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MUSLIM ARTS COLLEGE

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Web: www.muslimartscollege.in, Email: muslimartscollege@gmail.com.

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on

MULTIDISCIPLINARY RESEARCH ETHICS

Certificate

This is to certify that Prof./Dr/~~Mr/Mrs/Ms~~ T. RENISHEVA JOY JEBA MALAR, ASSISTANT PROFESSOR DEPT. OF NUTRITION & DIETETICS, MUSLIM ARTS COLLEGE has participated / presented a research paper entitled NUTRIENT ANALYSIS AND PRODUCT FORMULATION STUDIES ON IPOMOEA BATATAS, in the National Conference on "Multidisciplinary Research Ethics" organised by MAC Research Forum, Muslim Arts College, Thiruvithancode, held on September 4 & 5, 2023.

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4th & 5th September, 2023

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NUTRIENT ANALYSIS AND PRODUCT FORMULATION STUDIES ON *IPOMOEA BATATAS*

M. Prabitha,
Research Scholar, Contact No-7695953934
Reg no: 22213092112007
Mail.Id- prabitharajeshbinojino@gmail.com,

Dr. T. Renisheya Joy Jeba Malar,
Assistant Professor,
Contact No- 9750904456, Mail.Id -renibjoy@gmail.com,
PG & Research Department of Nutrition and Dietetics,
Muslim Arts College, Manonmanium Sundaranar University, Tirunelveli

Abstract

Ipomoea batatas instant food mixes are becoming more popular as there is no need for heavy preparation. Ipomoea batatas powder is a good source of Vitamin A. Ipomoea batatas are vegetables that look like large ordinary potatoes but taste sweet. Ipomoea batatas skin contains fiber, which is important for digestive health. Health benefits, such as antioxidant, antimicrobial, anti-inflammatory, anti-diabetic, antihypertensive, anti-cancerous, and anti melanogenesis effects. The nutrient content of 100g of Ipomoea batatas powder incorporated health mix was analyzed and found that the Energy content was (72g), Protein content was (3.9g) Fat content was (270mg/g), Fiber content was (4.2mg/g), Ash content was (0.5%), potassium content was (400mg/g), and Vitamin A content was (700mg/g).The functional properties of 100g of Ipomoea batatas powder incorporated health mix. They are rich in vitamin C, which is an antioxidant. Product such as Ipomoea batatas puttu, Ipomoea batatas cake, Ipomoea batatas ice cream, Ipomoea batatas health mix, and sensory evaluation of the formulated products were done by 20 selected panel members and evaluated by using score card. The keeping quality was also done for the formulated products.

Keywords: *Ipomoea batatas* flour, *Ipomoea batatas* products, Sensory evaluation.

Introduction

Sweet Potato *(Ipomoea batata)* is native to the tropical regions of the Americas of the approximately 50 genera and more than 1,000 species of Convolvulaceae, *I. batatas* is the only crop plant of major are poisonous some cultivars of *I. batatas* are grown as ornamental plants under the name tuberous morning glory, and used in a horticultural context *I. batatas*. In terms of annual production, *I. batatas* ranks as the fifth most important food crop in the tropics and the seventh in the world food production after wheat, rice, maize, potato, barely, and cassava (FAO 2016). The objective of the present research was to demonstrate the nutritional content of *I. batatas* and to carry out formulation studies by preparing different food products incorporated with *I. batatas*. The sensory quality of the *I. batatas* incorporated food products were analysed by selected panel members.

Materials and method:

Collection of Sample:

The sample used for the study was *Ipomoea batatas* collected from Local market at Marthandam. The other ingredients were purchased from the nearby supermarket. The collected sample were cleaned thoroughly and dried under the shade. Once the drying process was completed, the dried product was kept in an airtight container for further studies.

Nutrient Analysis:

The Nutrients such as Calories, Carbohydrate, Protein, Fat, Iron, Potassium, Flavonoid, Crude Fibre, beta carotene, iron and magnesium were analyzed by standard methods.

Sensory Evaluation of the Formulated Products:

The prepared products were subjected to sensory analysis to find out acceptability. The formulated products were organoleptically evaluated using a numerical score card. Sensory assessment was done on the quality description (i.e) Appearance, Texture, Taste, Colour, Flavour and over all acceptability. The sensory evaluation was carried out for *Ipomoea batatas* products such as *Ipomoea batatas* health mix, *Ipomoea batatas* icecream, *Ipomoea batatas* cake, *Ipomoea batatas* puttu. The products were evaluated by a panel of 25 semi trained panel members from the Department of Nutrition and Dietetics, Muslim Arts College, Thiruvithancode, Kanyakumari District.

Keeping Quality:

Keeping quality was done to find out the storage behaviour of the product. They were kept in room storage and refrigerated storage for a period of three month. They were examined microbially organoleptically once in a week for a period of 90 days to find the growth of microbes, off flavour production.

Statistical Analysis:

Statistical analysis such as arithmetic mean and percentage analyse were done to analyse the data.

Result and Discussion

The result of the present work reported the nutritional and sensory evaluationary studies.

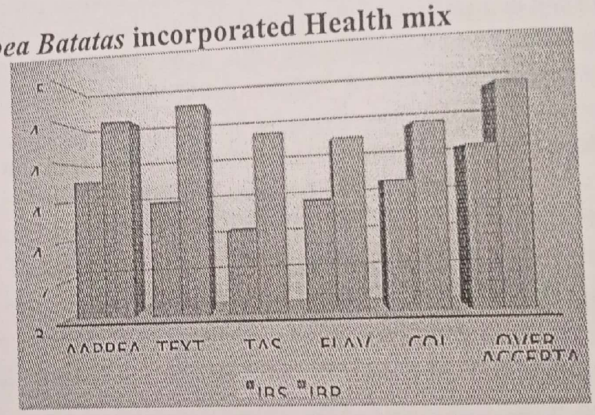
Nutrient Analysis:

The nutrients of *Ipomoea batatas* such as calorie, carbohydrate, iron, fat, protein, potassium, flavonoid, crude fiber. In the nutrient analysis, crude fiber was present in larger amount in *Ipomoea batatas* followed by carbohydrates (24.74gm), protein (0.46gm), fat (0.2gm) whereas flavanoid (17.9 µg) antioxidants (3.92µg), potassium (1.38 µg) and carotenoids (1.14 µg) were present in very less amount.

Mean score for *Ipomoea Batatas* incorporated Health mix

The mean score for overall acceptability of standard product is 4.6 and percentage is 92 and means score for overall acceptability of *Ipomoea batatas* healthmix is 4.9 and percentage is 98. The product score is greater than standard product. The Table. 2 and Figure.1 showed the mean score for sensory parameters such as Appearance, Texture, Taste, Colour and overall acceptability of *Ipomoea batatas* incorporated Healthmix.

Figure. 1. Mean score for *Ipomoea Batatas* incorporated Health mix



Mean score for *Ipomoea batatas* Incorporated Icecream.

The mean score for overall acceptability of standard product is 4.52 and percentage is and means score for overall acceptability of *Ipomoea batatas* icecream is 4.86 and percentage is 97. product score is greater than standard product. The mean score for sensory parameters such as Appeara Texture, Taste, Colour and overall acceptability of *Ipomoea batatas* incorporated Ice cream.

Mean Score for *Ipomoea batatas* Incorporated cake

The mean score for overall acceptability of standard product is 4.68 and percentage is 94 and mea score for overall acceptability of *Ipomoea batatas* cake is 4.84 and percentage is 97. The product score greater than standard product.The table.3 and figure. 3 showed that the mean score for sensory parameter such as Appearance, Texture, Taste, Colour and overall acceptability of *Ipomoea batatas* incorporated cak

Mean Score for *Ipomoea batatas* Incorporated Puttu

The mean score for overall acceptability of standard product is 4.36 and percentage is 87 and me score for overall acceptability of *Ipomoea batatas* puttu is 4.82 and percentage is 97. The product score greater than standard product. The mean score for sensory parameters such as Appearance, Texture, Tas Colour and overall acceptability of *Ipomoea batatas* incorporated puttu.

Keeping Quality:

Keeping quality was done to find out the storage behaviour of the product. They were k in both room storage and refrigerated storage for a period of three month. They were examined microbia

and organoleptically once in a week for a period of 90 days to find the growth of microbes, off flavour and production. The keeping quality of the product were demonstrated in Table. 3.

Table.3. Keeping Quality of *Ipomoea batatas* Incorporated products.

S.No	Months	Appearance	Texture	Taste	Flavour	colour
1.	1st month	No changes	No changes	No changes	No changes	No changes
2.	2nd month	No changes	No changes	No changes	No changes	No changes
3.	3rd month	No changes	No changes	No changes	No changes	No changes

DISCUSSION:

Sweet potato is a root crop. It is the world's seventh most important food crop after wheat, corn, potato, barley and cassava. The sweet potato is important because it is easy to grow and has high yield (Kamonwan, 2011 and Melada, 2014).

Antonius Suparno *et al.,* (2016) analyzed the nutritional value of sweet potatoes consumed by infants and children of the Dani tribe. The results showed that each of 4 (four) sweet potato accessions, which were consumed by infants and children, had diverse nutrient levels. Barbara Sawicka *et al.,* (2014) studied the content of nutrient in sweet potatoes' tubers. White Triumph cultivar with a white skin and flesh characterized by a significantly higher content of starch, sugar sum, protein, vitamin C, ascorbic acid and phosphorus, calcium and magnesium in comparison with skin colour and flesh cultivars. The present research revealed the presence of crude fiber was in larger amount in *Ipomoea batatas* followed by carbohydrates (24.74gm), protein (0.46gm), fat (0.2gm) whereas flavanoid (17.9 µg), antioxidants (3.92µg), potassium (1.38 µg) and carotenoids (1.14 µg) were present in very less amount. Owori *et al.,* (2007) states that sensory evaluation is an essential components of a food research product or product development. In the present styudy among the four formulated products prepared *Ipomoea batatas* health mix represented the higher score value in the sensory evaluation. In different ratios *Ipomoea batatas* product were formulated and the acceptance were recorded.

Conclusion:

The result of this study indicated that *Ipomoea batatas* has a high keeping quality as compared to other snacks items. The flour used in this products was sweet potato flour the dry form of the product make self life longer.

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