Spermiogenesis in insects has demonstrated a number of changes in different groups of Hemiptera, providing diversity adequate to justify descriptive studies that may support analysis taxonomy, reproductive biology and phylogeny. The objective of this paper is to obtain more data on the morphology of spermatozoa of T. brasiliensis and T. sherlocki, which can be used in phylogenetic analyzes of Hemiptera. For SEM, drops of sperm suspension were spread on histological glass slides and fixed in 2.5% glutaraldehyde in 0.1 M cacodylate buffer, pH 7.2, for 1 hour at room temperature. After drying, the glass slides were mounted on metal stand, covered with a thin layer of gold and observed under scanning electron microscope, model JEOL JSM 6390 LV of Electron Microscopy Platform of Oswaldo Cruz Institute, FIOCRZ, RJ. For TEM, males were dissected in saline solution and seminal vesicles transferred to 2.5% glutaraldehyde in sodium cacodilate buffer at room temperature, washed in same buffer and post-fixed in 1% OsO4 in buffer for 1h. The seminal vesicles 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 Microscopy Jeol JEM 1011 of Electron Microscopy Platform of Oswaldo Cruz Institute, FIOCRZ, RJ. The sperm are long and thin, formed by the nucleus, inserted at the anterior end and flagellum composed of double axial wire and two mitochondrial derivatives (Fig. 1 and 2). The flagellum consist of the axoneme, which follows the pattern of microtubule arrangement 9 + 9 + 2, 9 accessories, 9 doubles and 2 central microtubules, and the two mitochondrial derivatives that flank the axoneme forming a heart-like structure (Fig. 2). In mitochondrial derivates could be seen bridges adhering the tank between mitochondrial derivatives and microtubules (Fig. 2). In the transition between nucleus and flagellum could be seen the centriole adjunct, parallel to the nucleus (Fig. 3). The mitochondrial derivates terminate before the end of the axoneme, therefore, the end of the flagellum is composed only by the axoneme (Fig. 4). The morphology of the sperm of T. brasiliensis and T. sherlocki is similar to those of other insects already studied, differing in the shape of the structures. Some characteristics observed in the sperm of two species can be considered as markers shared between families of Heteroptera.

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Fig. 1: Nucleus and flagellum of the sperm. Arrowhead showing junction of nucleus and flagellum.

Fig. 2: Cross-section of the flagellum showing the axoneme (Ax) consisting of nine microtubule accessories, nine doublets and one central pair, and mitochondrial derivatives (MD) with bridges between microtubules and mitochondrial derivatives (arrowhead). N: nucleus.

Fig. 3: Cross-section of the nucleus-flagellum transition region, showing the nucleus (N) and the portion of the centriole adjunct (CA).

Fig. 4: Posterior extremity of sperm. Axoneme (Ax); mitochondrial derivates (MD).