

ABSTRACT

Sauroleishmania is a group of less studied parasites that belong to the genus *Leishmania* (Kinetoplastida: Trypanosomatidae). They circulate between reptile hosts and sand fly vectors (Diptera: Psychodidae). Due to the non-pathogenic character of its species, little is known about their development in reptiles and sand flies. The main objective of this project was to elucidate some missing aspects of *Sauroleishmania* life cycle. A major part of this thesis aimed to test the susceptibility of various sand fly species to different *Sauroleishmania* isolates and describe their development in the sand fly intestinal tract. A minor part was devoted to the study of infection in reptiles.

First, we investigated the development of *Leishmania* (*Sauroleishmania*) *tarentolae* in three *Phlebotomus* species. Sand flies were infected through membrane on promastigote suspension and dissected at various time intervals post infection. *Leishmania* (*S.*) *tarentolae* developed in all three species tested and underwent peripylarian type of the development. Moreover, heavy parasite loads were frequently found in Malpighian tubules, which is a unique localization among *Leishmania* parasites. To summarize the current knowledge on *L.* (*S.*) *tarentolae*, we have also written a review describing the origin, life cycle and application of this *Sauroleishmania* species.

Next, we described the development of two selected *Sauroleishmania* species, *L.* (*S.*) *adleri* and *L.* (*S.*) *hoogstraali*, in various sand flies of the genera *Sergentomyia* and *Phlebotomus*. Herein, we observed that the same *Sauroleishmania* species can undergo both, peripylarion or hypopylarian development, and that this is influenced by the sand fly vector. The susceptibility of *Phlebotomus* spp. to *Sauroleishmania* infection has been clearly demonstrated and we propose that *Phlebotomus* sand flies may play a role as alternative vectors of *Sauroleishmania*.

In addition, we studied the host feeding preferences of *Sergentomyia minuta*, a natural vector of *Sauroleishmania*, and compared it with *Phlebotomus papatasi*. *Sergentomyia minuta* refused to feed on mice and rabbits but was attracted to and fed on a human volunteer. Thus, the anthropophilic behaviour of this species has been experimentally demonstrated, further highlighting its potential involvement in the transmission of human pathogens. Contrarily, *P. papatasi* fed on *Tarentola mauritanica* geckos, supporting the role of this species as alternative vector of *Sauroleishmania*.

Second part of the project focused on *Sauroleishmania* development in reptiles. *Hemidactylus turcicus* geckos have been experimentally infected with *L.* (*S.*) *adleri* or *L.* (*S.*) *hoogstraali* using sand-fly derived parasites and examined using xenodiagnosis. The presence of parasites was not confirmed in any of the infected geckos. Possible explanations might be a wrongly chosen route of infection or loss of infectivity of the *Sauroleishmania* isolates used. Therefore, we studied the infection of wild-caught reptiles in Italy. Blood of various reptiles was examined by PCR and *L.* (*S.*) *tarentolae* DNA was found in *T. mauritanica* geckos. Interestingly, DNA of the human pathogenic *Leishmania* (*Leishmania*) *infantum* and amastigote forms were found in the bone marrow of *T. mauritanica* geckos. The sympatric occurrence of *L.* (*S.*) *tarentolae* and *L.* (*L.*) *infantum* was observed in sand flies and geckos but also in sheltered dogs, which were found serologically positive for both species.