Abstract

In this study, caffeic acid-graft-chitosan/polylactic acid (CA-g-CS/PLA) packaging was shown to be effective in enhancing the storage stability of postharvest Agaricus bisporus, and its regulatory pathway was further elucidated. Results showed that expression levels of essential genes in the mitogen-activated protein kinase (MAPK) signaling pathway such as Sho1, Ssk2, Pbs2, and Hog1 were upregulated in CA-g-CS/PLA packaging group. Furthermore, the accumulation of stress-resistant compounds was promoted by the packaging. Glycerol, γ-aminobutyric acid (GABA), proline, and glutamate were 2.6, 2, 1.4, and 2.3 times higher respectively than the PE group at the end of storage and their associated metabolic enzyme activities were promoted, similarly. Moreover, through correlation analysis, the pathway was shown to be related to the synthesis of stress-resistant compounds. These findings indicated that CA-g-CS/PLA packaging acted synergistically through both the synthesis of stress-resistant compounds and regulation of the MAPK signaling pathway to delay quality deterioration of postharvest A. bisporus.