Abstract:
The major factor limiting ruminant production in the tropics is the lack of a year-round supply of quality forage and protein supplements. Therefore, the use of underutilized shrubs and trees such as *Moringa oleifera* is noteworthy due to its rich nutritional composition and potential as a feed resource for ruminants. This study investigated the nutritional composition of *Moringa* leaves, Lucerne hay, and Rhodes grass hay with their combinations at different ratios. The ingredients were grouped into seven in ratios 90:10:0, 90:5:5, 90:0:10, 0:100:0, 0:50:50, 0:0:100, and 100:0:0 of Rhodes grass hay, Lucerne hay and *Moringa* leaves respectively. Proximate, fibre, total phenolic and condensed tannin contents were used to determine the nutritional value of these feed ingredients. The in vitro dry matter digestibility was also determined and the result was used in estimating the metabolizable energy (ME), organic matter digestibility (OMD) and short-chain fatty acids (SCFA). *Moringa* has the highest CP, EE and NSC. There was no significant difference (p<0.05) in the ash content of Lucerne, *Moringa* and the combination of the two. The NDF, ADF, ADL and CF contents were significantly lower (p<0.05) in *Moringa* than in others which explains the increased (p<0.05) dry matter digestibility, DE and ME observed in *Moringa*. The organic matter content and hemicellulose were significantly lower (p<0.05) in *Moringa*. *Moringa* has the highest total phenolic (6.39%) and the least condensed tannins (0.13%) when compared with the combination of Lucerne and *Moringa*. The gas production was significantly lower (p<0.05) in *Moringa* leaves despite its high ME. The results show that *Moringa* reflects a desirable nutritional balance which shows that it can serve as a protein supplement for ruminants including dairy cows and also a substitute for Lucerne which is the major protein supplement utilized by ruminant producers in the tropics.

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