A B S T R A C T

A study was conducted to evaluate the utilization of both energy and protein when complete diets were formulated essentially from local by-product feeds and fed to goats. A total of twelve (12) intact bucks 5 to 8 months old with an average weight of 19.9 (± 2.8)Kg were used in three metabolism trials. In Trials 1 and 2, animals were fed diets of varying energy levels in 4 x 4 and 3 x 3 Latin Squares, respectively. In Trial 3, animals were fed diets of varying protein concentrations in a 5 x 5 Latin Square.

The mean DMI obtained in Trials 1, 2 and 3 were 2.98, 3.52 and 2.50KgDM/100KgLwt, respectively. DEI increased with increasing energy concentration ($P<0.05$) for Trial 1 and showed significant differences ($P<0.05$) between dietary protein levels in Trial 3. The mean DEI were 7.07, 8.22 and 5.37MJDEd^{-1} for Trials 1, 2 and 3, respectively. Digestible-N intake was significantly different between dietary energy levels in Trial 1, but decreased significantly ($P<0.05$) with increasing dietary energy levels in Trial 2. The overall mean digestible-N intakes were 10.66 and 12.89gdig-Nd^{-1} for Trials 1 and 2 respectively. When iso-caloric diets varying in dietary protein concentration were fed to goats, N-intake increased significantly ($P<0.001$) with increasing dietary protein level with an overall mean intake of 5.13gdig-Nd^{-1}.

The mean digestibility coefficients for Trials 1, 2 and 3 were: 0.598, 0.566 and 0.602 for DM; 0.605, 0.587 and 0.615 for OM; 0.689, 0.872 and 0.877 for energy; and 0.691, 0.711 and 0.572 for nitrogen, respectively.

Nitrogen retention and the efficiency with which the apparently digested-N was retained, increased as the dietary energy concentration was increased. When iso-caloric diets varying in dietary protein levels were fed, N-retention showed a significant ($P<0.001$) linear relationship with N-intake ($r = 0.93$). The overall mean N-retention for Trials 1, 2 and 3 were 5.56, 7.57 and 3.32gNd^{-1}, respectively.