Title Effect of packaging films on individual anthocyanins in pericarp of imported non-acid treated litchi

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Citation Abstracts, 10th International Controlled & Modified Atmosphere Research Conference, 4-7 April 2009, Antalya, Turkey. 80 pages.

Keyword anthocyanin; film; litchi

Abstract

Litchi fruit (*Litchi chinensis* Sonn.) are mainly produced in Asian and African countries and typically exported some distance from the growing area to the destination. If fruit are not handled correctly after harvest, they rapidly lose their attractive colour, which decreases their market appeal. Although sophisticated packaging materials can be used to minimise postharvest changes of litchi fruit, no work has documented the effect of modified atmosphere packaging on individual anthocyanin contents in litchi pericarp. Hence, the aim of this study was to detail the changes in weight, colour, and individual anthocyanin concentrations in litchi pericarp using various packaging materials. Non-acid-treated cv. Mauritius fruit, imported by air from Israel, were packed using 4 different packaging films viz. micro-perforated polypropylene (PP), PropaFresh™ (PF), NatureFlex™ NVS (NVS), Cellophane™ (CP) and unpacked (CT), and stored at 13°C for 9 days. C02 was determined from single packs (n = 90) whilst fruit (n = 450) were individually measured for weight loss (%), lightness (L*), chroma (colour intensity, C*) and hue values. Freeze-dried pericarp tissue was extracted and analysed for individual anthocyanin content. Concentration of CO_2 (%) was significantly greater in CP packs during 9 days storage followed by NVS, PF and PP films, respectively. Weight loss of fruit stored in PF film was significantly lower than for other treatments. Fruit with CP and PF films showed significantly higher L* and C* values over 9 days. The major anthocyanins found in pericarp tissue were cyanidin 3-rutinoside (328.00 μg g-1 DW), cyanidin 3-glucoside (42.88 μg-1 DW) and malvidin 3-glucoside (5.01 μg-1 DW). Anthocyanin concentrations from litchi wrapped with PF were significantly higher than for other plastic films after 9 days storage indicating that this treatment was the best.