

**Title** *Morphological Modifications Induced by Mannan Oligosaccharide Concentrations in Small Intestine of Rock Pigeon (Columba livia domestica)*

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**Abstract:**

This experiment was designed to study the influence of different concentrations of Mannan Oligosaccharide (MOS) on IELs count and goblet cells characterization in Rock Pigeon (*Columba livia domestica*). Forty young, healthy, and maternally isolated pigeons were randomly divided into four groups. Three groups were fed basal diet supplemented with 0.1 %, 0.2% and 0.5% MOS whereas fourth group was only fed unsupplemented corn-based basal diet ad libitum. The commercial product Bio-MOSTM (BM, Altech, USA) was the source of MOS for this experiment. Birds were given 7 days acclimatization period. After acclimatization dietary supplementation was given for 35 days. The coccidiostat and antibiotics were not used either in feed or water supply. At d-42 eight pigeons from each group were slaughtered and whole intestinal tract was removed. Two cm portion of duodenum, jejunum and ileum were collected from slaughtered pigeons and fixed in freshly prepared 10% neutral buffered formalin. Tissues were processed for light microscopy by Paraffin embedding technique. Three segments (4/cm thick) per slide were mounted for staining. Haematoxylin and Eosin staining protocol was adopted for Intraepithelial Lymphocytes count whereas combined Alcian Blue and Periodic Acid Schiff staining procedure was used for goblet cells characterization. Five intact villi per slide were considered for the results. The results were analyzed through Completely Randomized Design ANOVA and statistical differences among groups ( $P < 0.05$ ) were identified using Duncan's Multiple Range Test. It was resulted that IELs count did not differ significantly ( $P > 0.05$ ) among all supplemented groups in all three segments of small intestine (duodenum, jejunum and ileum) as compared to control group. Acid mucins also did not differ significantly among supplemented groups of duodenum and ileum. Mixed mucins goblet cell decreased significantly ( $P < 0.05$ ) in jejunum but did not differ significantly in duodenum and ileum whereas neutral mucins were not observed in all segments of small intestine. It was concluded that rock pigeon appeared to be more resistant to the environmental stress but yet it cannot be an alternative research model of birds because it reacted differently as compared to broilers and other birds along with MOS had no significant influence on gut histology of rock pigeon (*Columba livia domestica*).