The scorpionism is a public health problem worldwide causing serious accidents in children under 10 years. Potentially dangerous scorpions to humans belong to the family Buthidae, in Latin America these events are mainly caused by the genus Centruroides and Tityus. Only in 2008 Colombia enters the list of countries affected by severe scorpion, especially that caused by the scorpion Tityus pachyurus, however Colombia for its megadiversity has more than one dangerous species to humans, among these is Tityus sp endemic Department of Cauca south western Colombia that has the most toxic lethal dose 50 (3.5 mg / kg), reported so far.

The objective of this study was to determine the ultrastructural level cardiotoxic effect on male Wistar rats (n = 16), weighing (200 ± 20g). A design with four treatments was applied: a control group treated with 0.9% saline (n = 4), and three sub-doses of LD50 (20%, 40% and 80%), each with four rats. After 3 hours of applying venom, the heart was extracted for ultrastructural analysis. Fixation was done in 2.5% glutaraldehyde, the post-fixation in 1% osmium tetroxide, dehydrated with alcohol in increasing concentrations (30% to 100%) and soak in LR White resin. The semithin sections were stained with 500 nm toluidine blue for light microscopy at high resolution and ultra-thin 40 nm thick, and contrasted with uranyl acetate - lead citrate for transmission electron microscopy.

The effect of the venom was observed in all treatments, the most striking pathological changes occurred in the sub-doses of 80%. The main findings of cardiac tissue consisted of edema of muscle fibers, a change that is also evident at the level of mitochondrial cristae, which have notorious separation cause by edema. Also focally, vascular congestion, karyorrhexis, karyolysis and vacuolization of sarcoplasmic that guide toward the emergence of incipient necrosis is observed. It is concluded that the venom of Tityus sp produces damage in the heart of Wistar rats at the cellular and tissue.

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Fig. 1: Electronic microscopy of rat heart treated with Tityus sp scorpion venom, with mitochondrial edema (asterisk); vacuolization (triangle); edema of the cardiac fibers (arrow).

Fig. 2: Electronic microscopy of rat heart treated with Tityus sp scorpion venom, with abundant areas of mitochondrial edema (asterisk).

Fig. 3: Electronic microscopy of rat heart treated with Tityus sp scorpion venom, with karyorrhexis (rhombus); cell congestion (circles).