



Physio chemical properties of soya flour incorporated high Protein biscuits

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Introduction

The soya bean is the seed of leguminous soya bean plant. Soya food has been a staple part of the chinese diet for over 4000 years but have only been widely consumed in western countries. Since the 1960's. Soya food include tofu tempeh textured vegetable protein, miso, soya sauces, soya oil and margarine and soya daily alternative.

Soya is an excellent source of high quality protein is lower in saturated fat and cholesterol free. Recent research has indicated soya has several beneficial nutritional benefits. Soya bean contain high concentrations of several compounds which have demonstrated anti- carcinogenic activity. These include isoflavonoids protease inhibitors and phytic acid. The low incidence of breast and colon cancer in china and japan has been partially attributed to the high consumption of soya products.

The population everywhere desires to eat a healthier diet without changing their conventional dietary patterns.

1. Eating of healthy food has received more attention in the recent years due to disliking of some having some health concerns such as fat sugar and salt.

2. Cereal based food products are part of stable diet of global population, where wheat is leading cereal crop and principally used in bakery products due to its much appreciated rheological characteristics. However wheat protein is deficient in some indispensable essential amino acid (3, 4) composite flour technology for wheat supplementation with protein rich materials like soya bean could be an approach to overcome the malnutrition. The growth of bakery industry is about 10% per annum and the products are increasingly becoming popular among all sections of people (5). Biscuits processes several attractive features including wider consumption base, relatively long shelf- life, more convenience attractive for protein fortification and other nutritional improvements. Biscuits are predominantly based on refined wheat flour and the blending of refined wheat flour with soybean can upgrade the nutritional quality. Soy bean flour powder has recognized its utility as a base ingredient in preparing composite flour for bakery products. Therefore in present investigation, efforts were made to standardize level of soy flour in



preparation of biscuits on the basis of physical, sensorial and nutritional quality characteristics.

MATERIALS AND METHODS:

1. Selection of soya bean:

The soybean is the seeds of the leguminous soybean plants. Soy food have been a staple part of the chine diet for over 4000 years but have only been widely consumed in western countries. It contains protein 16g, Dietary fiber 12g. Other soybean nutrients include vitamin B6, and B1, phytosterols, and minerals nutrient such as calcium, phosphorous, Iron, and potassium.

Soy bean were obtained from the local Market in Madurai, Tamil Nadu, India. The seeds were cleaned by hand to remove foreign materials. The cleaned seeds were processed using for sun drying method.

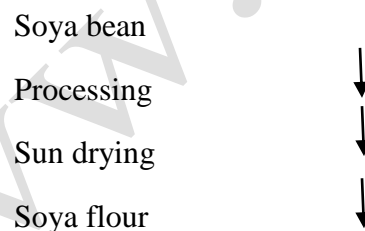
2. Preparation of raw materials:

Soya bean seeds were sorted and soaked in water. Thereafter, the seed coat was removed and drained. The seeds were than cleaned and Boiled and sun dried. The dried seeds were milled in to flour. The flours were screened sieve and stored refrigerator to prevent spoilage particularly rancidity until usage. The process ensures effective removal of the anti-nutritional factors.

3. Boiled and sundried sample:

Boiling was done for 30 min (Muller 1988) drained and sun dried in the open air for four days to a constant weight.

Schematic Diagram for the study:



4. Assessment of physical parameters of soya bean flour:

Physical appearance of grain is an important characteristic which determines consumer acceptability and hence the study of physical characteristic of the grain becomes a basic step in any research.

a) Size:

The size such as length, breath and width of the seeds were measured using 0.04mm.



b) Thousand seed weight:

Thousand seed were measured by counting 100 seeds and weighing them in an electronic balance and then multiplied by 10 to give mass of 1000 seeds.

c) Thousand grain volume:

Thousand randomly selected grains were dropped in a measuring cylinder containing known volume of distilled water. The difference in volume was recorded in ML.

d) Hydration capacity /index:

Hydration capacity was calculated as the difference in weight of seeds after soaking for 24 hours. It was expressed as weight per gram (Dhingra et al., 1992)

Hydration index was calculated by using the formula given by Kantha et al.,

$$\text{Hydration index} = \frac{\text{Hydration capacity per 1000 seeds}}{\text{Original dry weight of 1000 grains}}$$

5. Physical properties of processed soya bean powder:

The physical properties of the all processed soya bean powder were analyzed. The physical characteristics such as rehydration ratio, water absorption capacity and bulk density of the processed soya bean flour were analyzed.

6. Selection of processed soya bean flour for incorporation in Biscuits:

Processed soya bean flour was selected for the development of biscuits.

CONCLUSION:

Soya bean rich source of complex Carbohydrate, protein, vitamins and minerals. Soya bean has been reported to have potential cholesterol lowering effect. They are also reported to possess anti- diabetic and anti- carcinogenic properties. Eating of healthy food has received more attention in the recent years due to disliking of some having some health concerns such as fat, sugar and salt. Biscuits process several attractive features including wider consumption base relatively long shelf- life, more convenience attractive for protein fortification and other nutritional improvements. It is low in carbohydrate and provides a good source of protein. It is great tasting natural and can have a plethora of healthy effects on the body. The anabolic



isoflavones is soy not only have exhibited effects as powerful men and women such as cancer fighting. Soya isoflavones also play an important role in protecting and maintaining strong and healthy bones.

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11. Source: Solae Health Claim Petition: Soy Protein and the Reduced Risk of Certain Cancers, March 2004