

Title Effects of controlled atmosphere, low light irradiation using red light emitting diodes and nutrient gel application during low temperature storage on the visual quality of postharvest chervils (*Anthriscus cerefolium* L.). towards low light irradiation-CA storage of green plants.

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Abstract

Chervils (*Anthriscus cerefolium* L.), a kind of fresh culinary herb, harvested and packed in drawn polystyrene packages in a commercial operation were stored at 5.DEG.C. for 27d under different gas compositions (0.05% CO₂+20% O₂, L; 0.5% CO₂+10% O₂, M; 1% CO₂+5% O₂, H) at a photosynthetic photon flux density of 0 (dark, D) or 1(low light irradiation using an array of red light-emitting diodes, R).MU.mol m⁻²s⁻¹, applying (A) or without applying (N) a nutrient agar-gel to the cut ends of their stems. The color difference (.DELTA.E*ab) value of the leaves of chervils in MRA was kept less than 4 during storage, and was significantly lower than the other treatments including LDN (control: usual low temperature storage) with a .DELTA.E*ab of 16 on the last day of storage (day 27). .DELTA.E*ab values in LDN, HDN and MRA were less than 3 (stored chervils with .DELTA.E*ab values less than 3 are considered salable) until day 12, day 18 and day 27, respectively, indicating that storage duration of postharvest chervils stored under controlled atmosphere(CA) and CA combined with low light irradiation and nutrient gel application was prolonged 1.5 times and 2.3 times longer, respectively, than under usual low temperature storage. Subjective visual quality scores showed a similar tendency to that on .DELTA.E*ab; the total percentage of scores 3 (salable) and 2 (limit of salability) in MRA and HRA was both 90% while that was 59% in-LDN. These results indicate that CA combined with low light irradiation and nutrient gel application was effective for preservation of the visual quality of postharvest chervils during low temperature storage.