

**Title** Combined effects of aqueous chlorine dioxide and ultrasonic treatments on postharvest storage quality of plum fruit (*Prunus salicina* L.)

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#### **Abstract**

The individual and combined effects of aqueous chlorine dioxide (40 mg L<sup>-1</sup> ClO<sub>2</sub> for 10 min) and ultrasonic (100 W ultrasound for 10 min) treatments on postharvest storage quality of plum fruit (*Prunus salicina* L.) were investigated. Two combination modes of these two treatments, treatment with ClO<sub>2</sub> solution accompanied by simultaneous ultrasonic waves (one-step mode) and applying them sequentially (two-step mode) were adopted. The effect of combined treatments on maintaining contents of total flavonoids, ascorbic acid, reducing sugars, and titratable acids were similar but were more beneficial than the individual treatments and the untreated control. The one-step mode was more effective in reducing the initial microflora and retaining sensory qualities of plum fruit than the two-step mode, and fruit shelf-life could be extended to 60 d compared to 35 d for the control. Moreover, there were no detectable chemical residues in the treated samples with the one-step mode. These results demonstrated that the combined treatments of ClO<sub>2</sub> and ultrasound could be a promising approach to maintain postharvest storage quality of plum fruit without significant risks to consumers.