

Prevention of decay and maintenance of bioactive compounds in strawberry by application of UV-C and essential oils

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Abstract

The present study investigated the impact of exposing strawberry fruits against UV-C intensity, besides basil and eucalyptus essential oils (EOs) with 40 μL on phytochemical content of the strawberry fruit. After treatment, fruits were transferred to 4 °C and the quality parameters comprising weight loss, firmness, antioxidant capacity, total phenolics, ascorbic acid, anthocyanins, titratable acidity, total soluble solids, and decay index were assessed after 1, 4, 8 and 12 days of cold storage. Results showed that all the factors were affected by the applied treatments, as well as the storage duration. The highest levels of firmness were found in BEO (2.47 N) and UV-C (2.44 N) treated fruits without significant difference. At the end of storage, the highest total phenol content (198.21 mg GAE L⁻¹) and antioxidant activity (3.51 mmol Fe II g⁻¹ FW) were found in fruits treated with UV-C radiation, as well as L-ascorbic acid content (33.0 mg ascorbic acid/100 g FW) compared to the control group. The highest and lowest decays were recorded in control fruits (80%) and those treated with basil essential oils (43.3%), respectively. Applying UV-C radiation and volatile oils in vapor phase could improve the quality properties of treated strawberry fruits by increasing antioxidant activity due to the preservation of phenolic compounds. Further investigations are required to introduce the most convenient, optimized, and effective methods for increasing the strawberry fruits storage time.