

P325 Development of a more sensitive protease model for apparent ileal amino acid digestibility in broilers

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Soybean products are the most important source of dietary protein for poultry in the US and much of the world. Variation in protein quality among soy ingredients can occur due to processing. The use of exogenous protease in poultry diets may improve amino acid digestibility, but it is difficult to demonstrate efficacy of protease in diets containing highly digestible ingredients such as SBM with low trypsin inhibitor (TI). The purpose of this study was to develop a more sensitive protease model. This was achieved by increasing SBM, thereby increasing TI concentrations and decreasing apparent ileal amino acid digestibility (AIAAD). 256 Ross 308 male broilers were allocated to 4 dietary treatments with 8 replicates pens of 8 birds in a 2 x 2 factorial arrangement of treatments in a randomized complete block design. The dietary factors were SBM inclusion (42 or 96%; SBM TI = 3.85 mg/g), or protease inclusion (0 or 300 U/g diet, CIBENZA® DP100 protease, Novus International). A common corn-SBM starter diet was fed to all chicks from d 0 to 16. Experimental test diets were fed from d 22 to 30, ileal digesta was collected on d 30. Performance and ileal AA digestibility were analyzed by one-way ANOVA. Fisher's protected LSD multiple pair-wise comparison procedures were used to compare treatment means. With increasing inclusion of SBM, weight gain, FI, FCR and performance index decreased ($P < 0.05$) and apparent ileal AA digestibility (AIAAD) was decreased 6-8% ($P < 0.05$). There was an uplift with protease in AIAAD in diets containing 96% SBM (3.6%; $P < 0.05$), but not in diets containing 42% SBM (0.3%). Although 96% inclusion of SBM does not represent a commercially relevant diet, it does simulate diets containing lower AA digestibility such as alternative protein ingredients and/or diets containing higher TI levels. In conclusion, CIBENZA® DP100 could be effective in mitigating poor quality raw materials by increasing AIAAD digestibility.

Key words: broiler, protease, SBM, trypsin inhibitor, digestibility