

Molecular identification of protozoan *Sarcocystis* species in sheep from Lithuania

Representatives of the genus *Sarcocystis* (Apicomplexa: Sarcocystidae) are parasitic protozoa broadly distributed in mammals, birds, and reptiles. They are distinguished by a two-host life cycle based on the prey-predator relationships. Sarcocysts are mainly formed in muscles or CNS of the intermediate host, and sporocysts develop in small intestine of definitive host. The intense *Sarcocystis* infection can result in reduced wool and meat production of sheep. *Sarcocystis* species differs in their pathogenicity, therefore it is essential to accurately identify species of these parasites. Usually, *Sarcocystis* species diagnosis is based on sarcocysts isolation and genetic characterization. However, such approach is not effective in epidemiological studies. The aim of the study was to develop a rapid and efficient molecular methodology for the identification of *Sarcocystis* species in sheep meat.

Diaphragm and oesophageal samples from 40 sheep raised in different Lithuanian regions were examined for *Sarcocystis* spp. About 25 g of muscle samples were digested with pepsin. *Sarcocystis* species were identified using species-specific nested PCR targeting *cox1* and sequencing. The prevalence of *Sarcocystis* infection was very high (40/40 diaphragm and 39/40 oesophageal samples were positive). Out of five *Sarcocystis* species tested, in analysed samples *S. tenella* and *S. arieticanis* were confirmed. This is the first study to identify *Sarcocystis* species in sheep from Lithuania. *Sarcocystis tenella* (n=39 in the diaphragm; n=34 in the oesophagus) was detected slightly more frequently than *S. arieticanis* (n=36 in the diaphragm; n=30 in the oesophagus). The species found in Lithuania are distributed via canids which are common in the studied area. It should be noted that detected species are more pathogenic compared to those transmitted via felids and opportunistic birds. The molecular diagnostics technique suggested in this work can be applied examining other economically important animals.

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