

CONSTRUINDO SABERES, FORMANDO PESSOAS E TRANSFORMANDO A PRODUÇÃO ANIMAL

CALCIUM VALUES PREDICTION ASSOCIATED TO THE CALCIUM:AVAILABLE PHOSPHORUS RELATIONSHIP FOR BROILERS FED DIETS WITH PHYTASE

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For evaluate a possible equivalence of the phytase in making available complexed minerals in the diet, particularly the calcium, a review of the literature published in the last 30 years, concerning the requirements of calcium, available phosphorus and related of phytase use in feed formulations of broilers was realized. The categories related to the type of phytase (3 or 6-phytase), commercial brand, age of the birds, lineage and sex used, number of replications, type of feed, calcium levels, phytate and supplemental phosphorus, as well as the interactions, so that their effects are removed from the mathematical model. The meta-analysis study was used and the weight gain (WG) and bone ash (ASH) data were transformed into a common metric. Posteriorly, it was determined equations to the supplemental calcium requirements (SCa) and the response to the supplemental phytase (Phy) in the diet. Linear and the second degree equations were defined for the two variables in different situations and for an equation of calcium equivalence in relation to the inclusion of the phytase in the diet. For a 3-phytase, as equations of equivalence to the WG [$SCa = (-1.1803 + (1.39311 - 8.74(0.00009Phy^3 + 0.0756))^{1/2})/-4.37$] and ASH [$SCa = (-0.6249 + (0.39050 - 3.8148(0.00008Phy^3 + 0.0035))^{1/2})/-0.19074$] were obtained. For 6-phytase, the equivalence equations were $SCa = (-1.1803 + (1.39311 - 8.74(0.0001Phy^6 + 0.0479))^{1/2})/-4.37$ and $SCa = (-0.6249 + (0.39050 - 3.8148(0.00007Phy^6 + 0.0082))^{1/2})/-0.19074$, respectively. From the equivalence equations, the values for different phytase concentrations were estimated, obtaining a response with negative values for WG and overestimated for ASH, respectively, independently of the type of phytase in the diet (3 or 6-Phy). The results shown that despite a similar response of the birds to the increasing inclusion of Ca and P in the diet, the same response was not observed for calcium in diets supplemented with phytase. In addition, it is possible to infer that the mathematical model used did not represent the biological relationship between phytase and calcium. The cataloged data showed that calcium is directly related to phytate, a substrate for the enzyme phytase, but probably without equivalence for phytase. Thus, is a need to continue the research in an alternative bias, to the help in the definition of a model or levels of calcium and phytate that best represent this biological relationship between calcium and the phytase in the diet.

Keywords: bone ash, enzyme, meta-analysis, poultry, weight gain

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