Effect of ozone treatments on the removal of pesticide residues and postharvest quality in green pepper

Tansu Özen, Mehmet Ali Koyuncu and Derya Erbaş

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Abstract

The use of ozone as a tool in the storage of some horticultural produces is recommended for all steps from harvest to consumption. However, little is known about its effects on the removal of pesticides and postharvest physiology of fresh peppers. In the present study, the effects of ozone treatment on the removal of pesticides, storage life and quality of green peppers were investigated. Malathion, emamectin benzoate and acetamiprid were applied to pepper plants before harvest. Residue contents of peppers were measured at harvest time and after all treatments to determine the effect of ozone on the removal of pesticide residues. Peppers were subjected to four treatments: immersion in ozonated water (2 ppm) and only tap water (control) for 10 min, exposure to 2 ppm ozone gas in air and only air (control) for 45 min. Treated peppers were stored at 20 °C and 60 ± 5% relative humidity for 8 days, and some quality analyses were performed during storage. Ozonated water decreased, remarkable, pesticide residues in peppers compared to harvest time, but there was no meaningful changes in the samples treated with ozone in air. Ozone treatments suppressed clearly respiration rates and decreased weight losses of peppers compared to control groups. Ozonated water also maintained green color of peppers, with minimum change in h° values. Additionally, sensory quality of peppers was retarded by ozone application during storage. These findings revealed that ozone could be an alternative treatment to extend storage life of green peppers and remove pesticide residues.