AMINO ACID DIGESTIBILITIES OF ANIMAL PROTEIN SUPPLEMENTS FOR BROILERS

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Animal proteins are normally superior to plant proteins as sources of essential amino acids, particularly of lysine, the first limiting amino acid in cereal grains. Meat meal is the animal protein supplement most widely used by the Australian feed industry, with fish meal, blood meal and hydrolysed feather meal being the other supplements. Despite their importance in balancing the supply of essential amino acids in feed formulations published data on the digestible amino acid contents of these ingredients is conflicting. In this paper, the apparent ileal amino acid digestibilities of these animal protein supplements for broilers are reported.

Assay diets were based on dextrose and contained the test feedstuff as the only source of protein. The proportions of dextrose and the test feedstuff were varied in each diet to obtain 200 g/kg crude protein. All diets were fortified with minerals and vitamins and contained celite (20 g/kg) as an indigestible marker. Each assay diet was fed ad libitum to three pens (4 birds/pen) of male broilers from 35 to 42 days of age. At the end of the trial, digesta contents from the terminal ileum were collected and processed as described previously (Siriwan et al., 1993). Samples of diets and digesta were analysed for amino acids and acid-insoluble ash, and the apparent ileal amino acid digestibility values were calculated.

The amino acid digestibilities in fish meal and blood meal were substantially higher than those in meat meal and feather meal. The overall mean apparent ileal amino acid digestibility coefficients were: meat and bone meal, 0.555; meat meal, 0.615; blood meal, 0.841; fish meal, 0.768 and feather meal, 0.563. The mean lysine digestibility coefficients were: meat and bone meal, 0.447; meat meal, 0.493; blood meal, 0.874; fish meal, 0.825 and feather meal, 0.540. Digestibility of threonine was usually the lowest of the essential amino acids in the animal protein meals examined. However, wide variations in amino acid digestibilities were observed among meat meal samples, highlighting significant batch-to-batch differences. In the two samples of meat meal the overall mean digestibility coefficients were determined to be 0.590 and 0.638. Corresponding figures for threonine and lysine digestibilities were 0.433 and 0.552, and 0.634 and 0.702, respectively. Interestingly, the crude protein concentrations of these two meat meal samples were similar (594 and 557 g/kg, respectively). The factors contributing to this variability in the nutritive quality of meat meal have been examined previously (Skurray, 1974) and will continue to be a concern to the feed industry.