

Title Effectiveness of high pressure treatment at low temperature to improve postharvest life of horticultural commodities

Author Tadashi Baba, Shingo Ito, Fukio Ikeda and Masafumi Manago

Citation Abstracts of 27th International Horticultural Congress & Exhibition (IHC 2006), August 13-19, 2006, COEX (Convention & Exhibition), Seoul, Korea. 494 pages.

Keywords high-pressure treatment; mume; sweet basil; rocket-salad; chilling injury

Abstract

High-pressure treatment (HPT) at room temperature extends the postharvest life of fresh fruits by suppression of CO₂ and ethylene production, and water loss. This study was conducted to evaluate whether HPT at low temperature could additionally prolong postharvest life of fruit and vegetables including chilling sensitive (CS) and non-chilling sensitive (NCS) commodities. Mume (*Prunus mume* Sied. Et Zucc., CS) fruit, sweet basil (*Ocimum basilicum* L., CS) and rocket-salad (*Eruca sativa* Mill., NCS) leaves were subjected to HPT below 0.5 MPa at 4°C. Pressure was generated by compressed air in a high pressure unit (OM labotech, Japan). Physical and physiological changes of fruit and leaves subjected to pressures at low temperature were investigated. HPT of 0.5 Mpa for 10 days at 4°C prevented discoloration of mume fruit and reduced chilling injuries such as skin pitting and browning. No symptoms of deterioration appeared after transfer to atmospheric pressure at 25°C. This result indicates an improved response over results of HPT at room temperature as reported previously. Leaves of sweet basil exhibited substantial injury that appeared as browning at a pressure of 0.5 MPa. A visual comparison indicated that HPT at 0.025 Mpa was effective in inhibiting water loss and chilling injuries. HPT of 0.025 MPa also prevented yellowing and fungal growth on rocket-salad leaves (NCS) during two months. These results suggested that HPT storage at low temperature was effective in improving postharvest life of some fruit and vegetables including CS commodities, and that the optimal level of pressure to maximize the beneficial effects varies greatly depending on the commodity.