

# Sensory, keeping and nutritional qualities of *Soyaladoo* before and after storage

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Soybean is one of the most important legumes having more than 40 per cent protein. It can be effectively used for supplementing cereal based products due to its amino acids profile. Beside this it contains a good amount of minerals and vitamins, hence, by taking into account the different properties of soyabean, it is considered to be use for the preparation of *Soyaladoo* which can be good supplement to pre-school children. The formulation and preparation of *Soyaladoo* is done. The soyladoo is evaluated for its keeping, sensory and nutritional qualities and noticed that no significant changes were observed in the keeping, sensory and nutritional qualities in *Soyaladoo*. Hence, *Soyaladoo* can be good supplement pre-school children.

**Key Words :** *Soyaladoo*, Sensory, Nutritional

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## INTRODUCTION

Soyabean belongs to family Leguminace and sub family papilionidae. It is a legume as well as an oil crop. It is one of the nature's wonder and nutritional gift for the human nutrition. Soyabean is very much popular food crop in most of the countries of the world where a large number of people is found of soya products prepared from soya seeds. Soyabean is now getting wide acceptance in India. The soyabean have the potential to become industrial raw material in dairy products and agricultural stuff. Soyabean is higher in protein than other legumes and many animal products. The quality of soya protein that is most remarkable health care professionals across the globe recognizes. The superiority in quality of soya protein considered equivalent to that of the other high quality protein sources. It has been also significant

that the amino acids pattern of soya protein is similar to those of cow milk protein (Carrington, 2008). There are number of soya products which are prepared by using soyabean as a base which may be categorized as traditional soya food products, advanced soya products and innovative soya products (Ketarpaul and Goyal, 2008).

## METHODOLOGY

### Formulation:

Formulation and preparation of *Soyaladoo* was done by (Thangamms, 1971).

### Sensory evaluation:

Soya products were prepared and evaluated organoleptically by "Hedonic scale" (Amerine *et al.*, 1965).

### Nutritional evaluation:

Nutritional quality analysis moisture content, total ash, major nutrient like crude protein, fat, carbohydrates, B complex vitamins including vitamin B<sub>1</sub>, B<sub>2</sub> and B<sub>3</sub>,

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minerals such as iron, calcium, zinc and crude fibre were analyzed (AOAC, 1984).

### Statistical analysis:

The analysis significant at  $p < 0.05$  level, S. E. and C.D. at 5 per cent level by the procedure (Gomez and Gomez, 1984).

## OBSERVATIONS AND ASSESSMENT

The results obtained from the present investigation as well as relevant discussion have been summarized under following heads :

### Keeping qualities of *Soyaladoo* stored in different package:

The keeping quality of the *Soyaladoo*, was

**Table 1: Keeping and sensory qualities of *Soyaladoo* stored in different packages**

Sr.No.	Type of packages and period	Score of sensory qualities				
		Colour	Flavour	Taste	Texture	Over all accepted
1.	Polythene package					
	upto 1 month	6.1	5.8	6.5	6.8	6.8
	1 to 2 month	4.1	4.2	5.8	6.0	5.5
	'Z' value	(2.95)*	(2.71) *	(1.29) NS	(1.35) NS	(2.79)*
2.	High guage package					
	upto 1 month	6.8	5.8	6.8	6.8	7.2
	1 to 2 month	6.3	5.1	5.9	6.5	6.8
	'Z' Value	(0.92) NS	(0.71) NS	(0.84) NS	(0.05) NS	(0.81) NS

\* indicate significance of value at P=0.05  
NS= Non-significant

**Table 2 : Major nutrients content in *Soyaladoo***

Sr.No.	Major nutrients (per 100g)	Mean $\pm$ SD		't' Test
		Before processing (raw ingredients)	After processing (final product)	
1.	Moisture (%)	13.2 $\pm$ 2.61	11.6 $\pm$ 2.19	0.26 NS
2.	Ash (%)	4.8 $\pm$ 4.90	3.1 $\pm$ 1.72	0.21 NS
3.	Carbohydrate (g)	96.9 $\pm$ 2.06	95.4 $\pm$ 1.91	0.04 NS
4.	Energy (kcal)	1073.7 $\pm$ 2.11	1070.0 $\pm$ 1.76	0.90 NS
5.	Total protein (g)	32.1 $\pm$ 1.87	28.5 $\pm$ 1.65	0.53 NS
6.	Crude fat (g)	26.7 $\pm$ 1.69	24.0 $\pm$ 1.25	0.41 NS

NS = Non-significant

**Table 3 : Vitamins content in *Soyaladoo***

Sr.No.	Vitamin content (per 100g)	Mean $\pm$ SD		't' test
		Before processing (Raingredients)	After processing (final product)	
1.	Thiamine (mg)	0.38 $\pm$ 0.04	0.36 $\pm$ 0.01	0.24 NS
2.	Riboflavin (mg)	0.20 $\pm$ 0.06	0.18 $\pm$ 0.03	0.18 NS
3.	Niacin (mg)	4.65 $\pm$ 0.19	3.35 $\pm$ 0.15	0.28 NS
4.	$\beta$ carotene ( $\mu$ g)	1190.6 $\pm$ 5.65	1186.6 $\pm$ 4.49	1.37 NS

NS = Non-significant

**Table 4 : Minerals content in *Soyaladoo***

Sr. No.	Minerals (per 100g)	Mean $\pm$ SD		't' test
		Before processing (Raingredients)	After processing (Final product)	
1.	Calcium (mg)	288.4 $\pm$ 11.5	286.9 $\pm$ 8.6	0.14 NS
2.	Iron (mg)	6.4 $\pm$ 1.2	6.3 $\pm$ 0.90	0.07 NS
3.	Zinc (mg)	4.1 $\pm$ 0.6	3.8 $\pm$ 0.70	0.17 NS

NS – Non significant

evaluated by organoleptically and nutritionally. The product was kept in polythene and high gauge package for 1 to 2 months at room temperature Dahlya and Kapoor (1992)

The data given in Table 1 represents the sensory qualities of *Soyaladoo*. These qualities were assessed after storage upto 1 month and 1 to 2 months of period stored in polythene and high gauge package at room temperature. A significant change was noticed in colour (4.1), flavours (4.2) and over all acceptability (5.5) of *Soyaladoo* stored in polythene for 2 months of period. No significant changes were observed in taste and texture after 2 months of storage in polythene at room temperature. No significantly difference was observed in the sensory qualities in high gauge packed *Soyaladoo*. The qualities like colour, flavour, taste, texture and over all acceptability of this *Soyaladoo* was not changed after stored in high gauge package for 2 months of period at room temperature. High gauge packaging found best option for the preservation of sensory qualities of *Soyaladoo* for longer period.

#### Nutritional qualities:

The principle of nutrition such as carbohydrates, fats, proteins, vitamins and minerals were analysed from *Soyaladoo*. The vitamins such as thiamine, riboflavin, niacin, ascorbic acid,  $\beta$  carotene and minerals like iron, calcium and zinc were analysed (Ghatge, 2013).

The data presented in Table 2 highlights the major nutrients content in *Soyaladoo*. It revealed that, per cent of moisture and ash content in raw ingredients of *Soyaladoo* was 13.2 and 4.8, respectively. It was non-significantly decreased in per cent of moisture as 11.6 and ash as 3.1 after processing in finished product. Carbohydrate content in the ingredients of *Soyaladoo* noticed as 96.9 (g) before processing. When it was prepared in *Soyaladoo*, decreased non-significant level as 95.4 (g). The energy (k.cal) was obtained from raw ingredients of *Soyaladoo* as 1073.7 and as in finished product as 1070.0 (Kausar and Parveen, 2001).

Reduction of energy level in the prepared *Soyaladoo* was non-significant level. Total protein (g) content in prepared *Soyaladoo* was slightly reduced (32.1) as compared with its raw ingredients (33.5). Similar observations were obtained in case of crude fat. It was found as 26.7 g in the raw ingredients of *Soyaladoo*. Where as it decreased non-significantly as 24.0 in

prepared *Soyaladoo*. A non-significant reduction were reported in content of moisture, ash, carbohydrate, energy, total protein, crude fat after processing treatment in the preparation of *Soyaladoo* as compared with its raw ingredients (Chandrashekhar and Sahay, 2004).

The data about average vitamins content in raw ingredients of *Soyaladoo* and its final preparation is presented in Table 3. It describes that, thiamine content (mg) in raw ingredient noticed as 0.38, where it was found as 0.36 in final product. Very low content of riboflavin (mg) and niacin (mg) were obtained as 0.18 and 3.35 in *Soyaladoo*, respectively. The values of vitamin B<sub>2</sub> and B<sub>3</sub> found decreased slightly during processing. Whereas content of  $\beta$  carotene ( $\mu$ g) in *Soyaladoo* was measured as 1186.6. The values of  $\beta$  carotene were decreased non-significantly in the process of *Soyaladoo* preparation (Donnen *et al.*, 1996).

Table 4 indicated that the raw ingredients of content 288.4 mg calcium, 6.4 mg iron and 4.1 mg zinc. Whereas these values were slightly reduced as 286.9 mg, 6.3 mg and 3.8 mg of calcium, iron and zinc, respectively after the processing of *Soyaladoo* (Gupta *et al.*, 2006).

#### Conclusion:

The qualities like colour, flavour, taste, texture and over all acceptability of this *Soyaladoo* was not changed. It is seen that formulated in *Soyaladoo* no significant change in all nutrients seen after processing of *Soyaladoo*, except  $\beta$  complex vitamins. There is no significant change in major and minor nutrient content in *Soyaladoo* after storage in high gauge packaging for 2 months period at room temperature.

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