

Influence of Magmeal Supplementation on Intestinal Physiology of Japanese Quails

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Abstract—A study was conducted on 240 Japanese quail birds (*Coturnix coturnix japonica*) from day old to six week of age at Poultry Research Station, Madhavaram Milk Colony, Chennai – 600 051 to evaluate the effect of magmeal supplementation on intestinal physiology. Maggot meal, popularly magmeal is a core product consisting of dried defatted larvae that is ground into a high protein larvae meal. The birds were divided into four groups with 20 birds each in each group in three replicates where group 1 (Control group) was fed with Japanese quail basal diet (with 7 per cent fish meal), group 2 was fed with Japanese quail basal diet replacing 50 per cent fish meal with magmeal, group 3 was fed with Japanese quail basal diet replacing 75 per cent fish meal with magmeal and group 4 was fed with Japanese quail basal diet replacing 100 per cent fish meal with magmeal. The effect of magmeal inclusion on the physiology of the small intestine in control and experimental groups of birds was studied by estimating the effect on intestinal pH and enzymatic activities. There was no significant difference in the intestinal pH between the groups and between the three weeks and six weeks age of birds in control and experimental groups of Japanese quails due to replacement of fishmeal with magmeal. Amongst the enzymatic activities studied, there was no significant difference in intestinal amylase activity between the groups and between three weeks and six weeks of age in control and experimental groups of Japanese quails on the inclusion of magmeal at varying levels. The intestinal tryptic activity was significantly higher ($P < 0.01$) in the group 4 when compared to other groups at both three and six weeks of age. The intestinal tryptic activity was significantly higher ($P < 0.01$) at six weeks age than at three weeks age in control and experimental groups of birds. The intestinal lipase activity observed was significantly higher ($P < 0.01$) in group 4 when compared to the control and other groups. The intestinal lipase activity observed was significantly higher ($P < 0.05$) at the six weeks of age than the three weeks age of birds in control and experimental groups in Japanese quails. The effect of magmeal inclusion on morphological changes in the small intestine revealed that there was a significantly high increase ($P < 0.01$) in intestinal villi length, intestinal villi width, crypt length and crypt depth of intestine between the groups from three weeks to six weeks age in control and experimental groups of Japanese quails. Thus dietary inclusion of magmeal replacing fishmeal at 100 per cent at six weeks of age enhanced the tryptic and lipase activity and morphology of small intestine by facilitating improved digestion due to high crude protein in the magmeal.