



International Journal of Current Research and Academic Review

ISSN: 2347-3215 Volume 3 Number 4 (April-2015) pp. 145-150

www.ijcrar.com



A study on formulation, evaluation and analysis of soya-idli

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KEYWORDS

Soyabean,
Formulation,
Soaking,
Germination,
Glycine,
Tryptophan

A B S T R A C T

Instant products are easy for preparation so people should prefer these products. These products are easily available in the market at different cost along with it has best nutritional value. Thus Soya idli has found many nutritional values as well as it is easy to prepare. Aims & objectives: After formulation of Soya idli and to study its health benefits along with nutritive aspects with its promotion in the community. Material & Methods: The selections of ingredients for the development of instant soya idli product were based on availability, nutrient content and their cost. The basic ingredients were selected from the entire basic group containing Rice (60 gm), soyabean (20gm), black gram dal (20gm) as a base. The other ingredients included like salt (to taste), Sugar (8 gm), Citric acid (2gm), soda (2gm). It consists of four stages like a. Formulation of Soya-idli; b. Preparation of Soya-idli; c. Analysis of Soya-idli and d. Statistical analysis of Soya -idli. Summary & Conclusion: The product instant idli mix requires no fermentation and very less time for preparation which helps to save time of consumer. From the sensory evaluation test and proximate analysis report it was proved that selected product is protein rich and self life of the product is about 5–6 months because of low moisture content. Soyabean is rich source of protein and calcium & nutritious oil seed. Thus soya-idli is palatable, nutritious and relatively inexpensive food.

Introduction

Instant products are easy for preparation so people should prefer these products. These products are easily available in the market at different cost. Ready to cook products are popular among the people because of their high nutritive value as well as low cost.

Soyabean (Keichiro Fuwa and Robert, 1964)

Soyabean (Glycine Max) is known as the “Golden Bean” of the 20 century. Though, soyabean is a legume crop, yet it is widely used as oilseed. It has many anti nutrients.

Consumption of soyabean before processing technique is not advisable hence certain processing techniques (soaking, germination, dehulling, drying, grinding etc.) must be used for proper consumption. It is now the second largest oilseed in India after groundnut. It has emerged as one of the important commercial crop in many countries. Due to its worldwide popularity, the international trade of soyabean is spread globally. Several countries such as Japan, China, Indonesia, Phillipines and European countries are importing soyabean to supplement their domestic requirement for consumption and cattle feed.

Nutritional composition of soyabean (Paul *et al.*, 1982)

Soyabean has great nutritional composition it has energy 432 kcal, carbohydrate 20.9 gm, soyabean contains above 40 % of superior quality and all the essential amino acids particularly glycine, tryptophan, glycine tryptophan, lysine similar to cow's milk and animal protein, it contains 20 % oil with an important fatty acids like lecithine, 4 % minerals salts of soya bean are rich in phosphorus and calcium, low in saturated fat and is cholesterol free.

The aims and objectives of the study are as follows:

- To formulate soya based products like *soya idli* at low cost.
- To study the nutritive aspect & health benefits of soyabean.
- To promote and increase awareness of *soya idli* in the food diet of community.

Shikha Goyal and Naik (2009), found on "Impact of soya bean based health food on climatic symptoms of pre-menopausal women" reveals the reduction in blood lipids and climatic symptoms. In conclusion it

may be stated that soya based health food is in effective and safe food for reducing menopausal symptoms and lipid profile of pre-menopausal women (Shikha Goyal *et al.*, 2009).

Similiarly Rekha and Vijaylakshmi (2009), have found on "Accelerated fermentation of idli batter using soya residue okara" and concluded that the aim of this works was to reduce the natural fermentation period of '*idli*' from the conventional 14 hrs to 10 hrs by adding under utilised okara for the preparation of '*idli*'. Black gram was partially substituted with soya residue okara in the ratio of (1:1). After 14 hr of natural fermentation, the pH and total acidity of control '*idli*' batter was 4.51 and 0.64 % and that of okara fortified '*idli*' batter was 4.53 and 0.43 % respectively. The amount of CO₂ released by the control and okara fortified batter was 19.7% and 33.6% respectively.

Dipal Soni *et al.* (2011), examined on "Nutritional quality of soy-khoa based Gulab-jamun" and concluded that good quality value added Gulabjamun can be prepared from blended khoa (i.e soya-khoa: milk based kheer:1:1) having sensory score as good as that of control (without soya solid) gulabjamun texture improvement was noteworthy in product made from blended khoa (1:1), especially due to improved sugar syrup.

Materials and Methods

The selections of ingredients for the development of instant *soya idli* product were based on availability, nutrient content and their cost. The basic ingredients were selected from the entire basic group containing Rice (60 gm), *soyabean* (20gm), black gram *dal* (20gm) as a base. The other

ingredients included like salt (to taste), sugar (8 gm), citric acid (2gm), soda (2gm).

The Research methodology has been categorized as

- 3.1) Formulation of Soya-idli
- 3.2) Preparation of Soya-idli
- 3.3) Analysis of Soya-idli
- 3.4) Stastical analysis of Soya –idli
- 3.5) Formulation of Soya-idli: 1

Generally we prepare *idli* by simple method from ancient time. The main ingredients of *idli* are parboiled rice and black gram *dal*. We soak rice, black gram *dal* for 12 hr and after 12 hr grind it in suitable granules and keep it for fermentation. After 12 hr Fermentation process steam the *idli* for 15 min. Idli is easy for digestion so it can be given to any age group.

First prepared all three combination of *idli* in proportion of 50:40:10 that is Rice: Soyabean: Black gram dal.

Second proportion was 50:25:25 that is Rice: Soyabean: Black gram dal.

Third proportion was 60:30:10 that is Rice: Soyabean: Black gram dal.

Fourth proportion was 60:20:20 that is Rice: Soyabean: Black gram dal.

Fifth Proportion was 60:40 that is Rice: Soyabean.

Preparation of soya-idli mix

Mix rice, soyabean, black gram dal in proportion of 60:20:20 respectively. Cleaning of all ingredients; these ingredients soaked for 12 hrs. Dehulling of soya is carried out. Sun drying of ingredients is done and after grinding it and we got instant idli flour.

Preparation of soya-idli

Added 200 ml of water to instant idli powder (mix well) & kept the mixture for 5 min, then steamed for 15–20 min.

Analysis of Soya-idli (Jacokbs, 1995)

Food analysis is a branch of science which deals with development application and study of analytical procedure for characterizing properties of food and constituents. One of the most important reasons for analysis of food is to ensure the consumer that the food is safe.

Result and Discussion

For the acceptability of the *soya-idli*, the product is tasted by different judges. The sensory evaluation of the product is done based on Hedonic rating test.

Sensory analysis of *soya idli* was carried out by Hedonic rating test. Ten panelist members were invited and said them for sensory of *soya – idli*. The sensory evaluations were carried out by organoleptic evaluation that is mouth feel, color, flavor, body, texture and cover all acceptability. These ten judges gave result of sensory evaluation and sample (d) contain 60:20:20 was selected and it has scores 8.4.

From above sensory evaluation of different samples from different judges, the sample d has maximum marks. Hence it is acceptable more than the other three samples. This mix made from the proportion of 60:20:20 was analysed for component.

From all above the sensory evaluation and chemical analysis of sample d), it is clear that the *idli* made from the proportion of 60:20:20 (Rice: Soyabean: Black gram dal) has maximum acceptability in sensory

evaluation and also it is good from nutrition point of view. Further the acceptability of this *idli* can also be increased by seasoning and decoration. It is nutritious as it contains about 18.11% Proteins, 60.41 % Carbohydrate, 8.09% Fat, and 1.2 % Crude Fiber.

The nutritional value of steamed idli as 57.94% moisture, 31.88 % Carbohydrate, 0.87 % Fat, 7.8% Protein, 0.50 % crude fiber and 46(mg) Calcium. The daily requirement of protein is 50–60 gm and this product fulfills 1/3 rd daily requirement of protein (Pearson’s Food Analysis, 1994).

Table.1 Chemical analysis of sample

Component	Percentage (gm) Instant Idli Powder	Percentage (gm) Steamed Idli
Moisture	9.15	57.94
Carbohydrate	60.41	31.88
Fat	8.09	0.87
Protein	18.2	7.8
Crude Fiber	1.2 mg	0.50 mg
Calcium	93.84 mg	46.9 mg

Table.2 sensory evaluation of sample based on hedonic rating test

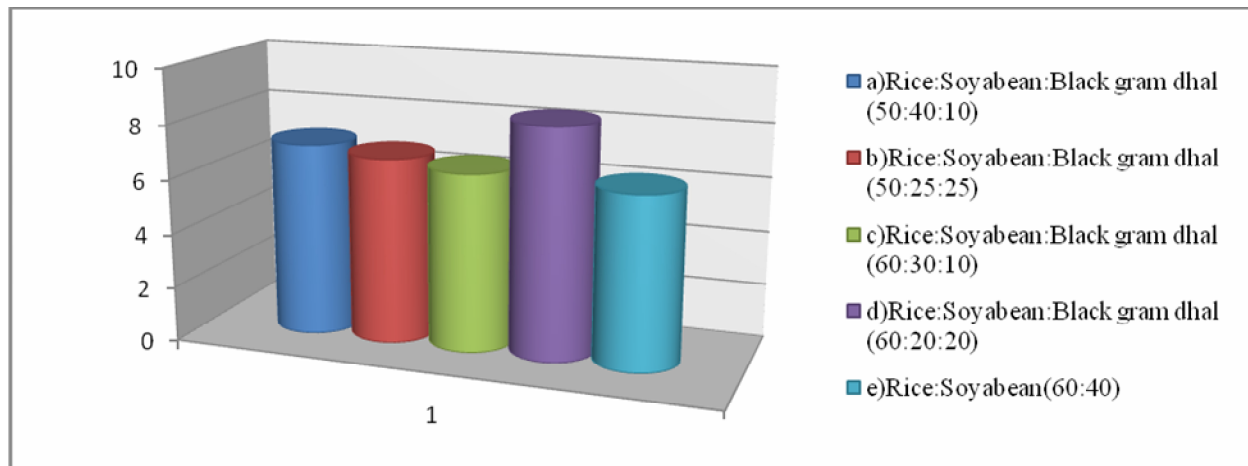
Different proportions of ingredient in <i>idli</i> (gm)	No. of Judges										Mean
	1	2	3	4	5	6	7	8	9	10	
a)Rice: Soyabean: Black gram dal (50:40:10)	7	8	6	7	4	9	9	7	8	6	7.1
b)Rice: Soyabean: Black gram dal (50:25:25)	8	7	7	7	6	7	6	6	8	6	6.8
c)Rice: Soyabean: Black gram dal (60:30:10)	7	7	6	2	7	6	7	6	9	6	6.5
d)Rice: Soyabean: Black gram dal (60:20:20)	9	8	8	8	8	9	9	8	9	8	8.4
e)Rice: Soyabean(60:40)	8	7	2	7	7	8	7	6	6	8	6.3

Table.3 Statistical analysis of soya –idli

Sr. No.	Food Group	Polythine up to 1 month		“t” TEST	Up to 2 Months		“t” TEST
		Before	After		Before	After	
1	Moisture (%)	10.12	9.09	0.539NS	9.15	12.15	0.15 NS
2	Ash (%)	2.01	2.00	0.605NS	2.95	2.01	-1.5 NS
3	Crude protein (gm)	8.01	8.00	0.0052NS	18.20	17.19	0.52 NS
4	Crude fiber (gm)	0.69	0.67	0.010 NS	1.2	0.69	0.26 NS
5	Carbohydrate	58.17	57.95	0.115 NS	60.41	58.17	1.17 NS
6	Energy	385.29	384.29	0.607 NS	387.25	384.29	1.02 NS
7	B-carotene(ug)	74.09	74.00	0.047 NS	75.09	74.09	0.52 NS
8	Vit.B1(mg)	0.15	0.10	0.026 NS	0.16	0.15	0.005 NS
9	Vit B2(mg)	0.09	0.08	0.0052NS	0.10	0.09	0.004 NS
10	Vit.B3 (mg)	0.90	0.87	0.015 NS	0.16	0.90	0.020 NS
11	Calcium (mg)	91.25	90.75	0.261 NS	93.84	91.25	1.35 NS
12	Zinc (mg)	1.95	1.89	0.031 NS	2.16	1.95	0.10 NS
13	Crude Fat (mg)	8.01	7.79	0.471 NS	8.09	8.01	0.041 NS

NS = Statically non significant at 1 percent level

Graph.1 Graphical Representation of Sensory Evaluation of five idli samples



Prepared Soya Idli



Soyabean



Soya idli

Conclusion

The main aim behind this project was to provide quality proteins to the consumers. The product instant *idli* mix requires no fermentation and very less time for preparation which helps to save time of consumer. From the sensory evaluation test and proximate analysis report it was proved that selected product is protein rich and shelf life of the product is about 5–6 months because of low moisture content. The recommended dietary allowances (RDA) of protein is approximately 50–60 gms, product fulfills the 1/3 rd daily requirement of protein. Soyabean is rich source of protein and calcium. It is healthy and nutritious oil seed. Generally soya is not consumed in our

daily life. Thus soya-idli is palatable, nutritious and relatively inexpensive food. *Soya-idli* is in highest protein content and low in fat content also one of the advantage is *soyabean* are available all year. Instant products are easy for preparation so people should prefer these products. These products are easily available in the market at different cost. Ready to cook products are popular among the people because of their high nutritive value as well as low cost.

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