MOLECULAR DETECTION AND CHARACTERIZATION OF *BORRELIA BURGDORFERI* SENSU LATO IN SMALL RODENTS

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Summary. Lyme borreliosis (LB) caused by the spirochete *Borrelia burgdorferi* s.l. is the most frequently diagnosed tick-borne zoonozis in Europe, North America, and Asia. *B. burgdorferi* s.l. can infect humans and wild and domestic animals. Small rodents are the most important reservoir host of *B. burgdorferi* s.l. The aim of present study was to detect f *B. burgdorferi* s.l. in different tissue samples of small rodents and identify *Borrelia* genospecies and strains using different molecular markers and detection methods. Flagellin (*fla*) and outer surface protein A (*osp*A) encoding genes of *Borrelia* genome were used as targets for PCR amplification. We found that the *osp*A gene was a more sensitive marker for the detection of *B. burgdorferi* s.l. than *fla* gene. The presence of *B. burgdorferi* s.l. in urinary bladder, spleen and ear biopsy samples of 136 small rodents was compared. *B. burgdorferi* s.l. infection was detected with different rates in ear and bladder tissues, but was not found in spleen samples. Multiplex PCR assay based on *osp*A gene was used for identifying *B. burgdorferi s. s.*, *B. afzelii*, and *B. garinii* genospecies. *B. afzelii* was a single genospecies detected in small rodents from Norway and was predominant in rodents from Lithuania. *B. garinii* strains from rodents were identified by nucleotide sequencing of PCR products. Phylogenetic relationship between *B. garinii* strains and their correspondence to OspA serotype types were compared with the sequences registered in GenBank database. *B. garinii* strains detected in the present study showed similarities with sequences of OspA serotype 5 type and OspA serotype 6 type.

Keywords: Lyme borreliosis, rodents, *B. burgdorferi* s.l., detection, PCR, sequencing.