# Oral fungal infection treatment shows promise in preclinical trials

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Dr. Ashraf Ibrahim in his laboratory at The Lundquist Institute. Credit: The Lundquist Institute for Biomedical Innovation at Harbor-UCLA Medical Center

A novel oral amphotericin B (MAT2203) developed by Matinas BioPharma for treatment of invasive mucormycosis (IM) and other

deadly invasive fungal infections, has demonstrated encouraging results in a series of preclinical studies. The research, led by Lundquist Institute (TLI) Investigator Ashraf Ibrahim, Ph.D., has been published in the journal *Antimicrobial Agents and Chemotherapy*.

The studies focused on MAT2203, an oral lipid nanocrystal formulation of amphotericin B, which has previously demonstrated safety and effectiveness in the clinical treatment of various fungal infections.

The research aimed to evaluate the efficacy of MAT2203 in comparison to the current standard treatment, liposomal amphotericin B (LAMB), in a neutropenic mouse model. This model mimics the human condition of IM caused by two strains of fungus, Rhizopus arrhizus var. delemar and Mucor circinelloides f. jenssenii DI15-131.

Results indicated that a daily dose of 15 mg/kg of MAT2203 was as effective as 10 mg/kg of LAMB in extending the median survival time and improving overall survival rates. Furthermore, while both treatments significantly reduced the fungal burden in the lungs and brains of infected mice, LAMB showed a more pronounced effect in reducing tissue fungal load compared to MAT2203 when dealing with R. delemar infections.

Dr. Ibrahim commented on the findings, stating, "The promising outcomes of MAT2203 in this study represent a significant step towards a less invasive and safer treatment approach to combating invasive mucormycosis since unlike LAMB which is given intravenously, MAT2203 is administered orally and can be administered long-term without any of the significant toxicities associated with LAMB treatment.

"It's a testament to the potential of innovative drug delivery systems like lipid nanocrystals in transforming how we treat infectious diseases."

A higher dosage of MAT2203 (45 mg/kg) did not show added benefits and was less tolerated by the mice, highlighting the importance of dosing in the development of this treatment.

These findings support the continued research and development of MAT2203 as a novel oral treatment option for patients suffering from mucormycosis, potentially offering a safer, more effective, and convenient alternative to current therapies.

**More information:** Efficacy of an oral lipid nanocrystal (LNC) formulation of amphotericin B (MAT2203) in the neutropenic mouse model of pulmonary mucormycosis, *Antimicrobial Agents and Chemotherapy* (2024). DOI: 10.1128/aac.01540-23, journals.asm.org/doi/10.1128/aac.01540-23

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