

Title Effect of heat treatment on color changes and lycopene concentration in tomato cv. Saladette
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Abstract

Tomato cv. Saladette is the most important horticultural product in Mexico due to its commercial value and exports volume. Clinical studies have demonstrated that tomato lycopene is a micronutrient in human health as it reduces the risk of prostate and lung cancer, as well as heart diseases. In addition, there is an important demand of natural pigments for the food, cosmetic and pharmaceutical industries. However heat treatment, usually applied in these industries to raw materials, promotes lycopene losses in tomato and its products. Color loss is due to isomerization and autoxidation. Lycopene degradation causes color fading in tomato products during storage. The objective of this work was to study the effect of heat treatment on tomato cv. Saladette quality parameters. Tomatoes were stored at 4 °C during 12 days. Samples were taken at days 0, 6, 12 and 13. On each sampling day, just prior to analysis, one batch of tomatoes was scalded in boiling water during 50 seconds, another batch was left non-scalded as control. Response variables were: color (Hunter Lab), total soluble solids and lycopene concentration (spectrophotometrically). The degree of isomerization was analyzed in lycopene extracted from tomatoes with a solvent system (hexane: acetone:ethanol) by HPLC. Scalding had no effect on pH, total titrable acidity and total soluble solids. However, scalded tomatoes had lower lycopene concentration and higher hue (less reddish) than non-scalded samples, although statistically non significant. HPLC analysis showed an increase in cis-lycopene in heat treated samples. Due to the high tomato production in Mexico, it can be used, in addition to food purposes, as a pigment source by extracting lycopene with organic solvents and applying as a coloring agent in foods, cosmetics and pharmaceuticals, however it is important to know the degree of discoloration due to heat treatment.