

p-Coumaric acid induces antioxidant capacity and defense responses of sweet cherry fruit to fungal pathogens

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Abstract

Phenolic acids are important secondary metabolites involved in multiple physiological activities in plants, such as enzymatic activities and nutrient uptake. Given their health-promoting benefits, phenolic acids have attracted considerable research interests. However, their functions in maintaining postharvest fruit quality and suppressing disease incidence are seldom documented. Here, we reported that *p*-coumaric acid (*p*-CA) dramatically reduced the natural decay rate and maintained organoleptic quality of sweet cherry fruit, which was mainly attributed to activation of phenylpropanoid metabolic pathway and cell wall remodeling, elevated contents of non-enzymatic antioxidants and improved activities of major antioxidant enzymes. Moreover, *p*-CA also significantly inhibited mycelial growth of *Botrytis cinerea* and *Penicillium expansum*, and it also reduced patulin production from *P. expansum*. Collectively, these results demonstrated that *p*-CA can improve antioxidant capacity and defense responses of sweet cherry fruit to fungal pathogens, which may provide references for understanding the freshness-keeping mechanisms relevant to plant-derived phenolic acids.