

Title Response of fresh-cut potato cubes of 3 different varieties to anti-browning treatments

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Abstract

Genotype is recognized to play a key role in the susceptibility of a given commodity to be processed as a fresh-cut product. Fresh-cut potatoes present many problems related to a very high potential for browning of cut surfaces. In a previous survey on 9 potato cultivars, 'Marabel', 'Agata', and 'Safrane', resulted the least susceptible to post-cutting browning. In the present work, these varieties were tested with the following pre-treatments, found in the recent literature as successfully in controlling browning of fresh cut potatoes: T1, dip in 2% of citric acid + 0.5% of cysteine solution for 3 minutes; T2, dip in 0.1 % ascorbic acid + 0.5% citric acid solution for 1 minute; T3, dip in 0.3% ascorbic acid + 0.3% citric acid + 0.1 % sodium chloride solution for 1 minute; T4, dip in 0.5% ascorbic acid + 0.5% citric acid + 0.2% potassium sorbate solution for 1 minute; T5, dip in 4% ascorbic acid + 1% citric acid + 1 % sodium pyrophosphate acid for 5 minutes; T6, dip in 1 % ascorbic acid + 2% citric acid solution at 50 °C for 5 minutes followed by a dip in 4% ascorbic acid + 1 % citric acid + 1 % sodium pyrophosphate acid solution for 5 minutes. These treatments were compared either with a dip in distilled water (CTRL) and with a dip in 1 % potassium metabisulfite solution for 1 minute (T7). Potato cubes were then stored at 5 °C and evaluated for overall appearance, colour, and firmness after 3, 8, 13, and 16 days. Best results for 'Marabel' and 'Safrane' cultivars were obtained using treatments T6 and T7, that allowed to maintain an overall score still above the limit of marketability after 16 days of storage at 5 °C with T6 treatment inducing lower colour changes and higher firmness retention compared to T7. For 'Agata', treatment T5 had the most effective anti-browning action, with the potato cubes showing highest appearance score and lowest firmness loss, compared to all other treatments. Although it would be highly desirable to select a good-for-all anti-browning treatment, according to the results obtained in this study, cultivars may respond differently, and it might be useful to customize the treatment according to their response. On the other hand some additional work might help to better understand causes which determine different responses and optimize anti-browning procedures.