

Title Aqueous chlorine dioxide treatment improves the microbial safety and quality of strawberry during storage

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Abstract

Introduction: Strawberry is a good source of many natural antioxidants as well as vitamins and mineral. However, strawberry fruits have a very short postharvest life due to high metabolic activity and rots from microbial growth, and quality loss during transport and handling may be significant. Therefore, in this study, we examined the effect of aqueous chlorine dioxide treatment of the microbial growth and quality changes of strawberries during storage. **Materials and Methods:** Strawberries samples were treated by dipping in a solution of 0, 5, 10, and 50 ppm chlorine dioxide solution for 2 min, and then individually packaged in polyethylene bag and stored at 4°C. After chlorine dioxide treatment, samples were removed using a sterile scalpel, homogenized using a Stomacher for 3 min, filtered through a sterile cheese cloth, and diluted with peptone water for microbial count. Total bacterial counts were determined by plating appropriately diluted samples onto plate count agar. Yeasts and molds were cultured on potato dextrose agar. **Results and Discussion:** Populations of total aerobic bacteria in the strawberry treated at 50 ppm of chlorine dioxide increased from 1.40 to 2.10 log CFU/g after 7 days, while increasing in the control from 2.75 to 4.32 log CFU/g. In addition, populations of yeasts and molds in the strawberry treated at 50 ppm of chlorine dioxide increased from 1.10 to 1.97 log CFU/g after 7 days, while the control increased from 2.55 to 4.50 log CFU/g. The pH and titratable acidity of the strawberry were not significantly different among treatments. Sensory evaluation results represented that chlorine dioxide-treated strawberry had better sensory scores than the control. These results indicate that aqueous chlorine dioxide treatment could be useful in improving the microbial safety and quality of strawberry during storage.