EFFECT OF NON-CONVENTIONAL GASES MODIFIED ATMOSPHERES ON *E. coli* INHIBITION IN READY-TO-EAT ARUGULA SALADS

Ives Yoplac; Cielo Char; Andrea Hinojosa; Daniela Cárdenas; Victor H. Escalona.

Center of Postharvest Studies. University of Chile. Santa Rosa 11315, La Pintana, Santiago, Chile. P.O. Box 1004. Tel: +56-2-9785841; Fax: +56-2-9785813; web site: www.cepoc.cl.

Agroindustry and Enology Department. Fac. Agricultural Sciences. University of Chile. Santa Rosa 11315, La Pintana, Santiago, Chile. P.O. Box 1004. Tel: +56-2-9785731; Fax: +56-2-9785796.

Agricultural Production Department. Fac. Agricultural Sciences. University of Chile. Santa Rosa 11315, La Pintana, Santiago, Chile. P.O. Box 1004. Tel: +56-2-978 5716; Fax: +56-2-978 5805.

Active modified atmospheres (MA) enriched with non-conventional gases have gained interest in recent years to extend the shelf life of fruits and vegetables. The objective of this work was to evaluate Ar, He, N$_2$O and superatmospheric O$_2$-atmospheres on ready-to-eat arugula salads, with special attention to the effect on microbial growth. After sanitizing with NaOCl (100 mg L$^{-1}$; pH 6.0) and rinsing, the leaves were inoculated with *E. coli* (1x10$^{6}$ CFU/g) and packed in different atmospheres enriched with Ar (55% Ar + 40% O$_2$ + 5% N$_2$); He (55% He + 40% O$_2$ + 5% N$_2$); N$_2$O (55% N$_2$O + 40% O$_2$ + 5% N$_2$) and superatmospheric O$_2$ (80% O$_2$ + 20% N$_2$); and stored at 5 °C for 10 days. Air (20% O$_2$ + 80% N$_2$) was used as a control. Gases concentrations, *E. coli* and *Enterobacteriaceae* were determined periodically. The headspace gas composition changed during storage due to arugula respiration and the film permeability. As expected, O$_2$ concentrations decreased from 40% to 20–26% in Ar, He and N$_2$O atmospheres, and from 80% to 58% in the superatmospheric O$_2$. The CO$_2$ levels increased in all MA packages from approximately 0 to 20-23 %, except in He where it attained 10%. Argon, He and N$_2$O were maintained constant during storage. Argon and He were the most effective to decrease inoculated *E. coli* (< 6.0 log CFU/g) and *Enterobacteriaceae* (< 7.8 log CFU/g) after 10 days. Non-conventional gases resulted to be useful tools for delaying microbial growth in ready-to-eat arugula salads.

Keywords: Fresh cut, food safety, rocket, argon, helium, *Eruca vesicaria* Mill.

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