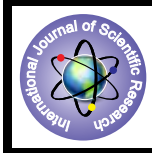


Effect of Different Packagings and Storage Conditions on the Shelf Life of Palm Candy



Home Science

KEYWORDS : Palm candy, Palm Neera, Narippayur, Therapeutic, Aluminium pouches

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ABSTRACT

India is the largest consumer and the second largest producer of sugar in the world. Sugar industry is the second largest organized sector industry in the country. Palm candy was the staple sweetener used by Indians, it is made up of palm Neera. In any Industrial production particularly in agro-industries the raw materials should be consistent in quality to maintain uniform quality standard in the end products. In Tamilnadu Palm candy was prepared by only traditional method. The candy producers were not aware about different packaging due to this investigator choose this study. Sample was collected from Narippayur, which is located in Ramanathapuram district. After collection of the sample, Nutritive value of fresh palm candy such as glucose, fructose, moisture and total acid were analysed. Keeping all the uses in medical and therapeutic aspect of palm candy in the mind and its storage difficulties the investigator got motivated to develop product with increased shelf life and keeping quality. After collection of sample, to prevent the undesirable changes in the product due to the environment factors and other factors, a barrier is needed to product the product, therefore different packaging material were used to pack the fresh palm candy to find the proper packaging material which enables the complete protection. There were four different packaging material was used. No much difference were found in the properties of palm candy when they were packed using laminated Aluminium pouches and kept at refrigeration condition and lower humidities.

Introduction

Palm candy is the direct products obtained from processing of palm juice (Neera). Palmgur is obtained by evaporation of juice (Neera) to a semi-solid stage. Palm sugar and palm candy are obtained in crystal form prepared out of palm syrup at the appropriate stage of concentration and adopting suitable crystallization techniques. These products are having valuable nutrients. Because of its medicinal value, palm candy is being used in Ayurvedic medicines. (E-magazine, September 2004)

In the existing process of preparing Panam kalkandu (Tamil equivalent for palm candy) commercial super phosphate is used for adjusting the pH and as clarificant. Further, impurities like thread, sand, dust etc., are present in this product since it is sun dried in open area at the end of the crystallization..

The challenge facing scientists, researchers, extension workers and farmers in this millennium is to find appropriate and improved ways of utilizing the earth's resources. Alternate uses of palm candy particularly in ethnic foods for enhancing their nutritive value and exploiting the export potential of these products with value addition need an in-depth study.

The shelf life of the palm candy is short where as the tapping of palm juice and the preparation of palm candy is seasonal. It can be prolonged by developing on economic packaging and working out a suitable environmental condition so as to make this product available at affordable price throughout the year. In any industrial production particularly in agro-industries the raw material should be consistent in quality to maintain uniform quality standard in the end product. No study seems to have been taken to map the variations in the palm sap quality among palm trees, the tapping time to get more yield and more sweet taste and the related preservation techniques for the sap collected from various farms prior to the preparation of palm candy.

Keeping all the uses in therapeutic aspect of palm candy in the mind and its storage difficulties the investigator got motivated to develop product with increased shelf life and keeping quality.

In our district population of palmyra trees was high in number. Palmcandy was prepared by traditional method only. The candy contains number of therapeutic properties. Hence Investigator was interested to understand the suitable method of packaging

technology for palm candy. It will promote their product quality and marketing.

OBJECTIVES

- ♦ To increase the shelf life of the palm candy.
- ♦ To introduce the appropriate packaging method to enhance the quality of the product.
- ♦ To prevent undesirable physical changes occurring in the product during storage period by storing in suitable storage conditions.
- ♦ To evaluate the impact of the introduced suggestions (packaging and storage methods).

Research Elaborations:

The sample collected from Narippayur, which is located in Ramanathapuram district. Palm trees are abundant in Narippayur and the people in Narippayur are largely involved in the production of palm candy. After collection of the sample, Nutritive value of fresh palm candy such as glucose, fructose, moisture and total acid were analysed. After collection of sample, to prevent the undesirable changes in the product due to the environment factors and other factors, a barrier is needed to product the product, therefore different packaging material were used to pack the fresh palm candy to find the proper packaging material which enables the complete protection. There were four different packaging material was used. There are

- 150 guage High Density Polyethylene (HDPE)
- 80 guage Low Density Polyethylene (LDPE)
- Aluminium foil, Laminated Aluminium Pouches

STORAGE OF PALM CANDY:

After packaging, to observe the physical changes occurring in the product during storage period, the palm candy was stored at room temperature, refrigeration temperature and three different relative humidity conditions. 11%, 75% and 85% were the three different relative humidity levels used to keep the packed samples. Respectively to obtain these humidity, saturated aqueous solution of lithium chloride, sodium chloride and potassium chloride were taken in three different desiccators. Then the packed samples were kept in room temperature, refrigerator and in those three desiccators.

SHELF LIFE STUDIES OF PALM CANDY:

After the introduction of various packaging and storage condi-

tions, brix and moisture of palm candy were checked out for every 10 days, 20 days and 30 days to observe the physical changes in palm candy. Brix had been checked out by Refractometer and the moisture had been determined by infra red absorption by moisture meter.

Results Findings

Table I Composition of palm candy (100gm)

S.No	Nutrients	Amount
1.	Glucose	21.8g
2.	Fructose	24g
3.	Moisture	2.4 %
4.	Total Acid	0.07292
5.	Brix	1.05%

According to Davis and Johnson, (1987) palmyra sugar contains 0.24 Of protein (%), 98.89 of Carbohydrate (% by difference), 98.4 % of Carbohydrate (% direct polarity) and NIL of moisture. Palmyra sweet sap (borassus flabellifer) contains 10.93g / 100 cc of total sugar and 0.96g / 100 cc of reduced sugar.

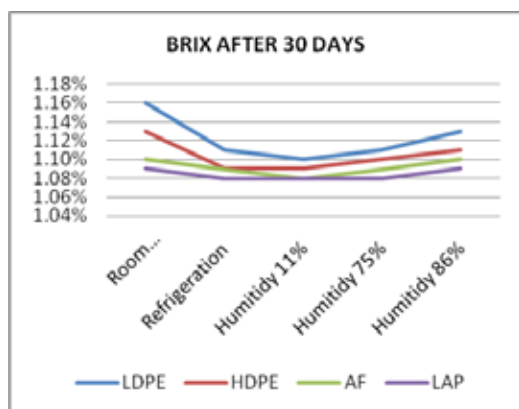


Figure I Sugar concentration Candy

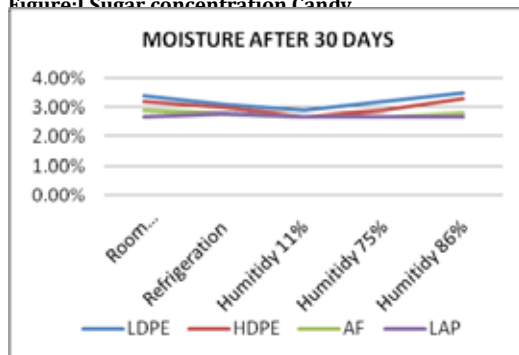


Figure :II Mioture content of Candy

Both brix and moisture content were increased as the days of storage increased. Also there were much fluctuations in the values were found according to various the storage conditions.

In all the samples, brix and moisture content were found to be increased as the days of storage increased. In samples which were packed in LDPE and HDPE packages, there were much increase in brix and moisure content were seen. In the samples, packed in aluminium foil and laminated aluminium pouches, very slight increase in brix and moisture content were found.

There was a significant decrease in the intensities of the fruity odour, taste and increase in the lumpiness of the jackfruit powdered stored at 38 c with 90% RH. It was suggested that RH less than 75% was better suited for keeping jackfruit powder. (Pua et al, 2008)

IMPACT OF LAMINATED ALUMINIUM POUCHES

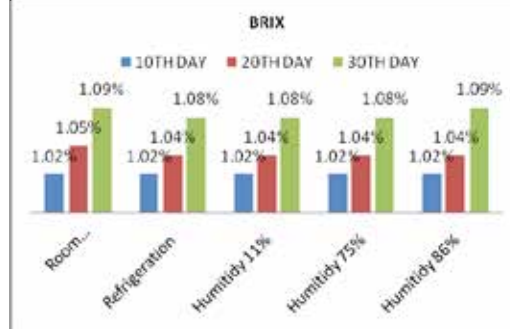


Figure III Brix content of the Packed Palm candy

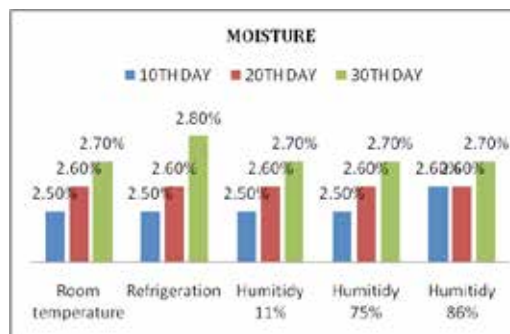


Figure IV Moisture content of the Packed Palm candy

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CONCLUSION

From the above study, it is suggested that laminated aluminium pouches with storage conditions at refrigeration storage and lower RH storage were better suited for keeping palm candy than other packagings and storage conditions. No much difference were found in the properties of palm candy when they were packed using laminated Aluminium pouches and kept at refrigeration condition and lower humidities.

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