

# The combined function of *Podosphaera xanthii*'s mechanisms to suppress immunity triggered by chitin

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## ABSTRACT

Fungal pathogens are the main destructive microorganisms for terrestrial plants and pose increasing challenges for global agricultural production. Chitin is a vital building block for fungal cell walls and a widely effective inducer for plant immunity. Chitin-triggered immunity is a powerful plant defense response against fungi. Therefore, phytopathogenic fungi have developed different virulence factors that allow them to suppress the activation of this defensive response. In this study, we intend to evaluate the molecular mechanisms of suppression the chitin-triggered previously identified in *Podosphaera xanthii*, the main causal agent of powdery mildew in cucurbits. These mechanisms consist of the modification of chitin immunogenic oligomers (CDA), the binding to these oligomers (CHBE) and their degradation (EWCAs). For this, we used RNA interference (RNAi) technology, which consists of the application of double-stranded RNA (dsRNA) designed to suppress the expression of the *PxCDA* and *PxEWCA* genes, which would result in the reduction of the three mechanisms of suppression of chitin signaling mentioned above, since CDA and CHBE proteins are products of the same *PxCDA* gene. Application of dsRNA was carried out using leaf disc assays and infiltration of melon cotyledons. The preliminary results obtained indicate that the application of dsRNA significantly reduces the development of the fungus and the symptoms of powdery mildew disease in melon, suggesting that chitin signaling suppression mechanisms are essential for the development of *P. xanthii*.

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