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Chemical Composition of Different Parts of Wild Yam (*Anchomanes difformis*) and the Nutritive Potentials of its Tuber for Inclusion in Small Ruminant Diet

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Abstract

Two separate trials were carried out to evaluate the chemical composition of different parts of *Anchomanes difformis* (Wild yam) and the nutritive value of its tuber. A toxicity study with 20 albino rats was carried out to ascertain the level of toxicity of *A. difformis* tuber and then, a feeding trial with 25 West African dwarf sheep (12 ± 1.3 months; 10 ± 0.6 kg) fed diets containing graded levels (0, 10, 15, 20 and 25 %) of *A. difformis* as supplement to basal diet of *Pennisetum purpureum*. The rats were drenched with 2 ml varying concentrations of *A. difformis* tuber extract (0, 200, 400, 600 and 800 mg per 50 ml distilled water) over 21 days. Results showed no significant ($p > 0.05$) difference in the dry matter (DM) contents of the parts (109 - 115 g kg⁻¹). The leaves recorded the highest ($p = 0.001$) crude protein content of 138 g kg⁻¹ DM. Similar trends were observed in the ether extract and ash contents of the parts. The non-fibre carbohydrate content was highest ($p = 0.001$) in the tuber (439 g kg⁻¹ DM) and lowest in the leaves (111 g kg⁻¹ DM). This shows a preponderance of soluble carbohydrates in this fraction. Results from toxicological studies with tuber extract showed lesions in major organs like lungs, liver, kidney and intestine. The severity increases with increasing concentrations of *A. difformis* extracts. The inclusion of *A. difformis* in the diets of the sheep resulted in decreased DM intake. The highest ($p < 0.05$) nutrient intake for animals on *A. difformis* based diets was recorded at 10 % level of supplementation. The nutrient digestibility coefficients were generally high for sheep in all the treatments. The live weight gain of the animals decreased from 27.3 g d⁻¹ in the control diet to 20.24, 18.93, 16.07 and 12.50 for 10, 15, 20 and 25 % levels of inclusion respectively. It was concluded that the average nutrient intake and daily weight gain of animals on 10 % *A. difformis* was the best among animals fed *A. difformis* based diets. The study therefore, recommended 10 % level of *A. difformis* inclusion in ruminant animals concentrate diets as a safe level that will guarantee no negative effect on nutrient intake and performance.

Keywords: Albino rats, Dry matter intake, Sheep, Toxicological effects, tuber extracts