

Ascorbic acid treatment inhibits wound healing of fresh-cut potato strips by controlling phenylpropanoid metabolism

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Abstract

In this study, we investigated the ability of ascorbic acid (AA) to regulate the wound-healing response in fresh-cut potato strips during storage. The results demonstrated that treatments of AA could delay browning, decrease hardening, improve taste, as well as reduce weight loss and respiration rate. Furthermore, AA treatment inhibited wound healing by modulating the activity of phenylalanine ammonia-lyase (PAL), cinnamate-4-hydroxylase (C4H), 4-coumarate-CoA ligase (4CL), chalcone synthase (CHS) and coumarate-3-hydroxylase (C3H), increasing total phenolics and flavonoid content, and decreasing monomeric phenolic acid content, including caffeic acid, *p*-coumaric acid, and ferulic acid. The accumulation of lignin and the polyphenolic component of suberin was also reduced. Overall, our results provided information on wound healing and revealed the potential benefits of AA in regulating the process of suberization in potato strips.