COMBINATION OF A MULTI-CARBOHYDRASE AND PHYTASE INCREASED GROWTH PERFORMANCE AND LIVABILITY OF HEAT-STRESSED BROILERS FED DIETS REDUCED IN

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Information available on the efficacy of exogenous enzymes inclusion in diets of heat-stressed broilers is limited. The efficacy of a multi-carbohydrase and phytase complex (MCPC) at 1,800 xylanase U/kg and 1,000 phytase U/kg was evaluated on performance of heat-stressed broilers fed diets reduced in metabolisable energy (ME), digestible amino acids (dAA), calcium and available phosphorus (avP). Male PM3 broilers (n=1,260) were fed 1 of 7 treatments from day 10 to 28 in a floor-pen facility with environmentally challenged conditions (26-36°C temperature and 38-72% humidity). Diets were a nutrient adequate-positive control (PC) and 3 negative controls (NC) reduced in dAA by 3%, avP by 0.174% unit, Ca by 0.159% unit, and sequentially reduced in ME by 3, 4, and 5% compared to the PC (NC1, NC2, and NC3, respectively) with and without MCPC. Overall mortality was 25%. While body weight of the PC birds was 12±8% lower than expectation, none of the NCs without MCPC was different versus PC for all parameters evaluated. Supplementation of the MCPC in the NC1, NC2, or NC3 decreased mortality by 18±1% units; increased body weight by 13±1%; with similar improvements in feed intake, gain, and feed conversion ratio (*P*<0.0001). Overall, livability and performance of heat-stressed broilers were decreased regardless of energy and nutrient levels, however, feeding energy and nutrient-deficient diets supplemented with MCPC to the environmentally challenged broilers significantly alleviated the adverse effects. Hence, dietary MCPC supplementation increased nutrient efficiency to support high performance and prevent detrimental effects of unfavorable environmental conditions on broiler livability.

Keywords: Heat-stress