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FORMULATION AND QUALITY EVALUATION OF KHESARI DAL AND AMLA POWDER ENRICHED PRODUCT

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ABSTRACT

Kesari dal Lathyrus Sativus is a rich source of protein, carbohydrate. Amla it is a rich dietary source of vitamin -c minerals and amino acids and also contains various phenolic compounds. Amla extract is also known to exert potent antioxidant properties and to provide protection from human dermal fibroblasts against oxidative stress. In this study formulated enriched product with khesari dal and amla powder. In the formulation of Product during sensory evaluation showed the highest acceptable and like product is product B with a combination of Kesari and amla powder weighing 60g Kesari dal powder and 40 g of amla powder. The selected sample has a CHO (75.71) g/100g, protein (11.67) g/100g, fat (1.71) g/100g, crude fiber (3.31) g/100g moisture (6.57) g/100g, ash (4.34) g/100g, vitamin (2.48.32) g/100g. In sample A the microbial growth was found observed till the end of the storage period and the total plate count is1770 and it is safe for consumption.

KEYWORDS: *Kesari dal, Amla Powder, Nutritional composition, Enrichment, Sensory evaluation.*

INTRODUCTION

Grass pea (Lathyrus sativus L.) is a drought-tolerant food legume that is produced and consumed in developing countries of Asia like Bangladesh, India, and parts of Africa such as Ethiopia, that are susceptible to drought In Ethiopia, because of its better tolerance to adverse environmental conditions, especially drought, and water-logging, than other legumes; grass pea is a staple food during famines, crop failures and in cases of extreme poverty as well as in times of food crisis. (Lambein et al., 2008).

Kesari dal (Lathyrus sativus L. family Fabaceae syn. Leguminosae), also known as grass pea, is an annual pulse crop that is robust and can withstand extreme conditions like drought and foods. It is also protein rich (26–30%) but one of the main drawbacks of grass pea is the presence of a major anti-nutritional compound (a neurotoxin) β-N-oxalyl-l-α, β-diamino propionic acid (β-ODAP) which is chemically a water soluble non protein amino acid and upon regular consumption causes spastic movements of the legs and leads to paralytic neurolathyrism.

Phyllanthus emblica L. (popular known as amla or Indian goose berry) is an ephemeral tree belonging to the Euphorbiaceae family. Amla fruits are edible and are mainly found in regions of India, Southeast Asia, China, Iran and Pakistan (Walia et al., 2015). Amla has an important role in the traditional medicine of India to reduce anxiety and burning sensation in skin and eyes, improve anemic condition, favor the health of the male reproductive system and reproduction, facilitate digestion, improve liver health, and also exert atonic effect in the cardio vascular system (Ramakrishna and Singh 2020).

MATERIALS AND METHODS

Sample Collection

The sample khesari dal is collected from the local market (100gm) and amla is collected from the local vegetable market for (100gm).

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Formulation of Protein rich Khesari dal amla powder

The khesari dal is roasted at a very low flame till the moisture content should is evaporated. Then the dal is made into fine powder. Amla is washed under running water to remove dust particulars that are present on the fruit. The seed in the amla should be removed and made it into small peace. They are dried under sunlight at (40-45 degrees). Make sure that the moisture contain should is removed totally. the fine piece is made into a powder, the powder is filtered then powder is packed into airtight bag. For product A khesari dal and amla powder were took in equal proportion 50 g and 50 g, whereas Product B Khesari Dal (60g) and amla (40 g), for product C Khesari dal (70 g) and amla powder (30 g).

Table 1: Formulation Protein rich Khesari dal and amla powder

Ingredient	Product A	Product B	Product C
Khesari Dal	50 g	60 g	70 g
Amla powder	50 g	40 g	30 g

Sensory Evaluation

Sensory evaluation is an essential component of product development. sensory evaluation is used to measure, analyze and interpret human reactions to meet sensory characteristics through sight, smell, and touch. The organoleptic characteristics of the Kesari and Amla powder were determined using a sensory study adopting a 5-point hedonic scale method. simple size of 10 members was taken and served with the developed product. They were asked to rate the quality attributes namely aroma, appearance, texture, taste, mouth feel, and overall acceptability through sense organs. The overall acceptability of cookies was evaluated using a 5-point hedonic scale ranging from (1 dislike very much to 5 like very much). 5-like extremely, 4-like very much, 3-like moderately, 2-dislike slightly, 1-dislike extremely

Nutritional Analysis

In the developed product most accepted products Nutritional status was analyzed from carbohydrates, protein, fat, ash, and moisture using standard estimation techniques in the food analysis lab**.**

Table 2 : Nutritional qualities and methods of kesari and amla powder

Nutritional qualities	Methods
carbohydrates	IFSH/SOP/C/TE/142
Protein	IS 219:1973
Moisture	AOAC925.10
Ash	FSSAI MANUAL FOR CEREAL&CEREAL PRODUCT
Crude fiber	IS:10226PART 1:1982
Fat	AOAC:92206
Vitamin c	IFSH/SOP/C/TE/067

Statistical Analysis

The data was obtained from the sensory analysis were subjected to mean and standard deviation and it was statistically analyzed by one -way ANOVA by using a significance of 0.05

RESULT AND DISCUSSION

Sensory Evaluation of Kesari Dal & Amla Powder

In the present study, three types of food supplement products were developed that is product-A, B, and C. These products were sensory evaluated by a group. the scores obtained on various attributes like aroma, appearance texture taste, and mouthfeel overall acceptability were recorded using a 5.0 hedonic scale.

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Table 3. showing the sensory evaluation of the product developed

Parameters	Product-A	Product-B	Product-C
Aroma	3.12±0.71	4.3±0.59	3.1±023
Appearance	3.6±0.96	4.4±0.57	3.7±0.85
Texture	3.7±0.67	4.6±0.50	3.4±0.47
Mouth Fell	4.1±0.66	4.4±0.51	3.5±0.74
Overall Acceptability	3.75±0.63	4.6±0.48	3.4±0.34

The mean scores of sensory -evaluation for the attribute aroma range between 5-3 (Table 3). Product B has the highest Score compared to other products. For Appearances highest mean score for the attributes was observed in product -B (4.4) followed by product A and C with mean values of 3.6,3.72. For Texture rating of Products, Product A (3.72) was followed by Product B (4.6) and Product C (3.4) respectively. The mean score of the taste for the product-A, product-Band product-C were 4.1,4.45,3.5 respectively. The mean score of the overall acceptability was found to be highest for product B. indicating that it was the most liked ratio of the other two blends. On the basis of over-acceptability, it can be concluded that the highest acceptable and like product is product B with a combination of Kesari and amla powder weighing 60gm Kesari dal powder and 40 gm of amla powder. The difference may be due to the number of factors during preparation as this is a multi-step process. Various factors like temperature, moisture, and mixing of food ingredients in different combinations may also affect organoleptic properties. Hence, a difference in attributes score was observed. This sample was further evaluated to estimate the nutritional composition.

Nutritional Analysis of Kesari And Amla Powder

Nutritional analysis is a process that determines the nutrient content of food. The product with the highest acceptability (product-A) was selected for nutritional analysis. The proximate component namely, carbohydrates, protein, fat, dietary fiber, iron, and calcium were analyzed for development product (Kesari and amla powder).

Table 4: Nutritional analysis of Kesari and amla powder.

Para meters	Result	Units
Carbohydrates	75.71	g/100g
Protein	11.67	g/100g
Moisture	6.57	g/100g
Ash	4.34	g/100g
Fat	1.71	g/100g
Dietary fiber	3.31	g/100g
Vitamin-c	248.32	g/100g

The carbohydrate content of Kesari and amla powder was found to be 75.71% in 100 grams of the product. The total protein content of the product 11.67% in 100gms. the fat content 1.71% was found. The moisture of Khesari dal amla powder was to be 6.65 in 100 g. the ash of Khesari dal and amla powder was 4.34% in 100gm. the fiber contain 3.31%in 100 g. The Vitamin -C contain in khesari dal and amla powder 248 g per 100 g.

SHLF LIFE OF KESARI DAL AND AMLA POWDER

The self-life analysis the selected sample was left for 1 month of storage. in the selection of Kesari and Amla fruit powder microbial growth was observed till the end of the storage period and the total plate count is 1770cfu/gm by total plate count test parameter**.**

Table-5. Microbial parameters of Selected Kesari dal and amla powder

Test Para Meter	Unit	Result
Total plat count	Cfu/g	1770

CONCLUSION

The amla powder weighing 60 g Kesari dal powder and 40 g of amla powder shown highest sensory property. It might be due to the difference in factors like preparation steps as this is a multi-step process. Various factors like temperature, moisture, and mixing of food ingredients in different combinations may also affect organoleptic properties. Hence, a difference in attributes score was observed. This

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sample was further evaluated to estimate the nutritional composition. The study concluded that the Kesari dal standardized with 60 g of khesari dal and 40 g of amla powder was highly acceptable in terms of sensory evaluation such as aroma, appearance, texture, and mouth fell overall acceptance. the standardized product of khesari dal was highly nutritious which can help regular diabetics and constipation. the Kesari dal is high in protein yet high in nutrients and it helps to maintain blood sugar. The microbial growth was observed till the end of the superior and the total plate count 1770 Cfu/g. So, it was safe for consumption. Due to its nutritional properties Khesari Dal and Amla Powder can be used as Enriched Product.

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