

Digestibility of an enzyme treated soybean meal for calf starter in weaned dairy calves.

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Recent studies have been focusing on the improved immune function and epithelial integrity provided by feeding fermented soybean meal in calves. Our objective was to measure and compare apparent (AID) and standard (SID) ileal digestibility of CP and AA in calf starters (CS) containing regular soybean meal (CON) or an enzyme-treated soybean meal (ESBM). A T-cannula was placed in the duodenum and ileum of 12 Holstein calves at 23 d of age. Calves were weaned on d 42 and on d 50 calves were randomly assigned to a 3 x 3 replicated Latin square with 10-d periods. The third diet consisted on a low-protein CS (LOW). Basal endogenous losses of CP and AA were estimated by regressing the apparent digestible contents of CP and AA against their total dietary contents in the 3 diets. Calves were fed ad libitum water and CS. Titanium dioxide (0.4% DM) and acid insoluble ash were used as indigestible markers. Digesta samples were collected continuously during 12 h on d 7 and 8 of each period from the ileum, and on d 9 and 10 from the duodenum. Calves during ESBM showed greater body length (2.9 vs 0.4 cm) and heart girth (2.1 vs 1.14 %) grow when compared with the LOW and CON diets, respectively. Calves in the ESBM diet had higher CS (2.3 vs 2.0 kg/d) and water (7.1 vs 6.0 kg/d) intakes than calves in LOW. There were no differences on AID for AA or CP, however it was smaller ($P = 0.01$) for Lys and tended to be greater for Phe ($P = 0.1$) with ESBM. Once ileal flows were corrected by the basal endogenous losses, we observed a tendency for a greater SID of Phe with ESBM. On the other hand, we found a greater duodenal outflow of CP ($P = 0.03$) and AA ($P < 0.01$) per kg of DMI with the ESBM diet than with CON. Moreover, ESBM had or tended to have greater small intestine disappearance of Glu ($P = 0.05$), Ile, ($P = 0.08$), Leu, ($P = 0.05$), Phe ($P = 0.01$) and Tyr ($P = 0.07$), and a tendency to lower ileal flow of CP ($P = 0.06$) and AA ($P = 0.1$) relative to total duodenal flow. Our results indicate that probably due to the reduction of antinutritional factors and the release of bioactive compounds by the fermentation process, an ESBM-based diet can promote greater duodenal flow of microbial or by-pass protein per kg of CP intake and greater absorption across the small intestine.