

Abstract

Trypanosomes (*Trypanosoma*, Kinetoplastea) are dixenous blood protists that require not only a vertebrate host but also a blood-feeding invertebrate to complete their life cycle. Infection of vertebrates can be asymptomatic, but on the other hand can cause serious diseases affecting lives of humans and animals. Thus, researchers usually focus on *Trypanosoma* species causing Chagas disease and sleeping sickness in humans or nagana and surra in animals, and on their vectors: tsetse flies and kissing bugs. However, mosquitoes are able to transmit trypanosomes as well, specifically, avian trypanosomes and probably mammalian trypanosomes from the *T. theileri* group. Nevertheless, the role of mosquitoes in the life cycle of trypanosomes has substantial gaps, which are focused in this dissertation.

Within the experimental work, it has been demonstrated that mosquitoes of the genus *Culex* are susceptible hosts of two species of avian trypanosomes: *T. thomashancofti* and *T. tertium* n. sp. On the other hand, *Culex* mosquitoes were unsuitable hosts for *T. theileri*, while the genus *Aedes* and surprisingly even sand flies (*Phlebotomus perniciosus*) turned up to be competent vectors. All investigated trypanosomes were able to develop within the guts of mosquitoes and were also found in their prediuretic liquid. This localization of trypanosomes suggests that the transmission occurs by ingestion of infected vector and through the conjunctiva.

During field studies, we focused on determining the prevalence of these trypanosomes among free living animals. Avian trypanosomes were strictly found in ornithophilic mosquitoes of the genus *Culex*, but with a relatively low prevalence around 0.1%. Their prevalence was also lower among insectivorous birds, reaching 3% for *T. thomashancofti* and 1.5% for *T. tertium*. On the contrary, *T. theileri* trypanosomes were detected mainly in mammalophilic mosquitoes of the genus *Aedes* with a prevalence exceeding 20%, however in some cases was *T. theileri* detected even among *Culex* mosquitoes. Apart from mosquitoes, the presence of mammalian trypanosomes was confirmed in 44% of captured tabanid flies and demonstrated in black flies for the first time. Additionally, phylogenetic studies confirmed that obtained *T. theileri* isolates belong to two previously described lineages, and moreover, the existence of third lineage was confirmed.