Diagnosis of the *Encephalitozoon cuniculi* infections in pet rabbits with neurological symptoms

J. Ziętek¹, Ł. Adaszek¹, B. Dzięgieł¹, M. Kalinowski¹, M. Bartnicki¹, A. Kalinowska², Ł. Jarosz¹, S. Winiarczyk¹

¹ Department of Epizootiology and Infectious Diseases, Faculty of Veterinary Medicine, University of Life Sciences, Głęboka 30, 20-612 Lublin, Poland
² Department of Ophthalmology, Medical University, Chmielna 1, 20-079 Lublin, Poland

Abstract

The purpose of the study was the *in vivo* diagnosing of *E. cuniculi* invasions in pet rabbits with neurological symptoms using the Real-Time PCR, and determination of the rate of invasion, in this group of animals. The study involved 103 pet rabbits with neurological symptoms. Parasitic invasions were diagnosed using Real-Time PCR. The DNA of the parasites for molecular tests was isolated from the urine of the diseased animals. Out of the 103 tested DNA samples, the presence of the *E. cuniculi* genetic material was detected in 27 samples (26.21%). The melting temperature (Tm) of all products was 77.5 °C. The presence of parasitic DNA in the urine of 26.21% of examined animals indicates that *E. cuniculi* infections occur widely in pet rabbits in Poland and are a significant cause of neurological disorders in those animals.

Key words: *Encephalitozoon cuniculi*, pet rabbits, Real-Time PCR

Introduction

*Encephalitozoon cuniculi* is an obligatory intracellular microsporidian parasite that can infect a wide range of mammals, including rodents, rabbits, horses, carnivores and humans (Ziętek et al. 2013).

The main host for *E. cuniculi* is the rabbit, and seroprevalence rates are usually high in pet rabbit with 37% to 68% of the population (Ewringmann and Gobel 1999, Ebrecht and Muller 2004). In wild rabbit populations the parasite is less prevalent, probably due to the lower animal density (Wilson 1979, Cox and Ross 1980). In veterinary practice, encephalitozoonosis is a common cause of neurological disease in pet rabbits. However, a definitive diagnosis in living animals is difficult and treatment protocols for the disease are still nonuniform (Kunzel and Joachim 2010, Ziętek et al. 2013).

As the parasite can pose a threat to human health and previous works did not explore the determination of the frequency rate of *E. cuniculi* invasions in pet rabbits in Poland, the purpose of the study was to use Real-Time PCR for *in vivo* diagnosis of *E. cuniculi* invasions in rabbits with neurological symptoms, as