

Abstract

Abstract The worry of unmitigated global warming causing irreversible climate change is on the rise. Sustainable solutions to mitigate methane production from ruminant farming should thus be sought. Shea nut meal (SNM) contains numerous plant compounds proved to reduce enteric methane production in ruminants and its adoption in ruminant feed could become a game changer. This experiment examined total gas production, metabolizable energy, organic matter digestibility and methane mitigation properties of shea nut meal when included at varying levels of SNM0 (0%), SNM5 (5%), SNM10 (10%), SNM15 (15%) and SNM20 (20%) in a basal diet containing Rhodes grass hay and maize bran in an in vitro experiment set in a completely randomized design. Results showed total gas production (ml) was improved at 5% (49.8) compared to 0% (46.7) but declined with further SNM inclusions at 10% (40.6), 15% (29.5) and 20% (24.8), Organic matter digestibility (% OMD) was reduced ($p < 0.05$) with SNM inclusion of 5% (42.8), 10% (40.5), 15% (35.51), 20% (34.0) compared to 0% (43.3). Metabolizable energy was improved ($p < 0.05$) for 5% (4.95) and 10% (4.82) but also declined ($p < 0.05$) with SNM further inclusion of 15% (4.27) and 20% (4.25). Methane from the 0.2g of the truly digested substrate was ($p < 0.05$) reduced with increasing inclusion by 28.7%, 31.9%, 42.8% and 56.9% in 5%, 10%, 15% and 20% respectively. It was concluded that SNM reduced methanogenesis and low inclusion of 5% can safely be fed without detrimental effects on fermentation. Key words: gas production, metabolizable energy, methane reduction, organic matter digestibility