Title Effect of aqueous chlorine dioxide treatment on the shelf life of Korean ginseng

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Abstract

Introduction: Korean ginseng (*Panax ginseng* C.A. Meyer) has been used as one of the most important medicinal herbs in Asia. However, fresh ginseng is easily deteriorated within a week after harvest. Therefore, it is difficult to supply high-quality fresh ginsengs year-round. In this study, we determined the effect of aqueous chlorine dioxide for controlling the microbial growth as well as sensory qualities of fresh ginsengs during storage. **Materials and Methods:** Fresh ginseng samples were treated by dipping in a solution of 0, 50, and 100 ppm ClO_2 solution for 30 min, respectively, and individually packaged and stored at 4±1°C. After ClO_2 treatment, samples were placed with 135 mL of peptone water in a sterile stomacher bag. Samples were then homogenized using a Stomacher, filtered through a sterile cheese cloth, and diluted with peptone water for microbial count. Changes in the populations of total bacterial counts and yeasts and molds were determined during storage at 4°C. **Results and Discussion:** Microbiological data represented that the populations of total aerobic bacteria, and yeast and mold were significantly reduced with the increased of ClO_2 concentration. In particular, the populations of total aerobic bacteria, and yeast and mold in the fresh ginseng decreased by 2.1 and 1.2 log CFU/g at 100 ppm ClO_2 treatment, respectively. Aqueous ClO_2 treatment improved the color of the fresh ginseng during storage, but there was no significant difference in weight loss during storage among treatments. Sensory evaluation results represented that the qualities of the fresh ginseng treated with aqueous ClO_2 during storage were better than those of the control. These results clearly indicate that aqueous ClO_2 treatment could be useful in decreasing the microbial growth and extending the shelf life of the fresh ginseng.