

Abstract example:

ASSESSMENT OF THE SPEED OF TRANSMISSION OF *EHRlichia canis*, *ANAPLASMA PHAGOCYTOPHILUM*, AND *BORRELIA BURGdorferi* SENSU STRICTO BY INFECTED TICKS THROUGH AN IN VITRO EXPERIMENTAL SYSTEM

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Canine vector-borne diseases (CVBDs) have significant clinical and public health implications. This experimental study used an adapted version of the USDA-developed continuous flow in vitro feeding system (CFIFS) for ticks to investigate the speed of transmission (SOT) of three tick-borne pathogens (TBPs): *Ehrlichia canis* by laboratory reared infected *Rhipicephalus sanguineus* (18.3% tick infection rate), *Anaplasma phagocytophilum* by laboratory reared infected *Ixodes ricinus* (56%), and *Borrelia burgdorferi* sensu stricto by laboratory reared infected *I. ricinus* (76%). All ticks began to attach and feed three hours after being introduced in the feeding system. PCR tests were used to detect the presence of pathogens in the blood flow collected every three hours. Swab samples from the inner face of the feeding membrane were also collected and tested every six hours during the *B. burgdorferi* study. In this experimental in vitro design, *Ehrlichia canis* had a SOT of 3-6h, *A. phagocytophilum* of 12-15h, and *B. burgdorferi* of 42-45h in blood but only 3-6h on inner membrane swabs. The early detection of *Borrelia* spirochetes on the membrane indicates a delay in their bloodstream entry. This in vitro system allows to test and compare many tick pathogen transmission pathways. The findings of this study highlight the transmission time of tick-borne pathogens, emphasizing the the possible difficulty to prevent pathogen with high speed of transmission like *Ehrlichia* and *Anaplasma* using acaricides.

Keywords: Tick-borne pathogens; speed of transmission; *Ehrlichia canis*; *Anaplasma phagocytophilum*; *Borrelia burgdorferi* s.s.; in vitro feeding system