Evaluation of the vector competence of ticks for *Coxiella burnetii* using an artificial feeding system

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*Coxiella burnetii* causes Q fever in a wide range of hosts, including humans. The main transmission route is via inhalation of contaminated aerosols, which arise during parturition of infected ruminants. Q fever is also discussed as vector-borne disease but the role of ticks in transmission of *C. burnetii* is unclear.

The aim of this study is to clarify the transmission of *C. burnetii* between tick life stages and from ticks to their hosts. Therefore, a silicone-membrane based feeding system was adapted for feeding of *Ixodes ricinus* with *C. burnetii* Nine Mile phase II inoculated blood. Feces and adult ticks were tested by quantitative real-time PCR. Furthermore, L929 cells were inoculated with feces positive for *C. burnetii* DNA to confirm viability of the excreted bacteria. Larvae and nymphs were fed with *C. burnetii* inoculated blood and left for molting to assess transstadial transmission.

With this feeding system, an engorgement rate of 50% in adult *I. ricinus* could be achieved. First results showed a time-dependent excretion of infectious *C. burnetii* within feces. This demonstrates the possibility of transmission of *C. burnetii* by inhalation of tick feces. Further analysis of the reinfection process will increase our knowledge about tick-dependent Q fever transmission.

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