

Formulation and evaluation of antimicrobial herbal soap

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Submitted: 15-05-2023

Accepted: 30-05-2023

ABSTRACT :-

Most of the commercial soaps contains chemicals that can be harmful to the skin. Use of nature herbal soap can be a good alternative. Herbal products have become an item of global importance both medicinally and economically and usage of herbal products has increased, their safety and efficacy. Bacterial skin infections are most prevalent among people, requiring to have a significant attention for treatment, better skin preservation as well as to maintain good looking healthy skin. Some herbal plant extracts have antibacterial activity. The aim and objective of the present study is to formulate antibacterial poly herbal bath soap using Azadirachta indica, Ocimum tenuiflorum, Curcuma longa, Allium sativum. . The prepared Polyherbal soap were evaluated for various physicochemical parameters such as ph, foam retention time for which good results were observed. The easy availability of plant and their effectiveness on skin helps manufacturers with cost-effective benefits, easy availability and with less or no side effects. herbal soap and hand sanitizer was formulated using the leaf and bark extract of Azadirachta indica. Neem (Azadirachta indica) tree has attracted worldwide prominence owing to its wide range of medicinal properties, neem leaves and its constituents have been demonstrated to exhibit anti-inflammatory, antihyperglycemic, antiulcer, antimalarial, antifungal, antibacterial, antimutagenic and anticarcinogenic properties. Herbal soap ingredients were used lemon grass , neem , orange peel powder , charcoal in which neem leaf and seed were found effective against some dermatophytes. Charcoal effective against antibacterial activity. Lemon grass acts as antioxidant.

Key words:- Antimicrobial , extract , antioxidant , Azadirachta indica , antibacterial.

I. INTRODUCTION :-

The word dress was deduced from the Greek word “ kosm tikos ” meaning having the power, arrange, skill in decorating. [1]Herbal cleaner medication is a drug or medicines it contain Antibacterial and antifungal agents which

substantially uses of part of shops similar as like leaves, stem, roots and fruits to treatment for a injury or complaint or to achieve good health. This medication retain antimicrobial property are administered topically and available to apply in colorful forms like creams, embrocation gel, cleaner, solvent excerpt or ointment. The variety of creams and cleaner parcels have been used to treat colorful skin disorders. 7. substantially skin infection are caused by fungi, staphylococcus aureus and streptococcus species. 6. Ethnomedicinally, juice and excerpt from leaves of the shops are topically applied as antimicrobial and anti-inflammatory agents in treatment of skin complaint including eczemas, ringworm and Pruritus. The succulent gel form is used to diseases of psoriasis. Crude medication of adulatory factory are suitable to soften the skin epidermis enhance lesser penetration and drawing acne and also promote mending and resolution by snappily in time. [1] Cleaner is sodium or potassium swab of adipose acid produced by saponification response using sodium or potassium hydroxide. [2] Grounded on its chemical parcels as an anionic face active agent(surfactant), cleaner is used to clean and wash skin and apparel. Skin from contagious microorganisms and their spreading the skin hygiene Plays an important part to avoid the contagious conditions. This polyherbal cleaner help reduce healthcare- associated transmission of contagious Disease more effectively. shops having the Medicinal parcels are being used as a traditional drug from times old. The colorful excerpt from the stem, roots and leaves, of colorful medicinal shops have been employed as a natural remedy in curing colorful affections and conditions. [2] Indeed numerous of the factory grounded products have been replaced use of synthetic chemicals, the efficacy and safety of ayurvedic Products couldn't find their match. The numerous factory- grounded drugs have been superseded by Synthetic chemicals, ayurvedic goods ' safety and utility haven't been proven. In comparison to chemical products treatment, herbal treatments have the benefit of being, readily

available, Having lower adverse goods and affordable.[3]



Fig no. 1 :- Herbal soap (Source :- <https://images.app.goo.gl/CFZTzAHXt7rzyEUb7>)

2. Preparation of introductory glycerine cleaner base-

The lye result was produced by blending sodium hydroxide(15.7 gm) with distilled water(32.7 gm) in a nonmetallic visage and hotting. [4]

It below 500C until it came transparent, also cooling it. The addition of lye result was done, which was produced by boiling win oil painting, coconut oil painting, and castor oil painting. Place the cover on the slow cooker and poach for numerous hours(about Hours) until the cleaner admixture becomes translucent. Pour the alcohol and glycerine into it. Allow the cleaner to poach for about 30 twinkles, covered and sealed. The formerly prepared sugar result at low temp is after 30 min, in which the sugar entirely dissolved in the water. also I gently poured glycerine cleaner into the cleaner moulds. The admixture in cleaner moulds was allowed to cool to and get solidified in refrigerator.[5]

Sr. No.	Ingredients	Quantity
1.	Distilled water	49.7 gm
2.	Sodium hydroxide	15.7 gm
3.	Palm oil	34.0 gm
4.	Coconut oil	35.3 gm
5.	Castor oil	34.0 gm
6.	Glycerine	19.6 gm
7.	Ethyl alcohol	38.0 gm
8.	Sugar	23.6 gm

Table no. 1 :- Formulation table for glycerine soap base

3. constituents-

1. Neem-

Botanical name – Azadirachta indica

Kingdom- Plantae

Family – Meliaceae

Part generally used – Leaves

Chemical ingredients – flavonoids, Alkaloids, Azadirone, nimbin, nimbidin, terpenoid, steroids.

Use- Treat dry skin and wrinkles, Heal injuries, Treat acne, Minimize intelligencers, Stimulate collagen product, Reduce scars.[6]



Fig no. 2 :- Neem extract (Source:- <https://images.app.goo.gl/T8FFbcDuvsJYMipZ8>)

2. Guava -

Botanical name – Psidium guajavaL.

Kingdom – Plantae

Family – Myrtaceae

Part generally used – leaves

Chemical ingredients – quercetin, avicularin, apigenin, guajaverin, kaempferol, hyperin, myricetin, gallic acid, catechin, epicatechin, chlorogenic acid, epigallocatechin gallate, and caffeic acid.

Use- fiercely fights off origins and protects your skin from vexation, lighten skin tone, improves skin texture[6]



Fig no. 3 :- Guava leaves extract (Source:- <https://images.app.goo.gl/2jwCd3PJ8tdRjcFbA>)

3. Lemon grass -

Botanical name – Cymbopogon citratus, Stapf

Kingdom – Plantae

Family – Poaceae

Part generally used – Roots

Chemical ingredients – neral, isoneral, geranial, isogeranial, geraniol, geranyl acetate, citronellal, citronellol, germacrene- D,

Use- helps to open pores while the tangy parcels of rosemary unclog them. Great for balancing soapy skin. [5]



Fig no. 4 :- lemon grass (

Source:-

<https://images.app.goo.gl/cm7Aif5xtiJB2F7x9>)

4. Orange peel powder -

Botanical name – Citrus Aurantium Dulcis

Kingdom – Plantae

Family – Rutaceae

Part generally used – peels

Chemical ingredients – limonene, ethyl butanoate, octanal, decanal, hexanal,(S)- linalool

Use – detoxify the skin cleanse, lighten and buck up the skin, treat acne and unctuous skin.[7]



Fig no. 5 :- Orange peel powder (Source :- <https://images.app.goo.gl/BbakgFPpx2j6sefn7>)

5. Watercolor-

Use- actuated watercolor works as an exceptional exfoliator and gets relieve of dead skin cells and

dirt and contaminations from the skin and unclogs pores. [6]



Fig no. 6 :- charcoal

(Source:-

https://www.google.com/imgres?imgurl=https%3A%2F%2Fmedia.istockphoto.com%2Fid%2F996686770%2Fphoto%2Ffacial-mask-and-scrub-by-activated-charcoal-powder-on-wooden-table.jpg%3Fs%3D612x612%26w%3D0%26k%3D20%26c%3DgTGZbd4umqS82FoLzGZEKq89f9MxpcNL_gRdFUfTx4%3D&tbid=pVrSsKsFb5OyfM&vet=1&imgrefurl=https%3A%2F%2Fwww.istockphoto.com%2Fphotos%2Factivated-charcoal&docid=QRS8NJV8ZQ0MUM&w=612&h=408&itg=1&hl=en-US&source=sh%2Fx%2Fim%2F4)

6. Chandan Powder-

Use- slipping dirt- contaminations and congested pores, buck up and glowing skin, treat acne. [7]



Fig no. 7 :- chandan Powder (Source :- <https://images.app.goo.gl/W7QLD6B13s31R1X68>)

7. Rose oil painting-

Use- antibacterial, anti-fungal, and antiviral parcels, treating a host of skin conditions topically. purifies the skin and maintains the pH position of the skin.[8]



Fig no. 8. :- Rose oil

(Source:-

https://www.google.com/imgres?imgurl=https%3A%2F%2F5.imimg.com%2Fdata5%2FSELLER%2FDefault%2F2020%2F8%2FZM%2FHY%2FMB%2F3343666%2Frose-essential-oil-500x500.jpg&tbnid=sUOyNLQZ0wFlBM&vet=1&imgrefurl=https%3A%2F%2Fm.indiamart.com%2Fproddetail%2Frose-essential-oil-22549860133.html&docid=bwW4_VYMP_e_AM&w=500&h=500&hl=en-US&source=sh%2Fx%2Fim%2F4)

8. Stearic acid-

Chemical formula – C18H36O2

Colour – white

Use- hardening agent, helping the ultimate to produce a rich lather that feels satiny, hydrating skin, decelerating humidity loss from the skin's face. [5]



Fig no. 9 :- Stearic acid

(Source:-

https://www.google.com/imgres?imgurl=https%3A%2F%2Fingredi.com%2Fproduct_images%2Fuploaded_images%2Fstearic-acid-correct-structure.png&tbnid=H1mfMzIXBSG9HM&vet=1&imgrefurl=https%3A%2F%2Fingredi.com%2Fblog%2Fwhat-is-stearic-acid%2F&docid=LvYuAr4BBAquOM&w=1920&h=1080&hl=en-US&source=sh%2Fx%2Fim%2F4)

9. Beet root-

Use- Beetroot is rich in Vitamin C which helps to clear marks and evens out your skin tone, giving you glowing skin.[8]



Fig no. 10 :- Beet root (Source:-
<https://images.app.goo.gl/2f8HmRQZSgw7mY4k6>)

4. Procedure-

The small pieces of the set introductory glycerine cleaner were put into a visage and melted on a water bath At a temperature below 60 °C. Take the powderders of guawa, neem, bomb lawn, orange peel greasepaint, chandan Greasepaint passed through the sieve. also, all the maquillages are independently hotted.[10]

In 1 ml water in separate teacups. All the excerpt filtered independently. also, this filtered liquid excerpt of guawa, neem, bomb lawn, orange peel greasepaint, chandan Greasepaint poured into melted Cleaner base also stearic acid, rose oil painting and watercolor added init.The liquids Was poured into the earth, which was also allowed to harden at room temperature And estimated the colorful parameters of cleaner.[5]

Table no. 2 :- Formulation table for Antimicrobial herbal soap

Sr.no.	Ingredients	Quantity	Uses
1.	Soap base	70 gm	
2.	Neem	4 gm	Antibacterial
3.	Guava	4 gm	Antimicrobial
4.	Lemon grass	4 gm	Astringent
5.	Orange peel powder	3 gm	Brighten skin
6.	Charcoal	0.5 gm	Unclogs pore
7.	Chandan Powder	3 gm	Treat acne
8.	Rose oil	4 ml	Antifungal
9.	Stearic acid	0.5 gm	Hardening agent
10.	Beet root	3 gm	Vitamin c



Fig no. 11 :- prepared antimicrobial herbal soap

5. Evaluation test-

1. Determination of Organoleptic Characteristics- Clarity and colour was checked by naked eyes against the white background, and the odour was smelled.

2. Size and shape Determination - The cleaner periphery of the size of 8.4 cm, with a consistence of 2.6 cm, which is round- shaped, was chosen for the medication of cleaner bars. This was chosen, as this size is ideal in regular operation to apply on the affected skin corridor of the body.

3. Consistence determination - The consistence was determined with the help of a screw hand which is pre-calibrated. The consistence was measured, by observing the consistence at five different corridor of the cleaner.

4. Weight determination- The weight was determined by using a Digital importing balance.

5. vexation test - cleaner is applied on hands for 5 to 10 twinkles, the result is that it isn't prickly to skin.

6. Froth Height - 0.5 gm of the sample of cleaner was taken and dispersed in 25 ml of distilled water. also, transferred it into 100 ml measuring cylinder; the volume was made up to 50 ml with water. 25 strokes were given and stand till waterless volume was measured up to 50 ml and measured the froth height, above the waterless volume.

7. Froth Retention - Prepared the 25 ml of the 1 cleaner result and transferred it into the 100 ml measuring cylinder. also the cylinder was shaken

10 times. The volume of froth was recorded at one nanosecond for 4 to 5 twinkles.

8. pH test- The pH test was performed for all the phrasings. Each expression of cleaner result was dissolved in 20 ml of distilled water and tested for pH with the help of a digital pH cadence. The dimension of pH of all the phrasings was done in the preliminarily calibrated pH cadence.

9. temperature stability - Liquid cleaner was allowed to stand at 50 °C for 1 week. The stability of liquid cleaner was observed during this period. The sample which was homogenous and stable liquid after standing was indicated as stable and the sample in which the chargers were planed and the sample in which rush was caused also liquid cleaner was said to be as Unstable.

10. Antimicrobial test - The set cleaner was subordinated to antimicrobial webbing by the agar well prolixity standard mug plate system. Organisms used were E. coli, S. aureus, and P. aeruginosa. One gram of cleaner was mixed with 5 ml of sterile water. [15 , 5 , 20]

Sr. No.	Parameters	Result
1.	Colour	
2.	Odour	Aromatic
3.	Appearance	Good
4.	Size	8.4 x 2.6 cm
5.	Shape	Round
6.	Foam height (cm)	1.3 cm 2.3.5cm
7.	Foam retention (min)	1.3 minutes 15 sec. 2.3 minutes 25 sec.
8.	Irritation test	No
9.	pH	7 to 8
10.	High temperature stability	Soap melts above 50 degree Celsius
11.	Weight determination	75 gm

Table no 3 :- Result of evaluation test

6. Evaluation of Prepared Herbal Cleaner expression for Antimicrobial exertion-

The (agar- well prolixity) standard mug plate fashion was used to determine the

antimicrobial exertion by using sabouraud's dextrose agar(Hi- media). The melted media were planted with the suspense of microorganisms and allowed to solidify. The phrasings were aseptically transferred to the Hi- media in Petri- dish with the help of sterile forceps. The treated cleaner was kept for incubation in an incubator at 30 °C for 5- 7 days. Observation The assessment of antimicrobial exertion was grounded on the dimension of the periphery of the zone of inhibition in mm. The values were recorded given in table.[5,9]

• Result of antimicrobial test for herbal soap :-

- 1 . E coli :- 13mm
- 2 . S. aureus :- 14 mm
- 3 . P aeruginosa :- 12mm



Fig no. 12 :- zone of inhibition for formulation 1 .
E .coli 2 . S. aureus
3 . P . aeruginosa

6. Uses of antimicrobial herbal cleaner-

- Treat acne antibacterial parcels of neem fight acne causing bacteria which help in the treatment and forestallment of acne.
- Tackles blacheads and blackheads.
- Aloe vera shows moisturizer it's humidity the skin whithout giving it a slithery sense. So it's perfect for anyone with an unctuous skin.
- It also fight sunburn or acne.
- This cleaner is substantially used all skin problem.
- gets relieve of bacteria and contagion's, while also sanctifying the skin.
- These detergents wetlands down any dead skin cells, giving you the most doused and sanctified skin. [13, 4]

7. Benefits-

- It made without chemicals and replicas.
- It's not dangerous to aqueducts.

- It moisturizes your hands more and longer with glycerin.
- It's win oil painting-free or only contains sustainably- gathered win oil painting.
- It's frequently vegan and not tested on creatures.
 - It comes from small businesses.
 - Its packaging is frequently sustainable.[6, 10]

II. CONCLUSION :-

The plant Azadirachta indica, Psidium guajava, Cymbopogon citratus, Stapf, Citrus Aurantium Dulcis were extracted using water and subjected to various evaluation test according to previous research the antimicrobial activity of Neem was studied. the prepared formulation when tested for different test gave good results. It does not give any irritancy to skin it was determined by using these soap by few volunteer hence it is proved that soap does not give any irritancy to skin. Furthermore the prepared soap were standardized by evaluating various physico chemical properties such as pH appearance odour in which the exhibit satisfactory effect.

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