Title Quality and shelf life of fresh-cut 'Nam Dok Mai' mango stored in air and low O_2 atmospheres

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Abstract

Quality changes of fresh-cut 'Nam Dok Mai' mango cubes held in air or low O_2 atmospheres (0.5, 1 and 2%) at 1, 5 and 13°C were evaluated. Attributes measured included incidence of browning and water soaking, respiration, ethanol content, L-ascorbic acid content, color, off-odor, firmness and microbial counts. The shelf life of mango cubes, based on browning and water soaked area, was 3 days at 1°C, 2 days at 5°C and below 1 day at 13°C in air. Low O_2 atmospheres extended the shelf life by 1 day at all temperatures by retarding the browning and water soaked condition. Respiration rates (O_2 consumption and CO_2 production) were not suppressed by low O_2 atmospheres at 1 and 5°C, but were suppressed at 13°C. However, the respiratory quotient of cubes stored in low O_2 at 13°C increased to more than 2, which contributed to the slight ethanol production and off-odor. Color based on L* and chroma values decreased with all cubes during storage, with the decrease being greater in air than in low O_2 atmospheres. Firmness and L-ascorbic acid content of cubes at the end of storage were similar between air and low O_2 atmospheres at all temperatures. Low O_2 levels did not affect the total microbial count on mango cubes, which ranged from 3.4 to 5.3 $\log_{10}$CFU•g^{-1}. The count of lactic acid bacteria on cubes stored in air or low O_2 at 1 and 5°C were below the level of detection (2.4 $\log_{10}$CFU•g^{-1}), but those at 13°C increased to 3.4-4 $\log_{10}$CFU•g^{-1} by the end of storage. Temperature of 1 or 5°C is recommended for holding 'Nam Dok Mai' mango cubes and the shelf life would be extended by 1 day, which is a 50% increase, when held in low O_2 atmospheres.