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## Subscription

### Veterinarni Medicina

**Mycobacteria isolated from the environment of pig farms in the Czech Republic during the years 1996 to 2002**

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Sources of mycobacterial infections in 50 pig herds in the Czech Republic were investigated during the years 1996 to 2002. A total of 2 412 samples from the external environment (feeds, bedding materials, drinking water, biofilms on drinkers, scrapings from the walls, floors and pen barriers, dust, spider webs, peat, kaolin, faeces, organs of rodents, and birds, etc.) were examined. After staining by the Ziehl-Neelsen technique, acid-fast rods were detected in 95 (3.9%) samples by direct microscopic examination and mycobacteria were cultured from 575 (23.8%) samples. From *Mycobacterium avium* complex (MAC), *M. avium* subsp.

*hominissuis* (genotype IS901-, IS1245+) of serotypes 4, 6, 8, and 9 (272; 47.0% isolates), *M. a. avium* (genotype IS901+, IS1245+) of serotype 2 (13; 2.2% isolates) and *M. intracellulare* (genotype IS901-, IS1245-) of different serotypes (2; 0.3% isolates) were detected most frequently. Other isolates from among 14 other mycobacterial species ranked as follows: 64 *M. gordonae*, 47 *M. fortuitum*, 17 *M. chelonae*, 14 *M. flavescens*, 11 *M. terrae*, seven *M. phlei*, seven *M. scrofulaceum*, three *M. diernhoferi*, three *M. triviale*, three *M. smegmatis*, two *M. xenopi*, one *M. szulgai*, one *M. gastri*, and one *M. ulcerans*. The remaining 111 isolates of unidentified species did not contain specific sequences IS901 and IS1245 characteristic for the pathogenic members of MAC (*M. a. avium* and *M. a. hominissuis*). Peat, drinking water, biofilms on drinkers, bedding materials, feeds, free living birds, kaolin and charcoal were identified as potential sources of mycobacterial infections for pigs. Peat given to piglets as a feed supplement was the most important source of mycobacteria (65.1% positive of 327 examined samples); 81.2% of them

serotypes 4, 6, 8, and 9. By contrast, mycobacteria of other species (*M. gordonae*, *M. fortuitum*, *M. chelonae*, *M. flavescens*, etc.) were the main isolates obtained from drinking water and biofilms on drinkers for pigs. By culture examination, the detection rate was higher in the biofilm samples (36.4%) than in the samples of drinking water (29.6%). The third group of sites with detected high levels (26.4%) of mycobacterial contamination were various types of beddings of woody material. *M. a. hominissuis* of serotypes 6, 8, and 9 were the most frequent isolates from sawdust; *M. a. avium* serotype 2 was sporadically detected. Mycobacterial findings in other samples from the external environment (wall and floor scrapings, dust, soil from the runs, and invertebrates) gave an indication of the pressure of infection in the herds. High contamination levels in faecal samples (15.6%) and in scrapings (18.4%) from respective parts of pens and stables indicated exposure of pigs to mycobacteria. In those materials, isolation of *M. a. hominissuis* of serotypes 4, 6, 8, and 9 prevailed. Mycobacteria were also

detected in 7.9% of 430 samples of various invertebrate species. Various mycobacterial species were identified in the larvae and puparia of *Eristalis tenax* and *Musca* spp. and in imagoes of *Drosophila* spp., *Musca* spp., family Scatophagidae, *Stomoxys calcitrans*, *E. tenax*, and in earthworms. All of the constituents of the external environment that are potential sources of mycobacterial infections should be considered during implementation of preventative measures and the control of mycobacterial infections in pig herds.

### **Keywords:**

mycobacteria; pig; environment; avian tuberculosis; PCR

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