The *Rlm1* transcription factor in *Candida oleophila* contributes to abiotic stress resistance and biocontrol efficacy against postharvest gray mold of kiwifruit

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Abstract

Biological control utilizing antagonistic yeasts has been actively pursued as an alternative to synthetic fungicides for the management of postharvest diseases. Abiotic stress resistance is an important attribute for antagonistic yeasts, directly associated with their biocontrol efficacy. The MADS-box transcription factor, *Rlm1*, has been reported to regulate the response of model yeasts to cell wall stress. *Rlm1* in the antagonistic yeast, *Candida oleophila*, was found to play a role in resistance to salt, heat, and oxidative stress. Two *Rlm1* mutants (Δ*Rlm1-1* and Δ*Rlm1-2*) were generated. Compared to the wild-type (WT), *C. oleophila* I-182, Δ*Rlm1-1*, and Δ*Rlm1-2* were more sensitive to a variety of stresses, including heat, salt, and oxidative stress. The mutants also exhibited lower biocontrol efficacy against gray mold caused by *Botrytis cinerea*, and slower growth in kiwifruit wounds with respect to the WT. This study provided the information to understand the relationship between the *Rlm1* transcription factor, stress resistance, and biocontrol efficacy of antagonistic yeasts used for the biocontrol of postharvest diseases.