

Title Storability and development of physiological disorder of netted melon 'life' fruit as influenced by storage conditions

Author T. Nishizawa, K. Okafuji and H. Murayama

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Abstract

Greenly matured fruits of a netted melon cultivar 'Life' (*Cucumis melo* L.) were stored at 2, 10, or 20°C for 14 days followed by two days shelf life at 20°C. At 10°C, the effect of photocatalytic oxidation by titanium-dioxide (with TiO₂) for the maintenance of fruit quality was investigated. Flesh firmness was maintained for 14 days when fruit were stored at 2°C, while it rapidly decreased under 20°C and losing commercial value by day 10. When fruit were stored at 10°C, the flesh firmness was between the firmness levels of fruit stored at either 2°C or 20°C. Fruit stored at 10°C with TiO₂ photocatalyst maintained higher firmness than without TiO₂ photocatalyst but the firmness decreased rapidly during subsequent storage at 20°C and by day 16 no difference was observed between fruit stored with or without TiO₂ photocatalyst. The effects of storage temperature and TiO₂ photocatalyst on changes in the soluble solid content and total soluble sugar concentration were similar to those for flesh firmness. Among sugar components, only sucrose concentration decreased during storage. Cell wall polysaccharides in the water-soluble fractions decreased, while those in the Na₂CO₃-soluble fractions increased during storage, especially when fruit were stored at 20°C. Both skin surface subsidence of the rind and watercored flesh developed, especially at 20°C. When fruit were stored at 2°C for 14 days, no watercored flesh developed, even after transferring the fruit at 20°C for 2 more days, but severe skin surface subsidence occurred during storage at 2°C, resulting in loss of commercial value. On the other hand, only slight skin surface subsidence occurred during the storage at 10°C for 14 days but water-cored flesh still developed, especially when the fruit were kept at 20°C for 2 more days. The use of TiO₂ photocatalyst at 10°C, however, could reduce the development of both skin surface subsidence and water-cored flesh up to a certain level.