

Phenylpropanoid metabolism enzyme activities and gene expression in postharvest melons inoculated with *Alternaria alternata*

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Abstract

This study explored the mechanism of melon resistance to *Alternaria alternata* (*A. alternata*) infection in Jiashi and 86-1 melons. Melons were inoculated with *A. alternata* and the change in lesion diameter was measured. The changes in cinnamic acid-4-hydroxylase (C4H), phenylalanine ammonia lyase (PAL), and 4-coumaric acid coenzyme A ligase (4CL) activity and gene expression were studied in the pericarp tissues of Jiashi and 86-1 melons. The lesion diameter was smaller in Jiashi melon than in 86-1 melon, and the pericarp lesions were smaller than pulp lesions, indicating that Jiashi melon can resist *A. alternata* infection better than 86-1 melon. After inoculation with *A. alternata*, the C4H, PAL, and 4CL activities of Jiashi and 86-1 melons peaked in the middle and late storage period, and the peak was higher in Jiashi melons. The gene expression changes were consistent with the enzyme activity. The *C4H*, *PAL*, and *4CL* gene expression was significantly higher in Jiashi melon pericarp than in 86-1 melon, and the C4H, PAL, and 4CL activities in Jiashi melon were positively correlated with their gene expression, confirming the role of phenylpropanoid metabolism enzymes in resistance to *A. alternata*.