Differential Regulation of Fungal Defense-related Genes by Specific Host-pathogen Interaction in Chickpea (Cicer arietinum L.) (C07-cho161314-Oral)

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Abstract:

Ascochyta blight of chickpea (Cicer arietinum L.), caused by the necrotrophic pathogen, Ascochyta rabiei, is a devastating fungal disease. We used biochemical differences between resistant and susceptible lines and determined genomic associations of biochemical markers with genes for blight resistance. Induction of defense-related genes by a single isolate of A. rabiei, AR21d and also by exogenous chemical treatments with salicylic acid (SA) or methyl jasmonate was observed in the blight resistant line, FLIP84-92C, but not in the susceptible line, PI359075. However, gene expression patterns within F7 derived RILs from the cross of PI 359075 x FLIP84-92C after AR21d inoculation and SA treatment did not significantly correlate with blight resistance. One QTL for field resistance to a mixture of A. rabiei isolates was identified on linkage group 4 with a LOD score of 3.6. Biochemical and genomic discrepancies in blight resistance between the green house trial field trial were observed. Further study to identify differential responses of chickpea RILs to different levels of pathogen virulence will enable explanation of its biochemical and genomic association with blight resistance.

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