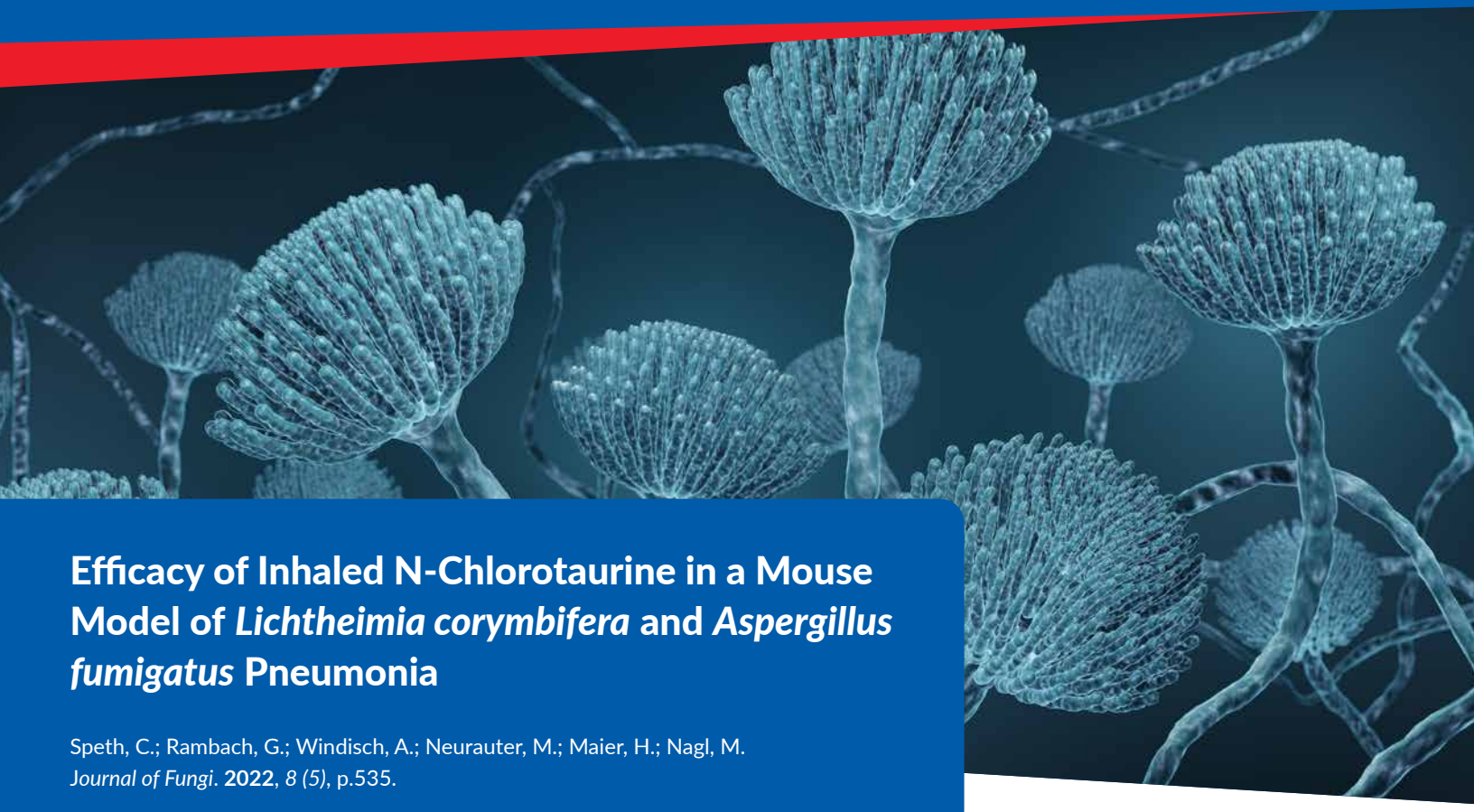
Fungal Pneumonia

CASE STUDY



Efficacy of Inhaled N-Chlorotaurine in a Mouse Model of *Lichtheimia corymbifera* and *Aspergillus fumigatus* Pneumonia

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Journal of Fungi. **2022**, *8 (5)*, p.535.

INTRODUCTION

N-chlorotaurine (NCT) is used as a topical antiseptic and anti-infective, and this study aimed to demonstrate the tolerability, safety, and efficacy of inhaled NCT in murine models of fungal pneumonia. Previous methods for organ homogenization post-infection challenge were laborious, so an easier method was established using a FastPrep-24™ homogenizer and Lysing Matrix M from MP Biomedicals. Survival, viable pathogen load in the lungs and other organs, body weight, organ weight, body temperature, and blood parameters were compared in NCT-treated vs. control groups. Results revealed an improvement of parameters for the NCT-treated *L. corymbifera* pneumonia group and support the safety and tolerability of inhaled NCT for treating fungal pneumonia *in-vivo*.

OVERVIEW

KEYWORDS: N-chlorotaurine (NCT), anti-infective, mouse models, fungal pneumonia, antiseptic, mold, *Lichtheimia*, *Aspergillus*

AIM OF THE STUDY: Investigate the efficacy of inhaled NCT in a mouse model of fungal pneumonia

APPLICATION: Histology, Blood cell counts, Tissue homogenization, CFU counts

SAMPLE TYPE: Lung, brain, spleen, and kidney tissues from mice

MATERIAL: FastPrep-24™ 5G homogenizer, Lysing Matrix M

CASE STUDY: Efficacy of Inhaled N-Chlorotaurine in a Mouse Model of *Lichtheimia corymbifera* and *Aspergillus fumigatus* Pneumonia

PROTOCOL AND PARAMETERS

1. Deep-frozen single, whole mouse organs were placed in a 2 mL Lysing Matrix M tube (6.4 mm ceramic sphere) with 1 mL of PBS.
2. Organs were thawed in the tube in an incubator at 37 °C for ~5 minutes and placed on ice.
3. Tubes with samples were homogenized in a FastPrep-24 5G homogenizer at 4 m/s for 20 seconds.
4. Homogenized samples were placed on ice and vortexed three times for 3 seconds.
5. 400 µL aliquots were removed and diluted in 400 µL of 0.9% NaCl for quantitative culture analysis.

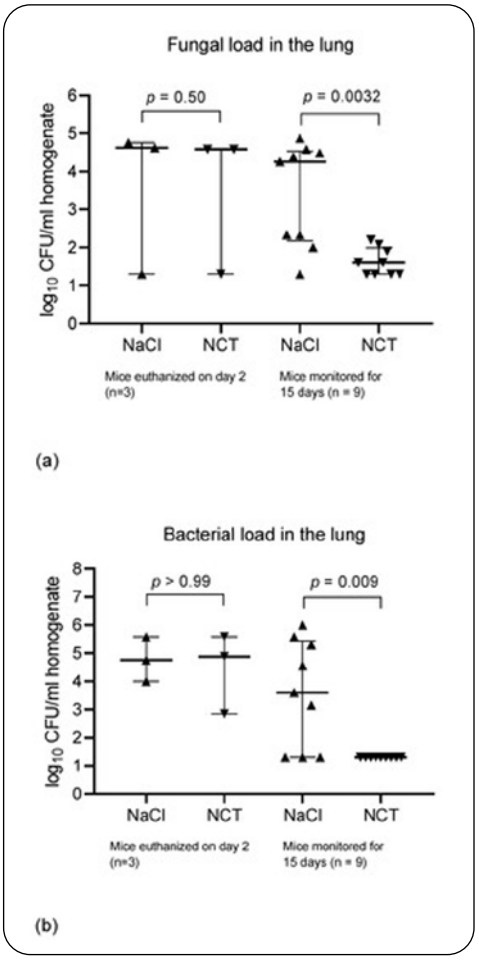

Figure 1. Fungal (a) and bacterial (b) pathogen counts from the homogenized lungs of control (NaCl) and NCT test mice previously challenged with *L. corymbifera*.

CONCLUSION

Mouse models of fungal pneumonia were used to demonstrate the therapeutic effect of an inhaled anti-infective, NCT, for the treatment of pneumonia. Traditional methods of organ homogenization using a rotating knife or mechanical treatment followed by MixerMill are laborious and time-consuming. A new, easier homogenization method was established using MP Biomedicals' FastPrep-24 5G homogenizer and Lysing Matrix M tubes to process mouse tissues and determine fungal load. The new method proved to be faster and more efficient, allowing for higher sample throughput while also maintaining the viability of fungi and bacteria for culture analysis and determination of microbial load.

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