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**INTRODUCTION:** The effects of insect meal on gut health have recently been reported in free-range and broiler chickens [1,2], but no data are available for organic intermediate growing chickens supplemented with black soldier fly (BSF) live larvae.

**MATERIAL AND METHODS:** Label naked neck chickens were reared from 21 to 82 days of age and randomly allotted into four groups (n= 240, 10 birds/pen, 6 replicates/treatment) according to bird gender (male-M and female-F) and larvae provision (Control-C and larvae-L). LM and LF groups received 10% supplementation of BSF live larvae, based on the average daily feed intake. At slaughter, samples of liver, spleen, bursa of Fabricius, and gut were collected from 60 animals (15 birds/treatment) and routinely processed for histomorphological examination. The following morphometrical parameters were evaluated on duodenum, jejunum, and ileum: villus height (Vh), villus width (Vw), crypt depth (Cd), Vh/Cd ratio, total absorptive area (TAA), mucosal, and muscular thickness (Fig.1). The observed histopathological findings were evaluated using a semi-quantitative scoring system (0: absent, 1: mild, 2: moderate, 3: severe). R software was used to perform the statistical analysis.

**RESULTS:** Morphometrically, Vh, TAA and mucosal thickness depended on sex, being greater in M than in F (P<0.05). Also, Vw was influenced by the interaction diet x sex, being greater in CM than in CF (P=0.016). Apart from Cd, all the evaluated morphometric indices depended on gut segment (P<0.001).

Histologically, gut showed absent to moderate multifocal lymphoplasmacytic enteritis (Fig. 2-3). Liver showed mild lymphoplasmacytic inflammation and absent to moderate multifocal vacuolar degeneration. Bursa of Fabricius presented absent to mild cortical depletion, while spleen did not show any alterations. Although the severity of all the observed lesions was not influenced by diet (P>0.05), liver degeneration depended on sex, being higher in F than in M (P=0.025).

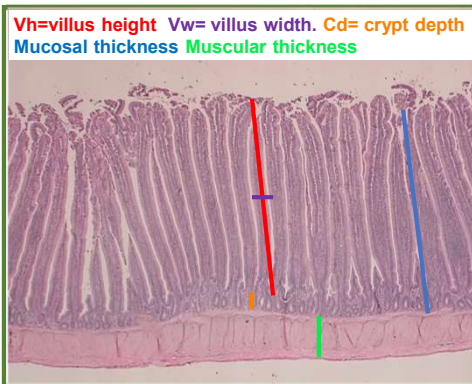


Fig.1 Morphometrical measurements (Jejunum, H-e, 2.5x)



Fig.2 Normal duodenum, H-e, 10x

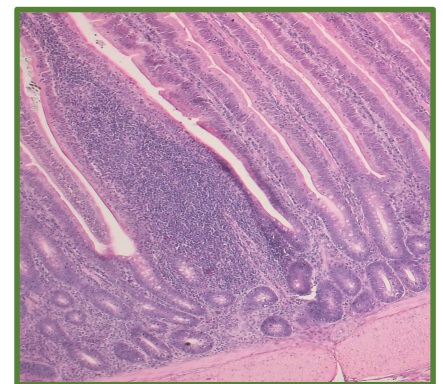


Fig.3 Moderate lymphoplasmacytic enteritis, H-e, 10x

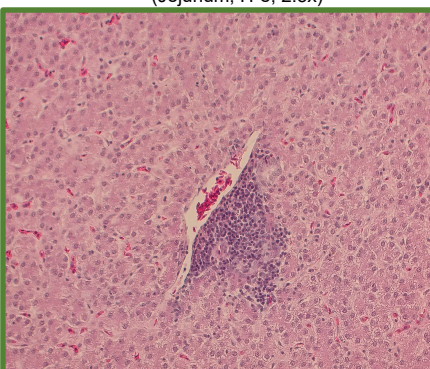


Fig.4 Mild lymphoplasmacytic hepatitis, H-e, 20x

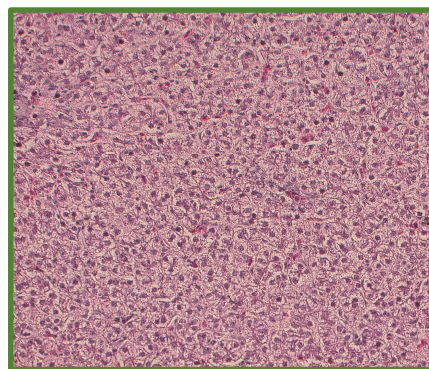


Fig.5 Moderate hepatic vacuolar degeneration, H-e, 20x

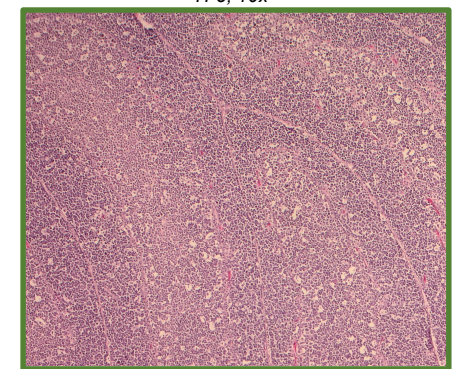


Fig.6 Mild cortical depletion of Bursa of Fabricius, H-e, 10x

**CONCLUSIONS:** In conclusion, results showed that BSF live larvae provision did not impair gut and general health of organic chickens, assuring a physiological, sex-dependent gut morphological asset.

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**Bibliography:** 1. Biasato I. et al. Modulation of intestinal microbiota, morphology and mucin composition by dietary insect meal inclusion in free-range chickens. *BMC Vet Res.* 2018 Dec 4;14(1):383. Biasato I. et al. Black soldier fly and gut health in broiler chickens: insights into the relationship between cecal microbiota and intestinal mucin composition. *J Anim Sci Biotechnol.* 2020 Feb 3;11:11.