Abstract

Cryptococcus neoformans is an important fungal pathogen of immunocompromised individuals. During initial infection, *C. neoformans* colonizes the airspaces of the lungs, resulting in pneumonia, and subsequently migrates to the central nervous system (CNS). There is also epidemiological evidence for dormancy of cryptococcal infections.

In order to greater understand fungal carbon utilization (particularly gluconeogenesis and glycolysis) during colonization of these fundamentally different niches within the host, mutants of key regulatory points in these carbon metabolic pathways were created. Our objective was to perform phagocytosis and killing assays to characterize how immune cells responded to the varying strains of *C. neoformans*. We performed these assays with three mutant strains of *C. neoformans*, along with the wild-type strain. The phagocytosis assay showed which mutant strains could be phagocytized by the immune cells and which strains could not. In addition, the killing assay showed which strains were resistant to the immune cells; the data was quantified by colony visualization to see which strains could be fought off by the macrophages. We found that there is, indeed, a difference between the phagocytosis of the metabolic mutant strains of *C. neoformans* and the wild-type strain. The results of this experiment will contribute to the understanding of *C. neoformans* metabolism and survival in a human host. With this information, the scientific community will have a foundation upon which to form potential preventions and treatments against cryptococcal infections.