

VARIATION IN AMINO ACID AND PROTEIN
CONCENTRATIONS IN AUSTRALIAN FEED INGREDIENTS

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Lack of sufficient analytical information on the amino acid (AA) composition of Australian feeds has been responsible for economic losses in pig and poultry production. Computer feed formulation facilities cannot be used effectively due to the dearth of available analytical data (Leache 1977).

During the past four years, extensive investigations on the protein and AA composition of feeds were undertaken with due emphasis on the effects of environmental conditions on the protein content and AA composition of sorghum and wheat grain varieties grown experimentally at various localities. A comprehensive study of protein concentrates was also carried out and results on meat meals have been included. The impact of AA composition of feeds on the composition of commercial pig diets collected at random was assessed. Variance and covariance analyses of results were carried out by using orthogonal and nonorthogonal blocks of data (Tocher 1952).

Protein and AA concentrations in sorghum and wheat grains varied significantly within and between varieties and neither of the two parameters was significantly correlated with the level of nitrogen application. The range of AA concentrations in wheat varieties was smaller than in sorghum and even smaller within than between varieties.

In sorghum, lysine, threonine and histidine concentrations were negatively correlated (lysine $P < 0.05$) with the protein content of the grain whereas in wheat, this correlation involved histidine, arginine and methionine but not lysine.

The variation in protein and especially in the AA profiles of meat meals was found to be wide and unpredictable, imposing serious problems in feed formulations. Comments on a practical method for their classification and estimation of available amino acids are made.

The present results suggest that, although most of the commercial pig diets were well supplied with crude protein, some were deficient in lysine, threonine and histidine in that order. This observation may prove of practical nutritional significance.

It is important to encourage AA analysis of Australian feeds but it is imperative that research laboratories adopt a uniform analytical procedure, avoiding inaccuracies inherent in the method.

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