

Methionine requirements of alternative slow-growing genotypes
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In the U.S. synthetic methionine (MET) will be banned from organic poultry diets in the future. Slower-growing alternative genotypes may be useful in organic production; they are less heavily muscled and may be expected to have lower MET requirements. Six trials were conducted to determine the MET and sulfur amino acid (SAA) requirements of alternative genotypes during the starter (7 to 21 d), grower (28-42 d), and finisher (49-63 d) phases. In each trial, five graded levels of DL-MET were added to corn-peanut meal basal diets that were deficient in MET (MET requirement trials) or MET and cysteine (CYS; SAA requirement trials). Experimental diets were fed to three genotypes: slow-growing (S), medium-growing (M) and fast-growing (F; starter and grower phase only). Each dietary treatment was fed to five replicate pens containing five male chicks (starter period) or thirteen male chicks (grower and finisher phases). Growth data were fitted to a broken line (when appropriate) such that an objective inflection point could be established. For each genotype (with the exception of the S birds in experiment 4), weight gain and feed efficiency increased ($P < 0.05$) with addition of DL-MET in experiments 1, 2, 3, and 4. Broken-line analysis with weight gain regressed against digestible MET or SAA intake revealed MET requirements (for S, M, and F genotypes, respectively) of 0.33, 0.30, and 0.33% for the starter phase and 0.28, 0.29, and 0.28% for the grower phase. In the finisher phase, the estimated MET requirement for the S genotype was 0.25%; no ($P > 0.05$) weight gain or feed efficiency response occurred in the M genotype in response to DL-MET addition, indicating that the basal diet contained adequate MET (0.22%). For the starter and grower periods estimates of SAA requirements ranged from 0.57 to 0.60%, regardless of genotype; extreme variability prevented the estimation of SAA requirements during the finisher phase. These data indicate that the MET and SAA requirements of the various genotypes are similar during the starter and grower phases.

Key words: Slow-growing, meat chicken, methionine, organic, amino acid