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FORMULATION AND EVALUATION OF HERBAL SOAP OF NEEM LEAVES

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ABSTRACT

Herbal products have become an item of global importance both medicinally and economically. Although usage of these herbal products has increased, their quality, safety and efficiency are serious concerns in industrialized and developing countries. Thepresent research has been undertaken with the aim to formulate and evaluate the pure herbal formulation. A herbal soap was formulated using the leaf and bark e\tract of Azadirachta indica,tulsi Ayurvedic cosmetics are also known as the herbal cosmetics the natural contentin the herbs does not have any sideeffect on the human body.Most herbal supplement are based on several botanical ingredients with long histories of traditional or folk medicine usage. Among the numerous botanical ingredients available in the market today. Numerouschemical to\ins microorganism present in the atmosphere may cause chemical infection anddamage to skin cosmetics alone are not sufficient to take care of skin and body parts.

Neem(Azadirachta indica) tree has attracted worldwide prominance owing to its wide range of medicinal properties, neem leaves and its constituents have been demonstrated to e\hibit anti– inflammatory, antihyperglycemic, antiulcer antimalarial, antifungal, antibacterial, antimutagenic and anticarcinogenic properties. This study was conducted to evaluate the effect of aqueous ethanolic and ethyl acetate e\tract from neem leaves.. The physicochemical parameters of formulations (Physical evaluation, pH, Foaming ability and foam stability) weredetermined. The results showed that formulation have pH level nearly equal to skin pH foaming nde\ is e\cellent

INTRODUCTION

Fungal infections are a common problem worldwide, affecting millions of people each year. These infections can range from mild to severe and can affect various parts of the body, including the skin, nails, and hair.

Conventional antifungal treatments often have limited effectiveness and can have unwanted side effects.
In recent years, there has been a growing interest in the use of natural ingredients for the treatment and prevention of fungal infections. Neem (Azadirachta indica) is one such ingredient that has been used for centuries in traditional medicine for its antifungal, antibacterial, and anti-inflammatory properties.

This study aims to develop a novel herbal antifungal soap using neem, which can provide a natural and effective alternative for skin care. The soap will be formulated using a combination of neem leaves, coconut oil, olive oil, castor oil, and lye, and its antifungal activity will be evaluated against various fungal species.The development of this herbal antifungal soap using neem has the potential to provide a safe, effective, and natural solution for the prevention and treatment of fungal infections, and can contribute to the growing body of research on the use of natural ingredients for skin care.

The Natural component of herbal medicine has no negative effects on the human body in the vast majority of cases. A pharmaceutical or medication that contains antibacterial and antifungal ingredients is known as an “herbal Soap preparation.” It’s made p of plant parts including leaves, stems, roots, and fruits, and it’s used to treat Damage, disease, and keep people healthy. Soaps have been used in our daily lives for over 6,000 years and Have a rich history. Ancient Babylonians developed a cleaning material by combining animal fats, wood ash, And water, which became known as “soap.”saponification is the basic method of soap production in which fats Or oils react with a base/lye. Soaps are divided into two types: solid and liquid. Medicinal soaps differ from Regular soaps in that synthetic or natural bioactive substances are added to the basic soap medium to give the End product a wide range of biological activity. Here’s some basic information about neem and its antifungal activities: Neem (Azadirachata indica)

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AIM AND OBJECTIVE

Aim :-

To study the formulation development and evaluation of herbal antibacterialsoap ofneem (Azadirachta indica) & tulsi (Ocimum tenuiflorum).

Objectives

The ultimate aim of this study is to formulate and evaluate the herbal antibacterial soapusing e\tracts of plant having ethnic and dermatological importance in Ayurveda,namely,Neem Azadirachta indica, and Tulsi Ocimum tenuiflorum

To study the evaluative parameters such as

1) pH
2) Foam retention
3) Foam height
4) Moisture Content
5) Cleansing Ability
6) Skin Irritation

- Plan Of work:

1. Selection of drug material
2. Study Of Monograph And Chemical constituent
3. E\traction Of Crude Drugs
4. Preparation Of Cream Base
5. Incorporation Of Essential Oil Into soap base
6. Evaluation Test
7. Formulation Of Soap

- **MATERIALS & METHOD**

NEEM

Monograph :-

- Common Name – Neem.
- Scientific Name- AzadirachataIndica.
- Biological Source- Almost all part of plant AzadirachataIndica.
- Family- Meliaceae, the mahogany family
- Kingdom- plant



Neem is an omnipotent tree and a sacred gift of nature. Neem tree is mainly cultivated inthe Indian subcontinent. Neem is a member of the mahogany family, Meliaceae. Today itis known by the botanical name Azadirachtaindica (A. indica)

SarvaRogaNivarini – the curer of all ailments Role of AzadirachataIndica is as a wonder drug is stressed as far back as 4500 years ago.

Importance of NEEM

- Some of its health restoring benefits Effective in skin infection, rahes & pimples.
- Immunity booster, Anti obesity, Blood purifier for beautiful & healthy skin, Anti diabetic, Anti viral,

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Dispels intestinal worms and parasites, Malaria, Piles, Hair disorder& Oral disorders.

- Neem is rich in fatty acids, including oleic, stearic, palmitic, and linoleic acids.
- Neem is used to treat psoriasis and eczema.
- neem has been used to treat acne, reduce blemishes, and improve skin elasticity neem
- leaf e\tract accelerates wound healing through an increased inflammatory response and the formation of new blood vessels.

Chemical Constituents
a) Flavonoids,
b) Alkaloids,
c) Azadirone,
d) Nimbin,
e) Nimbidin,
f) Terpenoids
g) Steroids,
h) Margosicacid,
i) Vanilic acid,
j) Glycosides,etc
are present in Neem Leaf.

Tulsi
MONOGRAPH

- Common Name – Tulsi
- Scientific Name- Ocimum tenuiflorum
- Biological Source- leaves Of Tulsi
- Family- Lamiaceae
- Kingdom- plant



Tulsi is called the _Holy Basil‘ in India with reference made to it in the Holy Scriptures. In its native India, it has been cultivated for nearly 2,000 years. Healers call it tulsi, the Queen of Herbs, the "Incomparable MOne," and it is prominent in Ayurveda and Hinduism for its various therapeutic applications. For skin care,
MImportance of TULSI :-

- Owing to its healing, antibacterial, antifungal anti-inflammatory properties
- Tulsi benefits the skin by preventing blackheads, acne and relieves skin infections, toname a few.
- Rich in vitamin K and antio\idants
- Tulsi benefits hair by stimulating blood circulation and promoting hair growthamongst others. .
- Tulsi has skin and hair benefits. It contains camphene which works as a natural tonerto remove e\cess oil in the skin.
- Tulsi neutralizes free radicals and rejuvenates the skin, reviving the youthful glow.

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Chemical Constituents

1) Oleanolic acid
2) Ursolic acid
3) Rosmarinic acid
4) Eugenol,
5) Carvacrol
6) Linalool
7) β-caryophyllene
8) vitamin
9) Advantages of neem soap :-

1. Hydrates the skin : It helps retain the skin's natural oils due to its content of natural fay acids and Vitamin E, which combat dryness, leaving the skin moisturized, so, and supple.

2. Fights Acne and Pimples: Neem soap is parcularly beneficial for oily and acne-prone skin. Its anbacterial and anmicrobial properes help cleanse the skin, purifying it and removing bacteria from clogged pores, thus aiding in the prevenon and treatment of acne and pimples.

3. Purifies Blood: Neem soap contributes to overall skin health by purifying the blood, enhancing blood circulaon, and smulang collagen producon. The presence of Vitamin C in neem supports the skin in producing natural collagen, which helps prevent various signs of aging.

4. Slows Down Signs of Aging: The ano\idant and vitamin-rich properes of neem help combat signs of aging such as wrinkles, fine lines, and dark spots. It shields the skin from environmental stressors like UV rays and polluon, thus prevenng premature aging. Addionally, neem's an-inflammatory properes soothe irritated skin and help alleviate acne breakouts.

5. Treats Skin Infecons and Rashes: Neem soap is effecve in treang various skin infecons and rashes. Its anviral and anbacterial properes help reduce inflammaon, soothe irritaon, and promote skin healing, resulng in healthier and clearer skin.

6. Evens Skin Tone: E\posure to environmental factors and UV rays can lead to the overproducon of melanin, resulng in dark patches, acne marks, and blemishes. Neem- based products contain ano\idants, vitamins, and fay acids that help reduce melanin producon, resulng in a more even skin tone. Regular use can help diminish dark spots and inflammaon, leaving the skin looking brighter and more uniform.

7. Heals Scars and Wounds: Neem is known for its ansepc and healing properes, making it effecve in treang acne scars and wounds. Neem soap helps to promote faster healing of wounds and scars while protecng the skin from infecons. Addionally, applying pure neem oil directly to wounds and scars can further aid in their healing process without leaving behind any unsightly spots.

8. Tackles Blackheads and Whiteheads: Neem-based soluons are parcularly beneficial for addressing blackheads and whiteheads. Neem acts as a natural e\foliant, helping to remove impuries and ghten pores. Regular use of neem-based products can help prevent the formaon of blackheads and whiteheads while keeping the skin clean and clear.

Disadvantages of neem soap

Taking neem seeds and seed oil by mouth is likely unsafe in children. Serious side effects in infants and small children can happen within hours aer taking neem oil. These serious side effects include voming, diarrhea, drowsiness, and seizures, loss of consciousness,coma, and death.

Plant Materials

Neem :-

- The Neem leaves were collected from different matured plant.
- Cracked and dry skin can be moisturised and made smooth by using neem.
- It acts as an Antibacterial, Antifungal, Antio\idant agent.
- Neem has been used to treat acne, reduce blemishes, and improve skin elasticity.

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- Neem is rich in fatty acids, including oleic, stearic, palmitic, and linoleic acids.

Tulsi

- Tulsi is well known for its myriad medicinal properties — antibacterial, antifungal, antipyretic, antio\idant, antiseptic and anticancer. Helps beat stress. Tulsi is a natural herb with anti-stress qualities . Tulsi is rich in Vitamin C and zinc , Rich in vitamin K and antio\idants.
- Tulsi benefits the skin by preventing blackheads, acne and relieves skin infections.
- It contains camphene which works as a natural toner to remove e\cess oil in the skin.
- Tulsi neutralizes free radicals and rejuvenates the skin, reviving the youthful glow.

Glycerin

- Glycerine is a nonto\ic, odorless, and colorless liquid.
- Glycerine is used as a humectant in soap products.
- Glycerine will make sure that your skin will maintain its own moisture in order toprotect it from damage caused by dryness .
- It can increase skin hydration, relieve dryness, and refresh the skin's surface.
- It's also an emollient, which means it can soften skin.

Ethanol

- Ethanol is most often used when making glycerin soap.
- Ethanol has the ability to dissolve on a partial level in water and oil.
- It helps in making soap transparent .
- Ethanol can be used as Antiseptic , Antidote and as Medicinal solvent

Steric Acid

- Stearic Acid helps to harden products, such as candles and soap bars.
- It's usually used as a thickening agent .
- Steari
- c acid is an emulsifier, emollient, and lubricant
- Stearic acid is used mostly in the manufacture of soaps, detergents, and severalother cosmetics such as shaving creams and shampoos.

Sodium lauryl sulphate :

- Sodium lauryl sulfate (SLS) is a surfactant
- sodium lauryl sulfate helps to stabilize and thicken solutions with ingredients of differing solubility.
- It allows products to achieve a more uniform te\ture for easier, and smoother application
- It makes soap foamier .

FORMULATION :

Formulations of Lye :-

Ingredients	Weight in gram or ml	Uses
NAOH	0.7gm	Saponify oils
Propylene glycol	9.2ml	Penetration enhancer
Glycerin	3.1ml	Humectant
Ethanol	9.4ml	Solvent
Sodium lauryl sulphate	7.4gm	Surfactant

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Formulation of soap

Ingredients	Weight in gram or ml	Uses
Steric acid	6.4 gm	Hardening
Neem e\tract	2 ml	Antimicrobial
Tulsi e\tract	3ml	Antio\idant
Menthol	2gm	Perfume/cooling agent

Materials

Materials	Source
1. Neem	Plant
2. Tulsi	Plant

- PROCEDURE

E\traction

- The Azadirictaindica powder, and Tulsi leaves was e\tracted with water by decoration process.
- 9 gm of above stated powder of neem and Tulsi leaves were taken in separate conical flask and e\tracted with water for 40-60 min with occasional agitation.
- Then filtered .

Preparation of lye

- Lye solution was prepared by mi\ing 0.7g NaOH and 1.5ml DI H2O in125ml beaker.
- Measure 9.2ml Propylene glycol, 3.1ml Vegetable glycerine
- Add 9.4ml 95% Ethanol solution, 7.4ml Sodium lauryl sulfate into 250ml beaker on hot plate with stir bar.
- Heat mi\ture to 60°C.

Preparation of Soap:-

- 6.4gmStearic acid and heat mi\ture to 68°C.
- When at temperature slowly add the 50:50 lye solution and mi\ for 20 minutes while continuously stopping and starting stirring until mi\ture becomes transparent.
- Further required quantity of Azadirachta indica and Tulsi e\tract was mi\ed to the above mi\ture and volume made up to 100 ml by adding remaining distilled water.
- Let solution sit for 1 hour at 68°C.
- Few crystals of menthol were also added to impart aroma to the prepared soap.
- Let soap solution cool to 62-64°C and pour into soap molde let cool and harden.

- Evaluation Test

EVALUATIONS OF HERBAL SOAP :-
The herbal soap formulated was evaluated for the following:
1. Physical evaluation:-
2. pH :-
3. Foam retention :-
4. Foam height : -
5. Moisture content :-
6. Cleansing ability :-
7. Skin irritation test :-

1) Physical evaluation:-
Physical characteristics such as colour and Appearance where checked by naked eyeOdour was identified by Smelling .

1. Colour-Green
2. Odour- pleasant
3. Appearance- Good

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2) pH

The pH was determined by using pH paper .the pH was found to be basic in nature.

1. Foam retention

Foaming ability and foam stability: Cylinder shake method was used to test for the foaming ability. 50 ml of the 1% formulated products solution was placed into a 250 ml graduated cylinder, covered with one hand and shaken for 10 times. After 1 min of shaking, the total volume of the foam content was recorded. Foam stability was value by recording the foam volume after 1 min and 4 min of shake test.

2. Foam Height

0.5 g of sample of soap was dispersed in 5 ml distilled water. Then, transferred it into10 ml measuring cylinder. Five-eight strokes were given and allowed to stand still and the foam height above the aqueous volume was measured.

3. Moisture Content

The moisture content was used to estimate the percentage of water in the soap by dryingthe soap to a constant weight. The soap was weighed and recorded as ―wet weight of sample and was dried from 100 to 115°C using a dryer [21]. The sample was cooled and weighed to find the dry weight of sample. The moisture content was determined usingthe formula.

% Moisture content + Initial weight–Final weight/Final weight × 100

4. Cleansing Ability

A dirty cloth was soaked In a bucket containing soap solution and rinsed slowly and the dirt removed from the cloth was observed

5. Skin Irritation Test

Soap was applied on skin of hands and legs of 5 volunteers and observed .

6. Physical Ability

When soap is placed in a hot temperature for more than 10-15 min it enters into gel phase and the colour becomes vibrant.

DRUG & EXCIPIENT PROFILE

Tulsi Monograph:-

- Common Name – Tulsi
- Scientific Name- Ocimum tenuiflorum
- Biological Source- leaves Of Tulsi
- Family- Lamiaceae
- Kingdom- plant

Neem Monograph :-

- Common Name – Neem.
- Scientific Name- AzadirachataIndica.
- Biological Source- Almost all part of plant AzadirachataIndica.
- Family- Meliaceae, the mahogany family
- Kingdom- plant

- Result

Among all the formulations the formulation in both table 1 and 2 e\hibited good result . The physicochemical parameters such as color, odor, appearance, and pH were tested.The pH of the soap was found to be 6.4 with pH strip . Remaining parameters such as foam height, foam retention moisture content, and were also determined .

Foam Height was found to be 2..6 FoamRetention was found to be 5.4min Moisture Content in soap is 6.82%

- Discussion

The present work is concerned with the formulation of soap using e\tract of neem and Tulsi.The formulated soap was a dry, stable solid showing no colour change and good appearance and is foamy in nature. It showed good skin compatibility and causes no irritation.

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Fig :- Herbal Neem Soap



- **CONCLUSION**

The formulated soap showed considerable antibacterial activity as the commercial standard and all the other parameters were good.

The plant Neem and Tulsi were e\tracted 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 e\hibit satisfactory effect.

The soap was free from harsh chemicals which are used in commercial soaps .Herbal soap can be used as a promising alternative to commercial chemical containing skin whitening soaps.

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