

Global molecular epidemiology of microsporidia in pigs and wild boars with emphasis on *Enterocytozoon bieneusi*: A systematic review and meta-analysis

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Abstract:

Background: Microsporidia are spore-forming intracellular pathogens with worldwide prevalence, causing emerging infections in humans and animals. *Enterocytozoon bieneusi* is a zoonotic species of microsporidia and is responsible for more than 90% of cases of microsporidiosis in humans and animals. Pigs and wild boars are important animal reservoirs of microsporidia. Hence, we aimed to estimate the global prevalence of microsporidia and genetic diversity of *E. bieneusi* in pigs and wild boars through a set of systematic review and meta-analysis (PRISMA) guidelines.

Methods: Four databases (Web of Science, PubMed, Scopus and Google Scholar) were searched between January 1, 2000 and April 30, 2021. Regarding meta-analysis, the random-effect model was employed by forest plot with 95% confidence interval (CI).

Results: After exclusion of irrelevant articles and duplication removal, 33 papers, including 34 datasets (30 datasets for domestic pigs and 4 for wild boars) finally meet the inclusion criteria to undergo meta-analysis. The pooled prevalence rates of microsporidia infection in domestic pigs and wild boars were 37.6% (95% CI: 30.8-44.9%) and 8.1% (95% CI: 2.1-26.8%), respectively. While, the pooled prevalence rates of *E. bieneusi* were 35% (95% CI: 28.4-42.2%) in domestic pigs and 10.1% (95% CI: 1.7-42.4%) in wild boars. The genotypes EbpA was the most reported genotype in domestic pigs and wild boars. Male animals had higher prevalence rates of microsporidia infection than females (27 vs. 17.4%, OR = 1.91; 95% CI, 0.77-4.71%).

Conclusion: This study indicates the important role of domestic pigs and wild boars as animal reservoir hosts of microsporidia. Thereby, strategies for control and prevention of these zoonotic pathogens should be designed in pigs and wild boars.

Keywords: *Enterocytozoon bieneusi*; domestic pig; microsporidia; systematic review; wild boar.