

Morphological and molecular analyses of larval taeniid species in small mammals from contrasting habitats in Denmark - DTU Orbit (09/11/2017)

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Taeniid infections in intermediate hosts manifest themselves as extraintestinal larval stages which, in early development, lack species-specific characteristics. The inability to distinguish infections of zoonotic importance such as *Echinococcus multilocularis* from other taeniid infections that have mainly veterinary significance stimulated the development of species-specific molecular diagnostics. In this study, the prevalence of taeniid infections in potential intermediate hosts was evaluated using both morphological diagnosis and a newly described multiplex Polymerase Chain Reaction (PCR) for species determination. Small mammals (N=719) were trapped in three different types of habitats in north-east Zealand, Denmark. The sensitivity of the multiplex PCR (90.5%) exceeded that of morphological examination (57.9%) for identifying 95 taeniid infections. The use of the multiplex PCR resulted in higher prevalence rates due to improved detection of immature liver infections with *Hydatigera taeniaeformis* and *Versteria mustelae*, but did not affect the observed prevalence rates of peritoneal metacestodes of *Taenia polyacantha*. The prevalence of taeniid infections showed a significant difference according to habitat type, potentially identifying a 'sylvatic' transmission and an 'urban' transmission with marked variation among different taeniid species. *Versteria mustelae* and *T. polyacantha* were more prevalent in rural forests, while infections with *H. taeniaeformis* were dominant in urban parks/forests and in residential and farm gardens. The multiplex PCR facilitated a better utilization of wildlife samples by yielding a higher number of definitive diagnoses of ambiguous taeniid infections in liver lesions, allowing for more accurate epidemiological data and, hence, a more accurate risk assessment.

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