

Abstrakt anglický

Phlebotomine sand flies (Diptera: Psychodidae) are the only proven vectors of *Leishmania* parasites (Kinetoplastida: Trypanosomatidae). In Nematoceran Diptera, including sand flies, adults produce a type 1 peritrophic matrix (PM) which is secreted in response to the distension of the midgut caused by blood meal. The PM is an acellular envelope composed of chitin fibres and proteins, which protects the midgut epithelium against abrasion and pathogens and improves digestion. In hematophagous insects, the PM also plays a central role in heme detoxification.

Female sand flies acquire *Leishmania* with a bloodmeal and the parasites undergo complicated development in their gut finished by the colonization of the stomodeal valve. The PM is one of the most important barriers in *Leishmania* development and its role in the vector competence of the *S. schwetzi* is the main topic of this master thesis. The PM's kinetic and morphology in the *S. schwetzi* is compared with other three sand fly species which differ in susceptibility to *L. donovani*. The key role of the PM in *S. schwetzi* vector competence is finally proved by disrupting the PM using the exogenous chitinase from *Beauveria bassiana*. Under these artificial conditions, the *Leishmania* parasites (*L. donovani* and *L. major*) are able to exit the PM, colonize the stomodeal valve and even evolve into metacyclic promastigote infective stages in the gut of *S. schwetzi*.

Key words: peritrophic matrix, chitinase, sand flies, leishmania