

**PERFORMANCE OF GROWING GOATS FED RHODES GRASS HAY
SUPPLEMENTED WITH KENYAN INDIGENOUS BROWSES MIXED WITH
TANNIN BINDERS**



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ABSTRACT

The major constraint to goat rearing in ASALs during the dry period is the unavailability of nutrients, especially protein, leading to poor productivity. This could be overcome by using locally available indigenous browse species. These browses contain condensed tannins which have antinutritive effects. It is proposed that treatments with tannin binders could minimize the antinutritive effects of tannins, but there is limited information available on this. This study evaluated ten (10) Kenyan indigenous browse species as protein supplement for growing Small East African Goats (SEAG) offered a basal diet of Rhodes grass hay *ad libitum*. In objective one, the nutritive value of ten common browse species was determined through laboratory analysis. The Crude protein content ranged from 77.3 to 203.7 g/Kg DM. The second objective determined the palatability and preference of the ten browses where, *B. aegyptiaca*, had the highest dry matter (DM) intake, relative palatability index, and was the most preferred, whereas *T. indica* was the least palatable. In objective three, 30 SEAG were randomly assigned to the three highly ranked indigenous browses and Rhodes grass hay plus 100 g maize germ as a control in a completely randomized design (CRD) in a factorial arrangement with three replications. The highest average daily gain was witnessed in Control plus 30% *A. brevispica* (AB30) and Control plus 45% *A. brevispica* (AB45). Dry matter intake was highest in AB30 and AB45 and lowest in TC (Control). In objective four, twenty-four growing SEAG were randomly assigned to the *A. brevispica* and *B. discolor* with various levels of Polyethylene glycol (PEG 6000) and bentonite clay in a CRD in a factorial arrangement. Animals on diets treated with binders had higher daily weight gains, and total dry matter intake. Bentonite clay and PEG addition did not affect ($P > 0.05$) the digestibility coefficient of all nutrients. In objective five, the economic benefit of treating indigenous browses with tannin binders in growing SEAG diets was determined. Feed cost per kilogram of gain (KES/Kg) was lower ($P < 0.05$) in T3 and T4 compared to other inclusion levels. Feed cost per kilogram weight gain (KES/Kg) was significantly ($P < 0.05$) lower in D3 (Hay plus 100 g maize + *A. brevispica* – Tannin binders) and D6 (Hay plus 100 g maize + *B. discolor* – Tannin binders) compared to other dietary treatments where tannin binders were incorporated. The study concluded that indigenous browse species could offer sufficient nutrients especially protein, to sustain growth in growing goats when grasses and other good quality forages are scarce. The addition of PEG and bentonite clay to a browse-based diet can be used to improve feed utilization as a result of tannins deactivation.

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