

Physicochemical changes in fresh-cut peaches with the combined treatment of UV-B irradiation and 1-MCP

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Abstract

Fresh-cut peaches are prone to quality deterioration, including browning, which is detrimental to their shelf life and marketability. Physiochemical changes in the fruit treated with the combination of a hormetic dose of UV-B irradiation (1.46 kJ m^{-2}) and $1 \mu\text{l L}^{-1}$ 1-MCP fumigation were assessed. The combined treatment effectively maintained the fruit quality as indicated by the inhibited weight loss and browning, which was associated with the enhancement of total phenolic content by UV-B, and restraint activities of polyphenol oxidase and peroxidase by 1-MCP. Meanwhile, a stable membrane was suggested based on the facts of the reduced membrane peroxidation and improved unsaturated fatty acid proportion. Moreover, the retarded energy deficit was coupled with moderated respiratory metabolism. In summary, the combination of UV-B and 1-MCP treatments compromised phenolic metabolism, enhanced membrane stability, and moderated respiratory metabolism, and hence can be used to extend the shelf life of fresh-cut peaches.