Abstract

Tsutsugamushi disease, also known as Scrub typhus or chigger-borne typhus, is an acute infectious disease that occurs when humans are bitten by larval mites (chiggers) harboring the etiological agent Orientia tsutsugamushi. The wild rodents are the most important reservoir keeping the pathogen. In Taiwan, Scrub typhus has designated as a reportable communicable disease since 1955, and all counties had reported confirmed cases. In this study, we collected around 363 rodent sera from 7 harbors and 6 fields. Serum samples were screened for antibody by indirect immunofluorescence assay (IFA) using antigen (Gilliam, Karp and Kato serotypes). The sera antibody positive rate is 60%. Antibody titers of prototype strains Karp and kato are higher than Gilliam, also high in southeast Taiwan and Pescadores Islands. In rodent species, Rattus losea has highest positive rate (86.6%) than other species. Using the whole-cell antigen for IFA is the standard method of scrub typhus diagnosis. However, O. tsutsugamushi is a zoonotic pathogen and almost 3,000 suspect patients every year in Taiwan. It is essential to provide a non-hazardous antigen for preliminary antibody detection. The gene encoding 56 KDa outer membrane protein of O. tsutsugamushi was cloned into the expression vector pET11a. The recombinant protein expressed in Escherichia coli BL21 is used as antigen for enzyme-linked immunosorbent assay (ELISA) to screen 183 rat and 81 mouse sera. Sensitivity and specificity are 80% and 79% in mouse samples, 73% and 72% in rat samples, respectively by using IFA titre 1:80 as cutoff.

Keywords：Scrub typhus；Elisa；Orientia tsutsugamushi, Indirect fluorescence antibody assay