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Comparative Effect of Microbial Phytase Supplementation on Layer Chickens Fed Diets with Required or Low Phosphorous Level

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Abstract : An experiment was conducted to determine the effect of microbial phytase (Quantum Blue®) supplementation on layer chickens fed diets with required or low phosphorous level in corn-soybean based diets. One hundred and sixteen 23-week-old Lohman brown laying hens were used in 8-week feeding trial. Hens were randomly allotted into four treatments where the group (1) (control group) was fed basal diet without phytase, group (2) fed basal diet supplemented with phytase, group (3) fed diet supplemented with phytase as a replacement of 25% of monocalcium phosphate and group (4) fed diet supplemented with phytase as a replacement of 50% of monocalcium phosphate. Records on daily egg production, egg mass, egg weight and body weight of hens at the end of experimental period were recorded. Results revealed no significant ($p \geq 0.05$) differences were observed among the other dietary treatments in BW, egg production, egg mass, feed intake or feed conversion when these parameters were evaluated over the duration of the experiment while egg weight showed significant ($p < 0.05$) increase in all phytase supplemented groups. There was no significant ($p \geq 0.05$) differences in egg quality including egg length, egg width, egg shape index, yolk height, yolk width, yolk index, yolk weight and yolk albumin ratio while egg albumin was significantly increased ($p < 0.05$) in group (2) and group (3). Egg shell weight increased significantly ($p < 0.05$) in all phytase supplemented groups when compared with the control group also shell thickness increased significantly ($p < 0.05$) in both group (2 &3). No significant ($P \geq 0.05$) difference was observed in serum Ca, P level while alkaline phosphatase was significantly ($P < 0.05$) increased in group (3). Egg shell analysis showed increase in egg shell ash% in all phytase supplemented groups when compared with the control group, egg shell calcium % was higher in group (3) and group (4) than the control group while group (2) showed lower egg shell calcium% than the other experimental groups, egg shell phosphorous% was higher in all phytase supplemented groups than the control group. Phosphorous digestability was significantly ($P < 0.05$) increased in all phytase supplemented groups than the control group and the highest p digestability was in group (4). Calcium digestability showed significant ($P < 0.05$) increase in all phytase supplemented groups when compared with the control group and the highest digetability was in group (4).

Keywords : layers, microbial phytase, Ca and P availability, egg production, egg characteristics
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