ABSTRACT

Sand fly saliva contains proteins and peptides that have an important role in bloodfeeding. Some of those proteins are antigenic and repeated sand fly bites result in a specific antibody response of the bitten host. Antigenic salivary proteins of *Phlebotomus orientalis*, main vector of visceral leishmaniasis in Sudan and Ethiopia, were identified using immunoblot with dog sera. The 5 most promising antigens were expressed in an *E. coli* bacterial system. Subsequently, these proteins were tested in ELISA with sera of domestic animals from Ethiopia naturally exposed to *P. orientalis*, and with sera of mice bitten experimentally by this sand fly species. Salivary gland homogenate (SGH) was used as the positive control.

The best antigenic properties were detected in two recombinant proteins, Yellow-related protein PorSP24 and ParSP25-like protein PorSP65, especially in tests with sheep and dog sera. However, nonspecific binding of dog sera was also detected using both antigens. In addition, we proved that sera of mice repeatedly bitten by *P. papatasii* and *Sergentomyia schwetzi* do not crossreact with SGH and the tested recombinant proteins of *P. orientalis*.

In a second part of this thesis we designed peptides representing epitopes recognized by specific anti-saliva antibodies. Two peptides were derived from each above mentioned salivary protein and tested in ELISA using sera of domestic animals from Ethiopia and experimentally bitten mice. In comparison to recombinant proteins, peptides revealed much higher specificity with dog and sheep sera. Both peptides deriving from PorSP24 could be considered as good markers of exposure to *P. orientalis* bites in dogs, one of them (PorSP24 Pep2) also in sheep. Both peptides deriving from PorSP65 revealed high antigenicity in tests with dog and goat sera.

**Key words**: *Phlebotomus orientalis*, ELISA, salivary glands, recombinant proteins, peptides