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Research Article

Formulation And Evaluation Of Polyherbal Soap

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ABSTRACT

Formulation and evaluation the herbal soap by selected ingredient include Azadirachta indica, aloe vera (Aloe Barbendensis), turmeric, Reetha (Sapindus mucorassiss), Babul (Acacia Nilotica) and for fragrance we are using jasmine oil. The herbal soap was formulated by using naturally obtained herbs and extraction of oils was performed without any chemical. The pH which found for formulation are between 7-9 which found for 2 to 6 cm which shows less foam height compared as standard foam retention which found in between the range of 3-5 min skin irritation by comparing standard marketed herbal soap. Industry soap is used as thickeners, components of some lubricants and precursors to catalyst. When used for cleaning soap sloughing particles and give which can then be separated from the article being cleaned. In today's fast world a natural rejuvenation is a necessary step for one's healthy mind and skin. The herbal soap is a natural freshener soap as well as a good cosmetic having rejuvenating and cleansing properties on the skin. the study is aimed to formulate a natural and safe herbal skin soap that has a cleaning, soothing, tightening effect on the facial skin to reduce the facial irritancy and bring freshness as well as fairness, also to Enhance the beauty. the aloe and neem extract we used gives excellent results and safety for sensitive skin dry, oily skin types and can be used on daily basis. along with glycerine which moisturizes the skin. the purpose behind formulating the toner is ease of spread, cooling and smoothening effect fast, and impartness to facial skin in a mild way. (1)

INTRODUCTION

Since the beginning of time people have employed Medicinal plants as a form of treatment several maladies and diseases have been treated naturally by using the extract made from the leaves, stems and roots of several medicinal plants even though many of the plants-based product have been

replaced by synthetic chemicals the safety and efficacy of ayurvedic product has set standards. The natural component of herbal medicine has no negative effect on the human body in the vast majority of cases a natural soap is prepared without a non-natural surfactant with addition of functional ingredient from natural substance such

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as essential oil or plant extracts Herbs are the natural product could be found on the treatment of almost all disease and skin problem owing to their high medicinal value cost effectiveness availability and compatibility. In earlier days, naturally available ingredients were generally used as cosmetics, but with the passage of time and improvement in science, several chemicals came into existence that is said to impart or enhance beauty thus used as cosmetics. using these chemical-based products can impart beauty for a particular time but it harms our skin when used for a long time. many harmful effects have been noticed due to the usage of chemical-based products, thus now day's cosmetics industry mainly focuses on the preparation of herbal products. it is known that cosmetic is the product used to enhance and impart beauty to the user. main aim to our project was to prepare chemical free soap so we introduce herbal face soap which is totally based on herbal ingredient. (2)

Different types of skin and skin related issue of soap user

Normal Skin Type

Normal skin is a term widely used to refer to well-balanced skin. the scientific term healthy skin is eudermic.



Fig 1: Normal Skin Type

The T-zone (forehead, chin and nose) may be a bit oily, but overall sebum and moisture is balanced and the skin is neither too oily nor too dry. How to identify normal skin a velvety, soft and smooth texture is a sign for a healthy and radiant skin. (2)

Normal skin

- Fine pores

- Good blood circulation
- A velvety, soft and smooth texture

Dry skin

Dry is used to describe a skin type that produces less sebum than normal skin. as a result of the lack of sebum, dry skin lacks the lipids that it needs to retain moisture and build a protective shield against external influences. this leads to an impaired barrier function. dry skin (Xerosis) exists in varying degrees of severity and in different forms that are not always clearly distinguishable. Significantly more women suffer from dry skin than men and all skin get dryer as it ages. problems related to dry skin are a common complaint and account for 40% of visits to dermatologists. Dry skin can feel tight and rough and look dull.



Fig 2: Dry Skin Type

Oily skin

Oily is used to describe a skin type with heightened sebum production. this over production is known as seborrhea oily skin has a glossy shine and visible pores. (2)



Fig 3: Oily Skin Type

Combination skin

Combination skin is, as the name suggests, skin that consists of a mix of skin types: combination skin the skin types vary in the T-zone and the cheeks. The so-called T-zone can differ substantially from a very slim zone to an extended

area. Combination skin is characterised by: an oily t-zone (forehead, chin and nose) enlarged pores in this area perhaps with some impurities normal to dry cheeks. (2)

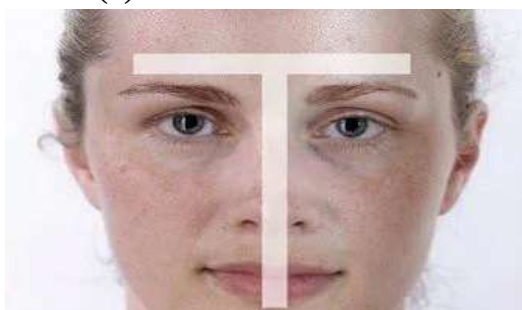


Fig 4: Combination Skin Type

Skin related issue

Acne:

Blocked skin follicles that lead to oil, bacteria and dead skin buildup in your pores. The term acne refers to not only pimples on the face, but blackheads, cysts, and nodules as well. acne is one of the most widespread skin conditions. symptoms can include Pustules, which are pimples with pus at their tips. Papules, which are raised bumps that stem from an infection in hair follicles which are painful lumps beneath the surface of the skin cysts, which are larger, painful, pus-filled bumps beneath the skin's surface, any person can get acne people of colour may also develop dark spots known as post inflammatory hyperpigmentation as a result.

Eczema:

Eczema usually develops early in childhood, but it can arise in adulthood. there are several types, including atopic dermatitis and contact dermatitis. eczema may cause rashes on or around the face, scalp, elbows, neck, wrists, ankles, or legs. the rashes are very itchy and may become bumpy change colour, or thicken become bumpy change colour, or thicken. in adults, the rashes may cover more of the body, leading to widespread dry, itchy areas. The symptoms may be less noticeable in people with darker skin, compared with those who have lighter skin. however, in people of colour, eczema can cause discoloration, making the affected areas lighter or darker. this may last, even

after the eczema symptoms are no longer present. there is no known cure for eczema. it may resolve on its own, but medications that relieve the symptoms are available. (2)



Fig 5: Acne



Fig 6: Eczema

Rosacea:

Rosacea most commonly causes redness on the face. in people with dark skin the affected area may be darker and warmer than surrounding skin. there are four subtypes and these can cause other symptoms: Erythematotelangiectatic rosacea may cause: (2)

- Redness
- Visible blood vessels
- Flushing
- Ocular rosacea may cause dryness.

Literature Survey

1. Borkar A. et.al., (2023)-

Soap formulation was solid formulations intended for topical application the soap formulation were prepared by using various herbal extracts oil and various excipients. The cosmetics which are ment for skin case nourishes the health, texture and moisturizers the skin polyherbal soap formulation intended for topical application.

2. Padaria. R. et al., (2023)-

Since the bgining of time people have employed medicinal plants as a form of treatment. As a natural cure the extract made from the leaves, stems and roots of numerous medicinal plants has been used to treat a variety of maladies and disorders. The majority of bacterial disorders occurs in human.

3. Joshi. D. P. et al, (2022)-

Our body's external surface is being covered by skin or cutaneous membrane. Surface area and

weight wise its largest organ of the body. The skin regulates the different functions such as body temperature regulation, blood reservoir provide protection from external environment cutaneous sensation, excretion and absorption, synthesis of vitamin D.

4. Devi. A. S. et al, (2021)-

Herbal soap are effective in curing different skin complaints, These soaps also contain glycerine, which is generally not used in commercial soaps. Glycerine helps in retaining the moisture in the skin there by making these soaps for dry skin conditions.

5. Tiwari. N. et al (2022)-

The cosmetics, according to the drugs and cosmetics act is defined as articles intended to be rubbed, poured sprinkled or sprayed on, introduced into or otherwise applied to the human body or any part thereof for cleansing, beautifying, promoting attractiveness or altering the appearance. The cosmetic does not come under the purview of drug license. The herbal cosmetics are the preparations containing phytochemical from a variety of botanical sources, which influences the functions of skin.

6. Kumar K. S. et al (2022)-

Herbal products in the crude state are also used. A single isolated principle derived from plants such as digoxin and reserpine tablets and are not considered as an Herbal medicine.

7. Govind A, et al., (2021)-

In their article entitled "Formulation and Evaluation of herbal Soap by using natural ingredients by using simple method" stated that the plant used in soap preparation is able to soften the skin, epidermis enhanced greater penetration, remove acne as well as promote healing and resolution in quick time.

8. Ahmed. L. et al., (2021)-

in their article entitled "Formulation and evaluation of an ayurvedic bath soap containing extracts of three ayurvedic herbs" the ultimate aim

of study is to Formulate and evaluate the ayurvedic bath Soap using plant having methanolic extracts of three plants having ethnic and dermatological importance in Ayurveda, namely aloe vera, neem and palm oil.

9. Sharma. S. et al., (2022)-

in their article the prepared soap was evaluated against marketed soap. Based on the study results it can be concluded that herbal soap can be formulated using cold process method taking parameters in consideration as the skin condition and as that of herbal potential and its activity.

10. Jacob B. et. AL., (2019) –

In their articles stated that most of the commercial soap and detergents contain chemical that can be harmful in the skin using natural herbal soap.

11. Kurli M & Yadav Y et al., (2020)-

In their article entitled "Formulation and Evaluation of Polyherbal Paper soap in their study they formulate Paper soap. This frequently used hand wash preparation.

12. Jacob B et al., (2019)-

in their article entitled "Formulation and Evaluation of Herbal Soap" Stated that most of the commercial soap and Detergents contain chemical that can be harmful in the skin. Using natural herbal soap and detergent can be good alternative. They Provide relaxation, healing from stress.

13. Manjusha GK et al., (2019)-

in their article entitled "Formulation and Evaluation of Herbal Bath Soap Containing Methanolic Extracts of Three Ayurvedic Varnya Herbs" in their article they formulate Herbal bath soap using methanolic extracts of three plant having ethnic and dermatological importance in Ayurveda namely *Hemidesmus indica*, *Cyperus rotundus* and *Saussurea lappa*.

14. Chandy V. Chyamol et al., (2019)-

in their article entitled "Formulation and Evaluation of herbal soap" stated that formulated



using herbal ingredient and evaluated for various physicochemical features.

15. Saudagar R B. Sisodiya M H et al., (2018) in their article entitled "Review on herbal cosmetics" stated that the herbal cosmetics are the most important part of the today's modern life as they are used for the beautification purpose

16. Varsha M Chaudhari et al., (2016)-

The reported of studies on antimicrobial activity of antiseptic soaps and herbal soaps against selected human pathogens, In the present study antimicrobial activity of various antiseptic and herbal market soaps were determined against bacterial activities of various soaps on such micro flora pathogens were studied

Scope Of Study

Aim :-

The aim of the present study was to formulation and evaluation of polyherbal soap.

Objective

- The objective of our research project is to prepare polyherbal soap for cleansing and beautification.
- To procedure sap that can be used on both hard and soft water purpose help the dirt microbes.
- The polyherbal soap treating a several acne and help to boost immune response in tissue of affecting skin area.

Material

1. Neem



Fig 7: Neem

Biological name

Azadirachta indica

Synonyms

Melia azadirachta

Biological source

It consist of leaves and other aerial part of azadirachta indica

Family

Meliaceae

Chemical constituent :

Various part of plant is used for various therapeutic and commercial purposes due to presence of different types of chemicals in different parts of this plant. Some of them being:

Leaf's

quercetin, nimbosterol, nimbin.

Flowers

nimbosterol, kaempferol, melicitrin.

Bark

nimbin, nimbidin, nimbosterol, margosine.

Seed

azadirachtin, azadiradione, nimbin, vepinin, vilasinin, fraxinellone.

Benefits :

The anti-aging benefits of neem contain antioxidants and vitamins that reduce wrinkles, fine lines, and dark spots. the goodness of neem protects the skin against environmental stressors such as UV rays and pollution. it also clears up acne breakouts by calming the itchy skin. (3,4)

2. Aloe vera



Fig 8: Aloe vera

Biological name

Aloe Barbandensis

Synonyms

Aloe barbadensismill,aloe indica royle ,aloe vulgaris lam

Family

Asphodelaceae (Liliaceae)

Chemical constituent :

Aloes contain c-glycosides and resins

- The crystalline glycosides known as 'aloin'
- Aloin contains not less than 70% anhydrous barbaloin.
- The main crystalline glycoside, barbaloin is found in all commercial varieties.
- On heating to about 160°C barbaloin is partly converted into amorphous β -barbaloin. this substance is said to be absent from the Barbados variety, but present to the extent of about 8% in the Cape.

Benefits :

Aloe vera contains saponins, which have a natural cleansing and antiseptic effect. this means that aloe vera in soap is great for killing bacteria that cause breakouts. these antibacterial properties also make aloe vera a great choice to prevent infection of irritated skin. (1)

3. Reetha



Fig 9:Reetha

Scientific name

Sapindus Mukorossi

Synonyms

Soap nut, Wash nut

Family

Sapindaceae

Chemical Constituent

Saponins, Sugar mucila protein.

Benefits : Its antimicrobial and cleansing attributes make it suitable for treating acne, removing dead

skin cells, and promoting clear skin. When considering the benefits of reetha for skin, it's evident that reetha can be beneficial for skincare. Its natural properties make it a gentle yet effective solution for cleansing the skin without stripping it of essential oils. This quality is particularly advantageous for those with sensitive or acne-prone skin. (3)

4. Babul



Fig 10:Babul

Scientific name

Acacia nilotica

Synonyms

acacia arabica ,acacia scorpioides

Family

Fabaceae

Biological source

Is the dried gummy exudation obtained from the stems and branches of acacia Senegal

Chemical constituent

acacia contains mainly arabin that is mixture of calcium, magnesium and potassium salt of arabic acid in this calcium salt is found in abundance.

Benefits:

Enriches Skin Texture. Babul leaves work amazingly well to heal dry skin problems like itching and flakiness. The powerful anti-inflammatory, antiseptic and antifungal properties of babool leaves are beneficial in treating various skin conditions. Furthermore, babool leaves sustain the skin radiance and glow. (4,5)

5. Turmeric



Fig 12 : Turmeric

Scientific name

Curcuma longa

Synonyms

Haldi, Curcuma, Rhizomacurcumae

Family

Zingiberaceae

Biological source

Turmeric is the dried rhizome of curcuma longa linn.

Chemical constituent

curcumin is the major colouring principle present upto upto 5% in the rhizomes. mixture of curcumin, monodesmethoxycurcumin, indisdesmethoxycurcumin

Benefits :

1. It offers cooling & soothing.
2. Promotes healthy and even skin tone, provides natural smell and effectively moisturizes the skin.
3. Packed with great antibacterial properties, it improves skin complexion, brightens the skin, treats dry skin and heals scars.

2. Preparation of polyherbal Soap :

Sr. No.	Ingredients	Formulation	Uses
1	Soap Base	--	--
2	Azadirachta Indica (Neem extract)	6 gm	Antibacterial/ Antioxidant
3	Turmeric Extract (Curcuma longa)	2 gm	Antiseptic/ Provide glow
4	Aleo Vera Juice (Aleo barbadensis)	2 ml	Moisturizer/ Antiseptics
5	Ritha Seed Extract (sapindus mukorosis)	3 gm	Surfactant and detergent

4. Besides this, it also fights skin damage by free radicals.

5. Safe and effective for all skin types. (6)

METHOD**1. Preparation of Soap Base :**

Sr. No.	Ingredient	Quantity
1	Distilled Water	25 gm
2	Potassium hydroxide (KOH)	12 gm
3	Coconut Oil	30 gm
4	Glycerine	15 gm
5	Sugar	10 gm
6	Palm Oil	10 gm

The lye solution was made by taking potassium hydroxide (12 gm), in distilled water (25 gm), into a non-metallic pan and applied heat above 50°C temperature till the clear solution was achieved and then cool the solution. The solution of oil and fat was made in which palm oil, coconut oil were heated at low temperature with occasional stirring and the previously prepared lye solution was added to it. Then place the lid on the apparatus and allow the soap base mixture to bake for several hours (around 3 to 5 hours) until it begins to get pellucid. Now add glycerine in it. Let the soap base to bake, covered and sealed, for around half an hour. The sugar solution was formulated, in which sugar completely dissolved in the water at lower temperature. After half an hour sugar solution was gently added to the previous mixture, then clear the foam produced over the surface and pour the soap base solution into the mould carefully. Then allowed it to get solidified at room temperature

6	Babul seed Extract (Acacia Nilotica)	3 gm	Surfactant and detergent
7	Jasmine Oil	2 ml	Perfume
8	Ethanol	6 ml	For hardening of soap

Evaluation Parameters

1. Organoleptic evaluation

By the sensory and visual inspection organoleptic evaluation (colour and clarity) was done.

2. Determination of pH

The pH of all the prepared formulations was determined by using digital pH meter. The formulations were dissolved in 100 ml of distilled water and collected for two hours. The estimation of pH of formulation was carried out using previously calibrated pH meter.

3. Foam Height

0.5 grams of sample of soap is taken and dispersed in 25 ml distilled water. then, transferred it in to 100ml measuring cylinder volume made up to 50 ml with water. 25 strokes were provided and allow to stand till aqueous volume estimated up to 50 ml and determined the foam height, above the aqueous volume.

4. Form Retention

25 ml of the 1% soap solution was taken in to a 100 ml graduated measuring cylinder. The cylinder was hooded with hand and off shaken 10 times. The foam volume at every 1 minute intermission for 4 minutes was recorded.

5.High temperature stability

Soap was allowed to stand at 50°C for 7 days. The stability of soap was observed during this period. The sample which was homogeneous and stable after standing was indicated as stable and the sample in which the crystals were roughened and the sample in which precipitation was caused; then the sample was said to be as unstable.

6. Irritancy Test

The soap solution is prepared and applied on the specific body area. This area is than kept under observation for 24 hrs to conduct irritancy test.

RESULT AND DISCUSSION

The organoleptic parameters of polyherbal soap such as colour, order, appearance as well as pH were performed. The formulation possesses a dark green colour, aromatic order as well as good and uniform appearance. Now the pH was found to be 7.2 which is desired pH other parameters like form height, form retention and irritancy test were also successfully perform.

Sr. No.	Parameters	Result
1.	Colour	Brown
2.	Odor	Aromatic
3.	Appearance	Good
4.	Size	8.1 cm * 2.4 cm
5.	Shape	Round
6.	Foam Height	2.1
7.	Foam Retention	2.0
8.	pH	7.2



Fig 13 Soap Base



Fig 14 : Extract of Herbal Ingredients



Fig 15 : Formulation of Soap

CONCLUSION

Formulation and evaluation the herbal soap by selected ingredient include Azadirachta indica, aleovera (Aleo Barbendensis), turmeric, Reetha (sapindus mucorassis), Babul (Acacia Nilotica) and for fragrance we are using jasmine oil. The herbal soap was formulated by using naturally obtained herbs and extraction of oils was performed without any chemical. The pH which found for formulation are between 7-9 which found for 2 to 6 cm which shows less foam height compared as standard foam retention which found in between the range of 3-5 min skin irritation by comparing standard marketed herbal soap. Industry soap is used as thickeners, components of some lubricants and precursors to catalyst. When used for cleaning soap sloubilizers particle and give which can then be separated from the article being cleaned.

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