

EVALUATION OF SOME PHOSPHORUS SOURCES IN POULTRY RATIONS

BY

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B. Sc. Agric. Sci. (Poultry production), Ain Shams Univ., 1985

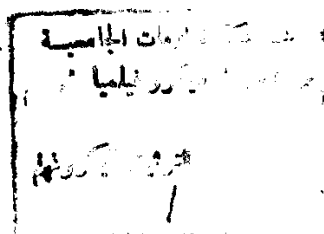
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ABSTRACT

Nabil Mohamed Hassan El-Medany. Evaluation of some phosphorus sources in poultry rations. Unpublished Doctor of philosophy, Dept. of Poultry Production, Fac. of Agric., Univ. of Ain Shams, 1997.

The first part of this study included two experiments. The first experiment aimed to study the effect of replacing Egyptian dicalcium phosphate (Dcp-1) with graded percentages of raw rock phosphate (Rrp-1) or triple super phosphate (TSP) in broiler diets. The results indicated that no body weight, feed intake, feed conversion ratio, mortality rate and tibia ash percent significant difference between Rrp-1 or TSP at all levels of inclusion and control group (100% Dcp-1). There were no differences in tibia weight, tibia length and tibia width among the group fed Rrp-1 or TSP to replace up to 75% Dcp-1 compared with the control group. However using TSP as the sole inorganic phosphorus source gave significantly poorer results of bone parameters compared with control.

The second experiment in this part was conducted to evaluate nine Egyptian phosphorus sources in Japanese quail diets. They were two sources of dicalcium phosphate (Dcp-1 & Dcp-2), one source of triple super phosphate (TSP), three sources of raw rock phosphate (Rrp1, Rrp2 and Rrp3) and three sources of bone meal (Bm1, Bm2 and Bm3). The results showed that dicalcium phosphates and bone meals could be replaced by raw rock phosphate or triple super phosphate without detrimental effect on growth rate, feed intake, feed conversion ratio, mortality rate, tibia ash and tibia measurements.

The second part of this study included three experiments conducted on laying hens at the same time and place. This part aimed to study the effects of phytase (Natuphos) supplementation at

different levels (0, 250, 500, 750 units/kg) to low (0.16-0.17%) or sub-optimum (0.27-0.28%) level of available phosphorus and the replacing of dicalcium phosphate (DCP) by Marrocco raw rock phosphate (RRP) at sub-optimum or optimum (0.38-0.39%) level of available phosphorus in laying hen diets. The results indicated that:

- 1) Addition of phytase to low phosphorus diet improved the performance of laying hens. However the supplementation of phytase to sub-optimum phosphorus level gave no further improvements in performance.
- 2) Interior egg quality was not affected by adding phytase at any level of phosphorus.
- 3) Addition of phytase to low phosphorus diet gave lower egg shell quality compared with unsupplemented group, while phytase had no effect on egg shell quality at sub-optimum level of phosphorus.
- 4) Addition of phytase to low phosphorus diet had no effect on tibia bone quality as well as tibia content of ash, P and Ca. However tibia bone quality and tibia content of ash, and Ca were improved by adding phytase to sub-optimum phosphorus diet.
- 5) DCP and RRP gave similar performance at sub-optimum phosphorus level. However, at optimum phosphorus level, RRP gave lower production performance compared with DCP.
- 6) Interior egg quality (Albumen height and Haugh unit) was improved by using RRP at optimum phosphorus level, while there was no difference between RRP and DCP at sub-optimum phosphorus level.
- 7) DCP improved egg shell quality at optimum phosphorus level, while at sub-optimum phosphorus level there was no difference between the two sources (DCP vs. RRP).

- 8) At sub-optimum and optimum P level, tibia bone quality was improved by using DCP, while tibia content of ash and calcium were increased by using RRP.

Key words: Phosphorus source, phytase, broiler, quail, laying hen performance, egg quality, bonequality.

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