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Anjeer Milk Shake Powder with Ragi Porridge

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Abstract: ***The project "Anjeer Milkshake Powder with Ragi Porridge" focuses on developing a nutritious, instant health drink using anjeer (fig) and ragi (finger millet). It is designed to provide essential nutrients, energy, and minerals suitable for all age groups. Anjeer supplies iron, calcium, fiber, and antioxidants, while ragi adds calcium, iron, amino acids, and complex carbohydrates. The formulation shows low moisture (6.2%) for good shelf life and is rich in carbohydrates (80.90 g/100 g) and energy (385.68 kcal/100 g). It also contains protein (14.62 g/100 g), fiber (6.5%), minerals (3.9%), and very low fat (0.40 g/100 g). The product supports digestion, improves metabolism, and provides sustained energy. It is easy to prepare, tasty, and suitable as a daily health drink. Future improvements include fortification, sensory testing, and shelf-life studies.***
Keywords: Fresh Fig powder, cooked dried ragi porridge , Skimmed Milk powder

I. INTRODUCTION

The present study focuses on the development of a nutritionally enriched ready-to-mix beverage powder formulated using Anjeer (Ficus carica) and Ragi (Eleusine coracana) blended with skimmed milk powder and sugar. Functional foods have emerged as an important segment in the food industry due to increasing awareness among consumers regarding health and nutrition. Modern consumers seek foods that not only provide basic nutrition but also deliver additional health benefits. Soni, R. & Jain, M. (2023).

Ready-to-mix beverage powders are gaining popularity because of their convenience, portability, ease of storage, long shelf life, and quick preparation. Traditional Indian ingredients such as anjeer and ragi possess exceptional nutritional value and are increasingly being utilized in value-added food products. Incorporation of these ingredients into beverage powder bridges the gap between traditional nutrition and modern convenience. Devi, L., & Sharma, P. (2022)

Anjeer is rich in natural sugars, dietary fiber, calcium, potassium, magnesium, iron, and antioxidants. It contributes natural sweetness, micronutrients, and functional health benefits. Ragi is recognized as one of the richest cereal sources of calcium and dietary fiber and contains slow-release carbohydrates beneficial for sustained energy. **.** Patil, A., & Deshmukh, V. (2024).

Thus, development of an Anjeer Milkshake Powder with Ragi Porridge offers an innovative functional beverage with high nutritional value, consumer convenience, and market potential.

II. MATERIAL AND METHODOLOGY

Table : Material Used

Material	Weight
Fig powder	22%
Ragi Porredge	32%
Skimmed Milk powder (SMP)	46%

1) Dried Anjeer - The Anjeer (Ficus carica) used in this project was in dried form, procured from a local dry fruit store in Chandrapur. It was selected because of its rich content of iron, calcium, fiber, and natural sweetness, which helps enhance both the taste and nutritional value of the product.
2) Ragi Grain - The Ragi (Finger Millet) grains were purchased from the local grocery market in Chandrapur. The grains were clean, unpolished, and free from impurities. Ragi was chosen as the main cereal base due to its high calcium, iron, and protein content, along with its gluten-free nature, which makes it suitable for all age groups.
3) Skimmed Milk Powder (SMP) - The skimmed milk powder used in the formulation was obtained from a reputed dairy brand (such as content of the Amul or Nandini), available in the local dairy store. It was added to improve the taste, creaminess, and protein milkshake powder.

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4) Sugar (white or jaggery powder optional) - For sweetening, fine crystalline sugar or jaggery powder (depending on the formulation) was used. These were purchased from local markets in Chandrapur and served as the natural energy source of the product.
5) Natural flavoring (vanilla cardamom) - In addition, natural flavoring agents such as vanilla or cardamom essence were obtained from a bakery ingredient shop to enhance the aroma and flavor of the final product. If required, maltodextrin was added to improve the texture and solubility, and a food-grade anti-caking agent was used to prevent lump formation and maintain a free-flowing powder consistency.

III. EQUIPMENT USE

Table : Equipment used

SR.NO	EQUIPMENT USED
1.	Weighing Machine
2.	Tray dryer (freez dryer)
3.	Grinder
4.	Seive
5.	Induction
6	Bowl

1) Weighing Machine: Used for measuring ingredients accurately.
2) Induction: A type of cooking range that uses electromagnetic fields for heating.
3) Grinder: Used for Grinding.
4) Bowl : For cooking.
5) Dryer : For drying
6) Seive : For Seiving fine and partical Even Particals.

IV. FLOWCHART OF ANJEER MILKSHAKE POWDER WITH RAGI PORREDGE

Raw material preparation: (Cleaning and sorting of dried and Ragi)
↓
Pre-treatment: (Soak the ragi dor 8-9 hrs after soaking remove feom water and keep 2 -3 days for sprouts after that keept in into dryer or sun drying; trimming and milling of anjeer.)
↓
Drying: Tray/oven drying of anjeer at 50–60°C to achieve moisture <6%
↓
Milling: Grinding of dried anjeer and ragi to fine powders and sieving through #80 mesh.
↓
Blending: Homogenous mixing of anjeer powder, ragi flour, milk powder and additives in ribbon blender.
↓
Packaging: Filling measured quantity into moisture-proof laminate pouches with nitrogen flush

V. FLOW CHART OF PREPARATION OF ANJEER POWDER

Selection Of Anjeer
↓
Washing
↓
Drying
↓
Grinding
↓
Seiving

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VI. PREPARATION OF ANJEER POWDER

1) Selection and cleaning: Choose high quality dried anjeer; remove stems, foreign matter and damaged pieces.
2) Washing (optional): Brief rinse may be done and re-dried to remove surface dust – ensure final moisture is controlled.
3) Drying: Spread anjeer pieces on trays and dry at 50–60°C in a hot-air oven until moisture content reaches approximately 6% (weight constant method).
4) Grinding: Use a pulverizer to grind dried anjeer into fine powder. Pass through mesh to ensure uniform particle size.
5) Sieving and packaging: Collect sieved powder, store in airtight containers and transfer to blender for formulation. .



VII. FLOW CHART PREPARATION OF RAGI POREDDGE FLOUR

Cleaning
↓
Soaking
↓
Drying
↓
Grinding
↓
Cooling
↓
Cooking
↓
Drying

VIII. PREPARATION OF RAGI POREDDGE FLOUR

1) Cleaning : Clean ragi grains (for remove dust and stone)
2) Soaking : Soak it for 8-9 hrs after that remove from water and keep it for sprouts
3) Drying : Keep it into dryer for drying 60-70°C for 8–12 hrs to for dry moisture and reduce microbial load. (Or You Can use Sun drying)
4) Grinding : Grind it Into a fine powder.
5) Cooling: Cool roasted grains to room temperature to avoid moisture pickup before milling
6) Cooking : For Taste enhance
7) Drying : For Powder

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IX. RESULT AND DISCUSSION

Interpretation Of Proximate Results

1) Moisture Content: The moisture content was determined by the oven drying method. About 5 g of sample was dried at 105°C until constant weight. The loss in weight represents the moisture percentage.
2) Ash Content: The total ash was measured using a muffle furnace. The dried sample was incinerated at 550°C until a grayish-white residue was obtained. The ash value represents the total mineral content of the sample
3) Crude Protein: The protein content was estimated by the Kjeldahl method, which determines the total nitrogen in the sample. The nitrogen value was multiplied by the conversion factor 6.25 to obtain the percentage of crude protein.
4) Crude Fat: The fat content was determined using the Soxhlet extraction method with petroleum ether as a solvent. The extracted fat was dried and weighed to calculate the fat percentage.
5) Crude Fiber: Fiber content was estimated by digesting the defatted sample with acid and alkali solutions and calculating the residue remaining after incineration.

DD	Result	Interpretation
Moisture (%)	6.2	Low moisture ensures good shelf life and reduces microbial growth risk. Low moisture ensures good shelf life and reduces microbial growth risk.
Carbohydrates (g/100g)	80.90	Major energy source from lactose and natural sugar
Ash (Mineral Matter) (%)	3.9	Indicates good mineral contribution from ragi and anjeer
Protein (g/100g)	14.62	adds nutritional and functional value.
Fat (g/100g)	0.40	Low-fat content suitable for a light and healthy
Energy (Kcal/100g)	385.68	High energy value suitable for health and energy drinks.
Dietary Fiber (%)	6.5	Derived from ragi and anjeer; aids digestion and improves texture.

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X. PHYSICO-CHEMICAL PROPERTIES

Physico-chemical properties of optimized formulation: - pH (10% reconstituted sample): 6.6 - Water activity (aw): 0.45 - Solubility index (warm milk): >95% dispersibility - Bulk density: 0.45 g/ml - Flowability: Good with anti-caking agent

XI. MICROBIAL ANALYSIS

Microbial testing results: - Total Plate Count (cfu/g): <1000 (acceptable for dried mixes under good processing practices) - Coliforms: Not detected per 10 g sample - Yeast & Moulds: <100 cfu/g These results indicate hygienic processing and adequate drying

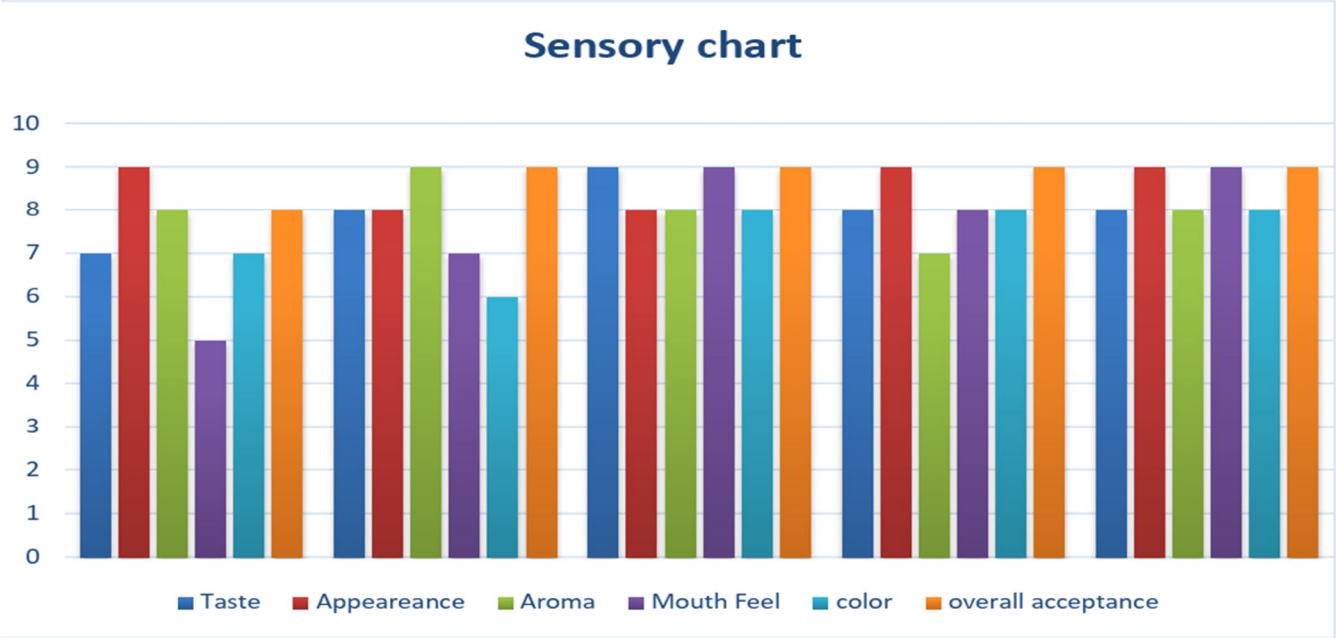


Figure : Graphical representation of sensory evoulation

XII. FINAL PRODUCT



Figure : Anjeer Milk shake With Ragi porred

XIII. CONCLUSION

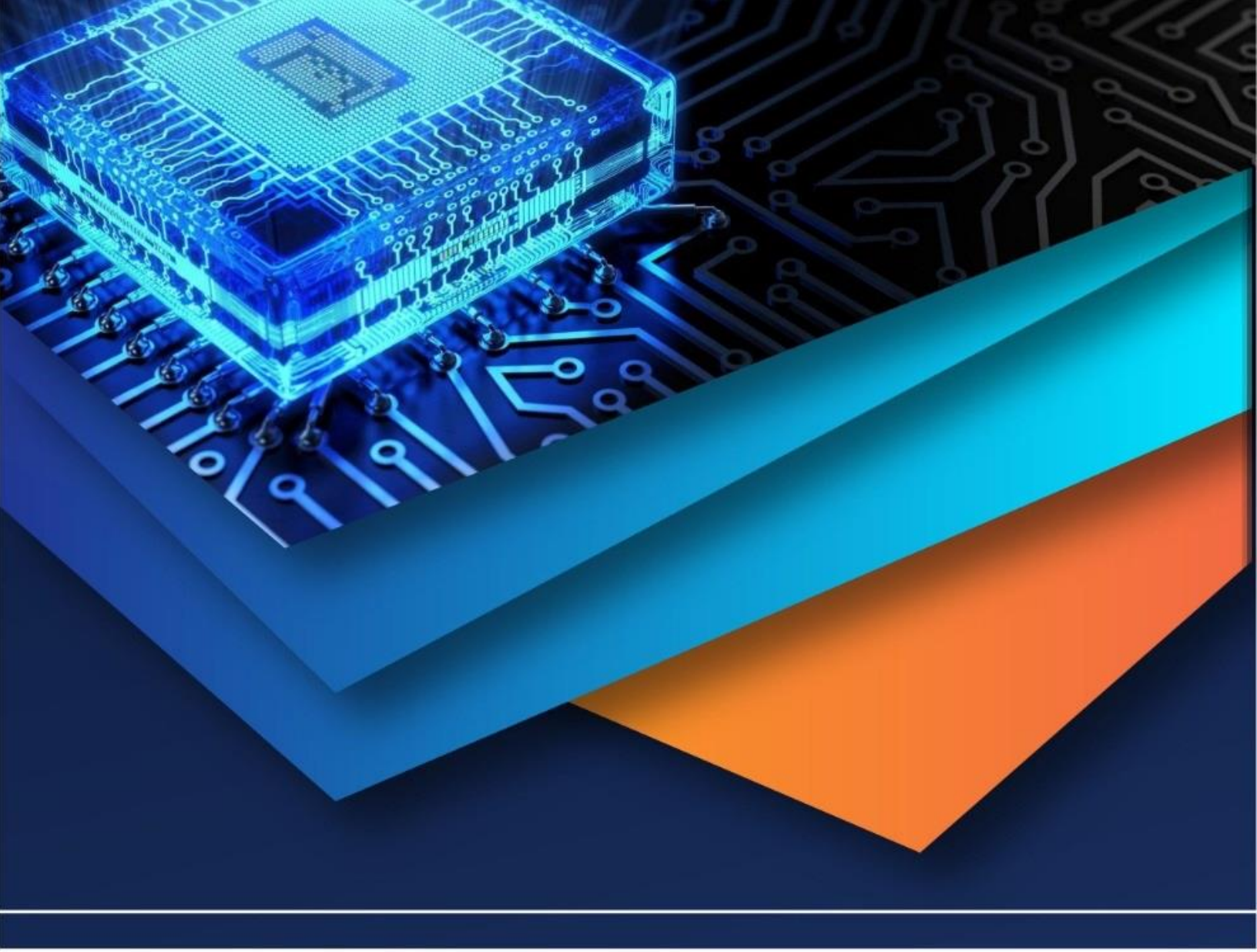
The formulation of Anjeer Milk Shake Powder with Ragi Porridge (Optimized Trial C) has been developed. with balanced nutritional properties and good powder characteristics.

The product combines natural fruit benefits with traditional millet nutrition and milk-based proteins to produce a convenient and shelf-stable instant beverage. Further work can include vitamin/mineral fortification, sensory panels for consumer acceptability, pilot-scale trials, and shelf-life studies under varied climatic.

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