



## PREPARATION OF HERBAL SOAP FROM DIFFERENT LEAVES AND STUDY OF ITS PHYSICAL PROPERTIES

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### ABSTRACT:

Nowadays soap is a daily need of humans as washing of hand with a soap is one of the ways to prevent infections. In the market variety of soaps are available. We have tried to prepare liquid soap from different leaves of medicinal plants and studied physical properties like pH, surface tension and viscosity of prepared soap. It is observed that the surface tension goes on decreasing with increase in concentration of soap. There are minor changes observed in viscosity and pH was also slightly alkaline.

**Keywords:** Liquid soap, Aloe vera, Neem, surface tension, Viscosity

### INTRODUCTION:

Soap is both a salt of a fatty acid and the term for a variety of cleansing and lubricating products produced from it. They are used as thickeners, components of some lubricants and precursors to catalysts for industrial use. [1]Soaps are the oldest surfactants and are chemically defined as the alkali salt of fatty acid. Synthetic detergents vary in composition, surfactant types and pH. In modern usage, the term “soap” generally refers to any cleansing agents regardless of chemistry. [2]Sometimes, drops of oil and some dirt are suspended in water. The way in which soap is used to clean your hands is as follows - it causes drops of grease and dirt to be pulled off from your hands and suspended in water. These drops are washed away when you rinse your hands.[3]In the reign of Nobonidus (556 -539 BC) a recipe for soap consisted of uhulu [ashes], cypress [oil] and sesame [seed oil] for washing the stones for the servant girls.[4]The Latin word *supo* simply means “soap”; it was likely borrowed from an early Germanic language and is cognate with Latin *sebem* “tallow”, which appears in Pliny the Elder’s account.[5] In our households, soaps are used for

washing, bathing and other types of housekeeping, where soaps act as a surfactant, emulsifying oil to enable them to be carried away by water.[6]

### EXPERIMENTAL METHOD -

In a plastic beaker 80 ml of aqueous extract was taken and 10 grams of acid slurry was mixed in it with wooden stick for 5 minutes. Then 2.5 grams of cellulose powder was added. After this addition of 2 grams of caustic soda the solution was left open for 8 hours. After 8 hours 5 grams of urea was mixed into it and stirred with wooden stick continuously till soap become transparent. Vinegar was added as a preservative.

### RESULT AND DISCUSSION -

The liquid soap is prepared from leaves of medicinal plant. We have studied the physical properties like surface tension, pH and viscosity of soap solutions with different concentration. It was observed that the surface tension of water decreases with increasing concentration of soap. The pH of the prepared soap was slightly alkaline. Viscosity of water goes on decreasing in general.

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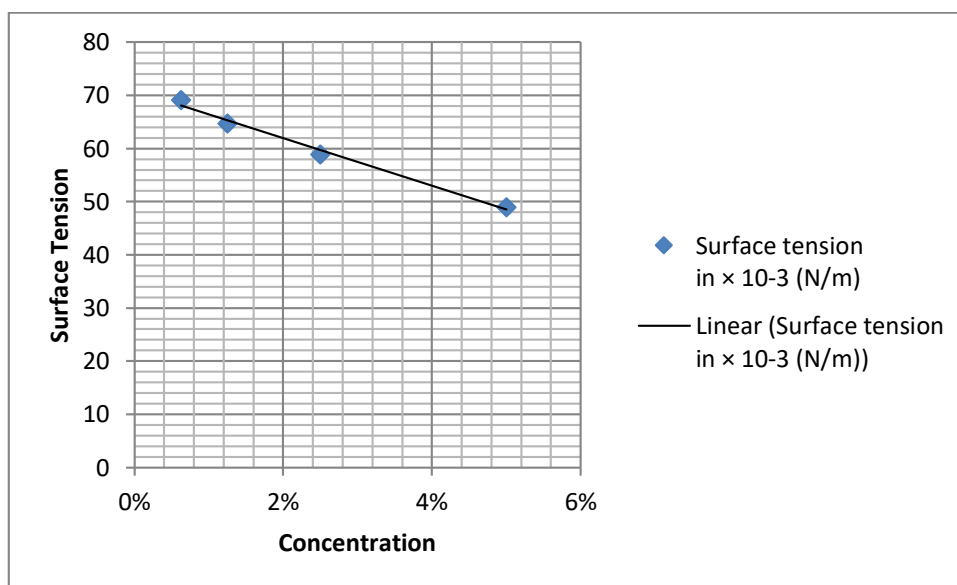
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**Surface tension of Aloe Vera liquid soap**

Percentage of soap solution	Density (Kg/dm <sup>3</sup> ) x10 <sup>3</sup>	Number of drops	Surface tension (N/m)
5%	1.0529	122	48.925 × 10 <sup>-3</sup>
2.5%	1.0491	101	58.8713 × 10 <sup>-3</sup>
1.25%	1.0501	92	64.689 × 10 <sup>-3</sup>
0.625%	1.0479	86	69.063 × 10 <sup>-3</sup>



**Viscosity of Aloe Vera liquid soap**

Percentage of soap solution	Density (Kg/dm <sup>3</sup> ) X10 <sup>3</sup>	Number of seconds	Viscosity(N/m <sup>2</sup> )
5%	1.0529	79	9.0674 × 10 <sup>-4</sup>
2.5%	1.0491	80	9.1490 × 10 <sup>-4</sup>
1.25%	1.0501	77	8.8143 × 10 <sup>-4</sup>
0.0625%	1.0479	78	8.9110 × 10 <sup>-4</sup>

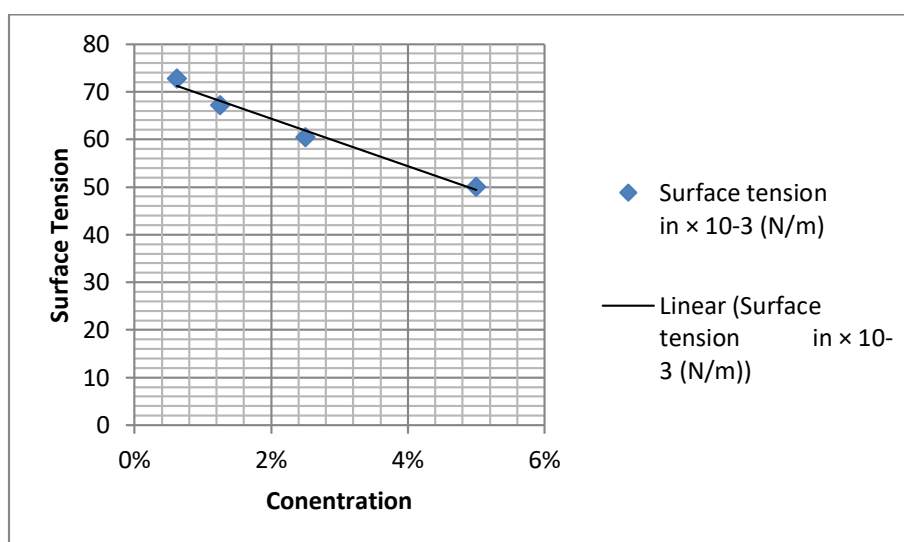
**pH of Aloe Vera liquid soap**

**pH of prepared Aloe Vera liquid soap =7.24**

Percentage of soap solution	pH
5%	7.24
2.5%	7.25
1.25%	7.26
0.625%	7.25

**Surface tension of liquid soap of Neem leaves**

Percentage of soap solution	Density (Kg/ dm <sup>3</sup> ) X10 <sup>3</sup>	Number of drops	Surface tension (N/m)
5%	1.0429	118	50.104 × 10 <sup>-3</sup>
2.5%	1.0453	98	60.4628 × 10 <sup>-3</sup>
1.25%	1.0428	88	67.1738 × 10 <sup>-3</sup>
0.625%	1.0400	81	72.7816 × 10 <sup>-3</sup>



**Viscosity of liquid soap of Neem leaves**

Percentage of soap solution	Density (Kg/ dm <sup>3</sup> ) X10 <sup>3</sup>	Number of seconds	Viscosity(N/m <sup>2</sup> )
5%	1.0429	71	8.0718 × 10 <sup>-4</sup>
2.5%	1.0453	70	7.9764 × 10 <sup>-4</sup>
1.25%	1.0428	73	8.3463 × 10 <sup>-4</sup>
0.625%	1.0400	70	7.9360 × 10 <sup>-4</sup>

**pH of liquid soap of Neem leaves**

**pH of Neem liquid soap = 7.26**

Percentage of soap solution	pH
5%	7.28
2.5%	7.28
1.25%	7.27
0.625%	7.27