

Title Effect of edible coatings on enzymes, cell-membrane integrity, and cell-wall constituents in relation to brittleness and firmness of Huanghua pears (*Pyrus pyrifolia* Nakai, cv. Huanghua) during storage

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Abstract

To investigate the effects of edible coatings, such as shellac and Semperfresh™ (sucrose-polyester based coating) on the brittleness and firmness of Huanghua pears (*Pyrus pyrifolia* Nakai, cv. Huanghua), the changes in the cell-membrane permeability and cell-wall constituents, such as total pectin (TP), Na₂CO₃-soluble pectin (NSP), CDTA-soluble pectin (CSP), water-soluble pectin (WSP), hemicellulose and cellulose were periodically measured, for up to 60 days of cold storage (4 °C) after harvesting. The activities of peroxidase (POD), pectinesterase (PE), polygalacturonase (PG), and cellulase were also assayed. The data suggested that high POD activity and low activity of cell-wall-degrading enzymes, such as PE, PG, and cellulase in the coated pears were associated with a high integrity of the cell membrane and few changes in the cell-wall constituents, which contributed to high levels of brittleness and firmness in the pears during storage; further, the shellac coating provided a better effect than Semperfresh coating.