Solution:

Vacuum fried chips from biofortified sweet potato

Submitter: ICAR

Solution Overview

What is it, and what problem does it solve? Brief 2–3 sentence description.

These are chips made from carotene and anthocyanin rich biofortified (orange fleshed and purple fleshed, respectively) sweet potato tubers by adopting vacuum frying technology, which has proven to be a viable technology for producing healthy and nutritious fried foods with low fat content.

It also helps to retain the natural pigments in the chips and is a healthier alternative to conventional fried chips.

Key Features & Benefits

Main components and why it is useful? Bullet points summarizing methods, tools, and value added.

- These are healthy and nutritious fried foods with lower fat content and higher nutritional qualities such as beta carotene (provitamin-A) and anthocyanins which aids in the prevention of many diseases on account of their high antioxidant potential.
- When compared to deep fat fried chips, purple sweet potato vacuum fried chips retained 86% more anthocyanin and had 35.6% less oil, and vacuum fried orange fleshed sweet potato chips retained 6.80 mg/100g beta carotene and 50.36% lower oil content than deep fat fried chips.
- The benefit-cost ratio for producing orange fleshed vacuum fried sweet potato chips is 2.13, and that for purple fleshed vacuum fried sweet potato chips is 2.29.

Where It Works and Where It Can Work

Existing and potential target regions, agroecologies, or farming systems. Include examples if available.

- The vacuum fried chips being rich in antioxidants and carotene, it can we potentially used for addressing malnutrition among children, women and tribal population in the country.
- These are also useful to include in the diet of children in Anganwadi.
- Being a nutritionally rich convenient food, another target use is in both airline catering and airport food outlets, where the product offers a practical solution for travellers seeking nutritious and convenient options.

Evidence & Impact

What results has it shown? Stats, pilot outcomes, or testimonials.

- Biofortified vacuum fried sweet potato chips are commercially produced and marketed in states like Odisha.
- M/S Mati Farms Private Limited, founded by Mr. Sanjog Sahu in 2018 in Cuttack, Odisha, is dedicated to enhancing the profitability of local farmers through sustainable value addition of perishable vegetables. The company focuses on producing healthier snack alternatives by commercially manufacturing vacuum-fried chips and powders from biofortified sweet potatoes (purple and orange). As an ICAR-CTCRI Incubator at Bhubaneswar, Mati Farms has received technical guidance for sweet potato flour production, ensuring high-quality processing. Their innovative products are also promoted through ICAR-CTCRI outreach programs, expanding market reach and consumer awareness. By integrating advanced food processing techniques with local agricultural resources, Mati Farms is bridging the gap between farmers and health-conscious consumers, creating economic opportunities while delivering nutritious, value-added products.
- The technology has been licensed to Kudumbashree State Mission of Government of Kerala for production and sale by women groups.

- Further steps to popularise the product among other target groups is in progress.

Scalability & Adoption Support

Why it can be scaled and what's needed to adopt it?

Low-cost, adaptable, partner-ready, etc.

- Sweet potatoes are widely grown in many parts of the country and are adaptable to various climates, making the raw material supply feasible.
- There is a growing consumer demand for healthier, natural snacks with functional benefits. Vacuum-fried chips meet this demand with lower oil content, better nutrient retention, and appealing sensory qualities.
- Vacuum frying is a commercially available technology with growing use in snack food industries. Equipment is scalable from pilot to industrial levels.
- The process can be customized to local varieties of sweet potato, labour costs, and energy availability.

Partners & Contact Info

Who's involved and how to connect? List of key contact and partners + email / phone.

ICAR-CTCRI has developed this technology. The list of key contacts are as follows:

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