Mosquito intestinal epithelial cells synthesize peritrophic matrix (PM), which is a chitin fibrous structure that surrounds the bloodmeal. 3-4 day *A. aquasalis* adult females were fed with normal blood or *P. vivax* infected blood from humans. In order to know the role of the PM, exogenous chitinase were added to the bloodmeals of control group and infected group of mosquitoes. The bloodfed mosquitoes were separated at different time intervals after ingestion and then, processed for light microscopy (LM), scanning (SEM) and transmission electron microscopy (TEM). To check the infection rate (IR), the infected mosquitoes were maintained until 7 days after the bloodmeals and dissected. The IR and the oocyst number were calculated. The midgut of *A. aquasalis* is an organ that extends from the stomodaeum valve to the tubule Malpighi and hindgut. The anterior portion of the midgut is called thoracic midgut and has columnar epithelium cells. Ultrastructurally have moderate electron density, nucleus central rounded, loose chromatin, evident nucleolus and cytoplasm with heterogeneous distribution of mitochondria, endoplasmic reticulum irregular rectilinear or spiral. The posterior portion of the intestine is called abdominal, it has epithelium irregular, nucleus at different heights and basophilic cytoplasm when stained with toluidine blue. Ultrastructurally have characteristics similar to the cells of the anterior portion of the midgut cells. Externally, the midgut consists of a muscle network formed by the juxtaposition of circular muscle fibers and longitudinal fibers. The MP can’t be defined as a structure defined by light microscopy, however in 24 hours intervals can be observed as an amorphous zone between the bolus and the epithelium. *Plasmodium vivax* has the ability to migrate the PM between 12 and 18 hours after infection. Ultrastructural analysis showed PM changes in the group treated with chitinase. The chitinase-treated group has a lower IR and oocyst numbers.

**Keywords:** peritrophic matrix, *P. vivax*, infection

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