Abstract

Impact of Photosensitization on Physicochemical Properties in Strawberries [†]

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Abstract: Strawberries, depending on the cultivar and environmental conditions, can be a rich source of nutrients like folates and vitamin C as well as bioactive phytochemicals, mainly polyphenols. But at room temperature, this fruit is highly perishable and has a relative short shelf life of only a couple of days. An innovative, cost effective and environmentally friendly technique, photosensitization, has been applied with the aim to extend the shelf life of strawberries and to minimize the loss of nutrients and also phytochemicals. Photosensitization works based on the combined action of photosensitizer, light and oxygen, which produce reactive oxygen species that inactivate microorganisms. Curcumin, known for its antifungal activity was used as the photosensitizer in this study. To see the effect of photosensitization, physicochemical parameters of both fresh and photosensitized strawberries have been tested. There were no significant ($p < 0.05$) changes in pH, titratable acidity, total soluble solids and moisture content between treated and untreated (control) strawberries. However, total sugar content of photosensitized strawberry was significantly ($p < 0.05$) higher than that of the control (5.29 ± 0.26 g/100 g FW vs. 4.12 ± 0.13 g/100 g FW). No significant difference was observed in the total phenolic content of the treated (192.9 ± 3.16 mg gallic acid equivalents (GAE)/100 g FW) and the control (195.8 ± 3.05 mg GAE/100 g FW) samples. These preliminary findings show that photosensitization could be a promising technique that has the potential to be used in the horticulture industry to extend the shelf life of fresh produce such as strawberries.

Keywords: photosensitization; total phenol content; horticulture

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