BROILER PERFORMANCE AND METHIONINE AND LYSINE CONCENTRATIONS IN DIETS FORMULATED USING DIGESTIBLE AMINO ACID VALUES

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Results of a previous study demonstrated that formulating diets based on digestible amino acid values gave superior broiler performance when compared to birds fed diets based on total amino acid values (Li et al., 2002). It was observed in this study that birds receiving higher dietary lysine and methionine levels had higher breast meat yield and lower abdominal fat content. The objective of this study was to determine the optimum dietary levels of digestible lysine and methionine for producing maximum breast muscle yield and minimal abdominal fat content when fed throughout the broiler growing cycle.

Diets consisting of sorghum, wheat, canola meal, cottonseed meal, meat and bone meal, soybean meal, minerals and vitamins were formulated to contain 230, 210 and 200g crude protein per kg of diet for starter, grower and finisher phases, respectively. The apparent metabolisable energy level of the finisher diets was approximately 13 MJ/kg diet. There were 12 experimental diets consisting of four levels of lysine and three levels of methionine. During the finisher phase the supplementary dietary levels of lysine and methionine were 11.5, 12.0, 12.5 and 13.0 g/kg and 3.8, 4.5 and 5.5 g/kg, respectively. Each diet was fed to 6 pens of 6 male broilers (Cobb); starter from days 1 to 14, grower from days 14 to 28 and finisher from days 28 to 40. Feed consumption and body weights were recorded throughout the study. On day 40 body measurements were made on 12 birds from each diet following a lethal injection of sodium pentobarbitone.

The results of the study show that methionine significantly increased liveweight gain and breast muscle yield, decreased abdominal fat content (P<0.05) but had no effect on feed intake. Feed conversion was significantly improved as methionine level in the diets increased (P<0.05). A similar positive response in performance was not observed with increasing levels of dietary lysine. There were no interactions between dietary lysine and methionine levels. It would appear from these results that a greater economic return can be expected from higher dietary sulphur amino acid levels when improvements in the most critical response parameters, FCR and breast meat yield, are taken into account. Moreover, the results of this and the previous study, suggest that amino acid requirements for broilers need to be reassessed for diets formulated using digestible amino acid values.


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