

Formulation of liquid hand soap made from neem oil and lemongrass oil for antimicrobial activity.

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ABSTRACT

Created to ascertain the acceptability of lemongrass (*Cymbopogon* sp.) and The COVID-19 pandemic has overemphasized how crucial it is to wash your hands with soap in order to stop the virus from spreading.

The purpose of this study was to create a liquid hand soap that contains essential oils of lemongrass and neem as a natural antibacterial. In Barangay Bagumbayan Lynville Subdivision Phase 1, Santa Cruz, Laguna, a study was conducted. The purpose of the study was to ascertain whether or not selected individuals in Barangay Bagumbayan Lynville Subdivision Phase 1, Santa Cruz, Laguna, would accept lemongrass (*Cymbopogon* sp.) and neem (*Azadirachta* sp.) leaves as herbal soap to treat or cure common skin health problems. The study's findings were used as the foundation for accepting herbal soap for treating common skin health problems. The purpose of this research is to evaluate the effectiveness of clove oil-solid soap manufacturing against three different types of bacteria, as well as its quality. The saponification reaction of olive oil started the soap-making process.

Keyword : neem, lemongrass, soap, Antibacterial Activity, Clove Oil, Soap Quality

I. INTRODUCTION

-An acute respiratory disease pandemic, known as the coronavirus disease 2019 (COVID-19), has swept throughout China and is affecting almost every country in the world. It is brought on by a recently discovered novel coronavirus, SARS-CoV-2. The COVID-19 pandemic was formally classified as a public health emergency of international concern by the World Health Organization (WHO) on March 11, 2020. Nearly every area on Earth has been affected by COVID-19, as it has spread over the globe. Many nations and jurisdictions have implemented steps to stop the spread of COVID-19 because to the disease's alarming fatality rate and rapidity of dissemination. One of the most important ways to avoid illness is through good hand cleanliness. Products with

liquid hand soap are widely accessible. Any type of cleaning solution is referred to as soap (Draeos, 2018). Soaps consist of salt.

Clove (*Syzygium aromaticum*), neem, lemongrass is one of the most valuable spices that has been used for centuries as food preservative and for many medicinal purposes. Clove is native of Indonesia but nowadays is cultured in several parts of the world including Brazil in the state of Bahia. This plant represents one of the richest source of phenolic compounds such as eugenol, eugenol acetate and gallic. Taxonomic position of

TAXONOMICAL CLASSIFICATION

***Azadirachta indica* (neem).**

| | |
|-----------|--------------------|
| Order | Rutales |
| Suborder | Rutinae |
| Family | Meliaceae |
| Subfamily | Melioideae |
| Genus | <i>Azadirachta</i> |
| Species | <i>indica</i> |

Active Compounds of *Azadirachta indica* L. (Neem)

Since it is a rich source of many different kinds of chemicals, *Azadirachta indica* L., or neem, exhibits therapeutic importance in health management. Azadirachtin is the most significant active ingredient; the others are quercetin, sodium nimbin, gedunin, salannin, nimbin, nimbidin, and nimbidol.

TAXONOMICAL CLASSIFICATION

lemongrass

| | |
|-----------|--------------------------|
| Kingdom: | Plantae |
| Division: | Magnoliophyta |
| Class: | Liliopsida |
| Order: | Poales |
| Family: | Poaceae |
| Genus: | <i>Cymbopogon</i> Spreng |
| Species: | <i>citratum</i> |

ACTIVE COMPOUNDS

Numerous beneficial chemicals, including citral (a blend of geranial and neral), isoneral,

isogeranial, geraniol, geranyl acetate, citronellal, citronellol, germacrene-D, and elemol, are present in large amounts in lemongrass essential oil (LEO).

TAXONOMIC CLASSIFICATION OF CLOVE

Kingdom: Plantae

Division: Magnoliophyta

Class: Magnoliopsida

Order: Myrtales

Family: Myrtaceae

Genus: Syzygium

Species: *S. aromaticum*

ACTIVE COMPOUND

Eugenol is the main bioactive compound found in clove extract, and it is responsible for many of its beneficial properties [23]. Eugenol has been comprehensively studied for its various biological activities,

Soap Preparation

In a beaker, coconut oil, castor oil, and neem oil were heated to 100°C. Three distinct neem oil concentrations—5%, 10%, and 15%—were employed. A thermometer was used to measure the temperature. Oils were combined with sugar and sodium lactate. Water was made, then KOH and glycerin were weighed. Glycerin, distilled water, and KOH were combined. KOH was dissolved by stirring with a stirring rod. The lye-water solution was made of the mixture. The lye-water solution was gradually added to the hot oils after it had been well combined and became transparent. In a beaker, the heated oils were filled with the lye-water solution. For thirty to forty minutes, the solution was heated to a constant temperature of 100°C. Next, the resolution

Soap characteristics

The following factors are used to characterize soap: pH, density, foam stability, free fatty acids, alcohol insoluble, and antibacterial activity. The SNI 2588: 2017 standard standards were utilized to evaluate the attributes of the liquid hand soap.

pH

A volume of 1 ml on each of the natural liquid hand soap was dissolved in a 100 ml distilled water.

Density test

Density is a material characteristic. Using a pycnometer, it shows the mass of matter per unit

volume. Pycnometer was weighed empty. Once the temperature is dropped to 25 °C, weigh the pycnometer fully filled with aquadest. If the volume decreases, add more aquadest through the capillary. The organic liquid hand soap is poured into a known-weight pycnometer. When the natural liquid hand soap reaches a reference weight, its weight is then determined

Foam stability test

In order to test the foam stability, one milliliter of liquid hand soap was placed into a test tube that had been scaled, and five milliliters of distilled water were then added. After giving the reaction tube a vigorous shake to create foam, the height of the foam was measured. After ten minutes, the height of the foam that had formed was measured.

Insoluble in alcohol

The soap samples were quantitatively placed into a pre-weighed filter paper after being dissolved in 50 milliliters of hot ethanol. After 30 minutes of drying at 105°C in the oven, the residue was cooled, weighed once more, and a reading was taken.

Free Caustic Alkaline

The amount of alkaline-free ingredients in the soap that, in excess, might irritate skin is known as the FCA value.

II. CONCLUSION

This study demonstrates that neem seed oil and lemongrass essential oil together could be utilized as a natural component in liquid hand soaps that are antimicrobial. It was discovered that the liquid hand soap from the exhibited antibacterial action against the gram-positive *Staphylococcus aureus* bacterium. This product innovation is a natural soap made from essential oils of lemongrass and neem that is devoid of chemicals like artificial coloring and sodium sulfate (SLS).

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