



P 6 Prevalence of tick-borne encephalitis virus and *Borrelia burgdorferi* sensu lato in *Ixodes ricinus* populations in the Rhine-Main area (Germany)

L. Bingsohn^a, A. Beckert^a, J. Amendt^b, R. Zehner^b, P. Kraiczy^c, R. Oehme^d, U. Kuch^a

^a Biodiversity and Climate Research Centre (BiK-F), Frankfurt am Main, Germany

^b Division of Medical Entomology, Institute of Forensic Medicine, Frankfurt am Main, Germany

^c Institute of Medical Microbiology, University Hospital, Frankfurt am Main, Germany

^d Baden-Wuerttemberg State Health Office, Stuttgart, Germany

Ticks are able to transmit numerous human pathogens like bacteria, virus, and protozoa. Lyme disease and tick-borne encephalitis (TBE) are the most common tick-borne zoonoses in Germany. The ecology and biology of ticks are closely related to the epidemiology of tick-borne pathogens. To date, there are no data for the Rhine-Main area concerning prevalence of the tick-borne encephalitis virus and *Borrelia burgdorferi* s.l. in ticks which, it has been suggested, have expanded their populations and/or ranges due to climate change.

The aim of this study was to analyze the prevalences of TBE virus and *B. burgdorferi* s.l. in ticks in selected locations of the Rhine-Main area.

Therefore, 12,691 unfed ticks (9672 nymphs, 2828 adults) were sampled in 2009 and 2010 via flagging. A real-time PCR was performed to detect the pathogens in the ticks. The human pathogenic species of the genus *Borrelia* show a huge heterogeneity; therefore, the samples were amplified in a semi-nested PCR and sequenced afterwards.

The prevalence of TBE virus in *I. ricinus* ticks in risk areas ranged from 0 to 0.2% depending on the investigated location. The virus was detected in 3 RNA pools of the administrative district Offenbach, whereas none tick was found infected in non-risk areas.

Depending on the location, the prevalence of *B. burgdorferi* s.l. in unfed ticks ranged from 3.8 to 14.7% in nymphs, from 0 to 20.0% in males and 3.3 to 27.6% in females.

The determined prevalence updates the epidemiological situation of the pathogens in the investigated locations and could account for higher risk of infection with one of these pathogens.