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Requirement recommendations for riboflavin in organic broilers

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GMO-free riboflavin is required for organic broiler diets. Currently it is produced by only one German manufacturer at high price. The recommended dosages are based on outdated studies, and current studies are rare. Due to high costs of GMO-free produced riboflavin, an accurate assessment of the requirement in poultry is of economic relevance. Furthermore, specific requirement recommendations for organic poultry do not exist. In the organic sector, slow-growing genotypes are used and diet composition partly differs from conventional systems. Both may influence riboflavin requirements. Four trials with riboflavin supplementations between 3.3 and 9.6 mg/kg feed DM in one- to three-phase feeding were conducted to identify the essential minimum amount of riboflavin supplements. The riboflavin source used was a GMO-free yeast strain (*Ashbya gossypii*). Across all experiments, the lowest dosages (2.5; 3.3; 3.5 mg/kg) resulted in lower performances and partly deficiency symptoms. Supplementation of 4.5 mg/kg feed DM was found to be a safe lower threshold. It was shown that an adequate supply is particularly important in the first phase of life, as certain early performance deficits cannot be compensated subsequently. A three-phase dosage gradation of 6.37; 5.28; 4.22 mg/kg for starter, grower and finisher diets, respectively, proved to be particularly suitable for generating best performance (feed conversion and efficiency). In conclusion, a general minimal supplementation of 4.5 mg/kg feed DM (as compared to 8-10 mg/kg starter feed and 6-8 mg/kg finisher feed currently used in the EU) is recommended for slow-growing broiler chicken in organic agriculture. Phase grading can improve efficient riboflavin use. Furthermore, the use of riboflavin-rich feed components such as yeast, whey and milk powder, alfalfa meal and grass meal or silages is recommended for on-farm feed mixtures.