EFFECTS OF AVAILABLE PHOSPHORUS AND CALCIUM LEVELS ON THE EFFICACY OF A MULTI-CARBOHYDRASE AND PHYTASE COMPLEX ON NUTRIENT DIGESTIBILITY AND PERFORMANCE OF BROILERS FED CORN-SOYBEAN MEAL BASED DIETS

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The dietary levels of available phosphorus and calcium could influence the efficacy of a multi-carbohydrase and phytase complex (MCPC) on nutrient digestibility and performance of chickens. This experiment was conducted to investigate the influence of dietary available phosphorus (avP) and calcium (Ca) levels on the efficacy of MCPC on nutrient digestibility and performance of chickens from 0 to 21 d of age. A total of 400 day-old Cobb 500 chicks were allocated to 4 treatments in a randomized complete block design with 2 x 2 factorial arrangements of treatments. The two factors were two levels of avP and Ca (adequate = 0.45% avP and 0.90% Ca or suboptimal = 0.35% avP and 0.75% Ca) and MCPC supplementation at 0 or 1,800 xylanase U and 1,200 FTU/kg diet. Regardless of the dietary levels of avP and Ca, the addition of MCPC significantly improved (*P* < 0.0001) the body weight gain and the feed conversion ratio. Moreover, the addition of MCPC significantly improved (*P* < 0.0001) the AID of all amino acids (+4.7% and +3.3% unit) and P (+17.8% and +16.8% unit) for suboptimal and adequate levels of avP and Ca, respectively. The ATTD of P, Ca and phytate was also significantly improved (*P* < 0.0001) by the addition of MCPC regardless of the dietary levels of avP and Ca. However, the ATTD of P and Ca were significantly higher with suboptimal than with adequate levels of avP and Ca. This study demonstrated that MCPC is an effective mean to improve the availability of nutrients and consequently the performance in broilers. It also highlighted the need to take into account the interactions with nutrient levels in order to optimize the efficacy of exogenous enzymes in poultry nutrition.

**Keywords:** Multi-enzymes