Title Responses of minimally processed leeks to reduced O_2 and elevated CO_2 applied before processing and during storage

Author Pavlos Tsouvaltzis, Jeffrey K. Brecht, Anastasios S. Siomos and Dimitrios Gerasopoulos

Citation Postharvest Biology and Technology, Volume 49, Issue 2, August 2008, Pages 287-293

Keywords *Allium porrum* L.; Preprocessing treatment; Quality; Inner leaf growth; Color; Pyruvic acid; Enzymatically produced pyruvate

Abstract

To study the effects of storage atmosphere on the main quality attributes of minimally processed leeks, stalks were stored in air, 1, 3 or 5% O_2 in N_2, 6, 11 or 17% CO_2 in air, or 1% O_2 + 14% CO_2 in N_2 at 6.5 °C for 14 days. In addition, other leeks were subjected to a preprocessing treatment consisting of exposure to air or 1% O_2 + 14% CO_2 at 6.5 °C for 0, 12, or 24 h prior to minimal processing and storage in air or 1% O_2 + 14% CO_2 at 6.5 °C for 14 days. Leaf and root growth, number of newly formed roots, color changes at the basal cut surface as well as on the white and green leaf tissue, fresh weight loss, and enzymatically produced pyruvic acid content were determined. Storage of minimally processed leek stalks in 1% O_2 at 6.5 °C for 14 days minimized leaf and root growth as well as color changes at the center of the basal cut surface, but did not prevent peripheral discoloration of the basal cut surface; the other reduced O_2 and elevated CO_2 treatments were less effective than 1% O_2 in reducing leaf and root growth and cut surface discoloration. Storage in 1% O_2 + 14% CO_2, however, resulted in an additional beneficial effect compared with 1% O_2 alone by preventing the appearance of peripheral discoloration on the basal cut surface. Exposure to 1% O_2 + 14% CO_2 at 6.5 °C for 12 or 24 h prior to processing did not further contribute to quality maintenance of minimally processed leeks during storage in either air or 1% O_2 + 14% CO_2 at 6.5 °C for 14 days.