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Poster #24967

External Application of dsRNA Targeting a *Phakopsora Pachyrhizi* Effector Candidate Attenuating Fungal Pathogenicity

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Abstract Text:

Asian soybean rust caused by the obligate biotrophic fungus *Phakopsora pachyrhizi* (Pp) is a major foliar disease of soybean that may cause losses of up to 75% under heavy infestation. Pp families of effector candidates has been predicted and its ability in suppress plant immunity was previously demonstrated. Considering the ability of recently described of another biothrophic fungi uptake dsRNA from the environment, as well as the effectiveness of externally application of these molecules in inhibiting pathogen virulence, we applied a similar approach to check the potential role of three *P. pachyrhizi* effector candidates in the pathogenicity: Pp121, Pp260 and Pp5370. The dsRNA molecules (300 ng uL^{-1}) targeting *P. pachyrhizi* effectors were mixed with 10^5/mL uredinospores solution, and immediately sprayed on soybean leaves. Three biological replicates containing 10 detached leaves were performed. Fourteen days after infection, the phenotypic parameters of disease severity, sporulation level, number of uredinia per lesion, and number of open uredinia per lesion were evaluated. A statistical level of significance at 5% in a Dunnet test was applied and compared with a control, dsRNA targeting GFP, demonstrating attenuation on fungal pathogenicity when Pp121 and Pp260 were silenced. Host induced gene silencing experiments mediated by virus silencing system in soybean is being conducted and might confirm the results and give additional evidence of an active machinery of gene silencing in *P. pachyrhizi*. It could also support the understanding of molecular role of fungal effectors.

* Both authors contributed equally to the study

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