# THE MICROANATOMY of the DIGESTIVE TRACT of *LEPIDOGLYPHUS DESTRUCTOR* (ACARI: ASTIGMATA): WHERE ARE DIGESTIVE ENZYMES as POTENTIAL MITE ALLERGENS PRODUCED?

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The amylases and proteases of astigmatid mites are well documented as allergens. They are produced in storage grain habitats and cause respiration problems not only to food industry workers but also in urban populations. The observation and better characterization of mite digestive tract and digestive enzymes improve our knowledge of these allergens.

*Lepidoglyphus destructor* (Schrank, 1781) is one of the most abundant astigmatid mites in stored grain in Czech Republic. The aim of the study was to describe its alimentary tract and to localize the enzyme-producing parts.

The mites were reared on a wheat-germ diet, fixed, and used for light and TEM microscopy. The digestive tract of *L. destructor* consisted of (i) foregut — pharynx, oesophagus; (ii) midgut — mesenteron, caeca, colon, postcolon, rectum; (iii) hindgut — anal atrium. The lumen of mesenteron and caeca was filled by fine particles. The ingested food was packed into a "peritrophic matrix" and concentrated in the middle of the mesenteron. Microvilli were observed in mesenteron, caeca, colon, and rectum. The rectal mikrovilli were larger and denser in comparison to those of the midgut. Mesenteral and caecal walls constisted of strongly vacuolized cubical or cylindrical cells with large well-stained nuclei. The mesenteral and caecal cells showed various secretory activities. Merocrine secretion was probably present in all mesenteral cells, while apocrine secretion occurred in the cells in the proximal part of mesenteron. These cells had higher amounts of mitochondria and endoplasmatic reticulum. Caecal cells, on the other hand, exhibited apocrine and holocrine secretion. The holocrine secretory cells were filled by the large vacuoles, and their contents were released into the caecal lumen by rupture. These observations indicate that enzyme production and secretion take place in mesenteral and caecal cells, and that the underlying mechanism is not uniform. The functional differences between mesenteral and caecal cells as well as the compartments of mite gut are discussed.

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