

## “Microbiological Analysis Of Soy Milk Produced From Soybean”

Thombare D.T, Shende R.T, Nirgude. M. S and H. S. Shinde

Department Of Post Harvest And Food Biotechnology  
K.K. Wagh College Of Agricultural Biotechnology, Nashik

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**Abstract:** The soy milk was prepared using the soaked soybean seeds then soy milk was treated with  $\text{Na}_2\text{CO}_3$  and  $\text{NaHCO}_3$  for the preservation. By spread plate method and streak plate method two bacteria *Escherichia spp* and *Streptococcus spp* were isolated respectively. These bacteria were subjected to biochemical and microbiological analysis. In Biochemical analysis IMVIC test was performed. Both the bacteria *Escherichia spp* and *Streptococcus spp* are positive for Methyl red test and citrate utilization whereas both the bacteria are negative for Voges-Proskauer test and for Indole production test *Escherichia spp* is positive and *Streptococcus spp* is negative. In case of microbiological test *Escherichia spp* is gram negative and *Streptococcus spp* is gram positive. Both these bacteria have catalase production ability.

**Key Words:** Soybean, Soy Milk, *Streptococcus spp*, *E.coli*, IMVIC, Catalase

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### I. Introduction

Soybean (*Glycine max*) with 40% protein and 20% fat is the most important source of protein and fat. It not only provides the most predominant quality macronutrients but also various other micronutrients, which are required to fight against malnutrition. (Gandhi P. A, 2009)

Soymilk resembles cow milk in both appearance and consistency (Jimoh and Kolapo, 2007). Different soy milks spoilage causing bacteria are present in soy milk in this study the soy milk spoilage causing bacteria were isolated and further these bacteria were subjected for biochemical and microbiological analysis.

### II. Materials And Methods

The present work Study on quality of soy milk produced from soybean was carried in Department of Post Harvest and Food Biotechnology, in K.K. Wagh college of Agricultural Biotechnology, Nashik.

#### Materials Source

Soybean was purchased from local market in Nashik region and kept at ambient temperature prior to usage.

#### Preparation of Soy Milk

Soymilk was prepared using standard method described by Lee et al., 1990. After preservation this soy milk were used for further analysis.

#### Isolation of Microorganisms

Soy milk was subjected to serial dilution and microorganisms were isolated by streak plate method and spread plate method.

#### Biochemical and Microbiological Analysis.

IMVIC test, Catalase test and gram staining of isolated bacteria were performed. (Odu N.N. and Egbo N.N. 2012)

### III. Result And Discussion

#### Preparation and Preservation of Soymilk

Creamy white colored soy milk was prepared and further used for biochemical analysis.

#### Isolation of Microorganisms

The microorganism was isolated by using two methods

1. **Streak plate-** by this method *Escherichia spp* was isolated by morphological analysis under microscope bacterium *Escherichia spp* population was confirmed.
2. **Spread Plate-** by this method *Streptococcus spp* was isolated and by morphological analysis under microscope bacterium *Streptococcus spp* population was confirmed.

### Biochemical Analysis of Microorganisms Isolated From Soymilk    **Imvic Test-**

After isolation biochemical analysis of these two bacteria were performed.    Result of biochemical analysis is summarized in table no-1

**Table No.1:** Result of IMViC Test of bacteria isolated from soymilk

Sr. No	Test	Escherichia spp.	Streptococcus spp.
1	Indole Test	Positive	Negative
2	Methyl-Red	Positive	Positive
3	Voges-Proskauer	Negative	Negative
4	Citrate-utilization	Positive	Positive

### Microbiological Analysis

Gram staining was carried out to check the gram nature of bacteria and to distinguish gram positive (+) and gram negative (–) bacterial species. Escherichia spp is gram negative and Streptococcus spp is gram positive.

Catalase test is carried out to check the hydrogen peroxide production ability of bacterial spp. Bubbles formation shows positive signs in this test. Escherichia spp and Streptococcus spp shows positive to this test.

Soymilk is important local beverage in most parts of India and other parts of the world. Its high protein level has made it more nutritious. Locally soymilk is prepared locally at homes under unhygienic conditions and thus is prone to contamination by the micro flora. From the shelf life study, it was observed soy milk produced under unhygienic condition shows presence of bacteria like Escherichia spp and Streptococcus spp

### Reference

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