

ABSTRACT

The main aim of this thesis was to test sera of domestic animals from endemic areas of visceral leishmaniasis in north and northwest Ethiopia for antibodies against presumed vector *P. orientalis* salivary glands and to clarify behavior of the sand fly and the role of domestic animals in transmission of visceral leishmaniasis.

Specific IgG antibodies against *P. orientalis* saliva were tested in dogs, cattle, goats, sheep and donkeys. Above the cut-off value there was 76 % analyzed dogs, 15 % cattle, 26 % goats, 60 % sheep and 45 % donkeys. Dogs, goats and donkeys revealed significantly higher anti-*P. orientalis* antibodies compared to control animals. In the case of cattle, goats and donkeys cut-off levels were very high and is questionable if observed results are relevant. Canine sera were screened also for anti-*P. orientalis* IgG2 and 88% of Ethiopian sera revealed significantly higher IgG2 than control sera.

The next aim was to detect if canine sera from Ethiopia with anti-*P. orientalis* antibodies react with other bloodsucking insect saliva by using immunoblotting method. In saliva of sand fly *Sergentomyia schwetzi*, which is abundant in Ethiopia, canine sera reacted mostly with 36, 37 and 51 kDa proteins. Mosquito *Culex quinquefasciatus* is cosmopolitan species and canine sera most intensely recognized 22 and 58 kDa proteins. Ethiopian canine sera also cross-reacted with the 50 kDa protein band in New World sand fly *Lutzomyia longipalpis* saliva. Mouse experimentally bitten by *P. orientalis* cross-reacted with *L. longipalpis* saliva but no cross-reaction was observed with *S. schwetzi* and *C. quinquefasciatus* salivary antigens.

In the third part salivary glands protein profile from two colonies of *P. orientalis*, which come from different areas was analyzed by using MALDI TOF/TOF analyzer. It was found out that the salivary proteins did not differ. We recorded 12 proteins belonging to the 7 families: yellow-related, apyrase, D7-related, PpSP15-like, Ag5-related, ParSP25-like a PpSP32-like. Canine sera from Ethiopia recognised on immunoblot mostly proteins from ParSP25-like (32kDa), apyrase (37, 38, 40 kDa) and yellow- related (42, 44 kDa) families.

Key words: Ethiopia, *Phlebotomus orientalis*, domestic animals, antibody response, protein profile, cross-reactions