

Title Enzymatic browning in sliced and puréed avocado: A fractal kinetic study
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Abstract

Modelling of browning is essential to evaluate the effectiveness of the processes applied to obtain fresh-appearance foods and also to determine their shelf life. Computer vision and the fractal kinetic method were used to quantify browning in three avocado cultivars. Samples (avocado slices and purée) were stored at 4 °C and surface images were captured in the tiff format. Browning kinetic was derived from images using the L* mean method and the fractal method. In another experiment, inhibitor kinetic was also quantified, using the polyphenol oxidase activity method (in purée samples) with 0.1%, 0.5% and 1% of sodium bisulfite. In the results for avocado slices, kinetic rate derived by the fractal kinetic method was higher than that obtained with the L* mean method, but the opposite was observed when the avocado was pulping (avocado purée). Kinetic quantified by the fractal method was similarly inhibited by bisulfite, when compared with the L* mean value or PPO activity value methods. In general, the fractal method can be used to record browning kinetic and to discriminate between avocado cultivars, initial structural state of the sample (slice or purée), or in experiments using browning inhibitors.