

## The study of the percentage of infection of *Ixodes ricinus* and *Dermacentor reticulatus* ticks with selected pathogens dangerous to humans

Michał Bartosik, Maja Kozłowska, Anna Bogucka-Kocka

Chair and Department of Biology and Genetics, Medical University in Lublin, Chodzki 4A, 20-093 Lublin, Poland

Corresponding Author: Michał Bartosik; e-mail: [michal.bartosik@umlub.pl](mailto:michal.bartosik@umlub.pl)

Of the more than 700 described species of ticks in Poland 19 of them occur on a regular basis. *Ixodes ricinus* and *Dermacentor reticulatus* have the greatest significance as vectors of invasive diseases of animals and humans. Recent times have seen an increase in the number of tick bites in urban areas and city center grasslands. Consequently, the threat of infectious diseases transmitted by ticks, mainly Lyme disease and tick-borne encephalitis (TBE), is constantly on the increase.

The study was conducted in the period 2012-2014 in cooperation with the authorities and employees of the Poleski National Park and Roztocze National Park as part of the task of the young researcher (MNmb26 / MU Lublin). The genetic material obtained from the ticks was tested for the presence of *Borrelia* using a PK17 diagnostic kit (DNA Gdańsk). TBE virus was identified using a test based on literature sequences with primers specific to the virus.

A total of 472 ticks were collected: 295 specimens of the species *Ixodes ricinus*, 176 species of *Dermacentor reticulatus* and one individual described as *Dermacentor marginatus*.

The 221 ticks obtained from the Roztocze National Park included 167 specimens of the species *Ixodes ricinus* and 83 of the species *Dermacentor reticulatus*.

Among the 221 ticks obtained from Poleski National Park, 128 were specimens of the species *Ixodes ricinus*, 93 of the species *Dermacentor reticulatus* and one described as *Dermacentor marginatus*. Testing for the presence of *Borrelia* was positive in 10.6% (31) *Ixodes ricinus* and in 6.8% (12) of ticks *Dermacentor reticulatus*. Among the surveyed ticks, TBE virus was detected in 7.8% (23) of *Ixodes ricinus* and 3.9% (7) of *Dermacentor reticulatus*. Three cases of coinfection of both diagnosable pathogens were observed among *Ixodes* ticks. No such case was found for *Dermacentor*.

Our results regarding the intensity of infection of ticks by the tested pathogens are similar to those of other studies conducted in Lublin region. The significant proportion of ticks found to be infected with *Borrelia* or TBE virus confirms the need for repellents, vaccination against TBE or the use of prophylactic antibiotics in people bitten by ticks.