

ULTRASTRUCTURE AND CITOCHEMISTS OF THE MALE REPRODUCTIVE ACCESSORY GLANDS OF *Triatoma brasiliensis* Neiva, 1911 (HEMIPTERA, REDUVIIDAE, TRIATOMINAE).

Simone P.C. Freitas (1), Teresa Cristina M. Gonçalves (2), José Eduardo Serrão (3), Jane Costa (4), Jacenir R. Santos-Mallet (2). (1) Departamento de Biologia Animal, Universidade Federal de Viçosa, Minas Gerais, 36570-000. (2) Núcleo de Morfologia e Ultra-estrutura de Vetores, Departamento de Entomologia, FIOCRUZ, Rio de Janeiro, 21045-900. (3) Departamento de Biologia Geral, Universidade Federal de Viçosa, Minas Gerais, 36570-000. (4) Núcleo de Informatização da Coleção Entomológica, Departamento de Entomologia, FIOCRUZ, Rio de Janeiro, 21045- 000. sfreitas@insecta.ufv.br.

Male accessory glands secretions of insects play multifunctional roles not only in the transference, activation and protection of the gametes, but also, inducing certain types of female behavior and stimulating ovarian development and oviposition [1]. *Triatoma brasiliensis* is the most important Chagas disease vector in the semiarid areas of Northeast Brazil and is found colonizing domiciles and peridomiciles habitats [2]. In present study we describe the ultrastructure of the male reproductive accessory glands in the *T. brasiliensis*, as well as the characterization of their secretions. Males five-day-old were dissected in saline solution and accessory glands transferred to 2.5% glutaraldehyde in sodium cacodylate buffer at room temperature, washed in same buffer and post-fixed in 1% OsO₄ in buffer for 1h. The glands were dehydrated in a graded series acetone and embedded in Epon 812. Ultrathin sections were stained with uranyl acetate and lead citrate and observed under transmission electron microscope. From the cytochemical study the glands were fixed and incubated in 2% phosphotungstic acid (PTA) in ethanol by 2h at room temperature. After the samples were dehydrated in ethanol and embedded in Epon 812. Ultrathin sections were observed under transmission electron microscopy without contrastation. There are four accessory glands: anterior, external, internal and dorsal. All glands have a single layered epithelium on a thin basement membrane. Externally there is a longitudinal muscles layer supplied with trachea (Figure 1). Many mitochondria are present in the gland cell cytoplasm, besides polyribosome, rough endoplasmic reticulum and secretory granules, suggesting that the secretory materials are proteinaceous. The nucleus, roughly oval shape, occupies the central position (Figure 2). The cell apex has many secretory granules that are released to the lumen (Figure 3). Cytochemical analyses showed weakly positive reaction for PTA in the secretory glands. In some secretory glands there is few amount of proteinaceous substances together large amount of non-proteinaceous substances, which appears as electron transparent areas (Figure 4), suggesting the accumulations of different substances in the same secretory granule. Besides there are small granules without positive reaction for PTA (Figure 5). The anterior glands present differences in epithelial cells compared the glands external, internal and dorsal, with the cell apex presenting short microvilli while the other three glands present long microvilli (Figure 6, 7, 8 and 9). Some cells have autophagic vacuoles containing RER profiles and secretory granules (Figure 10), suggesting reabsorption of their content. In the five-days-old males, the secretions of the four glands are released in hilum and leave to the glandular duct which has a wall containing several layer of circular muscles (Figure 11). In conclusion, *T. brasiliensis* has active accessory glands five day after adult emergence despite the occurrence or not of blood meal. Cytochemical results suggest the glands play a role in secretion of small amount of proteins.

Financial support - CMPQ and FAPEMIG

[1] L, Regis et al. Mem. Inst. Oswaldo Cruz (1987) 82, 75.

[2] J, Costa et al. Mem Inst. Oswaldo Cruz (2003) 98, 443.

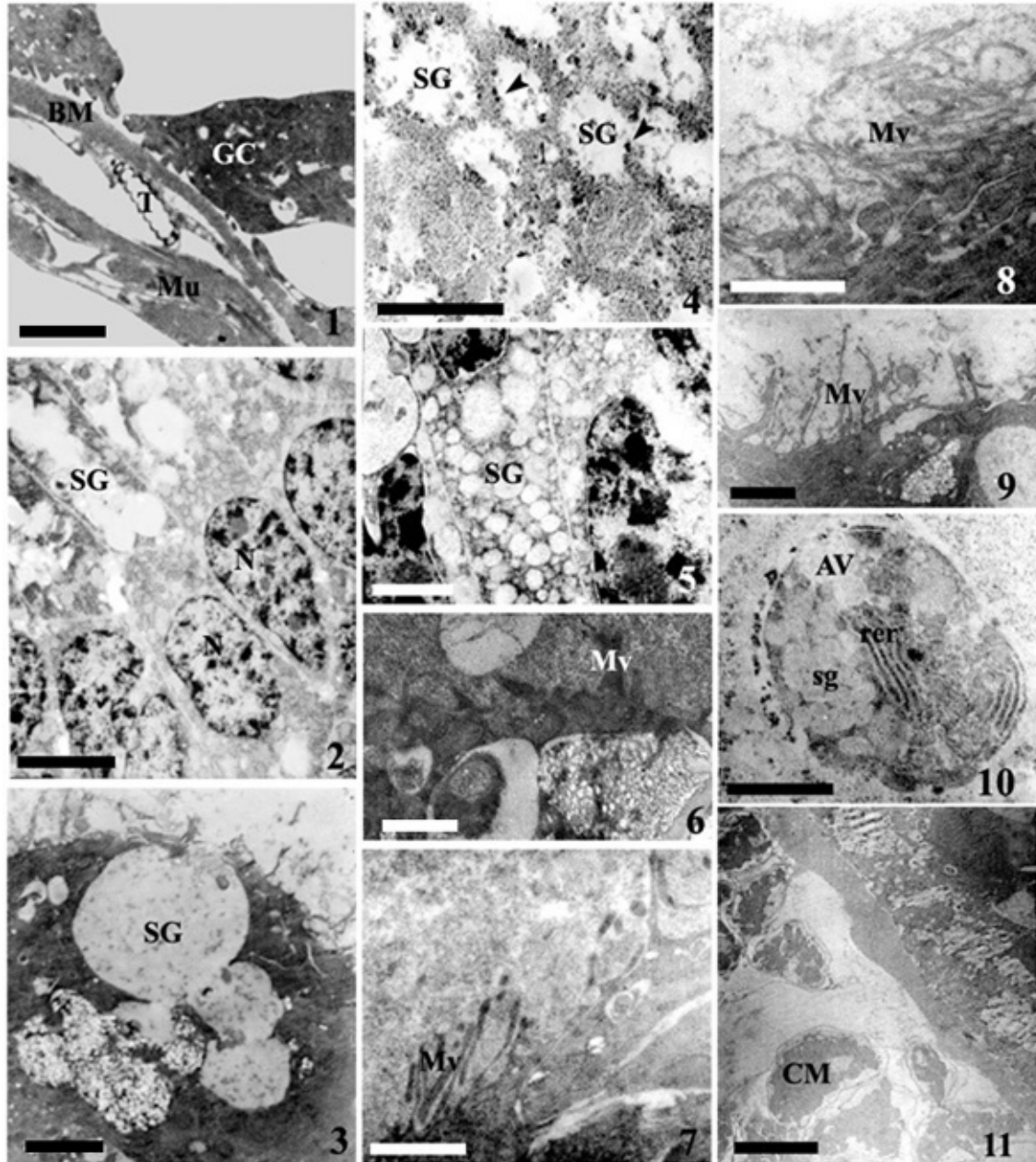


Figure 1-11: Micrographs of the male accessory glands of five-day-old *Triatoma brasiliensis*. (1) Gland wall showing glandular cell (GC), basement membrane (BM), trachea (T) and muscle (Mu) (bar 2 μ m), (2) Nucleus (N) and secretory granules (SG) in median position of cell (bar 5 μ m), (3) Secretory granules (SG) released to the gland lumen (bar 2 μ m), (4) Secretory granules (SG) with few amount of protein (arrowhead) together large amount of non-protein substances, which appears as electron transparent (bar 0.5 μ m), (5) Secretory granules (SG) without PTA positive reaction (bar 2 μ m), Cell apex of accessory anterior gland (6) presenting short microvilli (Mv) (bar 1 μ m), while the external gland (7) (bar 1 μ m), internal gland (8) (bar 2 μ m) and dorsal gland (9) (bar 1 μ m) have long microvilli (Mv), (10) Autophagic vacuole (AV) containing rough endoplasmic reticulum (rer) profiles and secretory granules (sg) (bar 1 μ m), (11) Layer of circular muscles (CM) of the glandular duct (bar 5 μ m).