

Rumen pH and ammonia nitrogen of cattle fed different levels of oil palm (*Elaeis guineensis*) frond based diet and dry matter degradation of fractions of oil palm frond

ABSTRACT

Three fistulated Malaysian local bulls were used in a 3×3 Latin square design to determine the effects of different levels of concentrate with oil palm (*Elaeis guineensis* Jacq.) frond (OPF) on rumen pH and NH₃-N concentration, and DM degradability of different fractions of OPF. Three diets namely, 60% OPF pellet and 40% concentrate (Diet 1), 50% OPF pellet and 50% concentrate (Diet 2) and 40% OPF pellets and 60% concentrate (Diet 3) were used. The levels of concentrate in the diets affected rumen pH and NH₃-N concentration. The pH and NH₃-N concentration almost in all hourly samples did not show any difference ($p > 0.05$) among the diets except the 6 h and 9 h samples. The highest ($p < 0.01$) NH₃-N concentration was obtained on Diet 3 followed by Diet 2 and Diet 1, but there was a slightly higher ($p > 0.05$) pH on Diet 1. The NH₃-N concentrations of rumen liquor at 9 h sampling on Diet 1 and Diet 2 were below the critical level (50 mg/liter) required for efficient fermentation of fibrous feeds. The in sacco DM degradation of different fractions of OPF was affected by diets. The DM degradation of fractions of OPF was higher on Diet 3, which showed differences ($p < 0.01$) with the other diets. It was found that a higher level of concentrate (60%) with OPF gave a higher rumen NH₃-N concentration that increased the DM degradation of OPF fractions. The results showed that OPF could support an efficient rumen function in terms of NH₃-N concentration and pH when 50% in the diet. A higher level of OPF (>50%) does not support an efficient rumen fermentation in terms of NH₃-N concentration, and resulted in lower DM degradation values of the fractions. The results suggested that there is a need to supplement additional nitrogen to OPF based diets.

Keyword: In sacco degradability; Oil palm frond; Rumen NH₃-N concentration; Rumen pH