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Efficacy of Resazomycins Against LolDF-Expressing Gram-Negative Bacteria

A growing number of human pathogens are becoming resistant to most common antibiotics. Each year, antibiotic-resistant infections are responsible for 23,000 deaths in the United States and billions of dollars in health care costs. To prevent the loss of additional lives from once “curable” diseases, new antibiotics must be developed. We recently identified a novel family of resazurin-based compounds, resazomycins, which exhibit antimicrobial activity against *Francisella tularensis* and *Neisseria gonorrhoeae* in vitro and in vivo. A common feature of both these bacteria is possession of a unique lipoprotein sorting system, LolDF. To investigate the relationship between LolDF and susceptibility to resazomycins, we propose performing antibiotic susceptibility testing on a diverse collection of medically important LolDF-possessing bacterial strains. My project focuses on characterizing the efficacy of two resazomycins, resazurin (Rz) and resorufin pentyl ether (RPE), against three different bacterial strains: *Acinetobacter baumannii*, *Moraxella catarrhalis*, and *Chromobacterium violaceum*. These bacterial species are human pathogens known to be multi-drug resistant and primarily infect immunocompromised individuals. Using the agar dilution antibiotic susceptibility test, we have determined that *A. baumannii* and *M. catarrhalis* are resistant to resazomycins, while *C. violaceum* is susceptible. These data suggest that LolDF may not be the sole target of resazomycins. Further investigation is needed to determine the precise mechanism of action of resazomycins. (Supported by NIH Grant P20GM103434 to the West Virginia IDeA Network for Biomedical Research Excellence)