

Characterisation of Jackfruit Seed Flour Using Different Production Techniques

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Abstract: *Jackfruit seed flour is an underutilized resource with significant nutritional and functional potential. This study evaluates the physicochemical and functional properties of jackfruit seed flour produced using different processing techniques. Various methods such as drying, roasting, and grinding were employed to prepare the flour, followed by analysis of moisture content, ash, protein, fat, and carbohydrate composition. Functional properties including water absorption capacity, oil absorption capacity, and solubility were also assessed. The results indicate that processing techniques significantly influence the nutritional profile and functional behavior of the flour. The study highlights the potential of jackfruit seed flour as a sustainable ingredient for food product development*

Keywords: Jackfruit seed flour, processing techniques, functional properties, nutritional analysis, food utilization

I. INTRODUCTION

The increasing demand for sustainable and alternative food sources has driven interest in underutilized plant-based materials. Jackfruit (*Artocarpus heterophyllus*) seeds, often discarded as waste, are rich in carbohydrates, proteins, and bioactive compounds.

Transforming jackfruit seeds into flour not only reduces food waste but also provides a cost-effective ingredient for food formulations. However, processing methods can significantly affect the nutritional composition and functional characteristics of the resulting flour. Understanding these variations is essential for optimizing its use in the food industry.

This study aims to characterise jackfruit seed flour produced using different techniques and evaluate its suitability for food applications.

II. MATERIALS AND METHODS

2.1 Raw Material Collection

Jackfruit seeds were collected, cleaned, and manually peeled to remove the outer seed coat.

2.2 Preparation of Jackfruit Seed Flour

Different production techniques were employed:

Sun drying

Oven drying

Roasting

The processed seeds were ground into fine flour and sieved for uniformity.

2.3 Proximate Analysis

Standard methods were used to determine:

Moisture content

Ash content

Protein content

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Fat content
Carbohydrate content

2.4 Functional Properties

The following properties were evaluated:

Water absorption capacity
Oil absorption capacity
Bulk density
Solubility

2.5 Statistical Analysis

Data were analyzed using appropriate statistical methods to determine significant differences between processing techniques.

III. RESULTS AND DISCUSSION

The results demonstrated that processing methods significantly impacted both nutritional and functional properties.

Moisture Content: Lower in roasted samples, improving shelf stability

Protein Content: Slight variations observed across methods

Functional Properties:

Water absorption capacity increased in heat-treated samples

Oil absorption capacity varied depending on processing intensity

Roasting enhanced flavor and reduced moisture, while oven drying preserved more nutrients. These variations suggest that processing methods can be tailored depending on the intended food application.

IV. CONCLUSION

Jackfruit seed flour exhibits promising nutritional and functional properties, making it a viable ingredient for food product development. Processing techniques play a critical role in determining its quality characteristics. Optimizing these methods can enhance its industrial applicability and contribute to sustainable food systems.

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