Delivery of Therapeutics and Treatment of Fungal Infections in the Central Nervous System

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ABSTRACT

A method of reducing, delaying, preventing, and/or inhibiting the progression of a *Cryptococcus* infection into the central nervous system and a method for delivery of therapeutic agents to the central nervous system.

FULL DESCRIPTION

Cryptococcus neoformans is the leading cause of fungal meningitis, a life threatening infection that is often difficult to treat due to the poor arsenal of antifungal drugs. Cryptococcus neoformans is a fungal pathogen that causes meningoencephalitis primarily in AIDS patients and results in over 1 million active cases of cryptococcosis and 700,000 deaths per year worldwide.

Researchers at the University of California, Davis have identified a novel enzyme that is required for *Cryptococcus* to breach the blood-brain barrier (brain endothelium), invade the central nervous system and cause life-threatening brain infection. This secreted enzyme which is unique to bacteria and fungi represents a viable drug target for the prevention of cryptococcal meningitis. UC Davis researchers have demonstrated using in vivo models that the enzyme is required for transmigration of the cryptococcal cells into the CNS and ablation of the enzyme results no fungal burden in the brain.

The invention provides a method to reduce, delay, or prevent the progression of a *Cryptococcus* infection by inhibiting the activity of this key enzyme which *Cryptococcus* uses to access the central nervous system. The enzyme may also be used to enhance the delivery of therapeutic agents to the central nervous system.

APPLICATIONS

- Therapeutic or preventive treatment of Cryptococcus meiningitis affecting immunocompromised patient populations including those with AIDS
- Potential methods for enhancing delivery of other therapeutic agents across the blood brain barrier

FEATURES/BENEFITS

- Key virulence factor necessary for that can be targeted
- Target protein unique to bacteria and fungi; potential toxicity of therapy to human host greatly diminished

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	10,329,356	06/25/2019	2011-846
United States Of America	Issued Patent	9,493,760	11/15/2016	2011-846

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OTHER INFORMATION

KEYWORDS

Cryptococcus, Meningitis, Blood-brain barrier, CNS protection, Drug delivery

CATEGORIZED AS

- **Biotechnology**
  - Health
- **Medical**
  - Delivery Systems
  - Disease: Central Nervous System
  - Therapeutics

RELATED CASES

2011-846-0

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