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Effect of Pre-Harvest Calcium Chloride Spraying on Maintaining Fruit Bioactive Compounds and Antioxidant Capacity of Three Citrus Cultivars during Storage

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Bioactive components play an important role in human health. In general, bioactive compounds of fruits decline during storage. Therefore, maintaining fruits bioactive compounds during storage is very important. In this study, effects of pre-harvest $CaCl_2$ sprays (0, 1, 2, and 4%) at different fruit developmental stages (120, 140, and 160 days after full bloom) on maintaining fruit quality of three citrus cultivars (*Citrus sinensis* cvs Thomson, Moro and *Citrus reticulata* cv. Page) during storage were investigated. After harvest, fruits were stored at 5˚C and 85% relative humidity for 60 days. Then, some biochemical characteristics of the fruits peels and pulps were determined at 0, 30, and 60 days of storage. Results showed that, total ascorbic acid, total phenol, total flavonoid and antioxidant capacity in peels and pulps of $CaCl_2$ treated fruits were significantly higher (especially those treated with 2 and 4 % $CaCl_2$) than control in each storage period. Results also showed that naringin (in 'Thomson'), hesperidin (in 'Thomson' and 'Page'), neohesperidin and quercetin (in 'Thomson' and 'Moro') of $CaCl_2$ treated fruits pulps were higher (especially those treated with 2 and 4 % $CaCl_2$) than control. Based on the findings of this study it could be suggested that 4% $CaCl_2$ pre-treatment is a useful strategy to maintain or increase bioactive compounds and antioxidant capacity of citrus fruits ('Thomson', 'Moro', and 'Page') during storage.

Keywords: Flavonoid compounds, Hesperidin, Naringin, Neohesperidin, Postharvest.

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