The MpkA MAP kinase module regulates cell wall integrity signaling and pyomelanin formation in *Aspergillus fumigatus*.

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Abstract

Aspergillus fumigatus is the most important air-borne fungal pathogen, causing severe infections in immunocompromised patients. Mitogen-activated protein kinase (MAPK) signaling pathways are involved in the regulation of various cellular responses to environmental changes in eukaryotes. Genome Blast analysis revealed that the central core of the cell wall integrity signaling pathway in A. fumigatus is composed of three protein kinases designated Bck1, Mkk2 and MpkA. This pathway is of particular interest because it represents a possible target for new antifungal drugs. Deletion of these genes resulted in severe sensitivity of the mutants against cell wall-disturbing compounds and drastic alterations of the fungal morphology. Western blot analysis demonstrated that Bck1 and Mkk2 directly activate MpkA during vegetative growth and under cell wall stress conditions further confirming that Bck1, Mkk2 and MpkA form a MAP kinase module. Interestingly, this MAP kinase module affects the formation of pyomelanin derived from tyrosine degradation.

Beteiligte Forschungseinheiten

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