

Effects of Adding Condensed Tannin from Shrub and Tree Leaves in Concentrate on Sheep Production Fed on Elephant Grass as a Basal Diet

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Abstract : Two studies were conducted involving an in vitro (Expt 1) and in vivo (Expt 2) measurements. Expt 1. aimed to evaluate effects of adding CT extracts on gas production and efficiency of microbial protein synthesis (EMPS), Expt 2 aimed to evaluate effects of supplementing shrub/tree leaves as CT source on feed consumption, digestibility, N retention, body weight gain and dressing percentage of growing sheep fed on elephant grass (EG) as a basal diet. Ten shrub and tree leaves used as CT sources were wild sunflower (*Tithonia diversifolia*), mulberry (*Morus macroura*), cassava (*Manihot utilissima*), avicenna (*Avicennia marina*), calliandra (*Calliandra calothyrsus*), sesbania (*Sesbania grandiflora*), acacia (*acacia vilosa*), glyricidia (*Glyricidia sepium*), jackfruit (*Artocarpus heterophyllus*), moringa (*Moringa oleifera*). The treatments applied in Expt 1 were: T1=Elephant grass (60%)+concentrate (40%); T2 = T1 + CT (3% DM); T3= T2 + PEG; T4 = T1 + CT (3.5% DM); T5 = T4 + PEG; T6 = T1 + CT (4% DM) and T7 = T6 + PEG. Data obtained were analysed using Randomized Block Design. Statistical analyses showed that treatments significantly affected ($P<0.05$) total gas production and EMPS. The lowest values of total gas production (45.9 ml/500 mg DM) and highest value of EMPS (64.6 g/kg BOTR) were observed in the treatment T4 (3.5% CT from cassava leave extract). Based on this result it was concluded that this treatment was the best and was chosen for further investigation using in vivo method. The treatments applied for in vivo trial were: T1 = EG (60%) + concentrate (40%); T2 = T1 + dried cassava leave (equivalent to 3.5% CT); T3 = T2 + PEG. 18 growing sheep aging of 8-9 months and weighing of $23.67\text{kg} \pm 1.23$ were used in Expt 2. Results of in vivo study showed that treatments significantly affected ($P<0.05$) nutrients intake and digestibility (DM, OM and CP). N retention for sheep receiving treatment T2 were significantly higher ($P<0.05$; 15.6 g/d) than T1 (9.1 g/d) and T3 (8.53 g/d). Similar results were obtained for daily weight gain where T2 were the highest (62.79 g/d), followed by T1 (51.9 g/d) and T3 (52.85 g/d). Dressing percentage of T2 was the highest (51.54%) followed by T1 (49.61%) and T3 (49.32%). It can be concluded that adding adding dried cassava leaves did not reduce palatability due to CT, but rather increased OM digestibility and hence feed consumption was improved. N retention was increased due to the action of CT in the cassava leaves and this may have explained a higher input of N into duodenum which was further led to higher daily weight gain and dressing percentage.

Keywords : in vitro gas production, sheep, shrub and tree leaves, condensed tannin

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