

ELLIOT COLLINS, DEANNA SCHMITT, KRISTEN SIKORSKY, ANTHONY SAKO, Department of Natural Sciences and Mathematics, West Liberty University, West Liberty, WV 26074, FRANCISCO LEON, MELISSA JACOB, National Center for Natural Products Research, University of Mississippi, University, MS 38677, and JOSEPH HORZEMPA, Department of Natural Sciences and Mathematics, West Liberty University, West Liberty, WV 26074. Immunostimulatory Activity of Dillapiole Isolated from Fennel Root.

*Francisella tularensis* is a highly infectious bacterium that causes the disease, tularemia. The Centers for Disease Control and Prevention classified *F. tularensis* as a category A bioterror agent due to its virulence and ease of aerosolization. The intentional release of a resistant strain of *F. tularensis* could be devastating. Consequently, there is a need for novel treatments effective against *F. tularensis* infections. We previously tested a cataloged natural compound library for inhibition growth of a fluorescent *F. tularensis* strain (LVS/pTC3D) during infection of THP-1 monocyte cells. From this analysis, we identified nine extracts that only limited bacterial replication in the presence of these host cells. One of the most promising extracts for the inhibition of *F. tularensis* during infection was from Fennel. Using bioassay guided fractionation, the Fennel extract was separated until a pure compound was isolated and identified using NMR and mass spectrometry. The active compound was determined to be dillapiole, an allylbenzene that has previously been extracted from several plant species. We sought to determine whether dillapiole would be effective at diminishing disease caused by other infectious bacteria, such as the opportunistic pathogen, *Acinetobacter baumannii*. Therefore, wax worms infected with *A. baumannii* were treated with dillapiole or were mock treated. Wax worm larvae treated with dillapiole exhibited significant survival compared to the control-treated insects. We are currently investigating the mechanism of activity of dillapiole, a compound that could have potential as a novel immunostimulatory therapeutic.