Available online at www.rajournals.in

RA JOURNAL OF APPLIED RESEARCH
ISSN: 2394-6709
DOI:10.47191/rajar/v8i2.02
Volume: 08 Issue: 02 February-2022

International Open Access

Impact Factor- 7.036

Page no.- 72-74

Characterization and Market Identification of Nutritious Syrup from Palm Juice

Chitradevi Kaniraja[1], Durgalakshmi Kandavel[2]

[1]Department of Biotechnology, Kalasalingam Academy of Research and Education, Krishnankoil, Virudhunagar
[2]Department of Management Studies, Anna University, Trichy

ARTICLE INFO

Published Online:
04 February 2022

Corresponding Author:
Chitradevi Kaniraja

ABSTRACT

The frightening nutritious health issues have made the researchers to discover new ideology from the traditional methods. The threat to humanity due to under nutrition is very dangerous. The majority of the population suffers due to malnutrition. Food Processing is an emerging area of science hence it is essential to safeguard people form health issues. The traditional food technology methods have been identified with some innovative modifications to develop new food products. The present study deals with preparation of palm syrup from palm juice with affordable cost. The sensory evaluation was done for the formulated syrup and the product was accepted with the scale of 8. The chemical properties were estimated as the pH value of 5.3, 94% total carbohydrate and 0.1% protein. The SWOT analysis was carried out for the product. It provides higher food value syrup at lower cost.

KEYWORDS: Palm Syrup, chemical properties, Sensory, SWOT analysis, Market

I. INTRODUCTION

Palmyra is declared as the "State tree" of Tamil Nadu. It is present everywhere and can last more than 100 years. The palm tree is a wild tree grown densely in a natural way. The products of palm tree are highly valuable and eco-friendly. The entire is useful to human race. This natural resource to be safe guarded and tapped for human living as a food source. The traditional technology used to produce the palm jaggery but this idea is to develop an innovative product from the palm juice [1].

India is the largest consumer and the second largest producer of sugar. It is an important part of the human diet, making food more palatable and providing food energy. Palm Jaggery is a natural resource from "sap" obtained from palm trees of Tuticorin district. The Tuticorin district has more than one core palm trees all around the district. But the maximum usage was in the form of palm sugar/jaggery during the season [2].

The palm jaggery made from sap which is utilized to produce value added products. Palm gur, palm sugar and palm candy has also considered as important among the products of sap. It has various uses in Ayurvedic medicinal preparations. Palm jaggery is made directly by concentrating the sap to a thickest consistency. The product is generally light brown in colour. It has earthy and salty taste and darker in colour with cooling effect [3].

Jaggery is a sugar rich product and most popular part of the cuisines of the India. Its regular usage is advocated in the daily diet. Due to its healthy and unrefined from of sugar which is healthier. It contains 65-80% sucrose, 5-15% reducing sugar and good source of minerals like calcium, phosphorous and iron. Jaggery has great nutritive and medicinal value. Jaggery purifies the blood prevents the rheumatic afflictions and disorders of bile and process properties of higher order. It may have a role to reduce the chance of lung cancer [4].

The jaggery was utilized mainly in the form of solid or granular for making sweets traditionally. The scope of the work is to develop of palm jaggery syrup with innovative package for the easy handling.

II. MATERIALS AND METHODS

An easy way to comply with the conference paper formatting requirements is to use this document as a template and simply type your text into it. Wherever Times is specified, Times Roman or Times New Roman may be used.

A. Raw material collection

Initially the lime treated sap was collected in the pots from the tappers at Korampallum, Tuticorin, Tamil Nadu, India.

B. Preparation of palm syrup

The sap was filtered after the lime sedimentation. The clear sap was then transferred into the pan for boiling. During boiling, the temperature for maintained at 160°C. The juice concentrate was removed from boiling pan, when it reaches the sticking point. The citric acid (0.04%) was added to improve the colour and avoid crystallization. The potassium metabisulphite (0.1%) and benzoic acid (0.5%) were added to concentrate to improve the shelf life. And, the concentrate was allowed to settle for 8 days at ambient temperature. The syrup was filtered before sterilization. The sterilized syrup was packaged in squeeze bottles.

C. Determination of palm syrup properties

The palm syrup was analysed for chemical properties by A.O.A.C method (Official Method of Analysis of A.O.A.C International – 18th Edition, 2005) and microbial properties. The pH of syrup was measured using a digital pH-meter. The total sugar of syrup was determined and value expressed in percentage. The protein content of syrup was determined by Biuret method using bovine serum albumin (BSA) as standard. The microbial analysis was done by using spread plate technique for the syrup after sterilization. The colonies were counted and the result was recorded.

D. Sensory Evaluation of palm syrup

The comparative sensory evaluation was done for the products such as palm syrup, honey and dates syrup. The sensory test was done with the major attributes like colour, aroma, flavour, taste, ease of handling and overall acceptability. A 1-9-point hedonic rating test was performed to assess the degree of acceptability of samples. 20 mL of sample from each product was presented to 25 panelists as randomly coded samples. The panelists were asked to rate the samples for the attributes on a 1-9 point scale, were 9= Like extremely; 8= Like very much; 7= Like moderately; 6= Like slightly; 5= Neither like nor dislike; 4= Dislike slightly; 3= Dislike moderately, 2= Dislike very much; 1= Dislike extremely. The results were evaluated and comparison chart also drawn.

E. SWOT Analysis

The SWOT analysis is one of the strategic planning tools that are used to ensure about clear objective defined for the project. Both positive and negative factors were identified and recorded. In order to accomplish this task, the process involves four areas of consideration: strengths, weakness, opportunities and threats. Strengths and Weakness were considered to be internal factors which have control. Opportunities and Threats were considered to be external factors which have no control. The internal and external factors of the project were focused to complete the task. [5]

E. Cost estimation

The price was determined by combing 3 P's. This includes product cost, packaging cost and processing cost. The product cost refers to the costs incurred to create a product. These costs include direct labour, direct materials, consumable production supplies, and factory overhead. It can also be considered the cost of the labour required to deliver a service to a customer. The packaging cost refers to sum of package designing cost and material cost. The process cost used mainly in manufacturing where units are continuously mass-produced through one or more processes. Transportation cost is an important element of cost for procurement of materials for production and for distribution of product for sale.

E. Market Identification

The market identification was carried out to promote the product in a correct way. The place, target people, packaging material, model and packaging size were identified for the palm syrup to promote the product in the market.

III. RESULT AND DISCUSSION

A. Chemical and Biological Properties of Palm Syrup

The palm syrup used for studies had 88% of total sugar due to the presence of invert sugar and protein content of 1.7% which is lightly lower. The pH of palm syrup was estimated as 5.3. The result of microbial analyses of palm syrup performed as a part of storage studies showed that E.Coli and Salmonella were not detected.

B. Sensory Characteristics of Palm Syrup

The responses from the comparative sensory analysis were recorded and the average score for each attribute was obtained. The scores of the attributes were determined on a hedonic scale of 9. The results were represented in a graph as Figure 1. Based on the results, it was observed that the colour of palm syrup is similar to honey with the score of 8. The aroma & taste profile of palm syrup is equal with the dates syrup. The palm syrup and dates syrup were similar in the flavour profile with the score of 8. The score of ease of handing had resulted equally for palm and dates syrup. Based on the overall sensorial characteristics, the palm syrup and dates syrup had resulted in the equal score of 7 for overall acceptability.

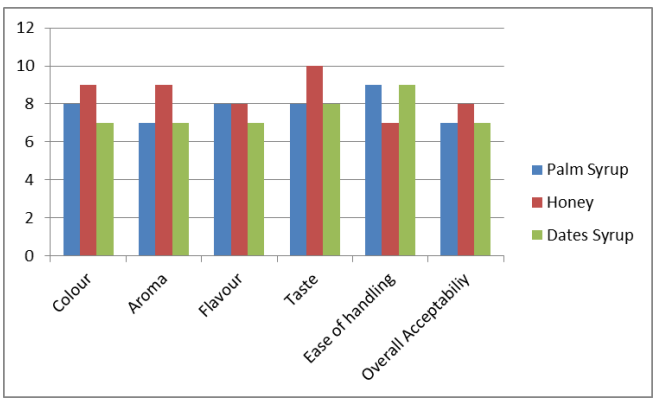

Figure 1: Comparative sensory characteristics of palm syrup with market brands

C. SWOT Analysis

The positive and negative factors were reordered and represented in a Table 1. As per the process, all the four area has been analysed and documented as strengths, weakness, opportunities and threats. The internal and external factors were analyzed and tabulated into strengths, weakness, opportunities and threats.

Table 1: SWOT Analysis

Strength ▸ Low price ▸ Easy to consume ▸ Less competition ▸ Less investment	**Opportunities** ▸ High market ▸ High Consumers ▸ Less expenses ▸ Easy to develop
Weakness ▸ Introducing stage ▸ Fear to buy ▸ Less market	**Threats** ▸ High in nutrition ▸ Less health drink ▸ High market value

D. Cost Estimation of Palm Syrup

The palm syrup cost was calculated using the cost estimation procedure. It was determined as Rs.100 per Kilogram. The final cost of the product includes the processing cost, packaging cost and transportation cost.

E. Market Identification

Launch – Sachets/Bottles
Market Covered - Southern Tamil Nadu
Nature of consumers - All age groups
Distribution channel - Manufacturer → Wholesaler → Retailer → Consumers
Promotional support- Advertise in multiple channels

IV. CONCLUSION

The people need for healthy, traditional and tasty food is endless. Jaggery contains minerals, vitamins and antioxidants in higher levels and act as a health supplement for both under nutrition or malnutrition deficiencies. Moreover, in India, it is one among the most popular products ran by small farmers and also consumed as an unpurified sugar in other countries ever since from the ancient times. In this study, the conventional way of high value added Ready-to-Use palm syrup was developed which may be a relevant substitute for sugar. Though jaggery is rich in its medicinal properties, the process flow and its mechanism was not developed till now.

REFERENCES

1. Vengaiah, P. C., Raju, M.S., Prasad, K. R., and Kumari, K. U. 2011. Food from Palmyrah palm (*Borassus flabellifer* L.) present practices and scope. Proceedings of the National Conference on National Convention of Agricultural Engineers.
2. Tamil Nadu State Palm gur and Fibre Marketing Cooperation Federation, Palm neera and palm cola, 1995.
3. Tiwari, G. N., Kumar, S., and Prakash, O. 2004. Evaluation of convective mass transfer coefficient during drying of Jaggery. 63 (219-227).
4. Sahu, A. P., and Saxena, A. K. 1994. Enhanced translocation of particles from lungs by jaggery. Environmental Health Perspective, 102(5), 211-214.
5. Agarwal, R., Grassl, W., and Pahl, J. 2012. Meta-SWOT: introducing a new strategic planning tool. Journal of Business Strategy. 33(2) 12-21.
6. Jagannadha, P. V. K., and Das Madhusweta, S. K., 2007. Jaggery—a traditional Indian sweetener. Indian Journal of Traditional Knowledge, 6: 95-102.