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“Study of the effects of fungal volatiles on *Arabidopsis thaliana* morphology and disease resistance”

Abstract

*Fusarium oxysporum* is a well-known soilborne plant pathogen notorious for causing wilt symptoms in a large number of plant species. However, not all isolates are plant pathogenic, and some of the non-pathogenic isolates even function as a biocontrol agent. Preliminary results indicate that certain pathogenic *F. oxysporum* strains produce volatile organic compounds that promotes plant growth, enhance leaf development, alter root architecture and enhance chlorophyll content in the model plant *Arabidopsis thaliana*. We have already identified a number of plant growth promoting isolates of *F. oxysporum* as well as the hormonal pathway by which these effects are regulated. One of the hormones up-regulated through the volatile compounds is ethylene, a known plant defense gene inducer. In this study we propose to investigate the role of those volatiles in plant host defenses and resistance genes expression. This study will give us an insight to the poorly studied plant-microbe volatile mediated interactions and help us better understand the communication interplay in the soil environment.