Title Changes in expression of oxidative stress related genes in grapefruit peel in response to the yeast, *Metschnikowia fructicola*

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Abstract

To gain insight into the mode of action of the yeast biocontrol agent, *Metschnikowia fructicola*, the transcription profiles of genes involved in oxidative stress were studied in grapefruit (*Citrus paradis*, 'Star Ruby') surface wounds following the application of the yeast antagonist. Three transcripts encoding peroxidase (POD), superoxide dismutase (SOD) and catalase (CAT) were selected for temporal expression analysis by quantitative real-time PCR (qPCR). The application of the yeast antagonist on surface wounds significantly decreased the expression levels of POD and CAT genes compared to control wounds. Moreover, this suppression was correlated with significantly higher levels in hydrogen peroxide, superoxide and hydroxyl production in yeast-treated surface wounds. Together our findings demonstrate that the *M. fructicola* application is involved in regulation of oxidative stress, and acts to induce ROS production in grapefruit.