

Title Evaluation of the use of decontamination agents during fresh-cut leek processing and quantification of their effect on its total quality by means of a multidisciplinary approach

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Citation Innovative Food Science & Emerging Technologies, Volume 10, Issue 3, July 2009, Pages 363-373

Keywords *Allium porrum* L.; Minimal processing; Decontamination; Native microflora; Nutrients; Antioxidants; Cooking

Abstract

In this study the impact of different decontamination agents (water, peroxyacetic acid, sodium hypochlorite, neutral electrolyzed oxidizing water and gaseous chlorine dioxide) on the microbial and sensory quality as well as the nutrient content of minimally processed leek was investigated. Washing with 250 mg/L peroxyacetic acid and contact with 1.59 mg/L chlorine dioxide gas reduced the native microflora with 1.52 and 1.48 log cfu/g respectively whereas the other treatments did not induce a reduction that was significantly higher than the one achieved after washing with water. None of the treatments had a significant effect on the sensory quality of the raw fresh-cut leek, whereas a treatment with 200 mg/L sodium hypochlorite or with 250 mg/L peroxyacetic acid changed the sensory quality of cooked leek significantly when compared with water washing. Apart from the effect of leaching of nutrients into the wash water, the supplementary effect on nutrient content caused by adding a decontamination agent was limited with the exception of some isolated cases such as the significant losses of vitamin C (23%), tocopherols (11–18%) and violaxanthin (66%) after a treatment with respectively chlorine dioxide, 250 mg/L peroxyacetic acid and electrolyzed oxidizing water.