

Morphological characterization of the gut of the water bug *Belostoma anurum* (Hemiptera: Belostomatidae)

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The digestive tract of insects is formed by a cylindrical tube that generally exhibit morphological similarities among insect groups. The shape and the complexity of the digestive tract in insects are directly related to the eating habits of these arthropods. Although the digestive tract of these animals is generally formed by a cylindrical tube, almost nothing is known in term of its morphology in aquatic insects. Thus, this investigation was conducted aiming to characterize the gut morphology of *Belostoma anurum* (Hemiptera: Belostomatidae) nymphs, which are prevalent aquatic predators of arthropods and small vertebrates in Neotropical regions. Firstly, we collected adult insects in fish-farming installations at Federal University of Viçosa in order to establish an in vitro population and avoid potential pollutant interferences. We used third instar nymphs which are considered the most active of such animals. Three nymphs were anesthetized at -4 °C and the midgut and hindgut were dissected in saline solution and transferred to fixative solution Zamboni's for 24h (at 5°C). The samples were dehydrated in a graded ethanol series (70, 80, 90 and 95% for 10 min each) and embedded in JB4 HistoResin. After 24h, the samples were sectioned at 3 µm thickness in Leica RM2255 microtome. Slices were stained with hematoxylin and eosin and examined with a Leica DMLS light microscope. The midgut and hindgut are wrapped and supported by longitudinal and transverse visceral muscles. The midgut is divided anterior, middle and posterior regions. The epithelium of the anterior and middle midgut consists of regenerative and columnar cells. The columnar cells exhibit numerous vacuoles. The presence of vacuolated cells indicates a high digestive activity due to the need of energy for ecdysis. There was no peritrophic matrix in the gut of *B. anurum*, since it is absent in Hemiptera. The hindgut is formed by the Malpighian tubules, ileum, rectum and anus.

Palavras-chave: aquatic insects, water bug, digestive tract.

Apoio: FAPEMIG, FUNARBE, CAPES, CNPq.