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Research article

SHELF STAY AND ACCEPTABILITY OF WATER MELON ,LIME JUICE ENCAPSULATES AND MICROWAVED SOYMILK DRINK

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ABSTRACT

The research study was on soya milk production its sensory acceptability using water melon and lime juice encapsulation and microwave treatment. The study utilized questionnaires constructed for the research and was distributed among lecturers and students of federal college of education Kontagora of Niger State to evaluate their opinion on ways soya milk could be sensorial accepted on periodic microwave treatments. The sampled population were 30 trained panelist.. The study showed that when soya milk is added with water melon and lime heating for short time using microwave treatment makes its acceptable and make it stay longer it also showed that milk is easy to preserve by adding water melon, lime and heat for three minutes to four minutes.

Keywords: Shelf- stay, encapsulates, microwave, soya milk drink

Introduction

Soy milk, the water extract of soybeans, is typically produced by grinding the soaked soybeans with water. As an inexpensive and convenient source of high quality proteins, soy milk is one of the most important traditional beverages that are consumed widely . In recent decades, extensive evidence has indicated the strong

relationships between soy food consumption and health-promoting effects. Soy milk possesses a balanced nutrient combination, which is similar to cow's milk, but free of cholesterol, gluten and lactose, plus favorable phytochemical compounds linked to health. Consequently, it has drastically spread its popularity to Western consumers in European countries, Australia and the United States, especially among vegetarians, milk allergy patients or people of lactose-intolerance, who use soy milk as a dairy alternative. In response to a gradual increase in sales and consumption, various new products have been introduced into the soy milk market. Some basic changes are made to the flavor soybean source. However, the most recent innovations are focusing on producing "functional soy milk".

Functional soy milk can be considered as soy milk that contains extra bioactive components and may help to enhance health or lower risk of diseases. Soybean is a good source of phenolic compounds with antioxidant properties and has an extraordinarily high amount of isoflavones, a group of phytoestrogens that have been reported to possibly lower the risk of hormonal and age-related diseases. However, the presence of natural anti-nutrients, such as trypsin inhibitors , lectins, phytic acids and indigestible oligosaccharides, has limited its consumption. Thus, modifying the processing methods could be an effective way to improve the health-promoting bioactive components and/or reduce the undesired compounds originally present in soybeans, to support functional soy milk product development.

The heating process during conventional soy milk making considerably destroys most of the anti-nutritional factors in soy milk and improves the digestibility of soy protein, as well. However, compounds, like phytic acid, which interferes with the availability of calcium, is not reduced effectively [1]. At the same time, over-heating to eliminate trypsin inhibitor activity to a great extent can cause damage to amino acids, as well as loss in the overall nutritional value of soy milk. Lately, incorporating the fermentation process into soy milk production has become a popular method to improve the acceptability and health properties of soy milk. Research has shown that soy milk fermented with properly selected microbial species had major advantages in decreasing indigestible oligosaccharides, like raffinose and stachyose, and beany flavor (undesirable for most Western consumers). However, with respect to other anti-nutritional factors, such as trypsin inhibitors, no improvements were observed.

In this study, a change was made to the conventional soy milk making method by starting the process with short-time germinated soybeans in an attempt to overcome some of these limitations with soy milk. The germination process is a period of intense metabolic activity, incorporating processes, such as respiration, subcellular structural changes, macromolecular syntheses and hydrolysis, and conversion of stored proteins, fats and carbohydrates to support the initial seeding establishment [2]. It has long been the leading way to improve the nutritional value of soybeans, so as to increase its use. Although additional labor, work and cost are required to produce sprouted soybeans compared to the original seeds, germination is still recognized as an inexpensive and simple method, considering its multi-effects in enhancing nutritional value and lowering anti-nutritional factors.

(1) increases of vitamin C and riboflavin and mineral availability [3]; (2) improvement of protein digestibility [4]; (3) hydrolysis of flatulent-causing oligosaccharides; (4) reducing levels of trypsin inhibitors, lectin, phytic acid and lipoxygenase activity, which lead to undesirable beany flavor [5,6]; and (5) enrichment of phenolics, isoflavone aglycones and saponin glycosides [4,6]. Many of these are closely related to soy milk quality and can be key attributes of soy milk. Thus, germination can be a very potent and efficient step for producing functional soy milk, as it covers the major benefits produced from other modifications, like fermentation, but possesses even more advantageous characteristics.

However, the effects of short-time germination on bioactive components are not very clear and may vary greatly with different germination conditions, and whether the patterns will change after conventional soy milk making process is still unknown. The current project aimed to establish optimum soybean heating conditions, under which the shelved soybeans milk could be used as home stored product on encapsulation with juice from fruits.

The self life of soyamilk is influenced by a variety of factor which what was used as substitute for milk, its exposure to light and heat, its packing and how the soyamilk are stored. Soya milk last long when properly stored at or below 60º C. unrefrigerated packaging, soyamilk last for 1-2 days, but refrigerated packaging, soyamilk last for 7-10 days .This drink has short life stability because of its chemical– enzymatic activities resulting in characteristic off flavors, colour and nutrient instability after preparation. Against this background, the researcher intends to solve problem using microwave treatment of the soyamilk on encapsulation after production.

Materials

Yellow soybeans (*Glycine max* (L.) Merr., a small-seeded variety) cultivated in agricultural farm of the department of agricultural education federal college of education kontagora (harvested in 2014) were purchased .A few seeds with defects were removed from samples.water melon and lime orange were purchased from new market fresh into the food laboratory .

Methodology

(A)

TWO CUPS soyabeans

↓

Rinse the dried beans thoroughly and drain.

↓

Soak in cold water overnight in a large bowl.

↓

Drain again pick bean and remove those that have not expanded and softened.

↓

MAKE puree to a large stock pot and add 3 addition cups of water.

↓

Bring to boil over high heat stirring constantly and skimming of foam as necessary 15 minutes.

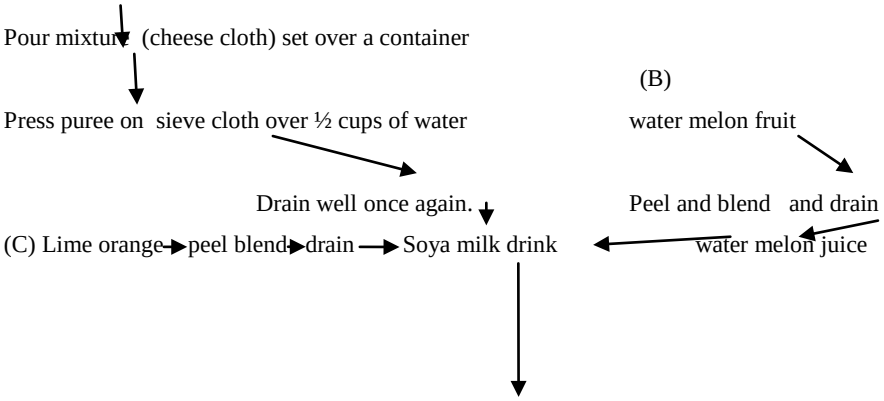
↓

Strain milk through a fine–mesh sieve lined with cheese cloth on stir

with salt and sugar pinches.

↓

Pour the mixture into the saucepan, bring to boil lower and simmer for 30 minute for milk with a milder flavour)



The control was prepared without addition of fruit juice and was refrigerated for the three days periods of analysis. Sample B1, B2 and B6 were caped kept in shelf for the three day periods of analysis and samples were drawn for sensorial panelist.

Population of the Study

The population of this study include lecturers and students of Federal College of Education Kontagora with a total population of 30 respondent

Sample and Sampling Technique

The sampling method adopted for this study is the random sampling technique. A total population of 30 lecturers and students were used.

Instrument for data analysis

The question was designed using different characteristics of soyamilk the taste, appearance, texture and flavour the question were structured on a two format of A which was the control and B which was treated sample using microwave and the B sample was divided into , B3, B4, and B5 **RESULTS**

Table 1 Day 1 SENSORIAL RESULT ON ENCAPSULATED AND SOYAMILK DRINK

Sample	Taste	Appearance	Texture	Flavour	General acceptability
A	4	3.9	3.9	4	15
B3	2.9	2.4	1.9	2	9.5
B4	2.9	2.5	2.1	2	9.5
B5	3.1	3.2	2.6	2.9	12.1

A - The control 100% soymilk

B3 - 60 %soyamilk Mixed with 30%water melon,and 20% lime heated for 4 minutes

B4 - 60% soyamilk Combined with 40% of lime heated for 4 minutes.

B5 - 60%soyamilk Combined with 20% water melon and 20% lime heated for 3.75 minutes

Table 2. Day 2 SENSORIAL RESULT SENSORIAL RESULT ON ENCAPSULATED AND SOYAMILK DRINK

Sample	Taste	Appearance	Texture	Flavour	General acceptability
A	4	3.8	3.8	3.8	13.9
B3	2.5	2.1	2	1.9	8.5
B4	2.4	2	1.7	2.1	8.3
B5	2.6	1.8	1.8	1.5	7.1

A - The control 100% soymilk

B3 - 60 %soyamilk Mixed with spoons of 30%water melon,and 20% lime heated for 4 minutes

B4 - 60% soyamilk Combined with 40% of lime heated for 4 minutes.

B5 - 60%soyamilk Combined with 20% water melon and 20% lime heated for 3.75 minutes

Table 3 .Day 3 SENSORIAL RESULT ON ENCAPSULATED AND SOYAMILK DRINK

Sample	Taste	Appearance	Texture	Flavour	General acceptability
A	4	3.9	3.7	3.6	15.2
B3	2.6	2.6	2.5	2.1	9.6
B4	2.4	2.4	1.9	1.9	8.5
B5	3.2	2.6	2.2	2	9.8

A - The control 100% soymilk

B3 - 60 %soyamilk Mixed with spoons of 30%water melon,and 20% lime heated for 4 minutes

B4 - 60% soyamilk Combined with 40% of lime heated for 4 minutes.

B5 - 60%soyamilk Combined with 20% water melon and 20% lime heated for 3.75 minutes

Conclusion

Based on the finding of this study it can be conclude that

Soya milk production could be acceptabe using microwave treatment can be as a result of short life of soya milk in order to improve protein intake or to reduce the spoilage of soya milk after production. The respondent shows that the use of additive such as water melon and lime using microwave to treat it can stay longer than the normal soyamilk prepared was accepted such production should be encourages by the government both for consumption and economic benefit.

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Wold soyabean production 2010