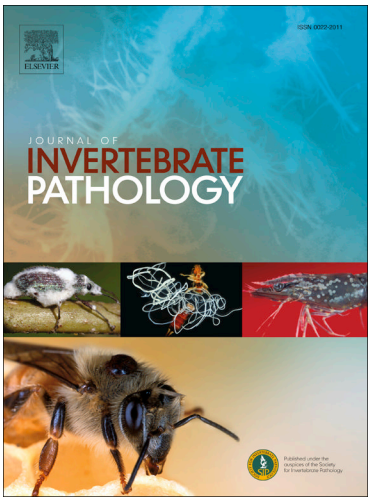

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Pathological analysis of silkworm infected by two microsporidia *Nosema bombycis* CQ1 and *Vairimorpha necatrix* BM

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Abstract

Microsporidia *Nosema bombycis* CQ1 can be vertically transmitted in silkworm *Bombyx mori* but *Vairimorpha necatrix* BM cannot. Therefore, the pathological differences in silkworm infected with these two microsporidia required clarification. Here, we compared the virulence of *N. bombycis* CQ1 and *V. necatrix* BM against silkworm. The pathological characteristics in intestine, testis and ovary were surveyed using paraffin sections, scanning electron microscopy and transmission electron microscopy. Our data firstly showed that the virulence of *V. necatrix* BM was weaker than that of *N. bombycis* CQ1. Secondly, the typical symptom of *V. necatrix* BM infection is making xenomas, which are full of pathogens in different stages, at the posterior of intestine. However, no xenomas were formed surrounding intestines infected with *N. bombycis* CQ1. Thirdly, *N. bombycis* CQ1 can cluster spores near the trachea while infecting ovaries. It is worth noting that *N. bombycis* CQ1 infected epithelial cells and connective tissues of ovaries, while *V. necatrix* BM did not. Although silkworm ovaries can not be infected by *V. necatrix* BM *in vivo*, it can infect embryonic and ovarian cell lines *in vitro*. This study is the first report about comparing infection features of *N. bombycis* CQ1 and *V. necatrix*