Feasibility of Vitamin C Extract from *Citrus sinensis* Peels on Slowing Banana Ripening through Color and Mass Degradation Analysis

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Abstract

This study explores the potential of vitamin C extracted from citrus peels, with a focus on orange peels, and with the goal of reducing food waste and recycling agricultural byproducts as a natural inhibitor of enzymatic reaction in bananas. The enzymatic reaction is responsible for accelerating the ripening process in fruits especially the banana. The primary objective was to develop a spray formulation derived from citrus peel extracts, particularly vitamin C, and apply it to bananas' peel to slow down the ripening process. The methodology involved extracting vitamin C using a solvent-based method, followed by the preparation of a spray solution. The treated bananas were monitored for changes, compared to untreated controls, over a period of 11 days. Key indicators of ripening, such as decrease in mass and color change were measured. Results indicated that bananas treated with the citrus peel-based vitamin C spray showed a slower reaction and exhibited delayed ripening compared to the control group. These findings suggest that citrus peel-derived vitamin C can be an effective, natural alternative to synthetic ripening inhibitors, offering a sustainable solution to prolong the shelf life of bananas.

Keywords: Vitamin C, Banana, Mass Degradation, Color Changes