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

Xian-Zhi Meng^{a,1}, Bo Luo^{a,c,1}, Xiang-You Tang^a, Qiang He^a, Ting-Rong Xiong^a, Zhuo-Ya Fang^a, Guoqing Pan^a, Tian Li^{a,*}, Ze-Yang Zhou^{a,b,*}

^a State Key Laboratory of Silkworm Genome Biology, Southwest University, Chongqing, 400716, P.R.

China

^b College of Life Sciences, Chongqing Normal University, Chongqing, 400047, P.R.China

^c College of Basic Medical Sciences, Zunyi Medical University, Zunyi, 563000, P.R.China

* Correspondence authors at: State Key Laboratory of Silkworm Genome Biology, Southwest University, Chongqing, 400716, P.R. China.

E-mail addresses: zyzhou@swu.edu.cn (Ze-Yang Zhou), lit@swu.edu.cn (Tian Li).

¹ These authors contributed equally to this work.

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*

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