Analysis of correlations between the occurrence of anti-MAP antibodies in blood serum and the presence of DNA-MAP in milk

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Abstract

Paratuberculosis (Johne’s disease) is a chronic, infectious enteritis of both domestic and wild ruminants. Unfortunately, the problem of MAP infections is not linked only with the health status of animals and potential direct and indirect economic losses in bovine herds (of dairy cattle in particular). MAP bacilli present in food of animal origin (milk in particular) are likely to lead to the development of the disease in humans. Fast and effective diagnosis of the disease in animals, especially of its subclinical form, may prevent the transmission of the germ to humans. The study was aimed at analyzing the correlations between the occurrence of seropositive and serodoubtful reaction in the ELISA test and the presence of DNA-MAP in udder milk. The results suggest that half of the population of animals with positive and doubtful serological responses against John’s disease are likely to be a potential source of germ transmission into humans. The fact of detecting DNA-MAP in 1/3 of all milk samples points to the likelihood of occurrence of MAP bacilli in milk of animals not displaying seropositive or serodoubtful responses.

Key words: Mycobacterium paratuberculosis, ELISA, DNA isolation, milk

Introduction

Paratuberculosis (Johne’s disease) is a chronic, infectious enteritis of both domestic and wild ruminants (Kennedy et al. 2001). Its etiological factor is Mycobacterium paratuberculosis (MAP), an acid-resistant, Gram-positive, slowly-growing bacillus belonging to the Mycobacterium avium complex. The first symptoms of the disease (periodical persistent diarrhea, body mass loss, successive wasting) appear 6 months to 15 years after infection. The clinical form of the disease usually occurs in older individuals, and is hardly ever observed in those aged under two years. The infected animals excrete MAP both with faeces as well as with milk (McIntyre and Selman 1981, Chiodini et al. 1984, Whitlock and Buergelt 1996, Pavlik et al. 2000, Manning and Collins 2001). A natural reservoir of the germ are domestic and wild ruminants, including dairy and slaughter cattle, sheep, goats, red deer and other Cervidae species as well as camels. The presence of MAP has also been detected in monogastric animals, including: foxes, weasels, wild rabbits, hares, badgers, rats as well as in birds, i.e. hooded crow (Pavlik et al. 2000, Kennedy et al. 2001). The disease spreads both horizontally and vertically. The horizontal infection proceeds through the contact with faeces – contaminated