAD goats without any deleterious effect.

Keywords: cafeteria experiment; digestibility; forage conservation; ruminants