THESIS SUMMARY

TOPIC: The Effect of Phytase Supplementation on Nutrient Utilization in Laying Hens

Supervised by: Dr. Halas Veronika (Ph.D)

Prepared By: Tukamushaba Silver (KI9F3)

Course: MSc Animal Nutrition and Feed safety engineering

This study examined the impact of phytase supplementation at levels of 500 and 700 FTU/kg on nutrient (dry matter, crude protein, Ca, P, Na, and energy) digestibility and retention in laying hens. A total of 120 Lohmann Brown hens at 35 weeks old were used in this experiment. Four dietary treatments were applied, with the positive control formulated based on recommendations. 10 birds and 30 birds per treatment were used for retention and digestibility studies, respectively. Data were analyzed using a one-way ANOVA and Significance was set at $P<0.05$; $P<0.10$

Results indicated improvements in the digestive efficiency of essential nutrients, phosphorus (74.79% and 73.82%), nitrogen (N) (82.73% and 83.16%), and energy (73.64% and 74.36%), in phytase-supplemented diets at phy500 FTU/kg and phy700 FTU/kg, respectively, compared to the positive control and negative control diets. Additionally, relative retention of phosphorus (40.4% and 45.9%) and calcium (55.4% and 55.7%) was enhanced in phytase-supplemented diets at phy500 FTU/kg and phy700 FTU/kg, respectively, compared to P (31.7% and 39.9%) and C (49.9% and 49.8%) in PC and NC treatments, respectively, suggesting increased utilization of dietary phosphorus and calcium.

These findings highlight the efficacy of phytase in enhancing nutrient utilization and retention in laying hens, particularly for phosphorus, while also indicating a positive impact on calcium retention. Incorporating phytase supplementation at appropriate levels could be a valuable strategy to optimize nutrient utilization and improve the overall productivity and health of laying hens.

The results of this work enable us to conclude that the efficiency of nutrient utilization can be improved by enzymes only if the nutrients are below the requirements.