Abstract

Leishmaniases remain among the most neglected tropical diseases reported worldwide which are caused by flagellated protozoa belonging to the Kinetoplastida order, the Trypanosomatidae family and the *Leishmania* genus. This disease involves different actors in its transmission cycle including mammals as reservoirs and sand flies (Diptera: Psychodidae) as vectors. This PhD thesis summarises the results of four subjects including six published articles related to the fauna of sand flies, interaction between *Leishmania major-Phlebotomus papatasi-Meriones shawi*, and putative reservoir hosts such as *Gerbillus amoenus* for *L. major*. The first subject referred to the construction of databases of DNA barcodes and MALDI-TOF protein profiles from sand flies and rodents in Algeria.

These data allowed the description of a new sand fly species *Sergentomyia* (*Sergentomyia*) *imihra* n.sp and the determination of sand fly blood meal sources using the DNA typing and MALDI-TOF mass mapping peptide technique which revealed that *Ph. perfiliewi*, *Ph. perniciosus, Ph. papatasi*, *Ph. bergeroti*, and *Ph. alexandri* were opportunistic and fed on various hosts such as cattle, camel, goat, sheep, dog, chicken and human highlighting the risk of zoonotic disease transmission. The second part focuses on putative host of *L. major* in areas where the proven reservoirs *Psammomys obesus* and *M. shawi* do not occur. Results from experimental infections and xenodiagnoses demonstrated that *G. amoenus* can act as a reservoir, as it was shown to be susceptible, capable of maintaining, and transmitting parasites to naïve sand flies after six months of infection. The third topic assessed the role of asymptomatic rodents in the transmission of parasites. Findings revealed that asymptomatic *M. shawi* are involved in the dissemination of the parasite and should be considered in epidemiological modelling studies so that proper disease control strategies can be implemented. The last topic focused on the assessment of effect of Sb(III)-resistance on the fitness of *L. major*. The results revealed that although the resistant lines showed reduced metacyclogenesis in *Ph. papatasi*, still they produced mature infections and parasites recovered from sand fly guts showed enhanced antimony resistance. This suggests that *Ph. papatasi* supports the development and circulation of *L. major* Sb(III)-resistant lines in the field.