Title Postharvest changes in the activities of sugar-metabolizing enzymes in eggplant [*Solanum melongena*] fruit stored at different temperatures

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Abstract

In this study, we investigated the postharvest changes in the activities of invertase (EC 3.2.1.26), sucrose synthase (SS ; EC 2.4.1.13) and sucrose phosphate synthase (SPS ; EC 4.4.1.14) and their relationships with sugar content during storage of eggplant (*Solanum melongena* L. cv. Senryou) fruit at 13 and 25degC for up to 14 days. Firmness and color change were used as the quality index of eggplant during storage. The acid invertase activity in the soluble fraction (SF) of the eggplants stored at 25degC was significantly higher than those of the eggplants stored at 13degC on days 11 and 14. In the cell-wall-bound fraction (CWBF), the activities were higher throughout the storage period. The acid invertase activity in the CWBF was 22-25 times higher than the SS activity on day 8 at 25degC. The SS and SPS activities in the eggplants stored at 25degC were the highest on day 14. Low-temperature storage was effective in decreasing invertase activity in both fractions, thereby suppressing sucrose degradation compared with high-temperature storage. Low-temperature storage at 13degC cause no chilling injury to the eggplant. It was even effective in maintaining the sucrose content, color and firmness of eggplant fruit.