

HISTOLOGICAL, MORPHOMETRIC AND HISTOCHEMICAL FINDINGS IN BROILER CHICKENS FED DIETS WITH INSECT MEAL INCLUSION

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Introduction: Insects are considered a novel and suitable protein source for poultry feeding. Dietary modifications have been reported to affect intestinal morphology and mucin composition in broilers, but no studies related to insect meal utilization are currently available. The present study aimed to investigate histological findings, gut morphology and mucin composition in broilers fed with insects.

Materials and Methods: 40 male broiler chickens were distributed over 4 dietary treatments (control feed and 5%, 10% and 15% *Tenebrio molitor* inclusion) and slaughtered after 53 days. Spleen, thymus, bursa of Fabricius, liver, glandular stomach, intestine, heart and kidney were submitted to histological examination. Intestinal morphology was assessed through morphometric measurements of villus height, crypt depth and villus height/crypt depth ratio on duodenum, jejunum and ileum. Small intestine and caecum were also stained with PAS, Alcian Blue pH 2.5 and Alcian HID to discriminate among neutral, sialylated, and sulfated acidic mucins.

Results: Histological findings and intestinal morphology and mucin composition were not significantly influenced by dietary *Tenebrio molitor* inclusion. Lymphoid system activation and higher duodenal and jejunal morphometric indexes compared with ileum were observed in both control and insects feed. Neutral and acidic mucins stained similarly in all the treatments. Mucin staining was also more intense in the crypt base and midsection than tip and distally increased along the duodenal-ileal axis.

Conclusions: Dietary insect meal inclusion does not affect histological findings and gut morphology and mucin composition of the broilers, thus suggesting no negative influence on animal health and intestinal development.

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