The mitogen-activated protein kinase MpkA of *Aspergillus fumigatus* regulates cell wall signaling and oxidative stress response.

Valiante V, Heinekamp T, Jain R, Härtl A, Brakhage AA (2008) The mitogen-activated protein kinase MpkA of *Aspergillus fumigatus* regulates cell wall signaling and oxidative stress response. *Fungal Genet Biol* 45(5), 618-627.

Details

PubMed

Abstract

Mitogen-activated protein kinase (MAPK) signaling pathways are involved in the regulation of various cellular responses in eukaryotes. In fungal pathogens they are of special interest because of their possible contribution to pathogenicity. Bioinformatic analysis of the genome of the most prevalent airborne human pathogenic fungus Aspergillus fumigatus, revealed the presence of four distinct MAPK-encoding genes. Here, we present the detailed functional analysis of one of these MAPKs, MpkA. Comparative analysis revealed similarities of MpkA with MAPKs involved in cell wall integrity signaling of other fungi. Accordingly, the analysis of mpkA deletion mutants revealed severe sensitivity of the mutants against cell wall active compounds, drastical alterations of the fungal morphology and increased resistance against oxidative stress. The expression of mpkA was induced by cell wall damaging conditions. Despite its involvement in cell wall signaling no influence on virulence of the deletion of mpkA was observed in a murine infection model.

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