

EVALUATION OF DISINFECTION EFFICACY OF CHLORINE DIOXIDE AND PERACETIC ACID SOLUTIONS ON DECONTAMINATION OF ASIAN SPINACH (*BASELLA ALBA*)

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Summary

The use of chlorine (NaOCl) as a disinfectant for disinfection of food surfaces and decontamination of vegetables, fruits and seafood products was very popular in industrial processes. In recent years, many studies have however reported that the use of chlorine may lead to the formation of disinfection by-products (*i.e.* trihalomethane, as possibly carcinogenic to humans) when high amounts of organic matter are present in the wash water. Chlorine dioxide (ClO₂) and peracetic acid (C₂H₄O₃) were thus suggested to be alternative disinfectants for decontamination of food. The main objective of this study was to evaluate the disinfection efficacy of chlorine dioxide and peracetic acid on Asian spinach (*Basella alba*). Chlorine dioxide and peracetic acid were evaluated at 25-100 ppm at contact time of 1-5 min. The results obtained revealed that the disinfection efficacy was depended on disinfectants, concentration and contact time. The total mesophilic counts, *Coliforms* and *Escherichia coli* of the Asian spinach vegetables treated with either chlorine dioxide or peracetic acid were significantly lower than that of the vegetables washed in tap water ($p < 0.05$). Washing with chlorine dioxide and peracetic acid (100 ppm for 5 min) resulted in a reduction of total mesophilic counts (0.64 and 0.49), *Coliforms* (0.75 and 0.99) and *E. coli* (1.31 and 1.63 log CFU/g, respectively) on the Asian spinach. In addition, application of both mentioned disinfectants did not significantly affected the sensorial quality of the Asian spinach ($p > 0.05$). Despite the high cost, the alternative of peracetic acid could be a good option for processors.

Key words: Asian spinach vegetables, chlorine dioxide, *Coliforms*, *E. coli*, peracetic acid, total mesophilic counts.