

Variability of the methionine requirement of weaned pigs fed a corn-soybean diet

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Lowering dietary protein contents and increasing the use of free L-lysine in swine diets will result in more frequent methionine (MET) supplementation. However, prior to supplementation, better data for the MET requirement of weaned pigs are necessary. Knowledge of the variability of requirements would allow adjustment of MET contents, based on cost vs. gain to maximize herd profitability. Our objective was to determine the MET requirement of weaned pigs and its variability using the indicator amino acid oxidation method.

The MET requirement was determined in 6 pigs entering the study at 7 kg. Each pig received 6 levels of MET in random order. Diets contained 0.187, 0.250, 0.290, 0.320, 0.350 and 0.363% MET and 0.474% cysteine as tested. Pigs were adapted for 6 d to the basal corn-soybean diet, offered at 95 g/kg^{0.75} body weight. During 4-h oxidation studies, 156.7 kBq, (SE 3.0), of L-[1-¹⁴C]phenylalanine (PHE) was mixed with each of 8 half-hourly meals and expired CO₂ was collected. Data were tested for co-variables using the mixed procedure of SAS (1999). The breakpoint in PHE oxidation, representing the MET requirement, and its variability, was determined using a two-phase linear regression. PHE oxidation decreased when MET contents were increased from 0.187 to 0.29%. PHE oxidation was not different ($P > 0.2$) for diets providing 0.320 to 0.363% MET. The MET requirement was determined as 0.34% of diet and its standard error was 0.04% of diet, indicating that the variability in MET requirement for pigs 7-18 kg was $\pm 11.4\%$. The recommended MET concentration (NRC, 1998) for pigs of this body weight and feed intake is 0.32% of diet and agrees with the present estimate.

Implications.

The mean dietary MET requirement of 0.34% varied between 0.30 and 0.38% for individual pigs. To maximize profitability, MET should be supplemented to starter pig diets depending on the cost of synthetic MET and the fraction of pigs whose requirement is to be met.

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