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Czech J. Food Sci.

M. J. Esteve, F. J. Barba, S. Palop, A.

Frigola: The Effects of non-Thermal Processing on Carotenoids in Orange Juice

Czech J. Food Sci., 27 (2009): S304-S306

New non-thermal technologies are emerging, such as pulsed electric fields (PEF) and high hydrostatic pressure (HHP), in order to provide a response to the need for greater nutritional and sensory quality in some manufactured foods in which the characteristics of freshness are especially affected by thermal treatments. The effect of non-thermal processing (PEF, 30 kV/cm, 100 μs and HHP, 4000 bars, 5 min) and pasteurisation (90 ° C, 20 s) on carotenoids of orange juice was studied. The total carotenoid concentration in the pasteurised juice (1195.4 ± 31.6 μg/100 ml) decreased significantly in comparison with the fresh juice (1367.2 ± 64.7 μg/100 ml), and the decrease was less in the juice treated by PEF (1275.2 ± 56.3

µg/100 ml). The decrease in the juice treated by HHP (1309.2 ± 46.7 µg/100 ml) was no significant in the conditions selected. Only the differences between the untreated orange juice and the pasteurised orange juice were significant. Thus, in refrigerated orange juice, the concentration of carotenoids is affected less by non-thermal treatments (PEF and HHP) than by conventional thermal treatments.

Keywords:
carotenoids; pulsed electric field; high hydrostatic pressure; pasteurisation; orange juice

[fulltext]