

# Effect of Supplementation of Soy Flour on Rice Fryums Quality

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**Abstract:** *The present study was to accomplish to the Effect of supplementation of soy flour on rice fryums and to determine its nutrient composition and sensory evaluation. To incorporate the formulated soy flour into rice fryums at the different levels of soy flour in the variation of 10 per cent, 15 per cent and 20 per cent proportions. Whereas without incorporate soy flour into rice fryums were served as control. Among the different treatment 15 per cent incorporated soy flour was recorded highest score for overall acceptability.*

**Keywords:** Rice fryums, Sensory evaluation

## 1. Introduction

Health is the level of functional and metabolic efficiency of a living organism in humans it is the ability of individuals or communities to adapt and self-manage when facing physical, mental or social challenges [1]. The World Health Organization (WHO) defines health as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. The term healthy is also widely used in the context of many types of non-living organization and their impacts for the benefit of human such as in the sense of healthy communities, healthy cities or healthy environment.

Soya bean is a legume and it is one of the few plants that provide complete protein as it contains eight amino acids that essential for human health. The plant is known as miracle bean [2]. The genus name Glycine is the same as a simple amino acid. Among the legumes the soybean also classed as an oilseed is preeminent for its high 38 to 45 per cent protein content as well as its high approximately 20 per cent oil content [3].

The protein in food is made up of amino acids and the quality of that protein is based on the number and types of amino acids it contains. Animal foods contain high-quality protein and egg white has the highest quality protein of all [4]. Unlike other plant or vegetable proteins, soy protein contains all of the essential amino acids necessary for good health. That makes soy protein a complete protein, similar to the protein found in animal foods [5].

Soy protein breaks down in our digestive system into amino acids that are absorbed into our bloodstream and travel throughout the body. In the process, some of these amino acids combine with others to form various types of protein that provide structure to the organs and tissues and play roles in various body processes. Some amino acids in soy protein also function as hormones, enzymes and other active substances in the body. Soy protein is a protein that is isolated from soybean. It is made from soybean meal that has been dehulled and defatted. A dehulled and defatted soybean is processed into three kinds of high protein

commercial products such as soy flour, concentrates and isolates [6].

Soy flour is made by grinding soybeans into a fine powder. It comes in three forms: whole or full-fat contains natural oils, defatted oils removed with 50 per cent protein content and with either high water solubility or low water solubility and lecithinated (lecithin added). Soy grits are similar to soy flour except the soybeans have been toasted and cracked into coarse pieces [7].

Per 100 g the soy flour contains of energy 350.5 kcals, protein 38.5 g, fat 10.47 g, carbohydrate 24.5 g, fibre 4.02 g. Provided the composition of minerals as sodium 15 mg, phosphorous 730 mg, calcium 320 mg, iron 10 mg and zinc 5 mg. Provided the composition of Amino acids contents as per 100 g Cysteine 0.9 g, Phenylalanine 5.7 g, Arginine 5.8 g, Histidine 2.3 g, Lysine 5.4 g, Tryptophan 1.2 g, Methionine 2.0 g, Threonine 4.0 g and Isoleucine 4.7 and the isoflavones content of the soy flour is 2.6 g. [8].

The health benefits of soy bean mainly attributed to Amino acid profile of soy protein is excellent amongst plant proteins. Hence, it is superior to other plant proteins as it contains most of the essential amino acids except methionine [9], which is abundant in cereals and it is the most economical source of dietary protein. Soy protein directly lowers serum cholesterol levels [10]. Soybeans also contain biologically active or metabolic proteins such as enzymes, trypsin inhibitors, hemagglutinins and cysteine proteases very similar to papain. The soy cotyledon storage proteins are important for human nutrition. Soybean contains isoflavones, which are said to have potential anticancer effects. It contains two primary isoflavones called Genistein and Diadzein and a minor one called as Glycitein [11].

When compared to human breast fed or cow milk formula fed diets, which contain isoflavone levels of 0.005 to 0.01 mg/day, soy-based infant formulas contain isoflavone levels of 6 to 47 mg/day that constitute several orders of magnitude greater than they receive from other sources of nutrition [12]. They retard bone loss in premenstrual and postmenstrual women, soluble fiber in soy foods control blood sugar. Soy foods are quite important to us as they

reduce the risk of heart disease. Regular consumption of soy food delays the process of aging and also improves mental and physical abilities, memory power and hemoglobin levels of children [13] Owing to these qualities, soybean has long been used in supplementary foods.

## 2. Materials And Methods

Soya bean is commonly available in all grocery stores. It was selected from a familiar departmental store, India for making of the soy flour. Soya bean selection should be based on maturity, yield, seed quality, well shaped, devoid of crackers were the criteria used for selecting soya bean from the market. Soy flour was incorporated into rice fryums at three different levels of variations. The treatments for preparation of soy flour incorporated in rice fryums were as follows.

### TREATMENT

- T1- Rice flour (control)
- T2- Rice flour + 10% soy flour
- T3- Rice flour + 15% soy flour
- T4- Rice flour + 20% soy flour

Rice fryums was prepared by mixing rice flour with specified amount of soy flour as mentioned treatment. All the ingredients such as rice flour, soy flour, oil, salt, cumin seeds, chilies and water were used to make dough. The prepared dough was allowed to cool and then it was put in a mould and pressed out into ribbon shape in the clean spreaded cotton cloth. Once the fryums were spreaded out in the cotton cloth, it was kept out in a clean environment for sun drying for about 4 days to drain out the moisture content completely for extended shelf-life of the product.

The sensory evaluation of the incorporated products were carried out by 10 am among the semi-trained (n=30) of Mother Teresa Women's University, Chennai, Tamilnadu, India, belonging the Department of Home Science. The evaluation of criteria includes organoleptic characteristics such as appearance, aroma, mouth feel, firmness, crunchiness, taste, friability, musty and overall acceptability. The panelists were explained about each quality attribute to avoid judgment variability. The mean scores given by thirty members were used for statistical analysis.

## 3. Results and Discussion

The evaluation of criteria includes organoleptic characteristics such as appearance, aroma, mouth feel, firmness, crunchiness, taste, friability, musty and overall acceptability. The data pertaining to the organoleptic evaluation was influenced by different treatments were presented in Table I. The overall acceptability and rating scale score was higher for the 15% level of incorporation of soy flour. The data reveals that there were significant differences at the level of 1% significances among 15%.

## 4. Conclusion

Soy bean has particular and proven advantage on human health. Due to its nutritional qualities, especially high in oil and protein content, soy is part of many humanitarian programmes as one of the most important legume. Soy protein products offer benefits to women in various life stages. Benefits include improved diet and cardiovascular status, prevention of certain types of cancer, improved health following menopause, obesity control and more options for food variety. The area of soy protein research has increased in popularity in recent years among multiple health disciplines. The research overall indicates that soy foods can be safely incorporated into the diets of essentially all healthy individuals with the exception of those allergic to soy protein. Among the three different variations 15 per cent of soy flour incorporation into rice fryums was record the highest scores for overall acceptability and thus it can be popularized among the community.

**Table 1:** Scores of organoleptic evaluation of incorporated rice fryums

Level of variations of soy flour (%)	Mean ± S.D	t-value	Level of significance
Control (0)	47.2 ± 2.97	0.38	1%
10	45.2 ± 6.03	4.04	NS
15	45.9 ± 3.28	1.80	1%
20	41.7 ± 6.64	5.14	NS

NS- No Significance

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