



ISSN: 2395-7476  
IJHS 2016; 2(2): 47-49  
© 2016 IJHS  
www.homesciencejournal.com  
Received: 10-03-2016  
Accepted: 11-04-2016

**Saxena G**  
Assistant Professor, Department  
of Home Science, the IIS  
University, Jaipur, Rajasthan,  
India.

**Vyas P**  
Student, Department of Home  
Science, The IIS University,  
Jaipur, Rajasthan, India.

## Effect of processing on the nutritional composition of Soyabean

**Saxena G, Vyas P**

### Abstract

Soybean is classified as an oilseed rather than a pulse by the UN Food and Agricultural Organization (FAO). Soybeans have historically been called "meat of the field" or "meat without bones. Soybean is mainly cultivated for its seeds used commercially as human and stock feed and for the extraction of oil. It is significant source of protein. It is presently the world's most important grain legume in terms of total production and international trade. Products of soybeans include soy flour, soy milk, tofu and soy sauce etc. As per the present investigation, soyabean was processed- soaked (12 hours), germinated (12 hours soaking followed by germination in sprout maker and soaking (12 hours) followed by blanching. The proximate composition and Calcium, Phosphorus, Iron and Vitamin C were analyzed by standard method (A.O.A.C, 2005). A product was developed from processed soyabean containing high protein content for school going kids. Recipe formulated by incorporating soyabean was Mathari which was evaluated for its sensory characteristics on a 5-point rating scale by a semi trained panel of 10 judges selected through threshold test.

**Keywords:** Soyabean, Threshold Test, *Mathari*

### 1. Introduction

The soybean (*Glycine max*)<sup>[1]</sup> is a species of legume native to East Asia, widely grown for its edible bean which has numerous uses. The beans contain significant amounts of protein as well as phytic acid, alpha-linolenic acid, and isoflavones. Soy protein is essentially identical to the protein of other legume seeds and pulses<sup>[2]</sup>. Some of the health benefits of soybean are helps in lowering cholesterol level<sup>[3]</sup>, helps in preventing certain forms of cancer<sup>[4]</sup>, helps in preventing bone loss, helps in type 2 diabetes. Soybean helps in improving cognitive function, particularly verbal memory<sup>[5]</sup>.

### 2. Materials and Method

Soybean was procured from local market of Jaipur city; the soybeans grains were physically examined for sand grits and other heavy particles. Then, the processing of soybean was done i.e. Soaking- 12 hours, germination- 12 hours, soaking followed by germination in a sprout maker, blanching-12 hours soaking and then blanching. The processing was performed in the cookery laboratory, Department of Home Science, The IIS University, Jaipur.

Proximate composition of soybean was analyzed- Moisture, protein, fat, carbohydrates, fiber and energy (AOAC, 2005). Soyabean was also analyzed for phosphorus (Colorimetric), calcium (EDTA), iron (Wong's method) and vitamin C (Titration method). After processing, soybean containing highest protein content was used to develop a value added product for school going kids. The product developed was *mathari* which was evaluated for its sensory characteristics.

The sensitivity threshold test was used for the selection of panel members for sensory evaluation of developed product.

Standardization of recipe was done to obtain consistently good quality outcome which means that every repetition of the procedure will result in a standard quality product.

Blanched soyabean flour was substituted for refined wheat flour in four different variations of 5g, 10g, 15g, and 20g to formulate *mathari* for school going kids.

### 3. Results and Discussions

Soyabean is easily available everywhere and rich in protein but due to certain antinutritional

#### Correspondence

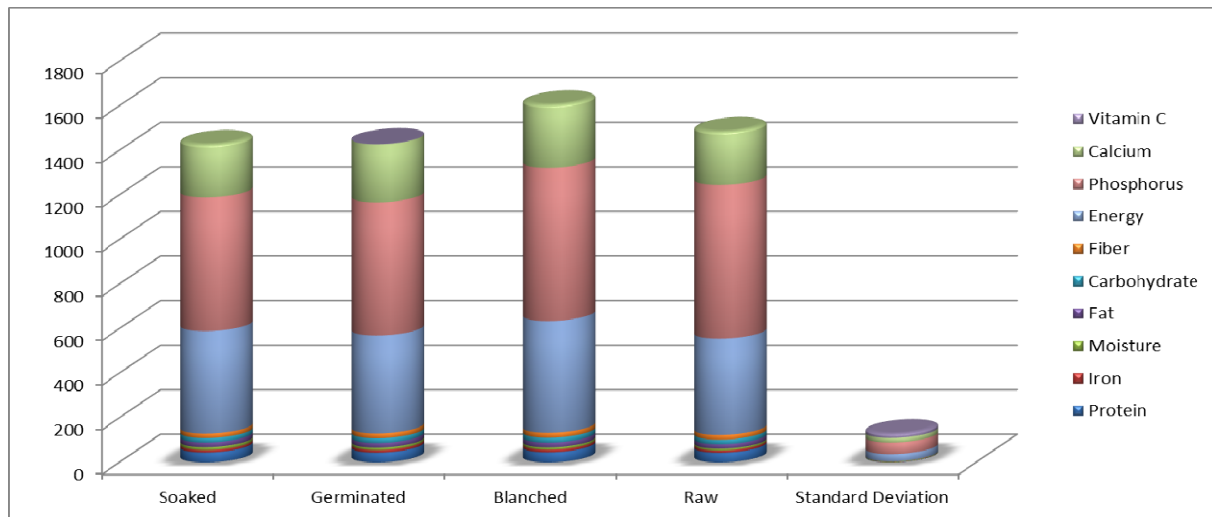
**Saxena G**  
Assistant Professor, Department  
of Home Science, the IIS  
University, Jaipur, Rajasthan,  
India.

Factors like trypsin inhibitors, its bioavailability decreases, so, to increase the bioavailability and digestibility of soyabean processing was done in the present study. Soyabean was soaked Germinated and blanched and then oven drying was

done. The dried powder was used to analyze the proximate composition and other nutrients. The nutritional composition of processed soyabean is represented below.

**Table 1:** Nutritional composition of processed Soyabean procured from local market of Jaipur city

Samples	Protein	Iron	Moisture	Fat	Carbohydrate	Fiber	Energy	Phosphorus	Calcium	Vit C
Soaked	44.32	11.26	12.7	20.84	20	20	460	600	238	-
Germination	43.62	11.8	10.8	20.68	21.33	21.33	440	598	260.2	0.78
Blanched	45.18	11.96	10.2	21.32	22	22	502	688	282.33	-
Raw	43.2	10.4	8.1	19.5	20.9	20.9	432	690	240	-
Standard Deviation	±0.866	±0.704	±1.895	±0.772766	±0.838	±0.838	±31.299	±51.974	±20.719	±18.624



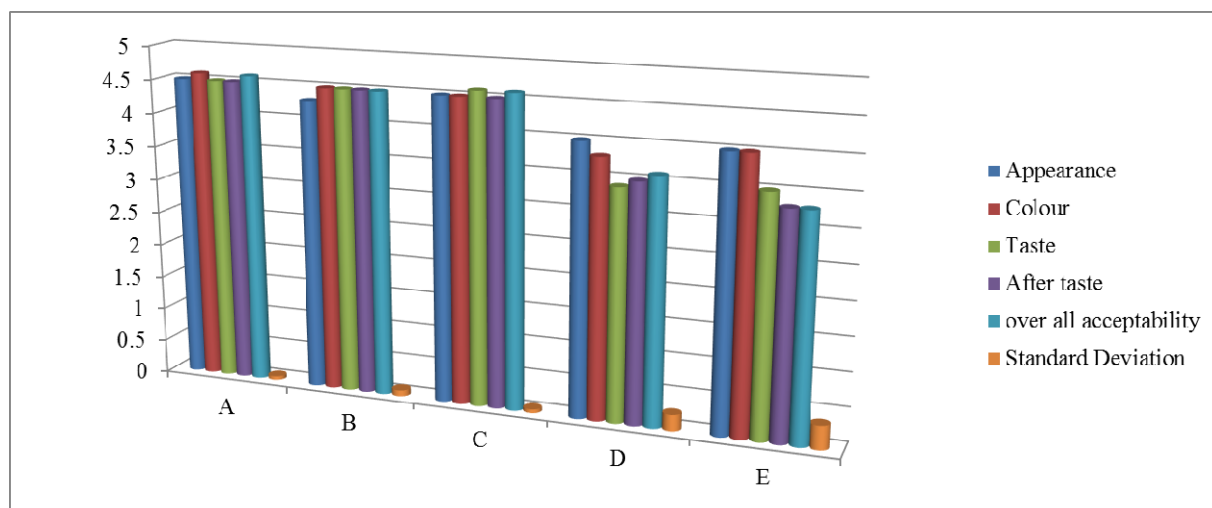
**Fig 1:** Comparison of Proximate in Raw and Processed Soyabean

Different variations of *mathari* were prepared by incorporating blanched soyabean flour. Product A was standard, product B contained 5 g blanched soyabean flour, product C contained 10 g blanched soyabean

flour, product D contained 15 g blanched soyabean flour and product E contained 20 g blanched soyabean flour. The product which contained 10g of blanched soya flour was reported to be most acceptable.

**Table 2:** Sensory evaluation of Matharis prepared by using processed soyabean flour

Sample code	Appearance	Color	Taste	After Taste	Over all acceptability	Over all mean score	Standard Deviation
A	4.5	4.6	4.5	4.5	4.6	4.5	±0.054772256
B	4.3	4.5	4.5	4.5	4.5	4.4	±0.089442719
C	4.5	4.5	4.6	4.5	4.6	4.5	±0.054772256
D	4	3.8	3.4	3.5	3.6	3.6	±0.240831892
E	4	4	3.5	3.3	3.3	3.62	±0.356370594



**Fig 2:** Mean overall acceptability score obtained for soybean *mathari*

#### 4. Summary and Conclusion

Now-a-days the school going kids are more inclined towards the consumption of junk foods like Pizza, Burger, Pasta, Maggi etc. which build a nutritional gap. So, an attempt was made to develop value added product by incorporating processed soyabean powder to fill the nutritional gap between their dietary intake and RDA'S. The soyabean *mathari's* contained a good amount of protein as soybean contain 43.2 g/100g protein<sup>8</sup> an important nutrient which is helpful in growth and development of kids. Even the product selected was relished by kids. On the basis of this study it can be concluded that Soybean can be used for developing may more recipes and has a great scope both at household and commercial level.

#### 5. References

1. [http://www.wikipedia.org/wiki/Glycine\\_max](http://www.wikipedia.org/wiki/Glycine_max)
2. Wolf WJ. Legumes: Seed Composition and Structure, Processing Into Protein Products and Protein Properties (PDF). United States Department of Agriculture. Retrieved. 2012; 17:291-314.
3. How do Front & Back Package Labels Influence Beliefs about Health Claims? Cornell University Food and Brand Lab. Retrieved February. 2012.
4. Palavalli M, Natarajan S, Thomas TY, Krishnan H. Imbibition of Soybean Seeds in Warm Water Results in the Release of Copious Amounts of Bowman-Birk Protease Inhibitor, a Putative Anticarcinogenic Agent. Journal of Agricultural and Food Chemistry. 2012; 60(12):3135. DOI: 10.1021/jf205308w
5. Kritz-Silverstein D, Von Mühlen D, Barrett-Connor E, Bressel MA. Isoflavones and Cognitive Function in Older Women: The Soy and Postmenopausal Health in Aging (SOPHIA) Study. *Menopause* (The North American Menopause Society). 2003; 10(3):196-202.
6. Association of Official Analytical Chemists, Washington D.C. 2005, 1899.
7. Gopalan C, Rama Shastri BV, Balasubramanian SC. Nutritive Value of Indian Foods. National Institute of Nutritional, Indian Council of Medical Research, Hyderabad. 2003, 48.