

## **Studies of ticks (Acari: Ixodidae) and tick-borne pathogens of dogs in Hungary**

Summary of PhD dissertation by **Gábor Földvári**

In Europe, the number of reports on canine tick-borne diseases has increased in the past few years. In Hungary, we have had very limited information concerning tick infestation and tick-borne pathogens of dogs. For these reasons, we started to study the tick species and tick-borne pathogens infecting dogs in our country.

Based on morphological studies, a figured practical identification key has been designed for the sixteen hard tick species which have been found on dogs in Europe. The simplicity of this key can help veterinarians and zoologists in tick identification.

In 29 veterinary clinics from six districts of Budapest and 13 counties, 1779 tick specimens were collected from 606 dogs. Most hosts were usually infested with a single female and very few of them had many ticks. The most preferred sites of tick attachment in decreasing order were head, neck and legs. *Ixodes ricinus* and *Dermacentor reticulatus* were the most common species. *Ixodes canisuga*, *Haemaphysalis concinna*, *Ixodes hexagonus*, *Ixodes acuminatus* and *Dermacentor marginatus* were also found. New data have been provided about the geographical distribution of *Dermacentor reticulatus*, because the specimens of this species were collected in north-eastern and south-eastern parts of the country too where they had not been found before. Field collections in 31 locations provided new data on the geographical and seasonal occurrence of *I. ricinus*, *D. reticulatus* and other tick species as well.

The occurrence of small canine piroplasms in two dogs was described for the first time in Hungary. These were autochthonous infestations but we need further investigations to know the species, occurrence, vector and origin of this pathogen. The subspecies *Babesia canis canis* was identified to be the causative agent of babesiosis caused by large *Babesia* sp. in dogs using molecular biological methods. It was also proven with molecular methods that the geographical distribution of canine babesiosis is larger in the country than it has been previously known. *Babesia* DNA was detected in free-living and engorged *D. reticulatus* females for the first time in the country. Presence of *B. canis canis* in engorged *D. reticulatus* specimens removed from dogs was also demonstrated with molecular methods.

Molecular evidence was found for the presence of *Borrelia* sp. in free-living and engorged *I. ricinus* females for the first time in Hungary. Three species, *B. burgdorferi* s.s., *B. afzelii* and *B. garinii* were identified with sequence analysis which are pathogenic to both dogs and humans.