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In vitro Gas Fermentation Assessment of *Persea americana* Leaf and Acceptability by West African Dwarf Sheep

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Abstract

Ruminants in the tropics are slow growing, resulting from low quality feed. The use of indigenous multipurpose plants is a good strategy for an improved livestock performance. Chemical composition and coefficient of preference (CoP) of green, yellow and brown leaves of *Persea americana* (PA) by West African Dwarf Sheep were determined. *In vitro* gas production (IVGP) of green, yellow and brown leaves of PA were carried out over a period of 24 hr incubation. Metabolisable energy (ME), organic matter digestibility (OMD) and short chain fatty acids (SCFA) were predicted. 10 M NaOH was introduced into the inoculums after 24 hrs from which methane (CH_4) production was measured. Results indicated that chemical composition ranged significantly ($p < 0.05$) among the different forms of PA leaves. Dry matter ranged between 88.75 and 91.22 % in green and brown leaf respectively, same trend was observed for neutral detergent fibre, it ranged from 59.48 to 60.01 % in green and brown leaf respectively, while the crude protein ranged between 23.59 and 25.85 % in brown and green leaf respectively.

The CoP ranged between 1.58 in brown leaf and 2.01 in green leaf. The IVGP, ME, OMD, SCFA and methane production were not significant ($p > 0.05$). Same trend was observed for all the *in vitro* gas production parameters with the green leaf recording the highest value, while the lowest values were obtained in the brown leaf. They ranged between 6.25 and 8.50 ml/200 mg DM; 3.73 and 3.96 MJ kg^{-1} DM; 38.66 and 41.67 %; 0.18 and 0.22 μmol; 2 and 4 ml/200 mg DM in brown and green leaf respectively.

The result of this study showed that all forms of *Persea americana* leaf have potential as prospective forage for ruminant production in the tropics .

Keywords: Acceptability, *in vitro* gas fermentation, leaves, *Persea americana*, WAD Sheep

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