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

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Abstract

It was developed to determine whether lemongrass (Cymbopogon sp.) is acceptable, and the COVID-19 pandemic has overemphasized the significance of washing your hands with soap to prevent the virus from spreading.The goal of this study was to develop a liquid hand soap with essential oils of neem and lemongrass, which function as natural antibacterials.In Santa Cruz, Laguna's Barangay Bagumbayan Subdivision Phase 1, a study was conducted.The goal of the study was to determine whether or not a sample of people in Santa Cruz, Laguna's Barangay Bagumbayan Lynville Subdivision Phase 1 would accept neem (Azadirachta sp.) and lemongrass (Cymbopogon sp.) leaves as a herbal soap to treat or cure common skin health issues. The results of the study served as the basis for accepting herbal

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

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 (Draelos, 2018). Soaps consist of salt.

One of the most precious spices, clove (Syzygium aromaticum), neem, and lemongrass have been used for ages as food preservatives and for a variety of therapeutic uses.

Neem trees could be found in central Java, East Java, Bali and West Nusa Neem oil has been used to produce of natural and organic cosmetics, medicinal cosmetics Natural liquid hand soap with neem oil .The most important active constituent is azadirachtin and the others are nimbolinin, nimbin, nimbidin, nimbidol, sodium nimbinate, gedunin, salannin, and quercetin. Leaves contain ingredients such as nimbin, nimbanene, 6-desacetylnimbinene, nimbandiol

Lemongrass oil it is An alternate cleanser to the synthetic chemicals in soap is lemongrass oil.This fragrant, long-living plant is indigenous to South India and Sri Lanka. It is now widely grown in tropical America and Asia. Lemongrass leaves that have been freshly chopped and gently dried are used to extract essential oils, which are then utilized for therapeutic purposes.toothpaste, emulsions, liquors, ointments, hair and skin care products, and personal hygiene goods.Citral monoterpenes have antimicrobial and antifungal properties. Lemongrass oil has been shown in numerous tests to possess strong antifungal and antibacterial properties.

Due to their potent antioxidant and antibacterial properties, spices like clove, oregano, mint, thyme, and cinnamon have been used for millennia as both food preservatives and medicinal plants. Many reviews these days attest to the antimicrobial,

TAXONOMICAL CLASSIFICATION

Azadirachtaindica (neem).

Order Rutales

Suborder Rutinae

Family. Meliaceae

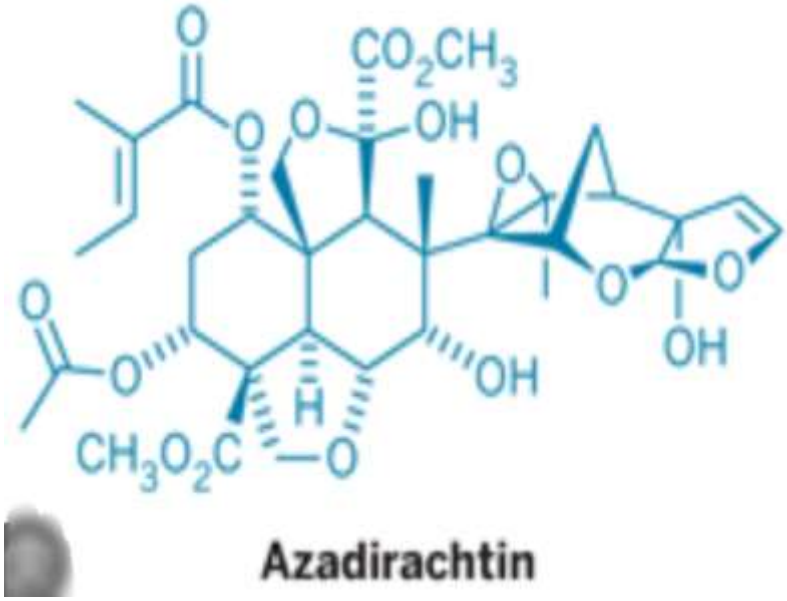
Subfamily Melioideae

Genus Azadirachta

Species indica

. **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 nimbinate, gedunin, salannin, nimbin, nimbidin, and nimbidol.



Azadirachtin

TAXONOMICAL CLASSIFICATION

lemongrass

Kingdom: Plantae

Division: Magnoliophyta

Class: Liliopsida

Order: Poales

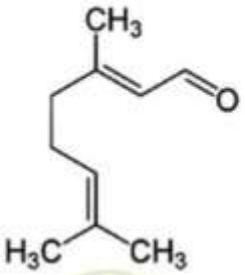
Family: Poaceae

Genus: Cymbopogon Spreng

Species: citratus

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).



Citral

TAXONOMIC CLASSIFICATION OF CLOVE

Kingdom:Plantae

Division: Magnoliophyta

Class: Magnoliopsida

Order: Myrtales

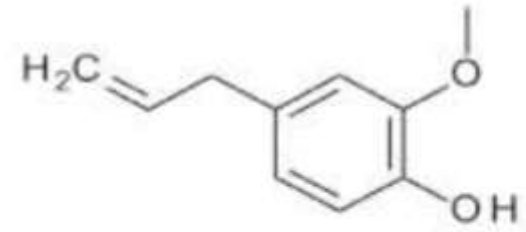
Family: Myrtaceae

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.



Eugenol

Soap Preparation

Neem oil, castor oil, and coconut oil were heated to 100°C in a beaker. There were three different neem oil concentrations used: 5%, 10%, and 15%.The temperature was measured with a thermometer. Sugar, sodium lactate, and oils were mixed. After making the water, glycerin and KOH were weighed. KOH, distilled water, and glycerin were mixed together. KOH was dissolved by using a stirring rod to stir. The mixture was the lye-water solution. Once fully blended and clear, the lye-water solution was gradually added to the heated oils. The heated oils were filled with the lye-water solution in a beaker. The solution was heated to a steady temperature of 100°C for thirty to forty minutes. Next, the settlement

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

One property of a material is its density. It displays the mass of matter per unit volume using a pycnometer. Piknometer had an empty weight. Weigh the pycnometer once it has cooled to 25 °C with the aquadest entirely within. Increase the aquadest through the capillary if the volume falls. Pour the organic liquid hand soap into a pycnometer with a given weight.The weight of the natural liquid hand soap is then calculated after it reaches a reference weight.

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.

Antibacterial activity

Disk Diffusion Method is used to conduct Antibacterial Activity Test. The microorganisms utilized are Staphylococcus aureus. The bacteria must be grown in Nutrient Broth (NB) medium and incubated at 36 oC for 18 to 24 hours. Next, using sterilized swaps, the bacterial solution is spread into Nutrient Agar (NA). After being sterilized, a swab was put into the inoculum tube and streaked up and down the plates as well as back and forth over the nutritional agar surface. After soaking the disk paper in 1 mL of soap sample, it was placed inside the NA and heated to 36 oC for 24 hours. Disk paper moistened in Dettol Soap for each

Data analysis

Data analysis used was factorial completely randomized design. Factors tested were the concentration of neem oil and lavender essential oil

CONCLUSION

..This study shows that lemongrass essential oil and neem seed oil together could be used as a natural ingredient in antibacterial liquid hand soaps. It was found that the gram-positive Staphylococcus aureur bacteria was susceptible to the antibacterial effect of the liquid hand soap from the. This product innovation is a natural soap free of chemicals like sodium sulfate (SLS) and artificial coloring, manufactured from the essential oils of lemongrass and neem

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