

Incorporating The Jackfruit Seed and Spinach Oleracea into Vermicelli

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Abstract— The Project report is entitled to “Incorporating the Jackfruit seed and Spinach Oleracea into Vermicelli. The Vermicelli was made by the ingredients include Jackfruit seed flour, Wheat flour, Ragi flour and Spinach Oleracea puree. The Jackfruit seed and Spinach Oleracea is a good source of protein and fibre. Sensory properties of the Vermicelli were evaluated by the trained and untrained 10 panel members. The Nutrient analysis like Carbohydrate, Protein, Fiber and Fat was done. The Microbial count and shelf life study of the vermicelli were evaluated. The cost analysis also were Determined.

Index Terms- Jackfruit Seed, Spinach Oleracea, Wheat Flour, Ragi Flour

I. INTRODUCTION

The jackfruit (*Artocarpus heterophyllus*), a massive, delicious tropical fruit grown by trees, is a member of the Moraceae family. Although it is now most commonly grown in Bangladesh, Burma, Malaysia, Indonesia, and Thailand, as well as on a smaller scale in Brazil and Australia, it is believed that it originated in India's Western Ghats (Hossain, 2014).

Seeds contain two lectins namely jacalin and artocarpin. Jacalin has been proved to be useful for the evaluation of the immune status of patients infected with human immunodeficiency virus 1 (Haq, 2006). Jackfruit seed powder is a rich source of dietary fibre, protein, carbohydrate, vitamins A, B, C and minerals. It helps to prevent constipation and indigestion.

Due to perishable nature, the seeds are usually discarded as a waste, but when stored in a cool or moist environment, they have a shelf-life of about one month. To extend their shelf-life, the roasted seeds can be made into powder and are used as a value addition of different products. Jackfruit seed powder is used as an alternative flour in bakery and confectionary products by blending it with wheat flour and other

low-cost flours (Hossain, 2014). In certain parts of India, the seeds are consumed by boiling or roasting them or used as a supplement for potato (Banerjee and Datta, 2015).



Spinach (*Spinacia oleracea* L.) is a nutrient-rich leafy vegetable. It contains at least 13 different flavonoids that function as antioxidants and anticancer agents. Spinach contains vitamin K and carotenoids useful for bone and heart protection, useful for eye diseases such as cataracts and macular degeneration (occurring with age). Moreover, it protects the brain from oxidative stress and reduces the negative aspects of aging, which contribute to the decline of brain function. According to Jiraungkoorskul, year spinach may be used in the prevention of Alzheimer's disease. It is an excellent source, which contains over 20 different nutrients, including dietary fiber, calcium, and protein (Butu M and Rodino S, 2019)



Ragi (Eleusine Coracana L.), also known as finger millet is popular in India mostly consumed without de-hulling. It is vibrant millet grown in several states of India and Africa and established as a principal food for a huge section of the residents in these countries. In Karnataka, ragi is prominent millet with the well-known attributes of slow digesting and high calcium content

Wheat (Triticum spp.) is a cereal crop that belong to the family Poaceae (order Poales). Wheat is a staple source of nutrients for around 40% of the world's population. Wheat has already been cultivated for millennia Wheat is essential for the health of people due to having a large number of diet contents and nutritional value. Carbohydrates 55% and 20% of food calories are present in the wheat grains (Muhammad et.al., 2022).

II. METHODOLOGY

- Selection of Samples

The selection of freshly greenish jackfruit and spinach oleracea is Purchased from the local market at Dindigul. Then the seeds were collected from jackfruit for further processing.

- Procurement of Samples

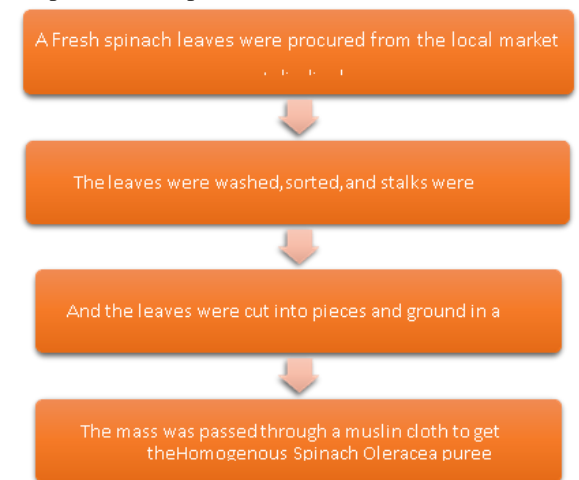
The fresh jack fruit seeds and spinach oleracea were purchased from the local market at Dindigul. Wheat flour and Ragi flour were brought from nearby grocery store at Dindigul. By using the heat processing method, the Jackfruit seeds were boiled, sundried and grounded into flour. The fresh spinach leaves were washed, cleaned thoroughly and ground into a mixture to make a spinach puree.

- Preparation of Jackfruit Seed And Spinach Oleracea Into Vermicelli

Preparation of jack fruit seed flour



Preparation of Spinach Oleracea



III. VERMICELLI

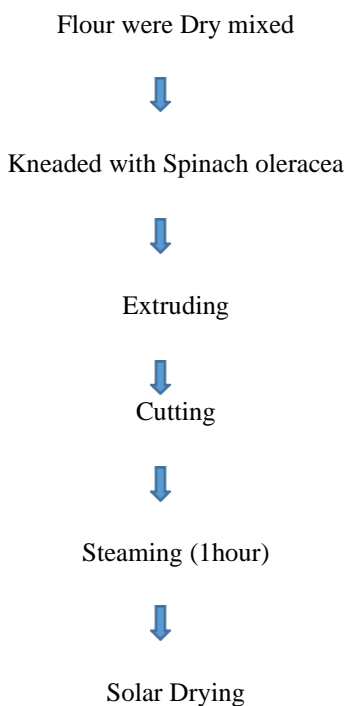
- 75g of jack fruit seed, 275g wheat and 75g Ragi flours were dry mixed.
- Mixed flours were kneaded with 215ml of spinach oleracea puree.
- Ingredients were mixed well and it is passed through the extruder
- A vermicelli were cut into desire length. After cutting, the vermicelli were steamed for half-an-hour
- Then the vermicelli were dried in solar dryer for 2 days.

- Vermicelli were dried.



Vemicelli

FLOW CHART FOR VERMICELLI



IV. RESULTS AND DISCUSSION

The findings for this study entitled “Incorporating the Jackfruit Seed and Spinach Oleracea into Vermicelli” are discussed under the following headings.

ORGANOLEPTIC EVALUATION OF VERMICELLI

Sensory properties of the product were evaluate for the consumer acceptance and sensory attributes of the products. Sensory evaluation of the sample was done in terms of colour, appearance, flavour, texture, taste and overall acceptability. The trained and untrained 10 panel members were selected to evaluate the sensory parameters of the Vermicelli. Appearance, taste, texture and flavour than vermicelli are presented in the table .

s.no	Criteria	Vermicelli
1.	Appearance	8
2.	Color	9
3.	Flavor	8
4.	Texture	8
5.	Taste	8

NUTRIENT ANALYSIS OF VERMICELLI

The Nutrient Analysis include Carbohydrate, Protein, Fat, Fiber of Vermicelli were analysed and shown in the Table

Nutrient Analysis of Vermicelli

S.No	Name of the Test	Result(per 100g)	Test Method
1	Carbohydrate	10.4g	AOAC
2	Protein	12.40g	
3	Fat	8.9g	
4	Fiber	1.90g	

MICROBIAL ANALYSIS OF VERMICELLI

In microbial analysis, the observed microbial count showed less amount of bacterial count, so it was observed that the shelf life of sample was increased and presented in the Table

Microbial Analysis of Vermicelli

S.No	Sample	No of colonies present	Coliform FormingUnit
1.	Vermicelli	137	1.4×10 ¹

SUMMARY AND CONCLUSION

Jackfruit seed and Spinach Oleracea is a good source of protein and fibre. The scientific studies believes that the daily consumption of jackfruit seed helps to lower the risk of heart disease and promote weight loss. Regular intake of jackfruit seeds contains blood sugar and keeps the gut healthy. Spinach Oleracea helps in prevention of cancer and weight reduction.

RESULTS PERTAINING TO THE STUDY ARE SUMMARIZED BELOW

- The appearance, color, flavor, taste, texture of the vermicelli was good.
- The overall acceptability of the vermicelli was 9 percent good.
- The Carbohydrate, Fat, Protein, Crude fibre of the Vermicelli were (10.4g), (8.9g), (12.40g), (1.90g).
- In microbial analysis the observed microbial count for shelf life study showed less amount of bacterial count.
- The functional properties include, water absorption capacity, optimum cooking time bulk density, moisture and pH of the vermicelli were analysed.
- The cost of 500g of vermicelli was rupees 50/.

FUTURE RECOMMENDATION

- Incorporating the Jackfruit seeds flour and Spinach oleracea aids to develop many value-added food products.
- Dehydrated Jackfruit seed flour are stored in an airtight container for future research purposes.
- Jack fruit seed flour and spinach oleracea are processed and used in pharmaceutical industry to cure infectious disease.

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