

## Scrub Typhus, Its Potential Zoonotic Hosts and Vectors in Sri Lanka: A Preliminary Report

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Scrub typhus or tsutsugamushi disease is an acute febrile infectious disease endemic in the “tsutsugamushi triangle” of Southeast Asia, the Asian Pacific rim, and Northern Australia, with approximately one billion individuals at risk of infection. Currently one million new infections occur annually. The term scrub typhus is descriptive of the typical habitat endemic to the vector, although its existence is not limited to such niches. It is caused by a Gram-negative, obligate intracellular bacterium *Orientia tsutsugamushi*, of the Rickettsiaceae family, transmitted to humans following an accidental bite by an infected larval trombiculid mite commonly known as chiggers. Chiggers are a group of ectoparasites prevalent on a variety of mammals, mainly small mammals like rodents. Clinical cases of scrub typhus are documented in almost all ecological zones including both rural and urban Sri Lanka, as year-round sporadic cases or as outbreaks. However, the reservoir hosts in Sri Lanka and transmitting vector species are yet to be identified. Such knowledge is important for effective implementation of control measures of this re-emerging infection. Therefore, this study was designed to live capture small rodent/mammal hosts and identify chigger mite species present in the country. Traps designed to live capture small rodents/mammals were placed in peri-domestic areas of clinically confirmed scrub typhus patients in southern province, Sri Lanka. Traps baited with fried coconut were placed around residences and in pre-selected sites with scrubby vegetation and rodent burrows, one hour before sunset and were retrieved the next day morning. The captured animals were anaesthetized with ketamine/xylazine and inspected for the presence of vector mites. Collected mites were preserved in 70% alcohol and identified by microscopy using standard morphological keys. Collected data were analyzed using chi square test, MINITAB 17 statistical software. Rodents belonging to *Rattus norvegicus* (n=15; 56%), *Rattus rattus* (n= 10; 37%) and shrews of *Suncus murinus* (n=2, 7.4%) were captured during the study over 6 months and a total of 147 mites were isolated. Isolated chigger mites belonged to genus *Leptotrombidium* (n=90; 67%), *Eutrombicula* (n=31; 23%), *Helenicula* (n=24, 17 %) and species *Leptotrombidium lagone* (n=2; 1.5 %). Majority were potential vectors for *Orientia tsutsugamushi*. It is noted that *Rattus norvegicus* harbored significantly more chigger mites (mean of 7 per individual;  $\chi^2 = 110.35$ ;  $p < 0.001$ ) compared to other species captured. We are currently in the process of molecular speciation of sampled chigger mites and molecular detection of *Orientia tsutsugamushi* in collected mites in order to determine their vectorial potential.

Keywords: Chiggers; *Leptotrombidium*; *Orientia*; Infectious disease; rodents

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