

## ABSTRACT

A cutaneous leishmaniasis is the most common clinical form of human disease caused by parasite of the genus *Leishmania*. They are transmitted between the hosts by haematophagous females of dipteran sand flies of the genus *Phlebotomus* in the Old World and *Lutzomyia* in the New World. One of the major agents of cutaneous leishmaniasis in the Old World is *Leishmania major*. The disease caused by this species is a zoonosis where rodents act as reservoir host. The parasite long time circulates between reservoir rodents and sand flies, while humans are infected only accidentally in the focus of infection.

Rodents of the genus *Arvicanthis* belongs to the most abundant in the African continent. The genus has evolved in Ethiopia from where it expanded to a major part of Sub – Saharan Africa and the delta of the river Nile. These rodents are very abundant in endemic locations of cutaneous and visceral leishmaniasis and fulfil many reservoir host criterias including repeated field findings of individuals infected by *L. major* and another *Leishmania* species in nature. However, their role in the disease cycle remains to be confirmed.

*A. neumanni* used in this study is an East African species spread from Ethiopia and Somalia to Kenya and Tanzania. Animals were experimentally infected with three different *L. major* isolates and their infectivity for *P. duboscqi* (a natural vector of *L. major* in Sub – Saharan Africa region) was tested by xenodiagnosis.

Additionally, external manifestations of the disease (skin lesion formation) were observed. Development of infection and distribution of *L. major* to several different tissues were tested by quantitative PCR. Production of antibodies against *L. major* during the course of infection was evaluated using ELISA. The ability of *L. major* to complete the life cycle in *A. neumanni* was tested by feeding of naive sand flies on *Arvicanthis* infected previously by experimentally infected sand flies. Also attractiveness of *A. neumanni* and two other rodent species for *P. duboscqi* and the fecundity and mortality of females after blood meal was evaluated.

Experimental infections of *A. neumanni* have shown that this species of rodent can serve as a *L. major* host. Isolates from Senegal persisted on the site of inoculation until the 20th week post infection and animals did not show significant signs of the disease. Some individuals of *A. neumanni* were able to infect sand flies between 5th and 10th week post infection.