



CANCER PREVENTION & RESEARCH INSTITUTE OF TEXAS

Award ID:
RP121002

Project Title:
Examination of the Pharmacological Properties of a Novel Antifungal
Named Occidiofungin

Award Mechanism:
Bridging the Gap: Early Translational Research Awards

Principal Investigator:
Smith, James

Entity:
Texas A&M University

Lay Summary:

There is a need to identify new antifungals for the treatment of serious fungal infections. Given an increasing population of immunocompromised individuals, in particular those undergoing treatment for cancer, fungal infections lead to debilitating illnesses and these patients have a high mortality rate. A substantial amount of work has been done to characterize an antifungal we named occidiofungin. Current studies support investigational studies aimed at determining occidiofungin's therapeutic potential for the treatment of life threatening fungal infections. A detailed structural analyses, spectrum of activity, and animal toxicity studies have been performed on occidiofungin. From these studies, occidiofungin has been determined to be rapidly fungicidal at submicromolar concentrations and has a broader spectrum of activity than other clinically used antifungals. Furthermore, occidiofungin appears to have minimal toxicological effects in an animal study. Structural characterization studies on occidiofungin revealed that it is a structurally unique compound. Current studies also indicate that the compound is stable against gastric proteases, high temperature, and acidic and basic pH. This data support studies aimed at investigating the compound ability to be given orally versus intravenously. If these studies prove to be successful, occidiofungin would be the only orally administered fungicidal drug. Our experiments also suggest that occidiofungin has a unique mechanism of activity when compared to other antifungals (polyenes, azoles, and echinocandins) used to treat serious fungal infections. Given that occidiofungin has demonstrated properties superior to currently used antifungals, the studies outlined in this application are aimed at understanding its efficacy for treating a systemic fungal infection. Occidiofungin holds great promise for the treatment of serious fungal infections, which can reduce the mortality rate of cancer patients.