The combined effect of ultraviolet-C irradiation and lysozyme coatings treatment on control of brown heart in Huangguan pears

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Abstract

The objective of our study was to evaluate the effect of ultraviolet-C (UV-C) irradiation and lysozyme coatings on the control of brown heart in Huangguan pears. Firmness, browning index, soluble solid content (SSC), total bacterial count, malondialdehyde (MDA) content, electrolyte leakage, total phenol content, soluble quinone content, and enzymes activities in samples were measured. The results showed that UV-C irradiation or lysozyme coatings treatment improved firmness, SSC, total phenols content, peroxidase (POD) and phenylalanine ammonia lyase (PAL) activity, and suppressed browning index, total bacterial count, malondialdehyde (MDA) content, electrolyte leakage, soluble quinone content, polyphenol oxidase (PPO) activity in comparison with the control. Moreover, the combination of UV-C irradiation and lysozyme coatings contributed the maximum efficacy compared with the individual treatment. In conclusion, our present results suggested that the combined treatment may be an efficient way to control brown heart in Huangguan pears.