

Project #8963

Novel Post Harvest Technologies

Researcher: Gopinadham Paliyath

Institution: University of Guelph

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I. Brief Project Description

The market value of fresh market vegetables produced in Ontario is in excess of 800 million dollars. A significant proportion of the vegetables produced are exported. In recent years, increased competition from vegetables grown in Mexico and the USA is becoming apparent.

The deterioration of the membrane is a major cause for the rapid damage of harvested produce. Previous lab research has shown that phospholipase D is the key enzyme involved in this process. Thus, inhibiting the action of phospholipase D is critical for enhancing shelf life and quality of fresh vegetables. Hexanal, a naturally occurring volatile aldehyde (evolved from cut cucumbers, beans etc.) is a very strong inhibitor of phospholipase D. Hexanal is a food ingredient of GRAS status, while GRAS is a status given by the FDA to exempt some compounds added in food preparations there is currently no Canadian comparative, hence the use of GRAS for this project while further testing is underway in Canada.

The University of Guelph have developed an enhanced freshness formulation (EFF, patent pending) using hexanal and other ingredients to enhance the shelf life and quality of fruits, vegetables and flowers. In the proposed project, this technology will be evaluated with the objective of increasing the shelf life and quality of fresh market tomatoes (from 10 days to over two months) that will increase the competitiveness of Ontario fresh market vegetable industry.

II. Project Objectives

1. To optimize the postharvest application protocols of an enhanced freshness formulation containing hexanal (EFF) to fresh market tomatoes for enhancing their shelf life and quality.
2. To evaluate changes in nutritional and quality determinant components during storage
3. To evaluate the action of phospholipase D in tomatoes during storage