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Threonine Requirement of Intensive Broiler Genotypes at Different Age and Sex Depending on Performance and Efficiency of Threonine Utilisation

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Abstract

Due to high cost of protein and environmental pollution, proper formulation of amino acids in animal feed has been a great interest to nutritionists. Threonine as the third limiting amino acid after methionine and lysine based on soybean meal has been intensively studied in growing broiler. The results vary between studies depending on the diet, age, sex, breed of animals and method for evaluation of the requirement. Based on the efficiency of the limiting amino acid, the amino acid requirement can be determined within the exponential N utilisation model. The objective of this study was to investigate threonine requirement of intensive broiler genotypes at different age and sex depending on performance and efficiency of threonine utilisation. The calculation of threonine requirement data was based on the exponential N-utilisation model from N rise experiments with totally 288 growing chickens of different sex (Cobb 500). The diets were based on HP soybean meal with supplementation of L-lysine and DL-methionine. Threonine concentration ($c=3,87 \text{ g} / 16 \text{ gN}$) and the relative amino acid pattern (Lys : Met+Cys : Thr = 1 : 0,85 : 0,54) identified threonine as the limiting amino acid in all diets. The results give a first indication that the threonine requirement between the age and sex could be different. The requirement of threonine based on metabolic body weight reduced with the increase of age. This observation might be affected also by the variation of threonine efficiency, calculated based on the mathematical estimated function between N intake and N retention for each N-rise experiment of the study. The results have to be approved in growth trials with determination of nutrient deposition and under conditions of varying Thr efficiency.

Keywords: Age and sex, broiler, threonine requirement