

Title Effects of aqueous chlorine dioxide treatment on browning of fresh-cut lotus root
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Abstract

Effect of aqueous chlorine dioxide (ClO₂) treatment on browning of fresh-cut lotus root (FLR) was investigated to explore the feasibility to apply ClO₂ for browning inhibition of fresh-cut products. Cut lotus roots were treated in ClO₂ solutions at different concentrations (10, 50 and 100 mg/l) for different time (5, 10 and 15 min), followed by chilled storage for 8–10 days at 4 °C. Color parameters (L^* , a^* and b^*), polyphenol oxidase (PPO) activity and overall visual quality (OVQ) were measured at one-day interval during storage. Results showed that higher ClO₂ concentration and longer treatment time can provide better inhibitory effects on the browning of FLR. ClO₂ concentration, treatment time and storage time were three significant factors ($P < 0.05$) and some significant interactions were observed. PPO activities were largely inhibited by 100 mg/l ClO₂ treatment for 10 min. The 100 mg/l ClO₂ treatment maintained high OVQ scores during 10-day storage; while 50 mg/l ClO₂ treatment was acceptable for maintaining OVQ during 4-day storage. ClO₂ treatment was demonstrated to be a promising alternative approach to control browning and improve OVQ of FLR.