

PREVALENCE AND MOLECULAR CHARACTERIZATION OF ANAPLASMAPHAGOCYTOPHILUM IN TICKS FROM URBANIZED AND NATURAL HABITATS OF LITHUANIA

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Anaplasma phagocytophilum is a tick-borne bacterium belonging to the family Anaplasmataceae, which causes human granulocytic anaplasmosis (HGA), tick-borne fever (TBF), and granulocytic infections in animals. While wild ruminants and small mammals play a central role in maintaining *A. phagocytophilum* in nature, a wide range of other animals (e.g., bears, foxes, wild boars, horses, and reptiles) may also act as occasional hosts or reservoirs. Across Europe, the pathogen shows broad geographic distribution and substantial genetic diversity with host and regional specificity. [1-2] However, data on the presence of *A. phagocytophilum* in ticks from urban environments remain limited, which is of particular concern given the pathogen's nonspecific clinical presentation and the potential risk it poses to human and companion animals health.

The aim of this study was to determine the prevalence and molecular characterization of *A. phagocytophilum* in ticks collected from urban and natural habitats in Lithuania. A total of 329 questing *I. ricinus* and *D. reticulatus* ticks were collected by flagging in two urban parks and one natural area (border of a wood) in Lithuania in 2023. The presence of *A. phagocytophilum* DNA in ticks was screened by real-time PCR for the *msp2* gene. *A. phagocytophilum* strains were characterized based on the *msp4* and *groEL* gene sequences.

The overall infection rate of *A. phagocytophilum* in ticks was 6.68% (22/329) and in different parks varied from 4.30% to 9.03%, while in the natural area, 4.94%. *Anaplasma phagocytophilum* was more frequent in *I. ricinus* (21/302) than in *D. reticulatus* (1/27). Two *A. phagocytophilum* ecotypes, ecotype I and ecotype II, were detected. Ecotype I has previously been detected in a wide range of hosts and is associated with HGA and TBF. In contrast, ecotype II has primarily been found in roe deer and moose and is currently considered non-zoonotic. [3]

Our findings confirm the presence of *A. phagocytophilum* in urbanized areas of Lithuania and the potential risk of anaplasmosis for city residents and their companion animals.

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