

Efficacy of volatile organic compounds as treatment for bats affected with white-nose syndrome

Abstract

Pseudogymnoascus destructans, the causative agent of white-nose syndrome (WNS), is a fungal pathogen implicated in the widespread mortality of hibernating bats across North America. Since its arrival to the United States in 2006, the pathogen has spread rapidly to 34 US states and 7 Canadian provinces. Researchers have been searching for disease management strategies to minimize the spread and severity of this fungal pathogen, as bats are an important aspect of a healthy regional and global ecosystem as insect predators and pollinators. Volatile organic compounds (VOCs), produced by a variety of microorganisms, have been found to exhibit antimicrobial properties against fungal pathogens such as *Ophidiomyces ophiodiicola*, the causative agent of snake fungal disease. Due to this observed antifungal activity, an *in vitro* experiment was conducted to explore the potential antifungal activity of VOCs against *P. destructans* mycelial growth. The experiment involved exposing mycelial plugs of *P. destructans* to various concentrations of VOCs and measuring the radial mycelial growth. One VOC, an azole compound, exhibited >50% inhibition of *P. destructans* mycelial growth when compared to the control.

Key Words: Pseudogymnoascus, psychrophilic, white-nose syndrome, fungal pathogen, volatile organic compound