Title The effects of disinfectant on the quality loss of fresh cut produce

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Abstract

ClO_2 has taken the place of NaOCl as a disinfectant more and more in water treatment, postharvest disinfection, food processing and pharmacy. As an oxidant with high oxidative potential, ClO_2 can pose a large threat to color change and nutrition quality of fresh cut produce. In order to investigate the potential nutritional loss caused by ClO_2, a slice of fresh cut lettuce and potato were immersed in 2 gradient concentration solutions of ClO_2, each immersion for 5 or 10 minutes, centrifuged and packed in PE package. Vitamin C content in fresh cut lettuce, protein content in potato were examined and ClO_2 residue in fresh cut produce were also evaluated. The studies showed almost no ClO_2 residue could be detected after 24h treatment, but after a high concentration immersion, fresh cut lettuce displayed water-soaked specks that affected the overall visual quality. No such specks were noticed on potato. Potato browning was noticed and persisted when potatoes were directly immersed in ClO_2 solution after being cut. The browning was almost retarded only if the freshly cut fresh cut potato was first flooded by running water. The disinfectant slightly retarded Vitamin C loss in cut lettuce, but had almost no effects on protein content in potato. ClO_2 has demonstrated to be a much more efficient disinfectant and browning inhibitor than NaOCl, but the heavy smell during the solution preparation limits its extensive application due to potential occupational health and safety problems.