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SYNERGISTIC EFFECT OF FEEDING *ASPERGILLUS AWAMORI* AND *SACCHAROMYCES CEREVISIAE* ON GROWTH PERFORMANCE IN BROILER CHICKENS; PROMOTION OF PROTEIN METABOLISM AND MODIFICATION OF FATTY ACID PROFILE IN THE MUSCLE

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ABSTRACT

This study was conducted to examine the effects of a combined in-feed supplementation of *Aspergillus awamori* and *Saccharomyces cerevisiae* on growth and muscle protein metabolism and fatty acid profiles in broilers. Chicks (15 d old) were fed a basal diet as control, diets supplemented with 0.05% *A. awamori*, 0.10% *S. cerevisiae*, or a combination of both (7 birds/group) for 12 days. Growth of the birds was promoted by all treatments. Synergistic effects of *A. awamori* and *S. cerevisiae* were observed on body weight gain and feed conversion, breast muscle weight, and digestibility of dietary protein. Plasma 3 methylhistidine concentrations were decreased by *A. awamori* and *S. cerevisiae*, and synergistically by the combination. Gene expressions of proteolysis-related factors in muscle were reduced by all treatments. Conversely, mRNA expressions of myosin and actin were synergistically increased by the combination. Abdominal fat and plasma triglycerides were decreased by *A. awamori* and the combination, but not by *S. cerevisiae*, while muscle fat content was increased by all treatments. Interestingly, there was a decrease in saturated fatty acids and an increase in unsaturated fatty acids in muscle in all treatment groups. This change in fatty acid profile was partially related to mRNA expression of delta-6 fatty acid desaturase in the muscle. In conclusion, the combined supplementation of *A. awamori* and *S. cerevisiae* synergistically improves growth performance by promoting muscle protein metabolism. In addition, *A. awamori* and *S. cerevisiae* modify the muscle fatty acid profile.

