

Title Extending shelf-life of fresh-cut green peppers using pressurized argon treatment
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Abstract

When fresh-cut fruit and vegetables are subjected to pressurized argon treatments, the argon gas dissolves into water and forms clathrate hydrates which ultimately lead to restriction in water mobility. In this study, fresh-cut green peppers were subjected to pressurized (2–6 MPa) argon treatments for 1 h. The untreated (control) and argon-treated samples were placed in polystyrene packaging with 5% O₂ and 8% CO₂ and then stored at 4 °C and 90% RH for 12 d. Various quality parameters of fresh-cut green peppers treated at 2, 4 and 6 MPa of argon were compared with those of the control. Water loss, ascorbic acid loss, visual sensory quality, malondialdehyde (MDA), cell membrane permeability, cell protective enzyme activity and microbial quality were determined every 2 d. Water mobility and loss of water in fresh-cut green peppers was greatly reduced by the pressurized argon treatment. Similarly, the loss of ascorbic acid, chlorophyll content and hue angle was also reduced during storage. The pressurized argon treatments were found to maintain the cell integrity by inhibiting an increase in MDA and membrane permeability compared to the control samples. The activities of catalase (CAT) and peroxidase (POD) were inhibited by the pressurized argon treatment. The treatment also reduced proliferation of spoilage microorganisms such as coliforms, yeasts and moulds. The fresh-cut green peppers treated by pressurized argon at 4 MPa for 1 h could be kept in a fresh-like condition for 12 d at 4 °C.