

Title Effects of aqueous chlorine dioxide treatment on polyphenol oxidases from Golden Delicious apple

Author Yucheng Fu, Kaili Zhang, Niya Wang and Jinhua Du

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Abstract

Effects of chlorine dioxide (ClO₂) treatment on the activity and characteristics of polyphenol oxidase (PPO) in Golden Delicious apples were studied. The treatment with 50 mg/l ClO₂ for 1 h did not affect some characteristics of the PPO, including its optimum pH value (5.0) and temperature (40 °C) as well as the maximum absorption wavelength (412 nm) of the final products. With increasing ClO₂ concentrations from 0 to 100 mg/l, the V'_{max} value reduced and K'_m value changed irregularly. When the concentration of ClO₂ increased from 0 to 60 mg/l, residual PPO activities significantly decreased, showing a negative linear-correlation with ClO₂ concentration. For 10 and 50 mg/l ClO₂ treatments, partial inhibition of PPO was achieved within 0.5 h and the PPO activities did not significantly decrease after 0.5 h. The inhibition and inactivation of PPO by ClO₂ treatment were observed at processing temperatures (30 and 70 °C) and storing temperatures (20, 0–4, and –18 °C).