

Title Evaluation of the changes in the color of candied chestnuts during processing
Author F. Korel and M.O. Balaban
Citation Book of Abstracts, 2004 IFT (Institute of Food Technologists) Annual Meeting and Food Expo, 13-16 July 2004, Las Vegas, Nevada, USA. 321 pages.
Keyword chestnut; color change

Abstract

Chestnuts are considered as one of the staple foods in the Italian, Swiss and French Alps. Candied chestnuts, (marron glaces) and chestnut purees are popular product forms. Candied chestnuts are popular desserts in Turkey. Their color is an important quality factor. The objective of this study was to determine the color changes of candied chestnuts during processing, using a machine vision system. Raw peeled-chestnuts were immersed into water, 0.2% citric acid or 0.1% sodium meta-bisulphite solution for 1 hr. Then they were steamed at 10 °C for 45 min. The chestnuts were boiled in a sugar solution containing either 65% sucrose and 15% dextrose, or 60% fructose and 20% dextrose, for 30 min. Then the samples were placed into containers and sugar solutions were poured on the samples. Chestnuts were kept in the sugar solution at room temperature for 48 hr. The colors of samples at each processing step were measured using a machine vision system. The 512-color histograms obtained from the images analyzed showed that the colors strong yellowish brown and dark orange yellow changed to deep brown after the samples were kept in sugar solution. L* values of candied chestnuts, treated with sucrose, were slightly lower than the samples treated with fructose. L* values decreased during processing (e.g. 48.02 to 13.81 for control samples having sucrose, and 48.98 to 12.15 for control samples having fructose). The a* values increased, but b* values decreased during processing. Treatment with sodium meta-bisulphite caused an increased in L* values after treatment. Treatment with citric acid did not have any effect on L*a*b* values. Knowledge of the processing steps where undesired color changes occur will enable processors to focus in those steps, and find methods to minimize quality loss.