



Impact of the unfolded protein response on the pathogenicity of the necrotrophic fungus *Alternaria brassicicola*

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Résumé en anglais

The unfolded protein response (UPR) is an important stress signalling pathway involved in the cellular development and environmental adaptation of fungi. We investigated the importance of the UPR pathway in the pathogenicity of the plant necrotrophic fungus *Alternaria brassicicola*, which causes black spot disease on a wide range of Brassicaceae. We identified the AbHacA gene encoding the major UPR transcription regulator in *A. brassicicola*. Deletion of AbHacA prevented induction of the UPR in response to endoplasmic reticulum stress. Loss of UPR in mutants resulted in a complete loss of virulence and was also associated with a cell wall defect and a reduced capacity for secretion. In addition, our results showed that the UPR was triggered by treatment of mycelia with camalexin, i.e. the major *Arabidopsis thaliana* phytoalexin, and that strains lacking functional AbHacA exhibited increased in vitro susceptibility to antimicrobial plant metabolites. We hypothesize that the UPR plays a major role in fungal virulence by altering cell protection against host metabolites and by reducing the ability of the fungus to assimilate nutrients required for growth in the host environment. This study suggests that targeting the UPR pathway would be an effective plant disease control strategy.

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Liens

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