



**V 11 Possible causes of the different tick-borne encephalitis virus prevalences in ixodid ticks, removed from humans and field-collected ticks**

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There is evidence that tick-borne encephalitis virus (TBEV) prevalence in ticks, removed from humans, is higher than in field-collected ticks from the same area. There are 2 possible explanations of this fact: (i) Infected ticks are more active and aggressive and can be found on humans more often; (ii) some questing ticks are infected with TBEV in a very low undetectable concentration, but during tick feeding the virus replicates and reaches detectable titres. The level of activity and aggressiveness of ticks can be estimated according to the speed and orientation of tick movements to the bait, when on their way to the potential prey is a barrier. In our experiments, *Ixodes ricinus* were infected with TBEV in the laboratory via parenteral inoculation under coxa IV. To compare the activity of infected and non-infected ticks, we used different concentrations of the repellent DEET as a barrier. Obtained data showed that infected ticks were more active and less susceptible to DEET. About 73% of the non-infected ticks (72 of 99) and only 13% (7 of 54) of the infected ones did not get over the lowest concentration of the repellent (0.1%). Only infected ticks (5.6%) got over 1% DEET.

To show the dynamics of TBEV replication in ticks during feeding, we compared the virus titres at different times post-infection in ticks that remained unfed after inoculation of the virus versus in partially engorged ticks, which had fed on mice. After feeding of infected ticks for 15 h the virus titre had increased 500 times (on 3 IgPFU/tick) since inoculation, while in unfed ticks it did not change.

According to our data, both hypotheses are approved and can be used to explain higher virus prevalences in partially engorged ticks than in field-collected unfed ones.