

Title *Effect of Supplemental Bacterial and Fungal Phytase at Different Dietary Level of Phosphorus on Tibial Bone Characteristics and Body Weight Gain in Broilers*

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Abstract:

The most organized sector of the agriculture is the poultry sector which has a contribution of 1.2 in GDP of Pakistan. It also generates jobs to approximately 1.5 million people associated with this sector. Nutrition plays a vital role in the growth of Poultry birds. Besides major nutrients and vitamins, many other elements play a key role in the development. Minerals are the nutrients that exist in the body and are quite important for the development. The skeletal system plays different roles in body like locomotion, support and it also provides a proper shape to the body. A continuous process of repair and regeneration occurs in bone throughout the life time. Bone related problems in broiler are the result of low production. Phytase enzymes help in digestion of phytate phosphorous which eventually have better effects on bone health.

Addition of Phytase enzyme in the diet results in better growth and development of the bones. Phytase enzyme breaks the antinutritional factor Phytic acid and releases the bound phosphorous that is than utilized by the birds. Keeping in view a 35 days research trial was conducted. A total of 140 birds were divided into 07 treatment groups with 04 replicates. Diet A was corn soybean meal with 0.45 %NPP NRC (1994).Diet B was 0.30% NPP + Fungal Phytase, Diet C was 0.30% NPP + Bacterial Phytase, Diet D was 0.15% NPP +Fungal Phytase, Diet E was 0.15% NPP + Bacterial Phytase, Diet F was 0.0% NPP + Fungal Phytase and Diet G was 0.0% NPP + Bacterial Phytase.

At the end of the trial, the data was analyzed by analysis of variance. The group differences will be compared by Duncan's multiple range test (Steel et al. 1997) using Statistical analysis was conducted with the Statistical Package for Social Science (SPSS for Windows version 20, SPSS Inc., Chicago, IL, USA).

Results show that there was a significant difference in weight gain ($P < 0.05$) in groups supplemented with Phytase. The bone weight of the broilers with different treatments showed significant difference ($p < 0.05$). It is evident that Group A (control); Group B, Group D and Group G are not significant. Group C showed significance difference when compared with all other groups and maximum bone weight is also attained by Group C. Bone length of the broilers with different treatments showed significant difference ($p < 0.05$). Group C shows significant difference among all the groups and maximum tibial length is also attained by Group C. Diaphysis diameter tibial bone of the broilers with different treatments showed significant difference ($p < 0.05$). Group C showed significance with all groups when compared with other treatment groups. Medullary Canal Diameter of the broilers with different treatments showed significant difference ($p < 0.05$). Maximum Medullary Canal Diameter is of Group C. Weight/ Length Index of the broilers with different treatments showed significant difference ($p < 0.05$). Highest Weight/ Length Index was attained by group C. The Tibiotarsal Index of broilers with different treatments did not show significant difference ($p > 0.05$). Rubosticity Index of the broilers with different treatments showed significant difference ($p < 0.05$). Lowest Rubosticity Index is attained by Group A (Control). Serum Alkaline Phosphatase and serum phosphorous level of the broilers with different treatments did not show significant difference ($p > 0.05$). Whereas Serum calcium level was significant ($P < 0.05$) in different treatment groups.

Conclusion

The results of the study conclude that addition of Phytase at low level of phosphorous results in increased weight gain and also increases bone density in broilers.