

Formulation And Standardization of Gluten Free Snacks Incorporated with Kenaf Leaf Powder in Brown Rice Flour Food Products

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Abstract-Kenaf (*Hibiscus cannabinus* L., Malvaceae) is a warm season annual fiber crop closely related to White Jute (*Corchorus capsularis* L.) that can be successfully produced in mainly in India and China, followed by Bangladesh. As the commercial use of kenaf continues to diversify from its historical role as a cordage crop (rope, twine, and sackcloth) to its various new applications including paper products, building materials, absorbents, and livestock feed, choices within the decision matrix will continue to increase and involve issues ranging from basic agricultural production methods to marketing of kenaf products. The aim of this study is to standardize Kenaf leaf powder incorporated brown rice flour food products namely Nachos and Halwa. These products and its variations were sensory evaluated by panel members by means of color, texture, taste, flavor, and appearance. From these variations 2% kenaf leaf powder incorporated brown rice nachos and 3% kenaf leaf powder incorporated brown rice halwa secured highest score among others. Nutrient analysis were done for the food products like carbohydrate, fat, protein, fiber etc. Hence it is recommended for all age group people.

Keywords -Cordage, absorbents, livestock, matrix, standardize.

INTRODUCTION

Kenaf (*Hibiscus cannabinus* L., Malvaceae) is a warm season periodic fiber crop nearly related to White Jute (*Corchorus capsularis* L.) that can be successfully produced in substantially in India and China, followed by Bangladesh. As the marketable use of kenaf continues to diversify from its literal part as a cordage crop (rope, twine, and sackcloth) to its colorful new operations including paper products, erecting accoutrements, absorbents, and beast feed, choices

within the decision matrix will continue to increase and involve issues ranging from introductory agrarian product styles to marketing of kenaf products. These operation opinions will bear an understanding of the numerous different angles of kenaf product as a fiber, feed, and seed crop. It's an periodic, non-wood fiber factory indigenous to central Africa. Akin to okra and cotton, kenaf grows to heights of 12 to 18 bases in a six- month growing season. (Mahbulul Islam- 2019) Kenaf (*Hibiscus cannabinus* L.) is a short day, periodic, herbaceous factory producing high quality cellulose. Kenaf is a precious fiber crop that's cultivated for its stringy stem. Lately, seeds and leaves have been also considered as a source of artificial products, similar as biopharmaceuticals. Still, their pharmacological goods and chemical composition are still inadequately studied. (Andreia Pascoal et al., 2015) Possible new profitable uses for kenaf(*Hibiscus cannabinus* L.) include feed for beast, paper- pulp, and bean poles. The crude protein content of 55- day-old kenaf leaves and petioles exceeds 25 and for the whole factory, banning roots, pars 16 to 17. Kenaf has been set up respectable as a paper- pulp or as a pulp to be blended with wood pulp. Yields of 20,000 kg ha of dry kenaf stems are produced in the South with slightly lower yields in South Central and Central countries. Kenaf is susceptible to root- knot nematodes (*Meloidogyne incognita* and *M. Incognita acrita*) and should be grown on soil free of these organisms. (G.B. Killinger 1969) *Hibiscus cannabinus*(Kenaf) is a implicit source of bioactive ingredients and natural antioxidant. The current study determined the impact of colorful detergents on birth yield, recovery of polyphenol and flavonoid, antioxidant, anticancer, and antibacterial

parcels of Kenaf leaves and seed. The greasepaint of leaves and seed was independently uprooted with n-hexane, ethyl acetate, ethanol, and water detergent. Among them, the ethanol excerpt of leaves and seed showed the loftiest birth yield, and their GC- MS analysis revealed a aggregate of 55 and 14 bioactive composites, independently.(Md Adnan et al, 2020) The kenaf factory is composed of multiple useful factors(eg stalks, leaves, and seeds) and within each of these factory factors there are colorful usable portions(eg filaments and fiber beaches, proteins, canvases , and allelopathic chemicals). The yield and composition for these factory factors can be affected by numerous factors including cultivar, planting date, photosensitivity, length of growing season, factory populations, and factory maturity. Thus, when agitating kenaf yields and factory composition it's necessary to understand the product factors that impact these factory factors and their composition. It's important to consider humidity content of kenaf samples when agitating factory yields. It's typically accepted within the kenaf assiduity to report factory yields on an roaster-dry base of 0 humidity. (Charles L Webber III et al, 2002) Kenaf(*Hibiscus cannabinus*L.) is a precious fiber and medicinal factory from the Malvaceae family. It's an indispensable crop that may be a doable source of cellulose which is economically feasible and ecologically friendly. This factory is cultivated for its fiber although its leaves and seeds have also been used in traditional drug in India and Africa for the treatment of colorful complaint conditions. Kenaf filaments are generally used for paper pulp and cordage, but it's also a promising lignocellulosic feedstock for bioenergy product. The kenaf seed oil painting can be used for cuisine and in different artificial operations. The present paper is an overview on its ethnobotanical and phytochemical parcels reported in the literature that we've delved and its great eventuality as a precious multipurpose crop due to multitudinous uses.(R Ayadi, et al, 2017)

OBJECTIVES

- To identify the concept of new product
- To assess the proximate analysis of developed food product
- To design and label the developed food product

- To find cost analysis of the newly developed food product

REVIEW OF LITERATURE

- The literature pertaining to the study entitled, "Standardization of Gluten free snacks using kenaf leaf powder incorporated brown rice nachos and halwa".
- Kenaf originated in India and Africa the plant is best grown in tropics and to some extent in sub-tropics. In Bangladesh, Kenaf is now a promising new fibre crop. Around 0.08-0.09million tons of kenaf produced in the country from 0.04 million hectares of land. The secondary data of kenaf used here were collected from different studies like national and international annual reports, thesis, books and journals during from January to July 2019.(Md Mahbulul Islam,2019)
- The study was conducted at the Regional Station, Bangladesh Jute Research Institute, Kishoreganj, Bangladesh during July to December 2010 and 2011 to determine the optimum sowing date and planting method of kenaf for seed production. The experiment comprised of six dates of sowing viz., 15 July, 30 July, 15 August, 30 August, 15 September and 30 September and three planting methods viz. direct seeding, top cutting and seedling transplanting. (MD. ABUL FAZAL MOLLAH., *et al*)
- The kenaf plant is composed of multiple useful components (e.g. stalks, leaves, and seeds) and within each of these plant components there are various usable portions (e.g. fibers and fiber strands, proteins, oils, and allelopathic chemicals). The yield and composition for these plant components can be affected by many factors including cultivar, planting date, photosensitivity, length of growing season, plant populations, and plant maturity. Therefore, when discussing kenaf yields and plant composition it is necessary to understand the production factors that influence these plant components and their composition. (Charles L. Webber III and Venita K. Bledsoe, 2002)
- The development of high-performance engineering products made from natural resources is increasing worldwide, due to renewable and environmental issues. Among the many different

types of natural resources, kenaf plants have been extensively exploited over the past few years. Therefore, this paper presents an overview of the developments made in the area of kenaf fiber reinforced composites, in terms of their market, manufacturing methods, and overall properties.

Several critical issues and suggestions for future work are discussed, which underscore the roles of material scientists and manufacturing engineers, for the bright future of this new “green” material through value addition to enhance its use. (H.M. Akil, 2007)

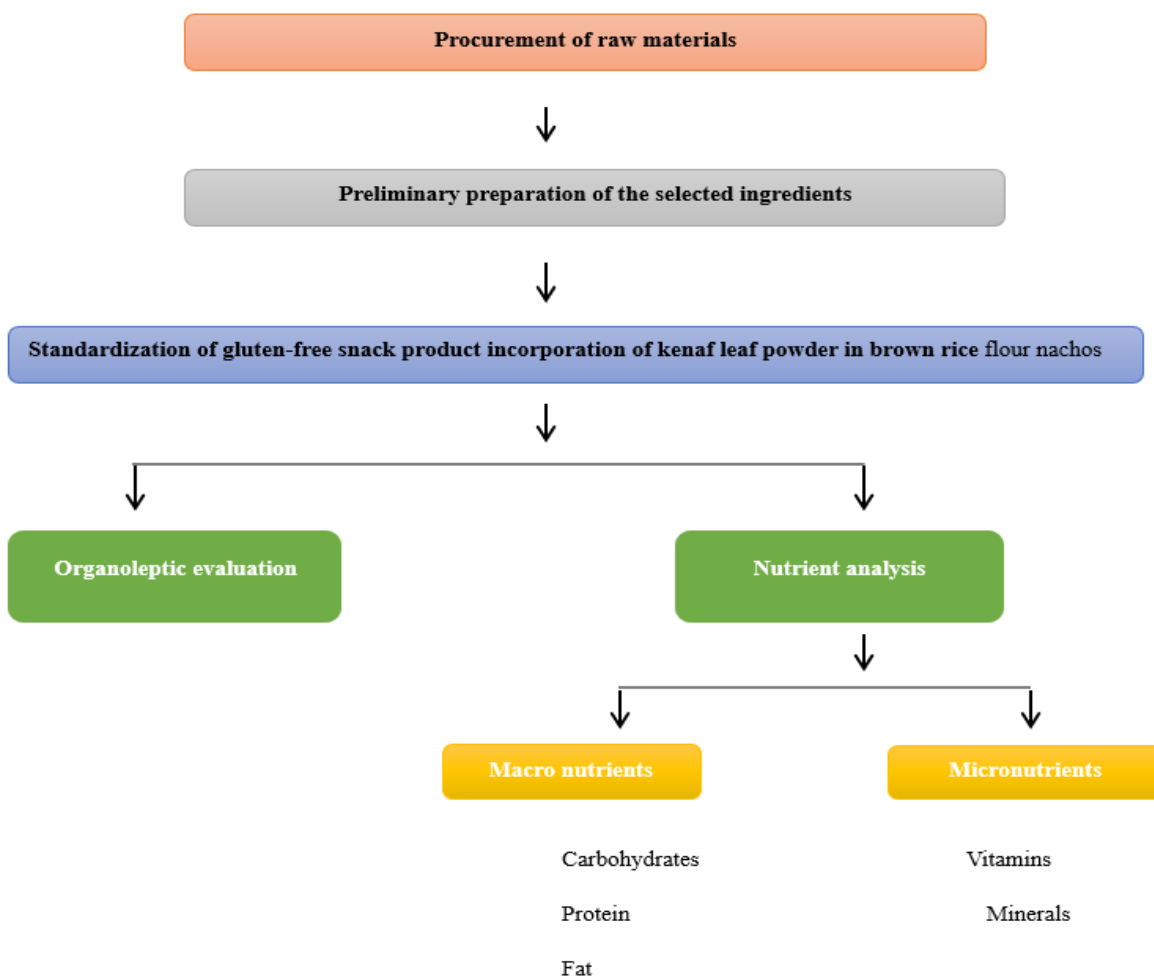
Methods

PROCUREMENT OF RAW MATERIALS

The raw materials such as brown rice flour, refined oil, salt, kenaf leaves were purchased from Departmental stores in Madurai.

(Figure 1)

Flow chart for the Standardization of gluten-free snack product incorporation of kenaf leaf powder in brown rice flour food products.



Standardization of gluten free snacks incorporated with kenaf leaf powder in brown rice flour food products.

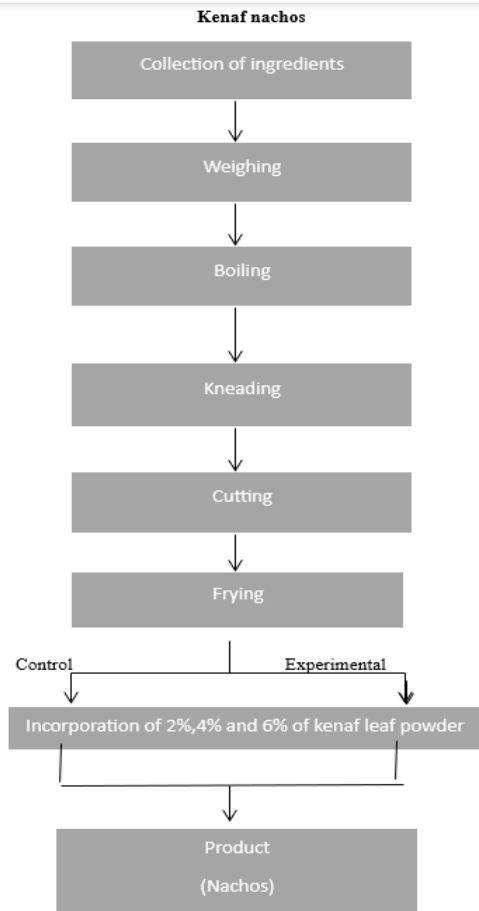
Kenaf leaf powder have high amount of essential nutrients. It was incorporated at the level of 2% and 4% in kenaf nachos and kenaf halwa respectively. Development of kenaf leaf powder

(Figure 2)



Formulation of kenaf leaf powder incorporated brown rice nachos and halwa

(Figure 3)

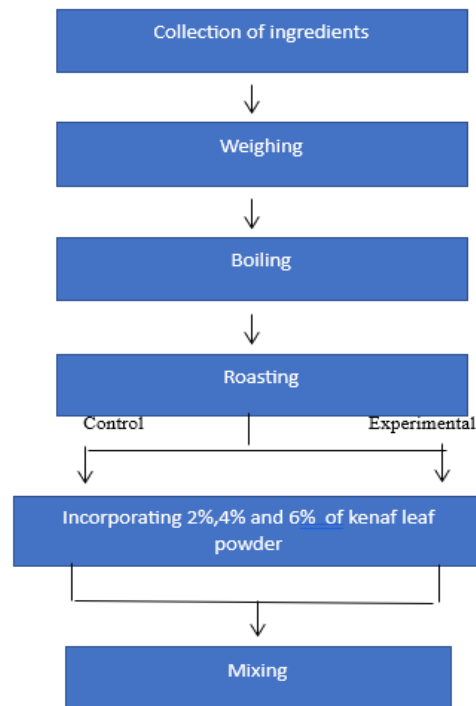


(Figure 4)

Procedure

Weighed amount of brown rice flour and kenaf leaf powder were mixed together. Boil some amount of water and salt in it. Allow it to boil and add weighed flour mixture and mix well for 2 minutes. Knead the flour mixture like chapatti dough and roll it in round shape. Then cut it into small triangle shaped form and allow it to fry. Control, 2%,4% and 6% per cent kenaf leaf powder incorporated brown rice nachos were developed and evaluated for its acceptability. The Flow chart for the developed of Control and Kenaf leaf powder incorporated Brown rice Nachos was shown in Figure 3.

Kenaf halwa



Procedure

The ingredients are weighed properly. Prepare jaggery syrup and heat a pan, then add ghee and roast the cashews and keep aside. Add brown rice flour and kenaf leaf powder then roast it for 2 minutes and then add jaggery syrup then mix it well. Slightly add ghee still it reach its consistency and at last add roasted cashews and mix well. Control,2%,4% and 6% per cent kenaf leaf powder incorporated rice flour halwa were developed and evaluated for its acceptability. The flow chart for the development of control and kenaf leaf powder incorporated rice flour halwa was shown in Figure 4.



Organoleptic evaluation

Organoleptic evaluation is a qualitative method wherein the worker uses his sense organs to study the characteristic features of crude drugs, especially the crude drugs of plant origin. In this method, the worker uses the sense of sight, smell, taste, hearing, and feeling, to study the crude drugs and records data such as size, shape, colors(external and internal), markings, fractures, texture, odor, taste, and so on.(A. B. D. Selvam, 2010).

Nutrient analysis

NUTRIENT ANALYSIS OF KENAF LEAF POWDER INCOPERATED BROWN RICE FLOUR FOOD PRODUCTS

The nutrient content of 2% kenaf leaf powder incorporated brown rice nachos is given in table 1

S.no	Nutrients	KLPIBRN2
1	Moisture	10.80%
2	Crude protein	0.08
3	Fat	23.3%
4	Crude fiber	3.68
5	Total ash	2.04
6	Acid insoluble ash	0.05
7	Carbohydrate	63.82%
8	Energy	458.02 Kcal

NUTRIENT CONTENT OF NACHOS

The nutrient content of 4% kenaf leaf powder incorporated brown rice halwa is given in table 2

S.no	Nutrients	KLPIBRH3
1	Moisture	15.41
2	Crude protein	6.9
3	Fat	13.7
4	Crude fiber	1.3
5	Total ash	1.2
6	Acid insoluble ash	2.6
7	Carbohydrate	41.1
8	Energy	279.2

NUTRIENT CONTENT OF KENAF HALWA

RESULTS AND DISCUSSION

The developed food products namely Nachos and Halwa were prepared by incorporated by kenaf leaf powder at level of 2,4 and 6% respectively.

Recommendations

- Supplementation studies can be carried out by using kenaf leaf powder.
- Shelf life of the standardized products can be assessed.

SUMMARY AND CONCLUSION

The summary of the study carried out the results of kenaf leaf powder incorporated brown rice food products viz., Nachos and Halwa with its sensory evaluation, nutritive value, and the standardization of this products have been summarized and concluded.

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