

## THE ROLE OF SPORE SURFACE PROTEINS IN *MUCOR LUSITANICUS*

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Fungal pathogens belonging to the order *Mucorales* pose a significant threat to agricultural productivity, as they not only cause severe postharvest decay in fruits and vegetables but they are also responsible for human infections such as mucormycosis. The spore surface proteins (CoTHs) of these fungi play crucial roles in adhesion, germination initiation, colonization, and infection establishment on plant surfaces. In our study, we examined *Mucor lusitanicus* *cotH* disrupted mutant strains to assess alterations in the cell wall. To monitor these changes, we employed fluorescent staining and transmission electron microscopy (TEM). Additionally, we evaluated spore viability using the XTT tetrazolium colorimetric assay and the FUN1 viability test. To investigate growth abnormalities and germination defects, we exposed the mutant strains to various stress conditions and a range of temperatures. Our findings revealed that the absence of the CoTH12 protein led to unusual septa formation. The response of the *cotH* mutants to cell wall stressors varied, with specific *cotH* gene deletions resulting in structural modifications in the inner spore coat, as well as differences in fungal growth and sporulation. TEM analysis of the *cotH9* mutant revealed morphological markers indicative of programmed cell death, suggesting that the *CotH9* protein plays a critical role in spore viability. The infection mechanism of *cotH* proteins holds considerable potential for developing novel defense strategies against *Mucorales* fungi, as these proteins represent key virulence factors. Several identified *cotH* proteins play indispensable roles in the infection process, contributing to spore formation and structural organization.

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