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### Research Article

## Sensory characteristics and stability of soyamilk drink using selected fruit juice and microwave treatment

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#### Keywords

soya milk,  
juice,  
sensorial acceptability  
shelf stability.

#### Abstract

The research study was on the soyamilk production its acceptability using water melon and onion juice at periodic 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 responded opinion on ways juiced soya milk could be accepted sensorial. The study showed that when soyamilk is added with 30-40% water melon and 5-10 % lime and lime residue and heating between 2-3 minutes using microwave oven , the product were more acceptable as showed in sample B1 and B6,hence make it stay longer for up to three days on shelf.

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### Introduction

Soya beans (Glycine max) also called soyabeans or soybeans Annual legume of the fabaceae family and it's edible seeds, probably derived from a wild plant of east Asia. The soyabeans is economically the most important bean in the world, providing vegetable protein for millions of people and ingredients for hundred of chemical products.

The soya bean has been used in china for 5,00 years as food and a component of medicine soya bean were introduce into the united state in 1804 and become particularly important in the south and Midwest in the mid 20th century. The most nutrient and most easily digested food of the bean family is the soyabean and one of the richest and cheapest sources of protein .It is a stable in the diet of people and animal in numerous part of the world today. The seed contains 17 percent oil and 63 percent meal and 50 percent of the meal is protein. Because soyabeans contain little starch, they are good source of protein for diabetics.

Shurleff,(2010) described soya beans as a species of legume native to East Asia, widely grown for its edible bean which has numerous uses. The plant is classed as oil seed rather than pulse. Soya bean is a leguminous vegetable of the pea family that grows in tropical, subtropical and temperate climate. Soya

bean was domesticated in 11th century Boarhound northeast of china. It is believed that it might have been introduce to Africans in the 19th century by Chinese traders always the east cost of African Riaz,(2006).

According to Huang, 2008, differentiated varieties of Soya bean with different coloured seed, Varity from white; yellow and brown to black are produced. Their chemical composition depends upon the variety. Soya beans utilization, with its large protein content, could be a substitute or expensive meat products since there is worldwide shortage of affordable protein.

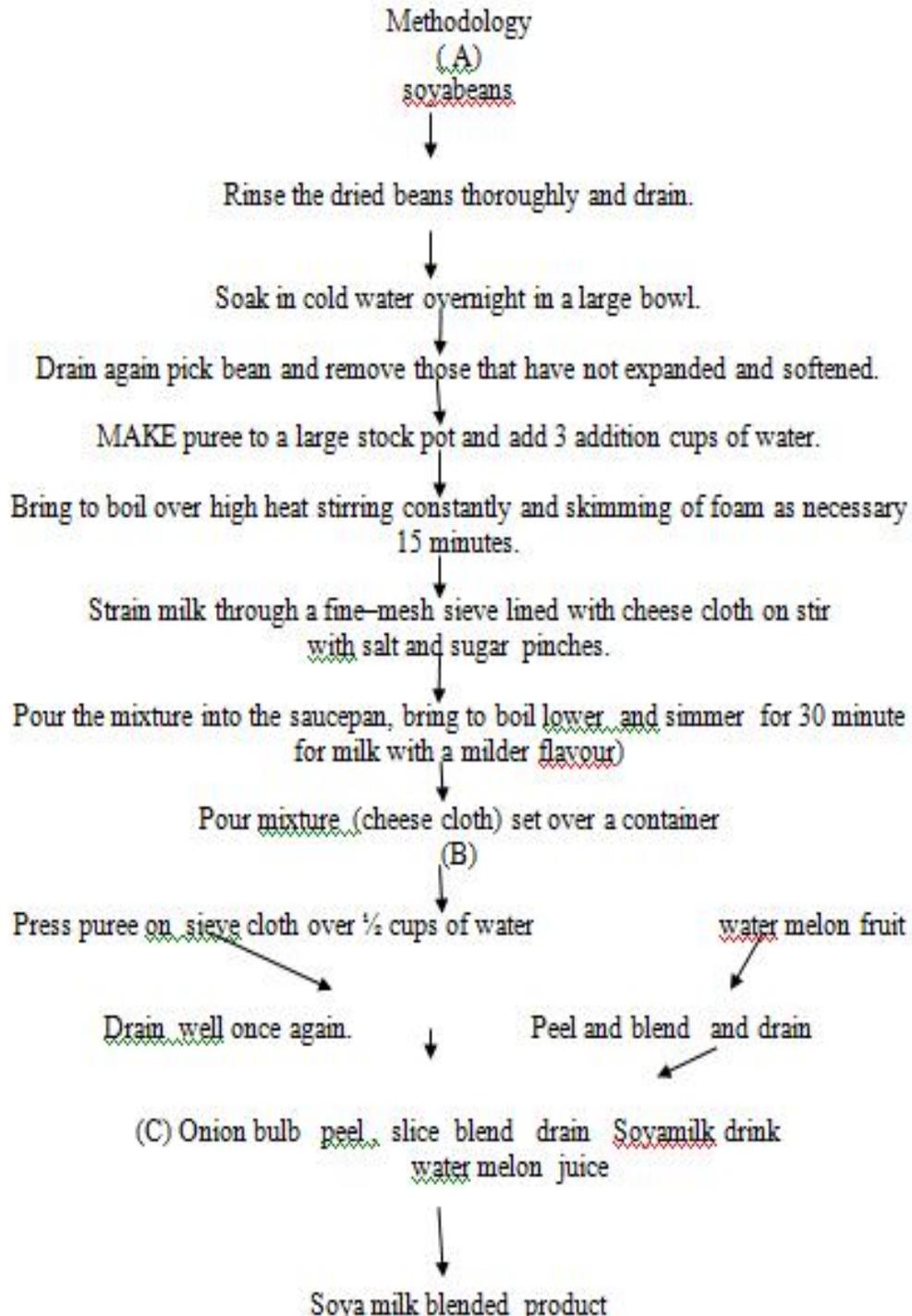
As food, soybeans may be flaked, ground or powered, made into a sauce oil or milk. Soyamilk is extracted from soyabeans portion of endosperms. Soya bean milk which is made from soaking, grinding and boiling with water, is a very nutritious drink. Soya milk is naturally high in essential fatty acids, protein, fiber vitamins and minerals. These nutrients provide energy and keep the body functioning at its optimum level.

Huang, (2008) said ,soyabean milk is prepared grinding soaked beans in a stream of water to obtain emulsion. Soyamilk is very good for infants feeding particularly for

those who are allergic to cow milk. Since it contains less sodium than cow milk and is better for persons with high blood pressure.

The shelf life of soya milk is influenced by a variety of factors when used as a substitute for milk, its exposure to light and heat, its packaging and how the soya milk is stored. Soya milk lasts long when properly stored at or below 60°C.

Unrefrigerated packaging, soya milk lasts for 1-2 days, but refrigerated packaging, soya milk lasts for 7-10 days (Dayff, 2000). This drink has short shelf stability because of its chemical-enzymatic activities resulting in characteristic off-flavors, color and nutrient ability after preparation. Against this background, the researcher intends to solve the problem using juice encapsulates and microwave treatment of the soya milk after production.



The controls were prepared without addition of fruit juice and were refrigerated for the three days periods of analysis. The sample B1, B2 and B6 were capped kept in shelf for the three day periods of analysis and samples were drawn for sensorial panels.

**Sample and Sampling Technique**

The sampling method adopted for this study is the random sampling technique. The population of this study includes lecturers and students of Federal College of Education Kontagora with a total population of 30 respondents.

**Instrument for data analysis**

The questionnaires were designed using different characteristics of soya milk such as the taste, appearance,

texture and flavor. The question were structured on a two format of A or sample A which was the control and B which was treated sample using microwave and the B samples were divided into B1-60%soymilk Combined with 30% of water melon, 10% of onion juice and 10 % onion residue heated for 3minutes.B2- 60%soyamilk Mixed with 25% water melon 15% of onion juice, 10% of onion residue heated for 3.5minutes.B6 -60%soyamilk Mixed with 40% water melon, 5% spoon of onion juice, 5% of onion residue heated for 2.75 minutes. Each data collected were subjected to simple mean of duo-trio test analysis for three days of subjective evaluation

**Results**

Table1. DAY 1 Sensorial acceptability results on selected juice addition to soyamilk drink

Sample	Taste	Appearance	Texture	Flavour	General Acceptability
A	4	3.9	3.9	4	15
B1	3.1	2.9	2.8	2.5	11.5
B2	2.7	2.4	2.1	2.4	9.3
B6	3.3	3.2	3.1	2.8	12.9

A -The control 100% soymilk refrigerated

- B1 -60%soymilk Combined with 30% of water melon, 10% of onion juice and 10 % onion residue heated for 3minutes .
- B2 -60%soyamilk Mixed with 25% water melon 15% of onion juice, 10% of onion residue heated for 3.5minutes
- B6 -60%soyamilk Mixed with 40% water melon, 5% spoon of onion juice, 5% of onion residue heated for 2.75 minutes

Table 2 . DAY 2 Sensorial acceptability results on selected fruits juice addition to soyamilk drink

Sample A	Taste	Appearance	Texture	Flavour	General acceptability
A	4	3.8	3.8	3.8	13.9
B1	3.2	2.7	3.1	2.2	9.2
B2	2.9	2.2	2	1.7	8.2
B6	3.3	2.9	2.4	3	11.6

A -The control 100% soymilk

- B1 -60%soymilk Combined with 30% of water melon, 10% of onion juice and 10 % onion residue heated for 3minutes.
- B2 -60%soyamilk Mixed with 25% water melon 15% of onion juice, 10% of onion residue heated for 3.5minutes
- B6 -60%soyamilk Mixed with 40% water melon, 5% spoon of onion juice, 5% of onion residue heated for 2.75 minutes

Table3. DAY 3 .Sensorial acceptability results on selected juice addition to soyamilk drink

Sample	Taste	Appearance	Texture	Flavour	General acceptability
A	4	3.9	3.7	3.6	15.2
B1	2.4	2.4	3.3	2	9.1
B2	2.4	2.3	1.8	2	8.4
B6	2.6	2.7	1.9	2.1	9.3

A -The control 100% soymilk

B1 -60%soymilk Combined with 30% of water melon, 10% of onion juice and 10 % onion residue heated for 3minutes.

B2 -60%soyamilk Mixed with 25% water melon 15% of onion juice, 10% of onion residue heated for 3.5minutes.

B6 -60%soyamilk Mixed with 40% water melon, 5% spoon of onion juice, 5% of onion residue heated for 2.75 minutes.

## Discussions

Sample B1 and B6 showed a characteristic similar with the control The mean value for B1 and B2 sensorial characteristics were higher than the other samples which were added the juice mixture. This showed that sample B1 and B2 were accepted by the respondents.

Table 2 showed sample of added water melon, onion heated for 2 minutes stored for two days. the mean value for taste were higher than other samples. However lower than the control the reason could be water melon addition using microwave sivasanka,(2009)

Table 3 showed the combination of water melon onion, onion residue treated for 2.75 minutes the mean value for taste in sample B6 was higher than sample B1 however lower than the control as the day on shelf increases. The mean difference could be due to material interaction.

The quality of the blends decreased with shelf stay especially in flavor appearance and taste. It was observed on heating that the samples (B1 and B2) heated for short times were able to maintain somehow chemical stability hence shelf quality.

## Conclusion

Based on the finding of this study it can be conclude that Soya milk production its acceptability using short time microwave treatment. The respondent showed that the use of juice encapsulate such as water melon and lime and short time microwave treatment can keep juice soya milk longer than the normal soya milk prepared. Production should be encourages by local processors both for consumption and its economic benefit.

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