

# Exogenous caffeic acid and epicatechin enhance resistance against *Botrytis cinerea* through activation of the phenylpropanoid pathway in apples

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## Abstract

The gray mold caused by *Botrytis cinerea* is a major postharvest disease of apple which seriously reduce the commercial value. This study was to evaluate the effectiveness of caffeic acid (CA) and epicatechin (E) on controlling gray mold of 'Fuji' apples (*Malus domestica* Borkh.) and explore its mechanism of action. Two treatment groups were injected with 10  $\mu$ L CA (300 mg/L) and E (300 mg/L) respectively and distilled water was used as control, after half an hour, inoculated with *B. cinerea* conidial suspension. The decrease in the incidence and lesion diameters of apples by these two free phenols are shown. CA and E activated peroxidase, polyphenoloxidase, phenylalanine ammonia-lyase, cinnamic acid-4-hydroxylase and 4-coumaric acid-CoA ligase, and also increased the content of total phenols, flavonoids and lignin. CA-treated effectively promoted lignin accumulation, whereas E-treated significantly increased the accumulation of flavonoids. Therefore, these two free phenol treatments effectively inhibit gray mold infection of 'Fuji' apples by related effective activation of different branches of the phenylpropanoid metabolism pathway.