

Integration of UV irradiation and chitosan coating: A powerful treatment for maintaining the postharvest quality of sweet cherry fruit

Moslem Abdipour, Parivash Sadat Malekhossini, Mehdi Hosseinifarahi and Mohsen Radi

Scientia Horticulturae 264: 109197. (2020)

Abstract

Sweet cherry is a non-climacteric fruit consumed more as fresh for its essential nutrients and phytochemical compounds. In this study, the single and combined effects of UV-B (21.6 kJ/m²), UV-C (21.6 kJ/m²) radiation, and chitosan (CS) coating 1 % treatments on fruit quality of sweet cherry were studied during 28 d at 4 °C. Sweet cherry fruit were evaluated for weight loss, firmness, total titratable acidity (TTA), pH, total soluble solids (TSS), ascorbic acid (AA), total anthocyanin content (TAC), antioxidant (AOX) capacity and total phenol compounds (TPC) every 7d. Compared with control, fruit quality was better maintained in UV/CS treated fruit. The UV/CS treatments significantly inhibited the decrease in the firmness, TAC, and AOX capacity, and the increased rate of weight loss and TSS in the sweet cherry fruit. Although both UV lights were effective in the maintenance of fruit quality, sweet cherries treated with UV-C showed higher TPC accumulation and related AOX capacity compared to UV-B treatment. Overall, the integration of UV lights (UV-B and UV-C) with CS was the best treatment that could strongly inhibit the increase in the weight loss and TSS and achieved the highest firmness, AA, TAC, AOX capacity and TPC. Our results indicate that the integrated management is a potentially effective method for preventing undesirable post-harvest changes and extending the shelf-life of sweet cherry fruit.