

Title of presentation : *Studies on Biochemical and Nutritional changes on fresh carambola (Averrhoa carambola L.) during refrigerated storage.*

Name of the supervisor : Mr. Nandan Sit ,Lecturer, Deptt. Of FPT

Name of the student : Kabita Choudhury.

Enrollment no. : FPT07004

Department : Food Processing Technology

ABSTRACT

Improvement in fruit quality has economical implications in the value of the product as well as in strengthening or expanding of consumers market. The world wide post harvest fruit losses are as high as 30-40% and even much higher in some developing countries (*Sankat, and Balkisson, 2006*). Reducing post harvest losses is very important, ensuring that sufficient food both in quality and quantity. It is estimated that 9-16% of the product is lost due to post harvest problems during shipment and handling (*Grierson, and Viner, 1998*).

Starfruit is one of the “super fruits” it is rich in antioxidants and vitamin C and lower in sugar, sodium and acids. It is sweet without being overwhelming and extremely juicy. Star fruit is a potent source of both primary and secondary polyphenolic antioxidants. Studies have shown that the primary antioxidants can help to prevent the damage of free radical and that secondary antioxidants can help prevent the damage that already exists in our systems. Vitamin C is an essential ingredient in a strong immune system and general wellbeing (*Thomas, and Patil, 2008*).

As carambola is one of the highly perishable fruit and it bruises also very rapidly making it very difficult to handle and store. As many soft fruits are harvested and eaten at a developmental stage (ripeness) which is at or close to, the onset of senescence. Carambolas are mainly sold as fresh fruits (*Campbell et al. 1989*). Thus making it important to store the carambolas in its maximum freshness, therefore an attempt was made by collecting fresh carambolas from the local areas and then storing them at different conditions. Some carambolas were washed with water and stored in the room temperature, 5°C and 10°C with (LDPE) and without packaging. Whereas few more carambolas were treated with 1% KMS and then stored under room temperature, 5°C and 10°C with and without packaging and then different biochemical and nutritional analysis was done.

It was observed that on lowering the temperature by putting in refrigerated storage, quality loss can be reduced. Fresh produce is active, living and breathing. Carambolas which were washed with water and kept open without packaging were spoiled within 14 days of storage and showed spoilage due to mold growth but storage of carambolas at 5°C and 10°C maintained fruit firmness and it retarded the changes in colour and water loss up to 34 days due to reduced rate of metabolic activities. Further it was observed that packaging with LDPE and storage under same conditions stored comparatively better in some parameters like, weight loss, firmness, ascorbic acid content and the fruit colour up to 34 days but only problem observed was the spoilage of carambolas even with small bruises.

Pre-treating carambolas with 1% KMS and then storage at room temperature showed an extended shelf life i.e up to 20 days as compared to untreated set. Similarly, pre-treating and than packaging with LDPE and holding at refrigerated temperature (specially at 10°C) markedly retard the decline in tissue firmness and the development of fruit colour, restricted water loss, and suppressed the incidence of CI with maximum retention of nutritional and sensory properties up to 34 days in comparison to the untreated set and this may be attributed to suppression of the various metabolic and enzymatic activities. Pre-treatment of carambolas with 1% KMS not only helps in attaining the above properties but also reduced the mold growth during refrigerated temperature but also helps in the storage if fruits with small bruises.