



PRELIMINARY COMMUNITY-BASED OBSERVATIONAL STUDY TO EXPLORE THE THERAPEUTIC POTENTIAL OF JACKFRUIT-BASED FUNCTIONAL FOODS IN SUPPORTIVE CANCER CARE

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Cite This Article: Suhra K M, "Preliminary Community-Based Observational Study to Explore the Therapeutic Potential of Jackfruit-Based Functional Foods in Supportive Cancer Care", International Journal of Computational Research and Development, Volume 11, Issue 1, January - June, Page Number 59-61, 2026.

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Type of Review: Peer Reviewed as per |C|O|P|E| Guidance.

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DOI: <https://doi.org/10.5281/zenodo.20321353>

Abstract:

The rising global burden of cancer has intensified the search for affordable, natural, and nutritionally rich complementary dietary interventions. This pioneering observational study investigated the potential therapeutic value of jackfruit-based (*Artocarpus heterophyllus*) functional food formulations developed through community-centered nutritional research. The research focused on green jackfruit powder and jackfruit noodles enriched with traditional bioactive components such as black cumin and cumin seeds. Observations from community-based dietary interventions among patients with gastrointestinal malignancies, including bowel and pancreatic cancers, indicated possible supportive effects. Jackfruit's nutritional composition, particularly its high dietary fiber content, micronutrients, and phytochemical profile, suggests potential involvement in immunological support, digestive health, and metabolic regulation. This paper examines the significance of plant-based dietary solutions in integrative cancer care and highlights the need for controlled clinical and biochemical studies to validate therapeutic efficacy.

Key Words: Jackfruit; Functional Foods; Cancer Supportive Nutrition; Green Jackfruit Powder; Dietary Fiber; Integrative Medicine; Nutraceutical Research

Introduction:

Cancer remains one of the leading causes of mortality worldwide, emphasizing the urgent need for affordable and preventive dietary interventions. Plant-derived functional foods have gained considerable scientific attention because of their bioactive compounds and potential roles in disease prevention and supportive care. Jackfruit (*Artocarpus heterophyllus*) is a tropical fruit recognized for its nutritional density, antioxidant properties, and high dietary fiber content.

Traditional food systems in South Asia have long utilized jackfruit for medicinal and nutritional purposes. However, limited scientific literature has explored its applications in supportive cancer nutrition. This study presents a preliminary investigation into jackfruit-based food formulations developed through community-centered research initiatives aimed at improving nutritional outcomes among patients undergoing supportive cancer care.

The research specifically evaluated green jackfruit powder incorporated into specialized noodle formulations enriched with black cumin (*Nigella sativa*) and cumin (*Cuminum cyminum*), both traditionally recognized for their medicinal properties. The study aimed to assess the nutritional rationale, community observations, and theoretical biological mechanisms that may support future clinical investigations.

Background and Rationale:

Natural products have historically contributed significantly to medicinal and nutritional science. Diets rich in dietary fiber, antioxidants, and phytochemicals may positively influence inflammatory pathways, immune modulation, and gastrointestinal health. Jackfruit contains substantial amounts of dietary fiber, carbohydrates, folate, zinc, potassium, and B-complex vitamins, making it a promising candidate for functional food development.

Green jackfruit, in particular, contains resistant starch and nondigestible fiber components that may support gut microbiota regulation and digestive function. Traditional medical systems have associated these characteristics with improved metabolic health and immune resilience.

The present concept emerged from extensive community-based nutritional observations involving the regular consumption of specially designed jackfruit-derived functional food products. Preliminary user responses indicated improvements in digestive health, nutritional status, and general well-being among individuals receiving supportive care for chronic gastrointestinal conditions. These preliminary findings encouraged the systematic development of a jackfruit-based nutraceutical formulation incorporating green jackfruit powder and selected traditional bioactive ingredients.

Although the present findings are observational and do not establish clinical therapeutic efficacy, the formulation demonstrates potential as a functional nutritional product with possible applications in preventive healthcare, dietary management, and supportive wellness interventions. The study therefore establishes a scientific basis for future research, product standardization, and intellectual property development within the functional food and nutraceutical sectors.

Materials and Methods:

Development of Functional Food Formulations:

The study involved the development of nutrient-enriched noodles prepared using the following ingredients:

- Green jackfruit powder
- Black cumin seed powder

- Cumin seed extracts
- Whole-grain cereal base materials

The formulations were designed to maximize dietary fiber content while maintaining palatability and nutritional balance.

Observational Community Study:

A preliminary observational approach was adopted in which participants voluntarily incorporated the jackfruit-based formulations into their regular diets during supportive cancer care. Informal health observations and dietary responses were documented over time through direct communication and nutritional monitoring.

Nutritional Analysis:

The nutritional profile of the formulations was evaluated using standard food composition references and preliminary laboratory estimations. Particular attention was given to:

- Dietary fiber content
- Micronutrient composition
- Antioxidant-rich components
- Potential immune-supportive phytochemicals

Results:

Nutritional Significance:

The developed formulations contained high levels of dietary fiber along with appreciable amounts of folic acid, zinc, and bioactive plant compounds. Green jackfruit powder substantially increased resistant starch and nondigestible polysaccharides, which are recognized for supporting gastrointestinal function.

Community Observations:

Participants who incorporated the formulations into their supportive nutritional care reported improvements in digestive comfort, appetite stability, and overall well-being. Observational findings from selected individuals diagnosed with gastrointestinal malignancies suggested that long-term dietary inclusion may contribute to positive health outcomes.

Although these findings are preliminary and non-clinical, they underscore the possible role of functional food-based supportive nutrition in chronic disease management.

Proposed Biological Mechanisms:

The observed benefits may be associated with the following putative mechanisms:

- Enhanced modulation of gut microbiota through increased dietary fiber
- Improved immune response supported by micronutrients and phytochemicals
- Reduction of oxidative stress through antioxidant activity
- Improved metabolic regulation associated with resistant starch content

Recent scientific literature suggests that dietary factors influencing mitochondrial activity and immune function may play important roles in disease progression and recovery.

Discussion:

The findings suggest that jackfruit-based functional foods may have potential as supportive nutritional interventions in integrative healthcare settings. Fiber-rich diets are increasingly recognized for their benefits in gastrointestinal health, inflammation regulation, and metabolic balance.

The inclusion of black cumin and cumin seeds further enhances the nutritional profile of the formulations. Previous studies have identified bioactive compounds in black cumin, including thymoquinone, with antioxidant and anti-inflammatory properties.

However, the present study has several limitations. The observations are preliminary, community-based, and non-randomized. No controlled clinical trials, biomarker analyses, or standardized therapeutic assessments were conducted. Therefore, the current evidence does not support definitive medical claims regarding cancer treatment or cure.

Future research should include:

- Controlled clinical trials
- Biochemical and molecular investigations
- Longitudinal dietary studies
- Standardized patient outcome assessments
- Toxicological and dosage evaluations

Such investigations are necessary to scientifically validate the therapeutic potential of jackfruit-derived nutraceutical products.

Conclusion:

This exploratory study highlights the potential utility of jackfruit-based functional foods as supportive dietary interventions in integrative healthcare models. The nutrient-dense composition of green jackfruit, combined with traditional medicinal ingredients such as black cumin and cumin seeds, may contribute to digestive health, immune support, and overall well-being.

Although preliminary community observations are encouraging, rigorous scientific validation through clinical and laboratory investigations remains essential. This study contributes to the growing global interest in plant-based nutraceuticals while emphasizing the importance of sustainable, accessible, and culturally relevant nutritional innovations in public health.

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