



# Utilization of Cereals and Legumes in Traditional Food Products



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**Submission:** July 6, 2017; **Published:** October 13, 2017

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## Abstract

Among the five food groups, cereals and legumes are chief food and cash crops for optimum nutrition essential in maintaining healthy life style. They are major sources of macronutrients and micronutrients especially the vitamin B and minerals. Cereal grains contribute adequate quantities of carbohydrates, proteins and micronutrients to the diet of human and legumes are excellent source of good quality proteins, dietary fiber, minerals, and vitamins. Many researchers have enlightened the health promoting and promising concepts of whole cereals and legumes that have the natural ability to reduce the risk of metabolic as well as degenerative diseases.

**Keywords:** Cereals; Legumes; Processing; Foods and Nutrition

## Introduction

The studies on the utilization of cereals and legumes in combination for the formulation of traditional foods reported that different variety of food products and dietary habits persistent all over the world for several years. These combinations includes different food groups like cereals and pulses, fruits and vegetables, milk and milk products, nuts and oilseeds, meat, fishes and poultry. Even today combination of cereals and legumes play chief role in the drive of developing countries. Whole cereals are found to be economical, as well as good source of energy and protein. Legumes are said to be the poor man's meat because of their elevated protein content ranging from 20% -40% [1].

## Traditional Processing

With the application of roasting and germination techniques, laddu and mathari products were developed using the formulated mix consisting of pearl millet, moth bean and peanuts [2] scored the maximum sensory values. Srivastava et al., [3] prepared sweet gruel, salty gruel, halwa, burfi and biscuits using malted proso millet convenient mix. The formulated products were evaluated for sensory quality and nutrient composition and the results were found to be 3.97-11.93g protein, 79-378kcal energy, 0.69-8.33g fat, 22.91-68.73mg calcium, 2.45-7.36mg ascorbic acid, 1.16-3.5mg iron and 17.75-53.25mcg of beta carotene/100g. Panjiri kheer, halwa and dalia were prepared by germinating

bengal gram, green gram, lentil and roasted peanut in different ratio had highest sensory scores when compared to control [4]. Similarly, Hemalatha et al., [5] reported that there was increase in ash, fiber, calcium, phosphorous and iron content in the biscuit formulated using little millet and wheat in varying proportion (10:90, 20:80, 30:70, 40:60 and 50:50). Among different variations 30:70 were highly acceptable and obtained maximum score of 8.45 out of 9.

Cowpea flour, a low cost - high quality protein complement to impart wanted functional properties in products such as baby food, bread, pasta and extruded products [6]. Cereal grain flour is in general used as key raw material in extruded snack foods. Composite flour was formulated using wheat, chickpea and soya bean by Kadam et al. (1985) and Prinyaiuwotka et al. [7,8] . They found that 20% of chickpea flour was considered the best because all the sensory quality characteristics of the products were same as control. 5% of methi incorporated to the chapathi has increased the nutritional quality of flour particularly in minerals (calcium and iron) and fibres.

The cereals and legumes are used in the other foods namely bread, bun and cakes. Whole wheat and soya bean in different proportion ranging from 10 % - 40 %, where substitution of 10 % soy flour into wheat flour has shown the best scores in overall quality. The soy flour incorporated bread was found to be nutritionally superior by having higher protein, fat and

crude fiber [9]. Apart from that, cookies and biscuits made with cereals are being popularized among the consumers. Wheat flour is substituted with legume flour in the formulation of cookies and considerable difference ( $P \leq 0.05$ ) was observed in ash, protein, crude fibre and total carbohydrate among control cookies and legume substituted cookies. Overall observation shows that the cookies incorporated with legume flour had the best flavour, crispiness and acceptability [10].

Fernandez-Orozco et al. [11] & Merero et al. [12] formulated baby foods from the germinated cereals and legumes. Cereals and legume blends such as rice, cowpea, corn and mung bean were germinated for the period of 72 hours and the gruels prepared from these combinations of cereals and legumes met 1/3rd RDA of protein and energy requirements of infants. Ocheme & Chinma [13] formulated porridge utilizing millet flours which was soaked and germinated and evaluated for the physicochemical and sensory property. Significant increase in the nutritional composition and physical properties was observed.

Cereal and legumes based weaning foods were formulated and the nutritional composition was investigated by Mariam [14]. The overall outcome of the study specifies that the weaning food formulated using the locally available cereal and legumes were superior in all the nutrients and helps in combating the problem of malnutrition among infants.

### Conclusion

Processing not only enhance the flavor and palatability of foods but also shows an increment in the bioavailability of nutrients by reducing the anti-nutritional factors and heam-agglutinins. Among different processing methods, sprouting and dehydration are the two types of processing which alters the chemical and physical changes for a successful food formulation. In addition sprouting of cereals and legumes will enhance the nutritional property and thereby provide good nutritional status as well.

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DOI: [10.19080/NFSIJ.2017.03.555616](https://doi.org/10.19080/NFSIJ.2017.03.555616)

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