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< previous article | next article > | View Table of Contents

Back to top

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Prev Article | **Next Article**

Abstract

Ozone and Chlorine Treatment of Minimally Processed Lettuce

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Abstract

ABSTRACTThe objectives of this research were to determine the effectiveness of ozone in combination with chlorine on the microbiological and sensory attributes of lettuce as well as the quality of the water used for processing commercial lettuce salad. Iceberg lettuce was inoculated with 8.0 log CFU/g microorganisms isolated from spoiling lettuce, treated with combinations of chlorine and ozone, and analyzed microbiologically. Commercial salads rinsed with chlorine, ozone, or a mixture were evaluated for sensory acceptability. Chlorine, ozone, and chlorine-ozone reduced aerobic plate count up to 1.4, 1.1, and 2.5 log, respectively. As determined by appearance, commercial lettuce salads treated with chlorine, ozone, or a combination had a shelf life of 16, 20, or 25 d, respectively. Using an ozone-chlorine or ozone rinse for commercial lettuce salads, there were no visible turbidity changes in process water. The quality of the water remained constant for longer periods of time making it available for longer reuse. Therefore, chlorine-ozone combinations may have beneficial effects on the shelf life

Log reduction
chlorine 1.4
ozone 1.1
chlorine ozone 2.5

shelf life
16 20 25 days

ozone
less water change