ABSTRACT

Five male dairy goats (Saanen), 4.6 month old with a body weight of 21.4 (SD±1.6) kg, were used to examine 5 dietary urea treatments in a 5x5 Latin Square experimental design. The five levels of urea were 10, 20, 30, 40 and 50 g urea/kg DM of steam-treated oil palm fronds (OPF) and dry matter intake tended (p>0.05) to increase with increasing urea supplementation up to 30 g/kg OPF (77.7 g/kg BW 0.75), but decreased (p<0.05) with 40 and 50 g urea/kg OPF (67.4 and 63.7 g/kg BW 0.75, respectively) supplementation. Similarly, dry matter, organic matter, crude protein, neutral detergent fiber and hemicellulose digestibilities increased (p<0.05) with the addition of urea to the diet. Ruminal pH, ruminal NH3-N concentration and plasma urea concentration increased linearly (p<0.01) and quadratically (p<0.01) as a consequence of addition of urea to the diet. Excretion of total purine derivatives (PD) by goats fed 30 g of urea/kg OPF was highest (p<0.05) followed by goats fed 20, 40, 10 and 50 g of urea/kg OPF. Microbial N (g N/day) and efficiency of microbial N supply expressed as g N/kg organic matter apparently digested in the rumen were higher (p<0.05) in goats fed 30 g of urea/kg OPF (5.5 g N/day and 22.0 g N/kg DOMR, respectively) than in goats on 10 and 50 g of urea/kg OPF treatments. However, the former did not differ from goats fed 20 g of urea/kg OPF (3.9 g N/day and 16.6 g N/kg DMOR, respectively). Ruminal VFA concentration, protein/energy ratio, N absorption and N retention increased (p<0.05) with the addition of urea to the diet up to 30 g/kg OPF but decreased (p<0.05) with 40 and 50 g/kg OPF. This implies that the optimal level of urea supplementation in an OPF based diet was about 30 g urea/kg OPF.

Keyword: Dairy goats; Fermentable protein; Oil palm fronds; Urea