

ABSTRACT

The Toscana virus (TOSV) is a causative agent of meningitis, meningoencephalitis, and encephalitis in humans. It is transmitted by the hematophagous sand flies *Phlebotomus perniciosus* and *Ph. perfiliewi* (Diptera, Psychodidae, Phlebotominae) in the Mediterranean area mainly during the summer months. In this thesis we studied experimental infections of sand flies belonging to species of *Ph. papatasi*, *Ph. perniciosus*, *Ph. sergenti*, *Ph. tobbi*, and *Sergentomyia schwetzi* with viral strains of two TOSV lineages (TOSV-A and TOSV-B). We were unable to infect any of the tested sand fly species with TOSV-A via artificial blood feeding. We report the susceptibility of *Ph. tobbi* and *Ph. sergenti* to TOSV-B by artificial blood feeding with infection rates of 59.5% and 5.9%, respectively, and the dissemination of the virus to the head with attached salivary glands suggesting the potential for TOSV transmission to vertebrates. Experimental TOSV infections through sugar meals were unsuccessful.

Key words: Toscana virus, *Phlebovirus*, Phlebotominae, sand fly, vector competence