

Molecular detection of pathogens in ticks and fleas collected from companion dogs and cats in East and Southeast Asia

ABSTRACT

Background: Ticks and fleas are considered amongst the most important arthropod vectors of medical and veterinary concern due to their ability to transmit pathogens to a range of animal species including dogs, cats and humans. By sharing a common environment with humans, companion animal-associated parasitic arthropods may potentially transmit zoonotic vector-borne pathogens (VBPs). This study aimed to molecularly detect pathogens from ticks and fleas from companion dogs and cats in East and Southeast Asia. **Methods:** A total of 392 ticks and 248 fleas were collected from 401 infested animals (i.e. 271 dogs and 130 cats) from China, Taiwan, Indonesia, Malaysia, Singapore, Thailand, the Philippines and Vietnam, and molecularly screened for the presence of pathogens. Ticks were tested for *Rickettsia* spp., *Anaplasma* spp., *Ehrlichia* spp., *Babesia* spp. and *Hepatozoon* spp. while fleas were screened for the presence of *Rickettsia* spp. and *Bartonella* spp. **Result:** Of the 392 ticks tested, 37 (9.4%) scored positive for at least one pathogen with *Hepatozoon canis* being the most prevalent (5.4%), followed by *Ehrlichia canis* (1.8%), *Babesia vogeli* (1%), *Anaplasma platys* (0.8%) and *Rickettsia* spp. (1%) [including *Rickettsia* sp. (0.5%), *Rickettsia asembonensis* (0.3%) and *Rickettsia felis* (0.3%)]. Out of 248 fleas tested, 106 (42.7%) were harboring at least one pathogen with *R. felis* being the most common (19.4%), followed by *Bartonella* spp. (16.5%), *Rickettsia asembonensis* (10.9%) and “*Candidatus Rickettsia senegalensis*” (0.4%). Furthermore, 35 *Rhipicephalus sanguineus* ticks were subjected to phylogenetic analysis, of which 34 ticks belonged to the tropical and only one belonged to the temperate lineage (*Rh. sanguineus* (sensu stricto)). **Conclusion:** Our data reveals the circulation of different VBPs in ticks and fleas of dogs and cats from Asia, including zoonotic agents, which may represent a potential risk to animal and human health.

Keyword: Ticks; Fleas; Dogs; Cats; Companion animals; Asia; Vector-borne pathogens; Zoonotic