

Traditional Indian Snacks

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Introduction

An essential part of the Indian diet is snacking. Traditionally made at home or in the community, traditional Indian snacks make use of a variety of local grains, pulses, oilseeds, and distinctive regional spice mixes. These dishes' clean-label ingredients, practical qualities, and rich cultural heritage have sparked a resurgence of interest in them in the context of rising urbanisation and globalisation. The engineering characteristics, nutritional value, and processing techniques governing Indian traditional snacks are assessed in this research.

Classification of Traditional Indian Snacks:

Indian traditional snacks can be fundamentally categorized based on their core processing methodologies and primary raw materials:

Fried Snacks

Characteristics: Deep-fried in vegetable oils to provide a highly palatable and crunchy texture. They are high in fats and carbs.

Key Representatives: *Samosa*, *pakora*, *kachori*, *sev*, *murukku*, and *chakli*.

Fermented and Steamed Snacks

Characteristics: Probiotic-rich, low-glycemic, structurally light, and highly digestible.

Key Representatives: *Dhokla*, *idli*, and various indigenous steamed doughs from Northeast India.

Roasted, Puffed, and Baked Snacks

Characteristics: produced by baking, dry heat, or hot-sand roasting; less greasy and high in calories.

Key Representatives: *Roasted chana* (chickpeas), *murmura* (puffed rice), *makhana* (foxnuts), and *matki* variants.

Conventional Processing Techniques and Parameters

Indian snacks' sensory and structural qualities are entirely dependent on exact unit operations.

Thermal Operations: The fundamental processes include deep-frying, steaming, roasting, and dry heating. To prevent undercooking or excessive fat absorption, it is essential to control thermal factors, such as the temperature of the frying oil slightly below the smoking point.

Biochemical Modifications: Fermentation, germination, and malting are frequently used. These techniques maximise ingredient bioavailability by optimising enzyme activity and successfully reducing antinutritional elements like phytic acid.

Functional Spice Incorporation: In addition to their sensory qualities, spices like *hing* (asafoetida), *jeera*

(cumin), and *haldi* (turmeric) also serve as natural preservatives and digestive stimulants.

Benefits of Core Ingredients for Health

Legume flours, such as *besan* (gram flour) or whole pulses, which provide significant amounts of protein and dietary fibre, are given priority in traditional formulas. Additionally, traditional methods that use entire grains like millets include vital complex carbs, vitamins, and minerals.

Contemporary Nutritional Supplementation

Redesigning traditional recipes has been a beneficial strategy to alleviate vitamin deficiencies in communities, according to recent studies:

Oilseed Meal Integration: Protein density, antioxidant activity, and in vitro protein digestibility have been significantly boosted when groundnut, sesame, or flaxseed meal by products up to 24% are added to *methi* and *sev* without compromising taste acceptability.

Millet and Pseudo-Cereal Incorporation: Formulating snacks like *murukku* with millets and garden cress seeds optimizes calcium, iron, and fiber profiles.

Glycemic Index Control: Traditional snacks that have been modified have much lower glycaemic indices (between 31% and 47%), which prevents postprandial hyperglycemia and makes them ideal for those with type II diabetes.

Modern Innovations and Industrial Difficulties

Technical Challenges

Shelf-Life Limitations: Rapid rancidity and spoiling are caused by high moisture or fat content.

Standardization: Regional and ethnic snacks require a lot of physical labour, have inconsistent processing methods, and are not very reproducible.

New Approaches

Novel Processing: To lessen lipid rancidity in millet-based snacks, non-thermal techniques including cold plasma and ultrasound are being studied.

Combined Preservation: Merging hydrothermal treatments with irradiation or near-infrared technologies extends snack shelf-life from a standard few days up to 90 days.

Convenience and Scaling: The development of modern "instant mixes" (e.g., instant *dhokla* mix enriched with pumpkin flour or ready-to-fry *samosa* sheets) permits rapid preparation while ensuring prolonged storage capabilities and consistent industrial quality.

Conclusion

For food scientists, traditional Indian snacks provide an excellent matrix that balances nutrition, sensory appeal, and

clean label requirements. Fermented and roasted choices offer intrinsic therapeutic benefits, whereas deep-fried versions need strict portion control or alternate processing like baking. Successful worldwide commercialisation and the elimination of regional malnutrition are made possible by combining conventional food knowledge with cutting-edge technical concepts, such as fortification with agro-industrial by-products and sophisticated non-thermal shelf-life extensions.

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