

Review on Papaya Fruit

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Abstract: *The majority of commercial soaps include chemicals that can be bad for the skin, therefore using natural herbal soap is wonderful substitute. Natural herbs and componets are used to make herbal soap, which are better for the skin and less likely to have any negative effect. To provide the greatest skin care option for your skin, some natural soap producers additionally utilise aromatherapy and herbal remedies. Herbal soap have been discovered to be quit helpful for the skin since they are made of rare herbs and other natural components. These soaps herbal infusion contain medicinal and restorative properties that provide the skin with particular advantages including hydration, nourishment, strength, and healing. These soaps also include ingredients that are healthy for the skin and overall health, such as ultra fatty oils, neem oil, orange oil, Different skin issues can be effectively treated with herbal soaps. Glycerin, which is often not included in commercial soaps, is also included in these soaps. These soaps for dry skin disorders include glycerin, which aids in keeping moisture in the skin. This article includes the formulation and evaluaton herbal handwash gel and tests its safty and effectiveness and analysis for the production at commertial scale*

Keywords: Herbal Handwash Gel, Herbal Skin Products, Neem Handwash Gel, Orange Oil Handwash Gel, Evaluaion Of Herbal Handwash

I. INTRODUCTION

Herbal drug indusry is now getting in trend because of its potential therapeutics and less side effects and hence the herbal preparations are getting in demand hence the herbal drug industry is getting on high nowadays. The formulated preperation of herbal hand wash gel is made up of basic ingredients i.e. neem oil and orange oil these herbal drugs having antimicrobial and antifungal properties and hence with these ingredients this formulation is used as antimicrobial and germicidal hand wash. the objective behind this topic is to formulate and evaluate this preperation under varoius criteria and demonstrate its efficacy and therapeutic activity.

II. LITERATURE SURVEY

This project is performed and evaluated indepedently and the litrature survey is done with the help of the inoformation available on the internet and from research rticles from various journals, some of them are as follows,

1. Mr. Bhiseakash bhagwan, et el.2016. The primary goal of the effort is to create and assess a multi-herbal hand wash utilising aloe vera and lemon juice.making a formulation with fewer side effects and better hand washing is necessary. The predominant locations for the infection are the hands.microbial infection is important child and employee issues in the pharmaceutical sector.so, industrial sites are where hand washing is most frequently used .The hand wash formulation was discovered to be effective in terms of physical parameters and hand washing.as a result,it raises the issue of using antiseptic for hand washing.the produced handwash is tested using many criteria, including colour,smell,ph, viscosity,and stability.

2. Sandeep DS, etel, 2020, This article is based on the preparation and formulation of a poyherbal handwash using methanolic extracts of the leaves of touch-me-not (Mimosa pudica), neem, and lemon juice. Two handwash formulations were created, and the compositions' physical characteristics, including viscosity, pH, and appearance, were assessed. By using the agar diffusion method, the antibacterial activity of created hand wash formulations was tested against the skin pathogens Bacillus subtilis, Staphylococcus aureus, Pseudomonas aeruginosa, and Escherichia coli. Comparing developed herbal hand wash formulations to the common antibiotic medicine Amoxicillin, the results demonstrated a considerable zone of inhibition. Therefore, these plant resources may be utilised to make commercial-scale herbal hand soap.

3. Niraj Terkar, et al 2021, The preparation of Polyherbal Hand Wash Gel has hand hygiene as its primary goal. All across the world, herbal medicines serve an important role in healthcare. Herbal medicines have long been utilised as effective treatments for preventive and various other illnesses. As a result, herbal therapy is sometimes referred to as botanical treatment or phytomedicine. To avoid side effects including itching, dermatitis, irritation, and other negative consequences, there are a variety of hand washes available on the market. An effort has been undertaken to create a polyherbal hand wash combining Neem extract, which has antibacterial properties, and Tulsi, which has purifying properties, to combat germs or disease-causing bacteria and protect your skin. Along with Neem and Tulsi, other herbal substances or herbs that also play crucial roles were added to the composition of the polyherbal hand wash. Parameters wash., foam height, foam retention, skin irritancy test, cleaning action, dirt dispersion test, antimicrobial activity, etc. Its effectiveness was assessed and contrasted with that of the commercial hand wash. Results that were made public were within reasonable bounds and had little to no negative effects. The goal of the current study was to create a polyherbal hand wash gel that contains herbal extract and may be used to inhibit bacterial development in addition to cleansing hands. Its ingredients were chosen based on how delicate the skin is, ensuring that it won't include colour, aroma, grit, pH, viscosity, and spread were used to evaluate a herbal hand irritate it in any way. The Polyherbal Hand wash Gel may therefore be determined to be much superior than basic soaps or already available synthetic hand washes owing to their constituents, efficacy on our hands' skin, and suitability for all types of skin.

4. Koushlesh Kumar Mishra, et al, 2021, Due to their potential for use in medicine and pharmaceuticals, herbs are now used all over the world. Herbs are also used to protect people from a wide range of ailments. In this research, an alcoholic extract of The plant *Andrographis paniculata*, often known as green chiretta, was utilised in the creation of handwash. Green chiretta has a long history of usage and is well known for its many pharmacological effects. Utilising Carbopol-934 as a gelling agent, TEA (triethanolamine) as a neutralizer, and sodium lauryl sulfoacetate (SLSA) as a surfactant, an alcoholic extract of *Andrographis paniculata* loaded herbal hand wash was created. Herbal handwash gel's antibacterial effectiveness was assessed using the cup-and-plate method. *Escherichia coli*, *Bacillus subtilis*, and *Staphylococcus aureus* are utilised to evaluate the gel's capability against microbes. It exhibits promising anti-*Bacillus subtilis* capabilities. A morphological analysis of the herbal handwash gel's physical and chemical properties, including its odour, colour, pH, foam height, consistency, and retention in accordance with chemical standards, was conducted. The herbal hand wash mix that was created had no negative side effects and had results that were within acceptable ranges.

5. P.Twila Pushpa et al 2022, The current study's objective is to create and assess a herbal hand wash gel using extracts of *Azadirachta indica* (neem powder), *Ocimum tenuiflorum* (tulsi powder), *Mentha* (mint powder), and *Syzygium aromaticum* (clove).

distilled water, (vehicle), turmeric (colourant), rose oil (perfume), saponin extract, *Sapindus mukorossi* (ritha powder), carbopol 940 (gelling agent), methyl paraben (preservative), glycerin (softening agent), to choose the plant components, using the air drying process to obtain particle-free extract from plant powders. Herbal hand gel may be made using the appropriate ingredients, to assess herbal hand soap. Like cosmetics, cosmeceuticals (a cosmetic with purported therapeutic characteristics) are applied topically but contain substances that affect how the skin behaves biologically.

6. Nikita P. Aware, et al 2022, The task at hand was to create herbal handwash formulations using methanolic extracts of *Mimosa pudica*, *Azadirachta indica*, and *Glycyrrhiza glabra* leaves. Formulations for a multi-herbal hand wash were created, and its physical characteristics such as appearance, pH, viscosity, grittiness, spreadability, cleansing action, and foam height were assessed. By using the agar diffusion method, the antibacterial activity of developed polyherbal hand wash formulations was tested against the skin pathogens *Bacillus subtilis*, *Staphylococcus aureus*, *Pseudomonas aeruginosa*, and *Escherichia coli*. The findings showed that when compared to conventional (marketed formulations), produced herbal hand wash formulations demonstrated a considerable zone of inhibition. Therefore, these plant ingredients may be utilised to make polyherbal hand wash on a large scale.

7. Aman Shukla et al 2022, The many alcohol-based hand sanitizers that pass for antiseptic hand wash on the market have certain negative side effects. An attempt has been undertaken to make a polyherbal hand wash utilizing extracts of ginger rhizomes in order to prevent these negative effects of the synthetic handwash formulations, such as itching, dryness, irritation, dermatitis, etc. In order to evaluate the produced poly-herbal hand wash's anti-microbial

effectiveness against skin infections obtained from volunteers, the Cup Plate Method was used. Because of the combined action of phytoconstituents found in the extracts, the findings of the Cup Plate Method demonstrated that hand washes made from both alcoholic and aqueous extracts of ginger rhizomes have effective activity. The findings of this study suggest the inclusion and use of herbs in formulations to get better results. Herbal hand soap was examined using many criteria, including pH, Viscosity, Foam Height, Foam Retention, Anti-Microbial Activity, Skin Irritation Test, and others. The findings were within acceptable ranges with little or no negative effects. Two hand wash formulations were created, and the compositions' physical characteristics, such as viscosity, pH, and appearance, were assessed. By using the agar diffusion method, the antibacterial activity of created hand wash formulations was tested against the skin pathogens *Bacillus subtilis*, *Staphylococcus*, *Pseudomonas aeruginosa*, and *Escherichia coli*. The current work's objective was to create herbal hand wash formulations using ethanolic extracts of ginger rhizomes.

Objective

- Herbal hand wash gel and soaps are getting into trend in consumer.
- Because of its natural contents, less use of chemicals, friendly on the skin, lesser side effects and wide therapeutic activities
- the aim of this research project is to introduce prepare and evaluate the herbal hand wash gel with herbal ingredients.
- To formulate and evaluate herbal handwash gel and evaluate it under various criteria of testing to confirm its safety and efficacy.
- To deepen the knowledge of pharmaceutical science and formulation

Neem oil :-



Fig. Neem oil

Neem

The *Meliaceae* family includes neem (*Azadirachta indica*), and its importance as a health-promoting agent is linked to its abundance in antioxidants. In the treatment and prevention of many ailments, it has been utilised extensively in Chinese, Ayurvedic, and Unani remedies around the world, particularly in the Indian Subcontinent. Neem and its components have a function in the scavenging of free radical production and the prevention of disease pathogenesis, according to earlier findings. According to research using animal models, neem and its main components have a crucial role in the management of cancer by modulating a number of molecular pathways. It is regarded as a safe therapeutic herb that modifies a variety of biological processes without causing any harm. (1, 2, 3)

Through the improvement of antioxidant activity, suppression of bacterial growth, and modification of genetic pathways, plant products or natural products demonstrate an essential role in the prevention and treatment of illnesses. Due to their low side effects and accessible qualities, several plants are still being eagerly explored for their potential

medicinal roles in the management of illnesses. It is common knowledge that allopathic medications cost a lot of money and have detrimental effects on healthy tissues and a variety of biological processes. It is well acknowledged that many pharmacologically effective medications are made from natural resources, such as medicinal plants. (2,3)

Plant Morphology

Scientific name: *Azadirachta Indica*.

Synonym: margosa, neem, nimtree or Indian lilac

Family: *Meliaceae*.

Kingdom: Plantae

Phylum: Magnoliophyta

Family: *Meliaceae*

Genus: *Azadirachta*

Chemical constituents:

Research over the years has revealed that *Azadirachta indica* has a broad variety of chemicals, some of which have medicinal potential. Triterpenes are the most therapeutically useful of all of these chemicals. It has been demonstrated that the triterpene Nimbin possesses antipyretic, fungicidal, antihistamine, and antiseptic effects. Additionally, Nimbin has anti-inflammatory and antioxidant properties that limit the creation of reactive oxygen species and lessen damage. (5)

Flavonoids, which act as prostaglandin biosynthesis inhibitors, endoperoxides, and inflammatory enzymes such protein kinases and phosphodiesterases are also present in neem.

As previously indicated, oil extracts are the most widely utilised form of neem, and thorough phytochemical testing has proven the presence of triterpenes, flavonoids, and saponins in significant concentrations, while catechins and nimbins appear to be present in lesser concentrations. Other metabolites in neem extracts include gallic acid, limonoids, tannins, alkaloids, terpenoids, reducing sugar, and catechins.(3,5).

Medicinal Uses of Neem.

Due to its numerous medical benefits, *Azadirachta indica*, often known as neem, has gained fame on a global scale recently. Neem has become popular in contemporary medicine due to its extensive usage in Ayurveda, Unani, and homeopathic treatments. Neem produces a wide range of chemically varied and structurally complex physiologically active chemicals. From various neem plant components, more than 140 distinct chemicals have been discovered. The traditional usage of the neem tree's leaves, blossoms, seeds, fruits, roots, and bark for the treatment of inflammation, infections, fever, skin conditions, and dental problems includes all of these elements. Neem leaf's therapeutic benefits have been specifically discussed.

The immunomodulatory, antihyperglycemic, antiulcer, antimalarial, antifungal, antibacterial, antiviral, antioxidant, antimutagenic, and anticarcinogenic activities of neem leaf and its components have been proven. (5,6)

Immunomodulatory Action**Antihyperglycemic Action.****Antiulcer Action.****Antimalarial Action.****Antifungal Action.****Antibacterial Action.****Antiviral Action.****Antioxidant Action****Antimutagenic Action.****Anticarcinogenic Action.****Orange oil**



Fig. Orange oil

Citrus sinensis (CS) (L.) Osbeck is a perennial species that thrives in warm climates all over the world. Fresh fruit, with a global production of about 6.7X10⁷ tonnes per year (TPY) in 2016, or processed derivatives like juice, marmalade, flavour, fragrance, and colouring additive, pectin, are primarily used as food.

An evergreen tree with scarce barbed branches and alternating, toothed blades that are formed variously, such as round or elliptical, and are attached to the stem by winged-petioles is known as CS. Its height ranges from 3 to 9 metres. Axillary blooms have up to 25 yellow-colored filaments and 5 white petals, and they can be found alone or in whorls of six. The pericarp of CS is spherical or oval in shape, measuring 6-10 cm in diameter, and turns yellow-orange as it ripens. The endocarp, which contains juice sac glands, is surrounded by a wrinkled epicarp, exocarp, or flavedo, which contains a large number of essential oil glands and is covered by a waxy epidermis. The albedo, also known as the mesocarp, is a white filamentous tissue made up of cells with a tubular shape that lies underneath the flavedo.(7)

Scientific name: *sinensis* L Osbeck,

Synonym: Sweet orange

Family: Rutaceae Kingdom: Plantae

Sub kingdom: Tracheobiontas

Genus: Citrus

Chemical Constituents:

D-limonene, a monoterpene alkene, an oxygenated monoterpene that includes alcohol aldehydes and esters, sesquiterpenes, as well as linear alkanes and aldehydes, make up the majority of the mixture. These numerous biological activities including anthelmintic, anti-aflatoxicogenic, antibacterial, antifungal, antioxidant, anti-tumor, anxiolytic, food preservative, hepatocarcinogenesis suppressant, insecticidal and larvicidal, pain relief and relaxant are explained by the CSP's rather complex blend. It might be suggested that the presence of the key ingredient Limonene, which shown a number of bioactivities when studied as a pure chemical, is what is primarily responsible for the effects. However, it is conceivable that the combination of limonene with other minor components may have synergistic effects.(7,8)

Medicinal uses:

Numerous Biological Activities Such As

Anthelmintic,

Anti-Aflatoxicogenic,

Antibacterial,

Antifungal

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Antioxidant
Anti-tumor
Anxiolytic
Food preservative,
Hepto carcinogenesis,
Suppressant,
Insecticidal,
Larvicidal
Pain relief,
Relaxant(7,8)

Formulation:

API: The marketed pharma grade oils of neem and orange are used for this formulation

Excipients:

HPMC(Hydroxypropyl methyl cellulose): HPMC is used in formulation as thickening agent.

SLS6: The SLS were used as foaming agent in formulation.

Glycerin: Glycerin was added to avoid dryness of skin after use and to moisturize the skin.

Colorant: Amber color is used to improve appearance of preparation. **Methyl Paraben:** Paraben Is Used As I.E. To Prevent AnyType Of Microbial Growth In Formulation.

Distilled water the distilled water used as vehicle and solvent for excipients.

Formulation 01

Sr. No	Ingredient	Formulation 01 (Concentration In %)	Use of Ingredient
01	Neem oil	0.1	API(Antibacterial, Antimicrobial)etc.
02	Orange oil	0.2	API(Antibacterial, Antimicrobial)etc
03	HPMC	6	Thickening Agent/Surfactant
04	SLS6	6	Foaming Agent
05	Glycerin	1.5	Moisturizer
06	Colorant	QS	Colorant
07	Methyl Parabem	QS	Preservative
08	Distilled Water	QS	Vehicle

Formulation no 2

Sr No	Ingrdient	Formulation 02 (Concentration In %)	Use of Ingredient
01	Neem oil	0.1	API(Antibacterial,Antimicrobialetc
02	Orange oil	0.2	API(Antibacterial,Antimicrobialetc
03	HPMC	8	Thickening Agent/Surfactant
04	SLS6	6	Foaming Agent
05	Glycerin	1.5	Moisturizer
06	Colorant	QS	Colorant
07	Methyl Paraben	QS	Preservative
08	Distilled water	QS	Vehicle

Formulation no 3

Sr no	Ingredient	Formulation 03 (concentration In %)	Use of ingredient
01	Neem oil	0.1	API(Antibacterial, Antimicrobial etc
02	Orange oil	0.2	API(Antibacterial, Antimicrobial)etc
03	HPMC	10	Thickening Agent
04	SLS6	6	Foaming Agent
05	Glycerin	1.5	Moisturizer
06	Colorant	QS	Colorant
07	Methyl paraben	QS	Preservative
08	Distilled water	QS	Vehicle

Method of Preparation

Herbal hand wash gel formulation batches were prepared as mentioned in desired concentration of gelling agent, foaming agent, emollient were measured accurately and dispersed in purified water with moderate stirrer speed. The required quantity of methyl paraben was dissolved in remaining quantity of purified water by gentle heating. Desired quantity of herbal oils, colorant was added to the above formulation. The formulated hand wash gel was filled in suitable container and stored at cool and dry place.

STEP 1

Formulation Batches Were Prepared

STEP 02

Desired Concentration Of Gelling Agent, Foaming Agent, Emollient Were Measured Accurately And Dispersed In Purified Water With Moderate Stirring

STEP 03

Required Quantity Of Methyl Paraben Was Dissolved In Remaining Quantity Of Purified Water By Gentle Heating

STEP 04

Desired Quantity Of Herbal Oils And Colourant Was Added To The Above Formulation.

STEP 05

The Formulated Hand Wash Gel Was Filled In Suitable Container And Stored At Cool And Dry Place.

Evaluation

The evaluation is based on various physicochemical parameters and antimicrobial activity of the formulations such as,

- Odor
- Appearance
- Size
- Shape
- Color
- PH Percentage Of Solids Content
- Foaming Capacity
- Foam Stability
- Emolliency
- Alcohol Insoluble Matter
- Microbiological Study

III. RESULT DISCUSSION

Physicochemical Tests.

Sr No	Test	Formulation 1	Formulation 2	Formulation 3	Observation	Results
01	Odour	Fragrant	Fragrant	Fragrant	Fragrant	Complies
02	Appearance	Amber Color	Amber Color	Amber Color	Amber colored gel	Complies
03	Shape	N/A	Liquid	Liquid	Liquid	Complies
04	color	Amber	Amber	Amber	Amber color	Complies
05	PH	7.5	7.9	7.9	Natural	Complies
06	% Solid content	23	22	22	With in the limit	Complies
07	Foaming capacity	15 cm	18 cm	14 cm	With in the limit	Complies
08	Foaming stability	4 min	5 min	5 min 20 sec	With in the limit	Complies
09	Test for irritancy	No irritation	No irritation	No irritation	With in the limit	Complies

Antimicrobial activity

Sr. No	Organism	Control	Formulation 01 (1% Concentration)	Formulation 02(2% Concentration)	Formulation 03 (3% Concentration)
01	Staphakococcus aureus	No Inhibition observed	Inhibition of growth observed	Inhibition of growth observed	Inhibition of growth observed
02	Pseudomonas aeruginosa	No Inhibition observed	Inhibition of growth observed	Inhibition of growth observed	Inhibition of growth observed

Uses

An efficient and secure method to maintain clean, fresh hands. Free of soap, made of a herbal and fragrant oil gel
Non-toxic and safe for the environment.

Gel hand soap that is ready to use and does not dry or strain the skin as soap does.

Defends against germs and fungi. Effective in eliminating odors and oils
100% natural

A unique combination of herbal oils and plant extracts.

Without chemicals,

Eco-friendly, and without adverse effects.

Vegan and free from cruelty

Result

The formulation and evaluation of herbal hand wash gel wash was prepared and evaluated under various criteria and here we can conclude its safety efficacy and it has no side effect's observed.

IV. CONCLUSION

From above results here we can conclude that the preparation is safe and has excellent antimicrobial activity with minimal side effects also from above preparation's the formulation 03 has better activity and fragrance than formulation 02 and formulation

REFERENCES

- [1]. Alzohairy, Mohammad A. "Therapeutics Role of Azadirachta indica (Neem) and Their Active Constituents in Diseases Prevention and Treatment." Evidence-based complementary and alternative medicine: eCAM vol. 2016 (2016): 7382506. doi:10.1155/2016/7382506
- [2]. Zong A., Cao H., Wang F. Anticancer polysaccharides from natural resources: a review of recent research. Carbohydrate Polymers. 2012;90(4):1395-1410. doi: 10.1016/j.carbpol.2012.07.026
- [3]. Jose Francisco Islas, An overview of Neem (Azadirachta indica) and its potential impact on health, Journal of