Investigation of the tick-borne pathogens *Rickettsia helvetica* and *Anaplasma phagocytophilum* in the blood of the domestic goat (*Capra hircus*)

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Abstract

The bacterial species *Anaplasma phagocytophilum* and *Rickettsia helvetica* are pathogenic for humans and domestic animals and are transmitted by ticks, e.g., of the *Ixodes* genus. Most of the vertebrate species constituting reservoirs for anaplasmas are known, but the potential reservoirs of rickettsiae are still under discussion. This study presents an analysis of the DNA of tick-borne pathogens isolated from the whole blood of goats grazing on meadows in West Pomerania, Poland. No DNA of *A. phagocytophilum* was found in the blood of the goats, while the DNA of *R. helvetica* was detected in 5.5% of the animals. The potential role of ruminants in the circulation of *R. helvetica* remains unknown.

Key words: tick-borne pathogens, veterinary pathogens, molecular identification

Introduction

Representatives of the order Rickettsiales are intracellular bacteria transmitted to the host mainly through arthropods. For certain genera of bacteria, such as *Rickettsia*, arthropods may not only be vectors, but also reservoirs. In the life cycle of *Anaplasma* sp. and *Rickettsia* sp., a very important role is played by widespread, long-lived arthropods, i.e. ticks, that feed on the blood of vertebrates. The common tick *Ixodes ricinus* is a cosmopolitan vector of *Anaplasma phagocytophilum* and *Rickettsia helvetica* (Raoul and Roux 1997, Petrovec et al. 2003a, Rymaszewska and Grenda 2008, Silaghi et al. 2011, Rymaszewska and Piotrowski 2013). The reservoirs of anaplasmas have been widely studied and wild animals, including the roe deer (*Capreolus capreolus*), the red deer (*Cervus elaphus*) or the wild boar (*Sus scrofa*), have been indicated numerous times as the potential sources of bacteria found in engorged ticks (Petrovec et al. 2003b, Skotarczak et al. 2008). The relationship between *Rickettsia* sp. and their potential vertebrate hosts is not yet known (Raoul and Roux 1997, Inokuma et al. 2008, Jilintai et al. 2008, Hornok et al. 2014).

The aim of this study was to discover whether *Capra hircus* goats in the West Pomerania region are infected with the tick-borne pathogens *Anaplasma phagocytophilum* and *Rickettsia helvetica*. These animals, often in-