

# CO-INFECTION WITH COXIELLA-LIKE BACTERIA AND *BABESIA* IN GOAT TICKS FROM SOUTHERN THAILAND

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**Abstract.** Ticks can transmit *Coxiella* bacteria and *Babesia* protozoa but little is known about their presence in ticks in Thailand. We aimed to detect the presence of *Coxiella* and *Babesia* in ticks in Thailand in order to determine their potential role as vectors of these diseases. We collected ticks from goats in southern Thailand. The ticks were identified morphologically and molecularly. Polymerase chain reaction testing was used to determine the presence of *Coxiella* and *Babesia* in these ticks. The phylogenetic trees and evolutionary relationships of these microorganisms were also determined. We collected 141 ticks during December 2013 - February 2015. We found *Haemaphysalis* spp (larvae and nymphs) ( $n=72$ ), *Haemaphysalis bispinosa* ( $n=63$ ), and *Rhipicephalus microplus* ( $n=6$ ). Of the 141 ticks collected, 94 were positive for *Coxiella*-like bacteria, 1 was positive for both *Coxiella*-like bacteria and *Babesia* spp and none were positive for *Babesia* spp alone. The tick with the *Coxiella*-like bacteria/*Babesia* spp co-infection was in a *H. bispinosa* tick. Phylogenetic analysis of the 16s rRNA of the *Coxiella*-like bacteria revealed 2 clades: 1) *Coxiella* endosymbionts similar to those detected in *R. annulatus*, *R. microplus*, *R. bursa* and *R. evertsi*; 2) *Coxiella* endosymbionts similar to those detected in *Haemaphysalis hystricis*. Phylogenetic analysis based on the 18s rRNA of *Babesia* spp revealed it was in the same clade as *Babesia bigemina*. In summary, we evaluated ticks in Thailand for the presence of *Coxiella*-like bacteria and *Babesia* spp and found 94 of 141 ticks with *Coxiella*-like bacteria and 1 of 141 ticks with *Babesia* spp. Further studies are needed to determine the proportions of animals and humans in the study area who have been exposed to these organisms.

**Keywords:** *Coxiella*-like bacteria, *Babesia* sp, *Haemaphysalis* ticks, southern Thailand

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