A COMPLEX OF MULTI-CARBOHYDRASE AND PHYTASE INCREASED CARCASS YIELD AND BONE MINERALIZATION OF BROILERS

FED DIETS DEFCIENT IN AMINO ACIDS,

ENERGY, AND MINERALS

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Need for increase in nutrient efficiency necessitates optimizing exogenous enzymes efficacy. The potency of a multi-carbohydrase and phytase complex (MCPC) to alleviate the detrimental effects of digestible amino acids (dAA), metabolizable energy (ME), available phosphorus (avP), and calcium deficiencies were evaluated on carcass weight, breast and leg muscles, bone ash, P and calcium concentrations and breaking strength in broilers. Seven diets were randomly allotted to 3,150 Ross 308 male broilers (30 birds ×15 pen-replications). Diets were a nutrient adequate-positive control (PC); 3 diets reduced in avP by 0.18% unit, calcium by 0.16% unit, but differently reduced in dAA (3, 4.5, and 6%), and in ME (3, 4, and 5%) compared to the PC (NC1, NC2, and NC3, respectively) with and without MCPC (1,800 xylanase U/kg and 1,000 phytase U/kg). The NC diets decreased carcass weight (7.6±0.2%) and bone ash (8±1%) versus PC (*P*≤0.007). Whereas, the MCPC usage increased carcass weight (7.9±1.5%) and bone ash (7.6±1.9%) to similar as the PC, with similar improvement for other carcass yield and bone quality parameters measured (*P*≤0.010). Overall, ME, dAA, avP, and calcium deficiencies decreased broiler nutrient utilization. Conversely, the increased carcass yield and bone quality with MCPC usage in the NC1, NC2, and NC3 diets inferred the high efficacy of the enzymes combination to increase energy and nutrient availability to maintain nutrient utilization of broilers fed energy and nutrient-deficient diets. Therefore, these results showed that inclusion of MCPC in commercial diet improved global nutrient digestibility to further increase nutrient efficiency.

Keyword: Broilers