कृषि एवं किसान कल्याण मंत्रालय
MINISTRY OF AGRICULTURE AND FARMERS WELFARE

NATIONAL BANK FOR AGRICULTURE AND RURAL DEVELOPMENT
NABARD

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AGRISURE GREENATHON

Team Details

- Team Name: CREW 4
- Team Leader Name: DHARSHINI G K
- Problem Statement: Efficient use of agriculture waste in food colours meeting the industrial demands.

BRIEF ABOUT THE IDEA

The extraction process involves using organic solvents like ethanol or acetone to dissolve the pigments from the jackfruit peel. After the pigments are extracted, the solution undergoes filtration and purification to obtain a concentrated pigment solution. This method is designed to be cost-effective, utilizing a low-cost raw material, and environmentally friendly by promoting the use of the entire fruit, thereby reducing agricultural waste.

The natural pigments derived from jackfruit peel provide a safer alternative to synthetic dyes, which are often associated with health risks and environmental pollution. Additionally, the pigments possess antioxidant properties, making them suitable for use in nutraceuticals and health supplements

OPPORTUNITIES

- How different is it from any of the other existing ideas?

Utilizing jackfruit peel, which is often considered waste, promotes sustainability by making use of the entire fruit. Jackfruit peel pigments, rich in caratenoids, could be used in dietary supplements for their antioxidant properties.

- How will it be able to solve the problem?

Problem: the production and disposal of synthetic dyes can cause significant environmental pollution.Solution: natural pigmentations from jackfruit peel are biodegradable and generally less harmful to ecosystems. Using these pigments can reduce the overall environment footprint of industries that rely on colorents.

- USP of the proposed solution

Market Differentiation- Unique Source: Being one of the few solutions that utilize jackfruit peel for pigmentation, this approach can stand out in the market and appeal to eco-conscious consumers.Versatile Applications: Used across various industries, including food, cosmetics, textiles, and pharmaceuticals, providing a broad market appeal.

LIST OF FEATURES OFFERED BY THE SOLUTION

- Rich Color Palette
- Cost-Effective
- Renewable Resource
- Compatibility with Various Fibers
- Cultural and Traditional Value
- Potential Antimicrobial

PROCESS FLOW DIAGRAM OR USE-CASE DIAGRAM

(1) Collect Jackfruit Peels
(2) Clean and Dry Peels
(3) Grind Peels into Powder
(4) Solvent Extraction
(5) Filtration & Centrifugation
(6) Concentrate Extract
(7) Purify Pigment
(8) Dry the Pigment
(9) Test and Control Quality
(10) Package and Store Pigment
(11) Research and Development

ARCHITECTURE DIAGRAM OF THE PROPOSED SOLUTION

[Jackfruit Peels] --(1)--> [Cleaning & Drying] --(2)--> [Grinding/Milling]
(3)[Solvent Extraction]
[Filtration & Centrifugation] < [Solvent Extract]
[Concentration (Rotary Evaporation)]
[Purification (Chromatography)]
[Drying (Spray/Freeze)]
[Yellow Pigment Powder or Liquid]
[Testing & Quality Control]
[Packaging & Storage]

TECHNOLOGIES TO BE USED IN THE SOLUTION

- Ultrasound-Assisted Extraction (UAE)
- Microwave-Assisted Extraction (MAE)
- Filtration and Separation
- Filtration Centrifugation
- High-Performance Liquid Chromatography (HPLC)
- Spray Drying
- Freeze Drying (Lyophilization)

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