ABSTRACT

CREATIVE PROJECT: Carvacrol May Aid Infection Progression of *Bacillus cereus*-mediated Endophthalmitis in Mice

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PAGES: 6

Bacillus cereus, commonly known as a foodborne pathogen, can also cause severe endophthalmitis, with 70% of *B. cereus* endophthalmitis cases resulting in vision loss. Currently, no therapeutic method is considered effective, since both the infection and subsequent inflammatory response are damaging to ocular tissue. If infection progression is curtailed, surrounding tissue is still damaged by the rapid inflammatory response that ensues. Carvacrol, a component of oregano, has been shown to have antimicrobial and anti-inflammatory properties, and has been shown to be effective *in vitro* against a broad range of microorganisms. This study evaluated the effectiveness of carvacrol on endophthalmitis in a mouse model, and assessed its potential for use on eukaryotic tissue. The results suggest that carvacrol aided infection progression, as the mice treated with *B. cereus* and the highest dose of carvacrol seemed to have the most visible symptoms of infection. No significant systemic immune response developed from the ocular infection, as determined through ELISA-based quantification of IL-6, TNF-α, and *B. cereus* enterotoxin in serum

14d post-infection. Future confocal microscopy will be used to determine the extent of local infection and inflammation that may have occurred.