

Carbon monoxide enhances the resistance of jujube fruit against postharvest *Alternaria* rot

Shaoying Zhang, Qiong Wang, Yijing Guo, Lin Kang and Youwei Yu

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Abstract

CO is a gas signal molecule involved in various physiological and metabolic regulation processes in plants. In the present study, we evaluated the effects of CO fumigation on the control of *Alternaria* rot in jujube fruit and explored the mechanism of action. Results showed that CO at $10 \mu\text{mol L}^{-1}$ significantly reduced lesion diameter in the fruit inoculated with *A. alternata* without showing any antifungal activity *in vitro*. CO treatment enhanced the activities of four representative resistance-related enzymes (phenylalanine ammonia-lyase, polyphenol oxidase, chitinase, and β -1,3-glucanase). Furthermore, CO also led to increase in the content of phenolics, flavonoids, lignin, and H_2O_2 . These results indicate that CO induces resistance to *Alternaria* rot primarily by activating disease resistance-related enzymes and enhancing accumulation of antifungal substances, and that CO can be a promising elicitor of plant defense responses to resist *Alternaria* rot in postharvest jujube fruit.