

Title Analyzing the browning of apple juice by fluorescence spectroscopy
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Abstract

Apple juice was produced from *Malus × domestica* 'Pinova', stored at 20°C for 4 d or heated at 80°C for 10 min and stored at the same conditions, in order to obtain both enzymatic browning and non-enzymatic browning reactions. Fluorescence spectroscopy as well as colour readings were carried out to monitor the quality changes of apple juice during storage. A standard set-up for colour readings with a colorimeter using an optical geometry for transmittance readings was applied. The fluorescence spectra were recorded with adapted parameters. Fluorescence excitation was set at 250, 266, 355 and 408 nm, and emission at 280-899 nm resulting in an excitation-emission-matrix (EEM) of 1240×4 for each sample. The sign test pointed out an enhanced sensitivity of EEM in comparison to the L*, a*, and b* values. Fluorescence EEMs were used to classify processed apple juice with different extent of browning. For classifying fresh and stored juice, as well as for differentiating fresh juice from heated-stored juice, the classification correctness was always over 90%.