

Abstract:

A method of quantitatively measuring tissue damage during fresh-cut vegetable processing was developed based on optical imaging technology. Images of damaged and undamaged tissues were acquired through a digital imaging system. The damaged areas were recognized and quantified using an Image-Pro Plus software program based on color differences of the damaged and undamaged tissues. In order to improve color differences between the damaged and undamaged tissue, the samples were stained with a 0.3% catechol solution to accelerate the browning reaction. This method was applied to determine the tissue damage of fresh-cut baby spinach (*Spinacia oleracea*) and iceberg lettuce (*Lactuca sativa*) during the centrifuge drying process. Significant differences were found among drying speeds and locations of the samples in the centrifuge drying baskets. By reducing centrifuge speed, a significant reduction in tissue damage of fresh-cut baby spinach and iceberg lettuce was obtained, especially on those located along the periphery of the centrifuge drying baskets.