

Modified atmosphere packaging delays enzymatic browning and maintains quality of harvested litchi fruit during low temperature storage

Sajid Ali, Ahmad Sattar Khan, Aman Ullah Malik, Muhammad Akbar Anjum, Aamir Nawaz and Hafiz Muhammad Shoaib Shah

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Abstract

Postharvest skin browning of litchi is the major issue which substantially affects its visual quality and market potential. Effect of modified atmosphere packaging (MAP) was studied to manage its surface browning and various quality attributes during storage at 5 ± 1 °C. It was noted that fruits kept under MAP exhibited reduced decay, browning index and loss of fresh weight. MAP storage of fruits markedly suppressed polyphenol oxidase (PPO) activity and delayed production of superoxide anion ($O_2^{\cdot-}$), malondialdehyde (MDA), hydrogen peroxide (H_2O_2) and relative electrolyte leakage with higher anthocyanin concentrations. Likewise, MAP stored fruits had higher total soluble solids (TSS), ascorbic acid content and titratable acidity (TA) with lower peroxidase (POD) activity. In addition, sensory quality, total phenolic content (TPC), radical scavenging activity, superoxide dismutase (SOD), catalase (CAT) and ascorbate peroxidase (APX) activities were also markedly higher in MAP kept fruits. So, litchi fruits storage under MAP packaging was suitable to delay its postharvest browning and to conserve biochemical attributes and antioxidative enzymes during 28 days cold storage.