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Incorporation of Palmyra Sprout Powder in Nachos

Sankari K
Guest Faculty, Department of Home Science, The Gandhigram Rural Institute, Gandhigram

Manisha M
M.Sc. Student, Department of Home Science, The Gandhigram Rural Institute,
Gandhigram, Dindigul District - 624302, Tamil Nadu, India.

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ABSTRACT

The present study investigates the impact of Perceived Leadership styles—specifically Transformational and Transactional leadership—on Innovative Work Behaviour among college teachers. The primary objective was to examine whether the perception of transformational and transactional leadership styles significantly influences the level of innovative work behaviour exhibited by college teachers. Data were collected using the Multifactor Leadership Questionnaire (MLQ-5X) developed by Avolio and Bass (2005) to assess leadership styles, and the Innovative Work Behaviour scale by **Gkontelon et al. (2022).** The study employed a proportionate stratified random sampling technique to ensure representative participation across various steams of college teachers. These results underscore the critical role of transformational leadership in fostering an environment conducive to innovation within academic institutions.

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I INTRODUCTION

Roots and Tubers are secondary staple foods which are cultivated from underground. Starchy foods having a high potential in giving dietary energy in the form of carbohydrate which is range about one-third of equivalent weight of rice due to moisture content present in tubers. The predominant advantage of rearing roots and tubers as they are suitable to cultivate from diversified land or soil and

environmental conditions by using minimal inputs and maximal yield from farmland **(Chandrasekara, A., & Josheph Kumar, T. 2016)**.

Roots and tubers cover a global production of approximately 836 million tones and 43% and 33% of global production across the regions of Asia and Africa **(Chandrasekara, A., & Josheph Kumar, T. 2016)**.

Table 1.1 Taxonomy of Palmyra Palm

Kingdom	Plantae
Sub-Kingdom	Tracheobionta
Superdivision	Spermatophyta
Division	Magnoliophyta
Class	Liliopsida
Subclass	Arecidae
Order	Arecales
Family	Arecaceae
Genus	BorassusL.
Species	Borassus flabelliferL.

(*Source:* Gummadi, V et.al., 2016)

The Palmyra palm has many beneficial bioactive components in every parts of the plant. Roots, Stem, Leaves, Flowers and Seeds are used to treat and manage diseases. The mature leaf is thick and visualizes a wide feather like appearance. The leaves can be used to cook cereal based products stuffed with pulses and sugars by wrapping the food with leaf and fix it with thread. The dried leaves are also used for packaging materials. The Palmyra stem is very hard and heavy to carry which is used to prepare fences, boats and cottage. Unripened and Ripened Palm fruit, Palm Sprout and Palm nectar from flower saps are major products from palm tree. Palm Sugar, Palm Jaggery, Palm oil, Palm wood for firewood are the products made for commercial usage **(Sandhiyadevi, P et.al., 2021)**

Palmyra Sprout is referred to as palmyra tuber harvested from underground that can be dried and cooked in steamer or roasting in an open fire. The sprouts contain nutrients like protein, fibre, potassium, phosphorous, iron, copper, calcium and zinc **(Ramani, S et.al, 2022)**. Tubers are notable source of carotenoids, glycoalkaloids, phenolic compounds and saponins and exhibit numerous

bioactivities such as antioxidant, antimicrobial, antidiabetic and immunomodulatory effects **(Chandrasekara, A., & Josheph Kumar, T. 2016)**.

Palmyra sprout can be grown in underground area and duration of sprout germination is around six to eight months that contains high fibre and starch content which counts low glycaemic index. Young sprouts has sweet taste, tender and soft in texture and matured sprouts has earthy flavor and mild bitter taste, fibrous and firm in texture **(Khatri, Rashi et al., 2020).**

The main objective of this study is to develop nachos incorporated with palmyra sprout powder and to standardize the developed nachos and analyze the nutrient content present in standardized nachos.

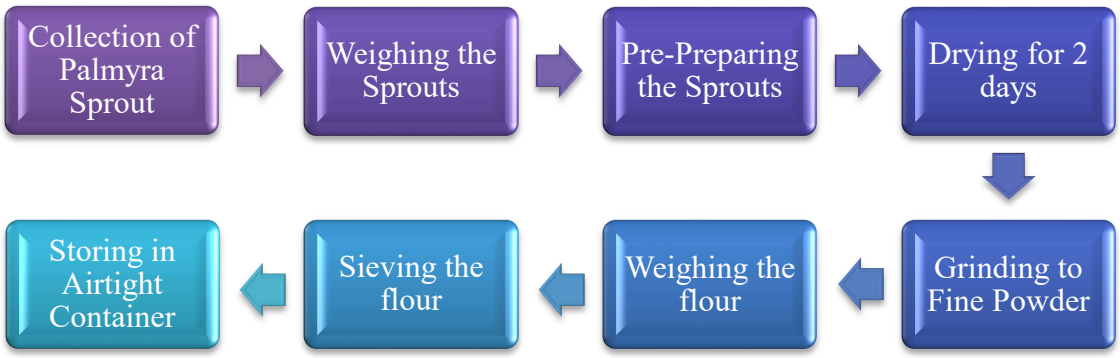
II METHODOLOGY

2.1 Preparation of Palmyra Sprouts Powder

The Palmyra sprouts were collected from a local market in dindigul district and the other ingredients like wheat flour, corn flour, cumin seeds, and spices were collected from nearby shops in Chinnalapatti, Dindugul district. The collected sprouts were weighed, peeled, cleaned, washed, boiled and the center portion of Palmyra sprout was removed. The sprouts were cut into small pieces. Then the sprouts were weighed and kept it for drying at 70 degree Celsius for 2 days in cabinet dryer. After drying they were grounded and the powder was sieved. The powder were weighed and stored in airtight bags for further analysis.

Figure 2.1 Palmyra Sprout and Selected Ingredients

Figure 2.2 Flow chart of the Preparation of Palmyra Sprout Powder



2.2 Removal of Saponin content from Powder

The powder was soaked in a hot water for 2 hours. The powder was filtered by using muslin cloth and spread into the tray for drying purpose. Then the powder was sieved and used to product preparation.

Figure 2.3 Palmyra Sprout Powder before and after removal of saponin content

2.3 Formulation and Standardization of Nachos

Standardized recipes were most important for product formulation. The standardized recipe specifically describes the exact amount of ingredients and the method of preparation needed to produce a high quality product. In this study standard samples were prepared and Palmyra Sprout Powder was incorporated in nachos that were tried with four variations of 10 gram, 20 gram, 30 gram and 40 gram.

Figure 2.4 Flow chart for the Standardisation of Standard and Palmyra Sprout Powder Incorporated Nachos

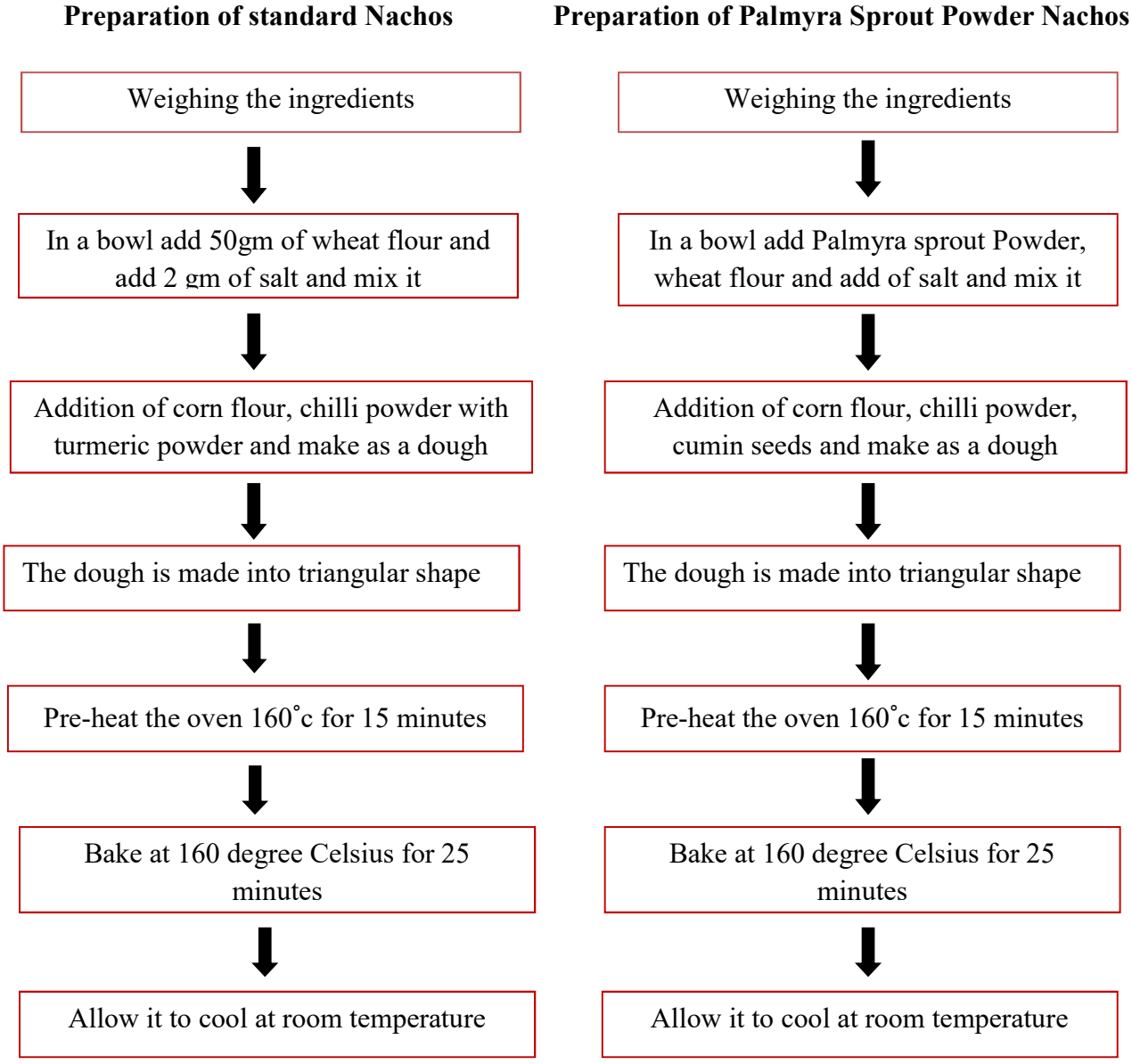


Figure 2.5 Standard and Palmyra Sprout Powder Incorporated Nachos

2.4 Sensory Evaluation of Palmyra Sprout Powder Incorporated Nachos

Developed Palmyra sprout Powder incorporated Nachos were evaluated sensory quality. 9 points of hedonic scale is used for the sensory evaluation. The developed products were evaluated by the 30 members. The appearance, colour, texture, flavor, taste and overall acceptability were evaluated.

The acceptance of food will be selected by the responds satisfaction. The Evaluators are assessed the overall acceptability of the incorporated palmyra sprout Powder nachos. Based on the results of sensory evaluation and the consumer acceptability the **variation 3** had a highest score was selected for further analysis.

III RESULTS AND DISCUSSIONS

The results of the present study discussed under the following headings. Standardisation of nachos and Sensory evaluation was carried to identify the nutrients present in the developed product.

3.1 Standardization of the standard Nachos

Table 3.1 Standardization of the Standard Nachos

S.No	Name of the product	Cooked weight (Gm per Nachos)	Method of Preparation	Equipments and Instruments Used	Duration (minutes)
1.	Standard	1	Oven Cooking	Bowl, Spoon, Rolling board, Rolling pin, Plate, Katori, Microwave tray	25 minutes at 160˚C

It is clear from the above data that the preparation time for standard Nachos is 25 minutes at 160˚C. The cooked weight of the standard 1g per 1 Nachos. The equipment were used such as bowl, spoon, rolling board and rolling pin, plate, katori, microwave tray for developed standard Nachos.

3.2 Sensory Evaluation of the Standard Nachos

The Sensory evaluation of the standard Nachos was evaluated by 30 members majorly on attributes such as appearance, texture, colour, taste, and flavor.

Table 3.2 Sensory evaluation of Standard Nachos

Attributes	Scores
Appearance	6.9±1.0
Texture	6.8±1.1
Color	7±1.2
Taste	7.0±1.0
Flavor	6.8±1.1
Overall acceptability	7.1±1.1

The above data shows the sensory evaluation of the standard nachos. The overall acceptability of standard nachos had 7.1±1.1 respectively including flavor, color, Taste, Appearance and Texture. Thus, the result shows that appearance had the moderate acceptability score among other attributes.

3.3 Proximate Analysis of Standard Nachos

Table 3.3 Proximate Analysis of Standard Nachos

Parameters	Values Per 100 gm
Moisture (%)	3.1
Ash (%)	2.32
Energy (Kcal)	350
Carbohydrate (g)	60.12
Protein (g)	10
Fat (g)	1.23
Fiber (g)	2.75

Table 3.3 shows the nutrient content of standard Nachos. The result shows that the standard Nachos have 3.1 percent of moisture per 100g, 2.32 percent of ash per 100g, 350 kcal 100g, 60.12g of carbohydrate per 100g, 10g of protein per 100g, 1.23g of fat per 100g, and 2.75g of fiber per 100g respectively.

3.4 Standardization of Palmyra Sprout Powder Incorporated Nachos

The Palmyra sprout powder incorporated nachos had four variations V1, V2, V3 and V4 were prepared, standardized and the result is presented in table 3.4

Table 3.4 Standardization of Palmyra Sprout Powder Incorporated Nachos

S.No	Name of the Product	Cooked Weight (gm per Nachos)	Preparation Involved	Equipment Used	Time Taken (minutes)
1.	V1			Bowl, Spoon, Rolling board,	20 minutes at
	V2				

	V3	1g	Oven cooking	Rolling pin, Plate, Katori, Microwave tray	160˚C
	V4				

It is clear from the above data that the preparation time for Palmyra Sprout Powder incorporated Nachos is 20 minutes at 160˚C. The cooked weights of the incorporated Palmyra sprout Nachos 1g per 1 Nachos. The equipment were used such as bowl, spoon, rolling board and rolling pin, plate, katori, microwave tray for developed incorporated Palmyra sprout Nachos.

3.5 Sensory Evaluation of the Palmyra Sprout Powder Incorporated Nachos

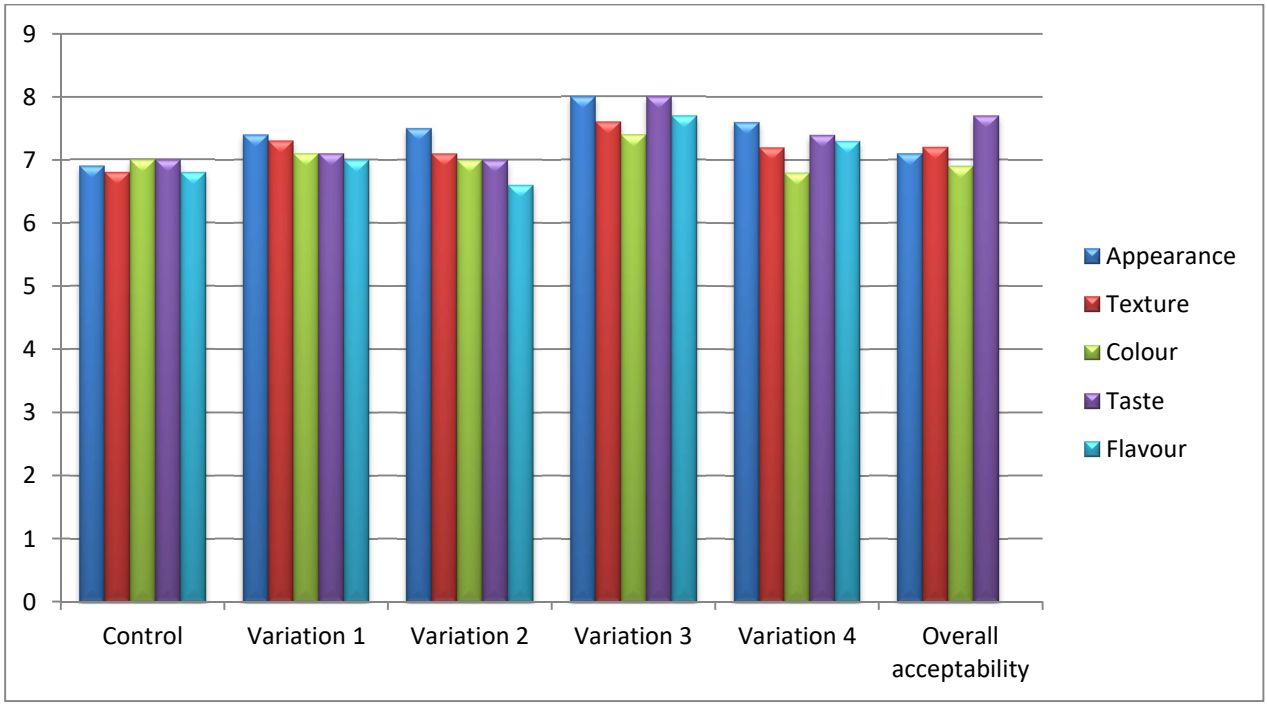
The Sensory evaluation of the Palmyra sprout powder incorporated nachos was evaluated by 30 members majorly on attributes such as appearance, texture, colour, taste, flavor and overall acceptability was scrutinized for evaluating the best variation.

Table 3.5 Sensory Evaluation of the Palmyra Sprout Powder Incorporated Nachos

Attributes	V1	V2	V3	V4
Appearance	7.4±0.7	7.5±0.8	8.0±0.7	7.6±0.8
Texture	7.3±1.1	7.1±1.0	7.6±0.8	7.2±0.9
Colour	7.1±1.0	7±1.1	7.4±1.0	6.8±0.8
Taste	7.1±1.0	7±1.0	8±1.0	7.4±0.9
Flavor	7±0.9	6.6±1.0	7.7±0.9	7.3±1.0
Overall acceptability	7.2±0.8	6.9±1.1	7.7±0.7	7.3±1.0

The above table shows the sensory evaluation of the most acceptability of Palmyra sprout Powder incorporated Nachos. The overall acceptability of developed incorporated Palmyra sprout powder Nachos V1, V2, V3 and V4 had 7.2±0.8, 6.9±1.1, 7.7±0.7, 7.3±1.0 respectively. The result shows that Variation 3 Nachos had the maximum overall acceptability score among other variations.

Figure 3.1 Bar Chart Represents the Sensory Scores of Palmyra Sprout Powder Incorporated Nachos



3.6 Proximate Analysis of Palmyra Sprout Powder Incorporated Nachos

Proximate Analysis represents the nutritional contents which are measured to determine the values for the developed product palmyra sprout powder incorporated nachos.

Table 3.6 Proximate Analysis of Palmyra Sprout Powder Incorporated Nachos

Parameters	Values Per 100 gm (V3)
Moisture (%)	5.7
Ash (%)	2.9
Energy (Kcal)	371.2
Carbohydrate (g)	77.39
Protein (g)	12.92
Fat (g)	1.11
Fiber (g)	3.05

The above table shows the nutrient content of Palmyra sprout powder incorporated Nachos. The result shows that the Nachos have 5.7 percent of moisture per 100g, 2.9 percent of ash per 100g, 371.2kcal/100g, 77.39g of carbohydrate per 100g, 12.92g of protein per 100g, 1.11g of fat per 100g, 3.05g of fiber per 100g respectively. The Palmyra sprout powder incorporated nachos had high amount of energy (371.2 Kcal/100g) and (12.92gm/100gm) of protein when compared to control samples.

CONCLUSION

The present research revealed that Palmyra sprout powder could be added into Nachos preparation for their rich source of fiber, protein, energy. The Nachos made out of wheat flour, corn flour, Palmyra sprout powder in the ratio of 40:35:25(V3) were accepted. It is a healthy snack for people who need a healthier lifestyle. These nachos can be served with boiled vegetables such as carrot, beetroot, green leafy vegetables, potato and topped with onion, tomatoes and sprinkled with salt and pepper. Thus nachos can be combined with salads and easy to prepare as a healthiest snack for school going children, adolescents and added to vegan diet foods and also recommended to fitness people for healthiest alternative to snack.

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