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Preparation of Flavored Tofu

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ABSTRACT

In the present project, various varieties of tofu were prepared and quality assessment of prepared samples was done on the basis of the physiochemical parameters like moisture content, acidity/pH, ash content, shelf life and organoleptic evaluation by a semi-trained sensory panel. Tofu's acceptability was compared with that of full cream milk paneer. Soya milk was obtained by soya bean followed by the coagulation of soya milk to obtain tofu and spices were added to obtain flavored tofu. The prepared samples were evaluated by the semi-trained panel. The assessment was done on various organoleptic parameters and the overall acceptability of the product was found.

It can be concluded that, flavored tofu varieties were acceptable by the sensory panelist. Tofu can be replaced as a substitute for paneer and can be useful for consumption by hypersensitive individuals (people with lactose intolerance).

Keywords

Paneer, Soya milk, Tofu, Flavored tofu, Organoleptic analysis, Physiochemical analysis

INTRODUCTION

For centuries, soyabeans and soyabean products have been used as the chief source of protein and as a medicine for millions of people (1). Soyabeans are nutrient-dense, fiber-rich, and are high-quality sources of protein. The intake of beans has the potential to decrease serum cholesterol concentrations, improve many aspects of the diabetic state, and provide metabolic benefits that aid in weight control. Soyabeans are a unique source of the isoflavones genistein and diadzein, which have numerous biological functions. Soyabeans and soya foods potentially have multifaceted health-promoting effects, including cholesterol reduction, improved vascular health, preserved bone mineral density and reduction of menopausal symptoms. Soya appears to have salutary effects on renal function (3). Soya beans is used in various food products such as in tofu, fruit flavored puddings, calcium and protein rich soya milk. Soya milk is very economical, lactose free, highly digestible and nutritious alternative of dairy and meat centered diet. It is cholesterol free product, has a very low fat content and is rich in polyunsaturated fatty acids of

phospholipids (4). Tofu is one of the most popular soya-product (6). Tofu is the most important of the soyabean foods in supplying protein nutrition (1). Tofu is generally made from a filtered water extract of whole soya beans called soya milk. The curd is obtained by coagulation of hot soya milk with a coagulant, followed by molding and pressing to remove whey (2). Tofu curd contains 88% moisture, 6% protein, and 3.5% oil. Tofu can also be frozen, aged, and dried. (1)
The bland nature of tofu affects its consumer acceptability. So, considering the demand and gap in the product range in the market, it was decided to prepare flavored tofu using various combinations of spices as flavoring agents.

METHODOLOGY

1.1 Raw materials (soyabean and spices) were procured locally from Delhi market.

2.2 Preparation of soya milk

Soya milk was prepared at Food Technology lab of Bhaskaracharya College of Applied Sciences. Soyabeans were washed and soaked in water (1:4 w/v) overnight at room temperature. Soaked soyabeans were de-hulled and grinded resulting in the formation of slurry. The soy slurry with additional water was boiled. During boiling, foam formation begins. Foam formation can be minimized by the adding alkali blanching improvers (5). It was passed through a muslin cloth. Upon straining, two portions of the soya milk were collected. The residual collected in the muslin cloth (soypaste) is known as *okra* and the drained liquid is the *soya milk.*

2.3 Preparation of Tofu varieties

Spices namely cinnamon and bayleaf, cardamom and sugar, non-roasted grounded cumin seeds, roasted grounded cumin seeds were added to the soya milk. Spices were heated with soya milk for 2 -3 minutes to extract the flavor of the spice to the milk. When soya milk achieved a temperature of 70^{o}C, then citric acid was added for coagulation (5). The remaining liquid was strained. The coagulated soya milk protein was then pressed to give appropriate shape and the remained liquid (whey) was drained.

2.4 Evaluation of the product

Organoleptic analysis by 10 semi-trained panelists was done to check the acceptability of various varieties of tofu in comparison with paneer: tofu with paneer and plain tofu with flavoured tofu. Physicochemical parameters included were determination of moisture content, ash content, % acidity and shelf life.

3. Result

Samples analyzed:

A- Paneer
B- Tofu (plain)
C- Cinnamom with bayleaf flavored tofu
D- Cardamom with sugar flavored tofu
E- Non-roasted cumin seeds flavored tofu
F- Roasted cumin seeds flavored tofu

Moisture content was studied as it affects the texture, shelf life and water activity. Percentage acidity was determined to ensure good flavor. Ash content was done to determine the amount of inorganic matter present. Shelf life was studied for the future commercialization of the product and its packaging.

Figure 1: Varieties of flavored tofu

Table 1: Comparison of Paneer and Tofu

Samples	Flavor and aroma (50)	Body and texture (35)	Color and appearance (15)	Overall acceptability (5)
A	39.41	30.33	12.84	3.91
B	33.29	26.16	11.19	3.56

Table 2: Comparison of plain tofu and flavoured tofu

Samples	Flavor and aroma (50)	Body and texture (35)	Color and appearance (15)	Overall acceptability (5)
B	35.15	27.66	10.16	3.20
C	36.08	22.58	10.08	3.25
D	36.50	27.33	11.16	3.41
E	39.16	30.08	11.91	4.04
F	40.30	31.25	11.50	4.20

Table 3: Comparison of flavored tofu with paneer using chemical analysis

Samples	Moisture content Percentage	Ash Percentage	% Acidity	pH	Shelf Life	
					At Room temperature	At Refrigeration temperature
A	44.72%	1.43%	0.32%	5	1 day	10 days
B	83.2%	0.85%	0.128%	5	1 day	10 days
C	80.12%	0.8%	0.64%	5	1 day	10 days
D	81.54%	0.83%	0.64%	5	2 days	10 days
E	82.49%	1.3%	0.64%	5	1 day	10 days
F	82.4%	1.2%	0.64%	5	1 day	10 days

DISCUSSION

The aim of our research was to study the acceptability of flavored tofu as a replacement of paneer. It can be concluded that the tofu varieties were highly acceptable although its acceptability was less in comparison with paneer and it can be used as a cheaper vegetable substitute for paneer.

Physicochemical parameters were evaluated and it can be concluded that moisture content was maximum for plain tofu and paneer sample had the least moisture content. From shelf life study, it was found that the samples get deteriorated in just one day at room temperature i.e. they are highly perishable except for sample D whose shelf life was 2 days but on storing it at refrigeration temperature, it could be stored up to 10 days although its texture becomes a little hard but is still consumable. Ash content was maximum in sample A and minimum in sample C.

acidity of all the flavored tofu samples was the same but that of paneer was 0.32%. The maximum moisture content was in sample B and the sample A had the least moisture content.

Organoleptic qualities of flavoured tofu were compared with plain tofu and it can be concluded that roasted cumin seed tofu was liked by the panelists Although, the tofu varieties showed high acceptability by the panelists, its color was not as acceptable as that of paneer.

CONCLUSION

It can be concluded that tofu is acceptable among consumers although its acceptability is less as compared to paneer. From the physicochemical analysis of tofu we can conclude that these parameters are comparable to paneer and thus tofu varieties can be successfully used as replacement of paneer commercially.
We can also conclude that with a little improvement in the color and appearance of sample F (roasted cumin seed tofu), it can become a highly acceptable product. Various other flavors of tofu can also be prepared and its packaging can be studied.

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