

Title Quality maintenance of broccoli and mushroom by nitrous oxide treatment during storage
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Abstract

There is general trend of a continuous increase in fresh market sales of vegetables. Many methods have been investigated to improve quality and extend shelf life during marketing. In this study, nitrous oxide (N_2O) gas, that is known to have potential for enhancing shelf life of vegetables, was evaluated for the perishable products, broccoli and mushroom. The effect of N_2O on weight loss rate, $L^*a^*b^*$ values, respiration rate and ethylene forming enzyme (EFE) activity and mushroom were examined during storage at 20°C and 4°C. Firmness and total soluble sugar were also examined. Whole broccoli were treated with different concentrations of N_2O gas (N_2O 60%: O_2 40% and N_2O 80%: O_2 20%) for 24 hours and mushroom were treated for 12 hours with same gas concentration. Weight loss of untreated broccoli was higher than in treated samples. Total color difference (ΔE) value increased during storage of all sample. ΔE values ranged from 0 to >2 , indicating noticeable visual changes in color particularly at a late stage of storage. Firmness of mushrooms decreased sharply throughout storage. Softest mushrooms were the controls. Respiratory rates of mushrooms were reduced by N_2O and respiratory rates at 20°C were much higher than those at 4°C, probably because of deterioration of tissue, development of fungi and drying of mushroom by moisture loss. EFE activities were delayed or inhibited in N_2O treatments.