

Evidence supporting vertical transmission of *Rickettsia felis* in mosquito

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Infection caused by *Rickettsia felis* is an important tick-borne disease with natural foci, mainly transmitted through vertebrates (mouse and cat) and arthropods (fleas, ticks). The disease has been documented in more than 20 countries and is recognized as an emergent global threat to human health. Our preliminary report demonstrated that 5.83% (54/926) of the examined mosquitoes carried *R. felis*. In this study, we investigated whether the mosquito can transmit *R. felis* in a vertical fashion. We used a generic FRET-qPCR to detect *R. felis* in mosquitoes while a HMBS-gene based real-time PCR was applied to detect the level of blood meal in collected mosquitoes. During 2013-2015, 1984 mosquitoes were collected monthly in Jiangsu of China and PCRs on these mosquitoes demonstrated that mosquitoes with blood meal between summer months (10.0%) were significantly lower than in winter months (35.8%). In addition, *R. felis* positivity in collected mosquitoes was highest in December (20.8%) among the collected months (0.0-14.4%). Positivities of *R. felis* did not differ significantly between the mosquitoes with (n=29) and without (n=50) blood meal. Furthermore, testing on 23 pools of female mosquitoes showed that 2 pools were *R. felis*-positive and 5 were blood meal-positive. In contrast, 9 of 30 male pools were *R. felis*-positive and none of the male mosquitoes carried blood meal. This is the first report of detecting *Rickettsia* spp. in male mosquito which is blood meal-free. Dynamic monitoring *R. felis* and blood meal in female and male mosquitoes provide here evidence that *R. felis* may be vertically transmitted in mosquitoes.

Biography

Jilei Zhang is currently a PhD candidate of Preventive Veterinary Medicine at College of Veterinary Medicine, Yangzhou University, China. He has published 12 papers in reputed SCI journals and was awarded 4 invention patents associated with vector-borne diseases. He was awarded with the National Scholarship for Graduate Students twice (2013 and 2015) and participated in one research program at The National Natural Science Foundation of China.

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