

Determination of in Situ Degradation Kinetics of Some Legumes Waste Unused for Human Consumption

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Abstract : The aim of this study is to determine nutrient contents, in situ ruminal degradation kinetics and protein fractions of screenings bean (B), chick pea (ChP), red lentil (RL) and green lentil (GL) that is used as residue in grain legume packing industry. For this purpose, four samples of each legumes species-a total of 16 samples, collected from different parts of our country were utilized. Feedstuffs used in the experiment were incubated for 0, 2, 4, 8, 12, 24, and 48 hours in the rumen of 3 ruminally cannulated Akkaraman rams as duplicate. The nutrient contents, in situ ruminal dry matter (DM), organic matter (OM) and crude protein (CP) degradabilities and fractions, and escape protein contents were evaluated. The highest OM and CP contents were observed in RL ($P<0.05$). Chick pea had the highest ether extract (EE) content and EE values were 3.47, 6.72, 2.26, 8.66 % for RL, B, GL and ChP, respectively ($P<0.05$). Crude fiber (CF), ADF, and NDF contents were the highest in RL and the lowest in ChP. CF values were 24.03, 10.80, 4.09 and 3.57 % for RL, GL, B and ChP ($P<0.05$). Acid detergent insoluble nitrogen content of samples did not differ. Escape protein content was the highest in RL and the lowest in B ($P<0.05$). After 48 h incubation, the lowest OM and CP degradabilities were observed in RL. While the highest OM degradability was seen in ChP the highest CP degradability was observed in B ($P<0.05$). The lowest water soluble OM and CP contents were observed in RL whereas the highest potentially degradable OM and CP contents were seen in B and ChP ($P<0.05$). Both rate of OM and CP degradations ($k-1$) did not differ among samples ($P>0.05$). In conclusion, it was noted that feedstuffs (GL, ChP and B) used in the experiment except RL had a greater ruminal degradabilities of both OM and CP and moreover, had a higher escape protein contents, except B. It was thought that these feedstuffs can be substituted with some of common protein sources used in animal nutrition.

Keywords : in situ, nutrient contents, ruminant, subsieve

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