

Effect of methyl jasmonate on wound healing and resistance in fresh-cut potato cubes

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Abstract

The aim of this study was to investigate the effects of methyl jasmonate (MeJA) treatment on physiology and quality attributes of fresh-cut potato cubes during storage. The fresh-cut potato cubes treated with MeJA showed occurrence of enzymatic browning, with higher total phenol and flavonoid content than the control cubes during 144 h of storage at room temperature (23 ± 1 °C). The activity of polyphenol oxidase (PPO), peroxidase (POD) and catalase (CAT) in fresh-cut potato cubes have also been increased significantly by MeJA treatment. MeJA induced an increase of activity in phenylalanine ammonia-lyase (PAL), cinnamate-4-hydroxylase (C4H) and 4-coumarate-CoA ligase (4CL) of fresh-cut potato cubes, compared to the control. RT-qPCR showed that the gene expression of PAL, C4H, 4CL, PPO, POD and CAT was significantly higher in MeJA-treated cube parenchyma tissues than that in control. Our experiments also showed that MeJA treatment could maintain firmness but enhanced the browning of the fresh-cut cubes. In addition, the parenchyma tissues of MeJA-treated fresh-cut cubes also showed higher suberin polyphenolic (SPP) and thicker cell wall than that in the control.