



FORMULATION AND EVALUATION OF HERBAL SOAP BY USING TULSI AS MAIN ACTIVE CONSTITUENTS OF ANTIBACTERIAL TREATMENTS OF FACE SKIN PROBLEM

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ABSTRACT

A herbal soap was formulated using the leaf extract of Tulsi, and Neem, Alovera, Turmeric powder. Ayurvedic cosmetic are also known as the herbal cosmetic the natural content in the herbs does not have any side effect on the human body most herbal supplement are based on several botanical ingredients with long histories of traditional or folk medicine usage. Numerous chemical toxins microorganism present in the atmosphere may cause chemical infection and damage to skin cosmetic alone are not sufficient to take care of skin and body parts. Tulsi is broad spectrum antibacterial activity, tulsi has proved to be highly effective in protecting our body from various infections and disease of the liver, skin, kidney, etc. Herbal soap of tulsi preparation is medicine or drugs it contain Antibacterial and Antifungal agent. Soap properties have been used to treat various skin disorders. Species of streptococcus and staphylococcus aureus are the most common types of fungus that cause skin infections [2]. This wonder herb is used to test acne, skin infections , lighten dark spots , pimples and improve skin texture. The leaves of the Tulsi plant are believed to possess healing properties and are often used in Ayurvedic medicine to treat various ailments and illnesses. Well known for its anti- acne benefits, tulsi can help reduce, heal and fade appearance of acne, pimples and blemishes on the skin.

KEYWORDS :- Tulsi, Neem, Alovera, Turmeric, Rosé Water, Cleanser Base, Lavendar Basic Oil.

INTRODUCTION

Tulasi is cultivated for religious and traditional medicine. It is commonly used in Ayurveda, and has a place within the Vaishnava tradition of Hinduism, in which devotees perform worship involving holy basil plants or leaves. Tulsi is an aromatic shrub in the basil family Lamiaceae (tribe ocimeae) that is thought to have originated in north central India and now grows native throughout the eastern world tropics [3]. Within Ayurveda, tulsi is known as “The Incomparable One,” “Mother Medicine of Nature” and “The Queen of Herbs.” The Tulsi plant is believed to have antibacterial and antifungal properties and is therefore used to treat skin infections, wounds, and other skin conditions. Tulsi helps in skin brightening, tulsi helps in curing



acne face marks, tulsi mixed with eggs and mixed can help in tightening skin pores, and tulsi helps in curing skin infections and any sort of skin allergies. The plant has been used in Ayurveda for centuries. Various modern scientific research has shown the leaves of the plant to exhibit anti-inflammatory, anti-cancer, antibacterial, anti-fungal and other medicinal properties [4,7]

Fig. 1 Tulsi plant in india

Botanical Name – *Ocimum tenuiflorum*, *Ocimum sanctum*

Synonyms –Holy Basil, Sacred Basil

Kingdom – Plantae

Clade – Tracheophytes

Order – Lamiales

Family – Lamiaceae

Genus – *Ocimum*

Species – *O.tenuiflorum*

It is commonly named as Tulsi (Hindi), Indian Basil (English), Tulasi (Telugu), (Gujarat), (Bengali), (Nepali), Tulas (Marathi), Krishantulasi (Malyalam), Vrinda (Sanskrit).

BOTANICAL DISCRETION

It is an erect, much branched, fragrant and erected plant attaining a height of about 30-60 cm when mature. Its aromatic leaves are simple, opposite, elliptic, oblong, obtuse or acute with entire or sub serrate or dentate margins, growing up to 5 cm long. The Tulsi flowers are small having purple to reddish color, present in small compact clusters on cylindrical spikes. Stalk less heart-shaped bracts are there at the base of each flower cluster. Sepal cup is not hairy within. Flowers are rarely longer than 5 mm, calyx tube bearded outside near base. Flower tube is hairy. The fruits are small and the seeds yellow to reddish in colour [8].

PHYTOCHEMICAL

Fresh leaves and stem of *Ocimum sanctum* extract yielded some phenolic compounds (antioxidants) such as cirsilineol, circimaritin, isothymusin, apigenin and rosameric acid, and appreciable quantities of eugenol. The leaves of *Ocimum sanctum* contain 0.7% volatile oil comprising about 71% eugenol and 20% methyl eugenol. The oil also contains carvacrol and sesquiterpine hydrocarbon caryophyllene [9]. Two flavonoids orientin and andvicenin from aqueous leaf extract of *Ocimum sanctum* have been isolated [10].

TRADITIONAL USES

Tulsi is also known as "the elixir of life" since it promotes longevity. Different parts of the plant are used in Ayurveda and Siddha systems of medicine for prevention and cure of many illnesses and everyday ailments like common cold, headache, cough, influenza, earache, fever, colic pain, sore throat, bronchitis, asthma, hepatic diseases, malarial fever, as an antidote for snake bite and scorpion sting, flatulence, migraine headaches, fatigue, skin diseases, wound, insomnia, arthritis, digestive disorders, night blindness and diarrhoea [11].

REVIEWS OF LITERATURE

1. Studies on the anti bacterial efficacy of herbal and antiseptic soap against certain pathogens have been described .The antibacterial activity of several antiseptic and herbal market soaps was assessed in the current investigation. Using the agar disc diffusion method against bacterial isolates such as *Staphylococcus aureus*, *Bacillus subtilis*, *Escherichia coli*, and *Pseudomonas aeruginosa* that are found on the skin's surface.The dust in the surrounding environment deposits a variety of bacteria on the skin's surface, leading to illness. Studies were conducted on the antibacterial properties of different soaps against microflora pathogens. (Varsha M Chaudhari et al., 2016).
2. Soap are made by steam extracting leaves from plant such as *Azadirachta indica*, *Ocimum basilicum*, *Hibiscus rosasinensis* flowers, *Acacia indica*, and *Aloe barbadensis* leaflets. Commonly employed by people in a variety of ways. The SARS-Cov-2 virus, in particular, caused people to wash their hands frequently in order to disinfect the virus and prevent infection. Herbal soaps have ingredients that not only nourish the skin but also revitalize the body and mind. This homemade soap is created from dried basil, neem, and *Acalypha Indica* leaves, aloe vera and hibiscus flowers. In

order to extract the oils from raw materials like dried leaves and use them to make soap, the steam distillation process is essential.(V S Kavinkumar and c.indirani, et al., 2007).

3. *Cypirus rotundus* L: report formulation and assessment Antiseptic soap, a product that is essential to human needs, comes in a variety of forms and scents that you may choose from based on your preferences. It is used as a body cleansing agent. Organic soap Products aren't used in the market very often. Many artificial substances are used as the active ingredients in soap products today, which might irritate those with sensitive skin and create other adverse effects. The purpose of this study is to analyze and report the antiseptic soap formula derived from *C.Rotundus*. (Sri Dwiyanti, Siti Sulandjari, Titik Winanti, IGP. Asto, Lilik Anifah et al., 2021).

4. *Salvinia auriculata* Aubl.'s Antibacterial Chemical Constituent and Antiseptic Herbal Soap Report Research on plants with antibacterial qualities has increased in the last few decades. Intensified, mostly because these plants are thought to be sources of pharmacologically active chemicals that, if their pure constituents or active extracts are assessed, could develop into novel antibiotics. If they don't have any way to manage their microbial biofilms, plants that thrive in nutrient-rich environments or in habitats with very high bacterial cell density such as aquatic plants will be overtaken by these biofilms. (Samia Lima, Gaspar Diaz, and Marisa Alves Nogueira Diaz et al., 2013).

5. The discovery of a herbal soap formulation that combats microorganisms that cause acne, Herbal remedies for skin conditions have been used for thousands of years. Herbal treatments, particularly those for a variety of disorders Skin problems are becoming more and more common among sufferers. Herbal remedies that have been utilized for centuries throughout Asia, particularly in south-east Asian nations, are currently the subject of scientific research. Records of Ayurvedic medicine, a natural medical system, can be traced back to approximately 3000 BC in India. (Anjum Attaullah, Aruna Govindarajulu, Mohana Priya K, MubeenaK.F, Summera Rafiq and Shaik Jasmine Shahina et al., 2021).

6. The effects of cold saponification on the content of unsaponified fatty acids and the way natural herbal soaps taste have been observed. The process of saponification involves mixing triglycerides with a potent base to create fatty acid metal salts when producing soap.The amount of unsaturated and saturated fatty acids in soaps impacts their hardness, scent, lather, and moisturizing properties.(Natalia Prieto Vidal, Oludoyin Adeseun Adigun, Thu Huong Pham, Abira Mumtaz, Charles Manful, Grace Callahan, Peter Stewart, Dwayne Keough and Raymond Horatio Thomas et al., 2018).

7. The reported of studies on antimicrobial activity of antiseptic soaps and herbal soaps against selected A pathogens, In the present study antibacterial activity of various antiseptic and herbal market soaps were determined against bacterial isolates present on the skin surface like *Staphylococcus aureus*, *Bacillussubtilis*, *Escherichia coli* and *Pseudomonas aeruginosa* using agar disc diffusion method. Various microbes are deposited on the surface of skin from the dust present

in external environment which causes infection. Antibacterial activities of various soaps on such micro flora pathogens were studied. (Varsha M Chaudhari et al., 2016).

AIM

Formulation and evaluation of herbal soap by using tulsi as main active constituents of antibacterial treatment of face.

OBJECTIVE

The herb has many antibacterial and antifungal properties. While there are limited quality studies on tulsi, some research indicates that tulsi may offer several benefits for skin , including that it;

- Fights acne
- Supports healthy skin aging
- Reduce pigmentation
- Soothes skin conditions
- Reduce the wrinkles
- Prevent the damage skin
- Reduce free radical production
- Clear the dark sports
- Remove the blackheads

SPECIAL SKIN PROBLEM AND CAUSES

Skin problem types	Cause
Eye dark circle	The area of skin below your eye looks darkened
Dark spots	Small, flat dark areas on the skin
Blackheads	Dark, open bumps in your skin
Wrinkles	Deep, coarse wrinkles
Freckles	Freckles are small, marks on the skin
Pimples	Which are papules with pus at their tips
Dry skin	Itchy, flaky, tight, chapped

Table. 1 Causes of skin problem



Fig. 2 Face Skin Problem

MATERIAL

Chemical

- Glycerine soap base, Lavendar essential oil,

- Rose water

Content of the soap

Tulsi

- **Biological name-** Ocimum tenuiflorum

- **Common name-** holy basil

- **Chemical constituents-** eugenol germacrceterpens, flavonoids and terpenoid

- **Part typically used-** leaves

- **Colour-** Green

- **Used** - Tulsi is used to blackheads, treat skin problems like acne, and premature ageing heart diseases.



Fig. 3 Tulsi leaves

Neem

- **Botanical name-** Azadiracta indica
- **Common name** - Nimtree or Indian lilac
- **Constituents-** Flavonoids, Alkaloids, Azadirone, nimbin, nimbidin, terpenoid, steroids, tannic acid and saponins.
- **Part typically used-** Leave
- **Colour-** Green
- **Used** - Treat dry skin and wrinkles, Heal wounds, Treat acne, Minimize moles, Stimulate collagen production, Reduce scars



Fig. 4 Neem leaves

Alovera

- **Biological name-** Aloe Vera
- **Common name-** Aloe barbadensis Miller
- **Constituents-** Vitamin, enzyme, minerals, sugars, lignin, saponin, salicylic acid and amino
- **Part typically used-** Leave
- **Color-** Green
- **Used** – Psoriasis, Seborrhea, Dandruff, Minor burns, Skin abrasions, Skin injured by radiation, Herpes sores, Acne



Fig. 5 Alovera leaves

Turmeric

- **Biological name** - *Curcuma longa*
- **Common name** - Haldi
- **Constituents** – Fat, Mineral and Carbohydrates
- **Part typically used** – Root
- **Colour** – Yellow

- **Used** - Could Help Heal Acne, Deals With Dull Skin, Could Help Psoriasis and Eczema,



Fig. 6 Turmeric Root

Glycerine soap base

- It is used for soap base,
- Soap base is white colour



Fig. 7 Glycerine soap base

Honey

- **Biological name** - *Apis mellifera*
- **Common name** - Madhu
- **Constituents** -Dextrose , Laevulose
- **Colour** - Nearly colorless to dark brown

- **Used** - Useful for dry skin conditions and anti-aging



Fig. 8 Honey

Rose Water

- Skin toner
- Acne fighter
- Pore cleanser
- Cooling effect



Fig 9 Rose water

Lavendar essential oil (Perfume agent)

- Antibacterial properties
- Killing bacteria
- It may prevent and heal acne
- Improve sleep

- Relieves pain



Fig. 10 Lavender oil

METHODS

Collection and extraction

- The leaves of the tulsi is collected from the fresh plant and is wash properly and dry.
- Then tulsi leaves were crushed in mortar pestle(kharal),and crushed leaves were squeezed through the filtered in the filter paper, and collect the tulsi extract.
- Neem leave also used same method.
- The alovera gel extract proper, and this extract filtered through the smooth cloth, and collect the alovera extract.
- Turmeric is the grinding in mortal pestle, and this turmeric extract passed through the sieve's, and collect the fine turmeric powder.
- The crude extract was complete to use.
- This extraction is best for the soap results.



Tulsi extract Neem extract Alovera extract Turmeric powder



Fig. 11 Extract of herbal plant (Tulsi, Neem, Alovera, Turmeric)

FORMULATION OF HERBAL SOAP

Chemical	Source
Lavender essential oil	Laboratory agent
Rose water	Laboratory agent
Glycerine soap base	Laboratory agent
Honey	Laboratory agent

Table. 2 Chemical source

Plant	Source
Tulsi	Leaves
Neem	Leaves
Alovera	Leaves
Turmeric	Root

Table. 3 Plant source

Ingredients	Quantity	Role
Tulsi extract	4.8ml	Antibacterial
Neem extract	3.2ml	Antibacterial
Alovera extract	3.6ml	Anti- aging
Turmeric powder	0.8gm	Antifungal
Glycerine soap base	64gm	Soap base
Honey	1.6ml	Antibacterial
Rose water	1.2ml	Cooling agent
Lavender oil	1.2ml	Perfume agent

Table. 4 Formulation of herbal soap

PROCEDURES

- Give of tulsi extract in a beaker then this beaker may be add Of neem extract, aloevera extract, turmeric powder, rose water and honey then all are mix 2 to 3 min.
- The small pieces of the prepared basic glycerine soap were put into a porcelain dish and melted on a water bath At a temperature below 60°C .
- After melt base add mix all ingredient in the melt soap and mix it them finally heat Stop and add lavender essential oil.

➤ The preparation solution will be give in small, small container for the shape of the soap. Final soap is ready and it packing in the paper.

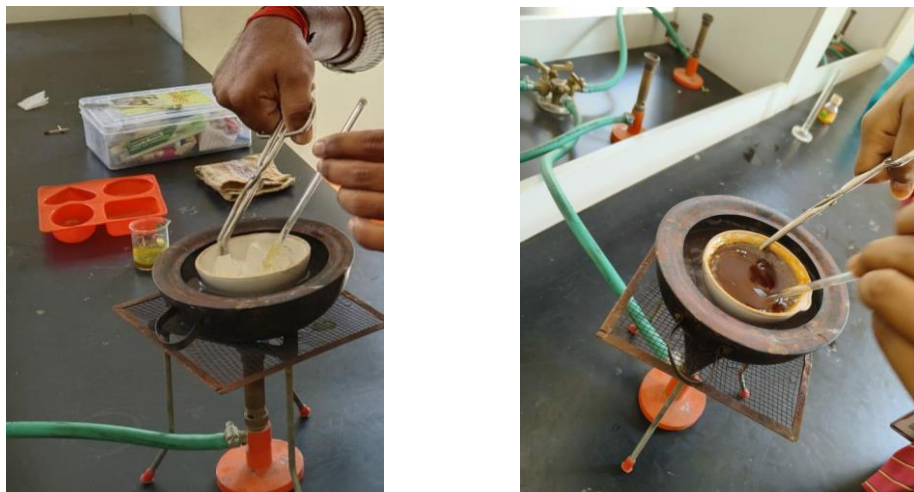


Fig. 12 Procedure of soap making

USE OF SOAP

Treat acne antibacterial properties of tulsi fight acne causing bacteria which help in the treatment and prevention of acne. Tackles blackheads and whiteheads. Aloe vera shows moisturizer it is moisture the skin without giving it a greasy feel. So it is perfect for anyone with an oily skin. It also fight sunburn or acne. Reduce the pimples and dark circle. This soap is mainly used all skin problem.

EVALUATION OF PHYSICOCHEMICAL PARAMETERS OF THE PREPARED HERBAL SOAP FORMULATION

• Organoleptic Evaluation

Organoleptic evaluation such as colour and clarity was done by sensory and visual inspection.

Colour – Brownish

Odour – Aromatic

Appearance – Good

Shape – Ovals

- **PH**

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

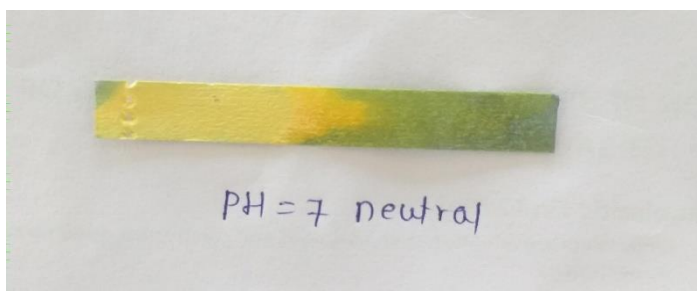


Fig. 13 PH of soap

- **Foam Retention**

In the 100 ml of measuring cylinder transfer the Prepared the 25 ml of the 1% soap solution . Then the cylinder was shaken 10 times. The volume of foam retention was recorded[12,13].



Fig. 14 Foam retention of soap

- **Acceleration stability testing**

After undergoing a week of rapid stability testing at room temperature, the manufactured PHF was examined for three months at 500c. The PHF were present on days 0,15,20,30,40,50,60,70,80, and 90. Kept under observation and at room temperature [14].

• Foam height

50ml of distilled water was used to dilute 1g of the sample soap. After that, it was placed in a measuring cylinder and filled to a capacity of 100ml. Determined the height above the volume of water [15].



Fig. 15 Foam height of soap

• Alcohol insoluble matter

5gm of the material were placed in a conical flask. This was mixed with 50ml of 70% ethanol and vigorously shaken to dissolve the material entirely. 20ml of warm ethanol and filter paper were added to the solution before it was filtered. Dried it for 1 hour at 105°C. It was noted how much dried paper weighed [16].

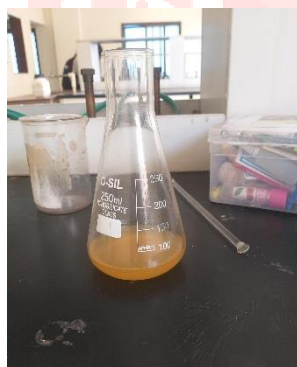


Fig. 16 Alcohol soluble matter of soap

• Dirt dispersion test

First, we prepare a 1% sample solution that was taken in a measuring cylinder and added two drops of ink in to the sample solution. The measuring cylinder was then shaken ten times while being covered by a hand. The ink is present concentrate in the foam is considered to be of low quality, investigate that. The remaining dirt particles are then found in the water section. The amount of ink found in the foam was notice.

• Skin irritation test

For the determination of irritancy test, Use the soap sample on clean skin to observe for signs of irritation, such as redness, burning, or itching and 24 hours, the situation was monitored.

RESULT

The pH of the soap were tested. The pH of the soap was found to be with pH strip. Remaining parameter such as foam height ,foam retention, percentage free alkali, alcohol insoluble matter was also determined.

Parameters	Results
Formulation	Soap
Colour	Brownish
Shape	Ovals
Appearance	Good
Texture	Smooth
Odour	Aromatic
PH	7 (Neutral)
Foam retention	19 min
Foam height	3 cm
Alcohol insoluble matter	18.0
Skin irritation test	Non irritant
Dirt dispersion	Good dirt dispersion
Acceleration stability testing	No change in soap

Table. 5 Result of soap

DISCUSSION

which can help to protect the skin from bacterial and fungal infections. Tulsi is also known for its antibacterial and antifungal properties, which can help to keep the skin clean and healthy. Neem is known for its antimicrobial properties, Neem is known for its skin-healing properties, which can help to soothe and clam irritated skin. Tulsi is also known for its skin healing properties, which can help to reduce pimples, dark circle, acne, and other signs of skin irritation. Turmeric is help to glow of face and deals with dull skin. Honey is used of cooling effect, tulsi and alovera both contain antioxidants, which can help to protect the skin from damaging free radicals and reduce the signs and aging.

CONCLUSION

Organic soaps are a great alternative to traditional soaps for those who want better care of their skin and the environment. They offer a range of benefits, including gentleness, nourishment, and protection from harmful chemicals, just like neem tulsi soap from Anuved is an excellent option for those looking for a natural and effective soap that can provide a range of benefits for the skin. Many different skin conditions can be healed with herbal therapy. It's used to skin care, In India, almost 80% of the population uses traditional medicine and other plant-based medicines to treat skin conditions. Ayurvedic medications are considerably inexpensive as compared to contemporary allopathic pharmaceuticals and can be quite beneficial for Indians, particularly the impoverished. Herbal remedies are a great way to get active components and can be

a safer and more affordable way to treat skin infections, which can range from rashes to dangerous skin cancer.

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