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FORMULATION OF HERBAL SOAP

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ABSTRACT

Cosmetic products formulated by the use of natural ingredients are known as herbal cosmetics. The natural content in the herbs have minimal side effects as compared with synthetic preparations. Most of the herbal cosmetics are based on several botanical ingredients with long histories of traditional or folk medicine usage. Compared to synthetic ingredients, herbal extracts-based preparations are having great demand in the modern world. The herbal soap was formulated using the leaf extract of Wrightia tinctoria (Danthapala) as the main herbal ingredient, combined with reetha, neem, aloe and turmeric as the other natural ones. Wrightia tinctoria have been found to have anti-inflammatory, antiulcer activities and also effective in the treatment of psoriasis. Neem (Azadirachta indica) leaves and its constituents have been demonstrated to exhibit anti–inflammatory, antiulcer, antifungal, antibacterial properties. Reetha acts as a detergent which have cleaning and foaming activity. Turmeric is used for treating different disorders of the skin. Aloe vera is a medicinal plant with antioxidant and antibacterial properties. All the herbal ingredients were uniformly incorporated with the soap base in varying proportions of extracts. The formulated soap batches were undergone for various evaluation parameters to arrive at the ideal preparations. The ideal herbal preparation promises the actual pharmacological effect. It will be beneficial for the herbal cosmetics

lovers.

KEYWORDS: Herbal cosmetics, Danthapala, Soap base Herbal soap.

INTRODUCTION

Skin is the largest organ in the body and covers the body's entire external surface. It is made up of three layers, the epidermis, dermis, and the hypodermis. People are using herbs for cleaning, beautifying, and protecting skin since the ancient era. The purposes of cosmetics include cleaning the skin, preserve the skin's moisture balance, stimulate skin metabolism, and protect the skin from harmful ultraviolet radiation. Skin care cosmetics[1] contain substances which enable the skin to function properly. Soap removes dirt and sweat from body and thus skin feels clean and refreshed. Some traditional or normal soap can be too harsh that will clean skin, but leave it dry or irritated.[2]

Herbal formulation has growing demand in the world market. The natural remedies are more acceptable in market because it is safe and only have negligible side effects. Herbal soaps contain antibacterial and antifungal agents which mainly use the extracts of plants such as leaves, stem, roots and fruits. The varieties of creams and soap preparations have been used to treat various skin disorders. Ethno medically, juice and extract from leaves of the plants are topically applied for antimicrobial and anti-inflammatory properties in treatment of skin disease including eczemas, ringworm and pruritus. The awareness and need for cosmetics with herbs are on the rise, primarily because it is believed that these products are safe and free from side effects.[3] In view of the broad acceptability of herbal formulations, the herbal soap preparation have a very good impact in the cosmetic field.

FUNCTIONS OF HERBAL SOAP

a) It must effectively cleanse the skin, by removing dirt, oil, and impurities without stripping away the skin's natural oils.

b) Protect skin against allergens, chemicals and stress.

c) It should generate enough foam to please the user.

d) Promote nourishment to skin, fight body odour and refreshes the skin

e) To treat various epidermal dysfunction such as eczema, psoriasis, acne etc.[4]

MATERIALS AND METHODS

A) PLANT PROFILE[4,17,18]

i) Wrightia tinctoria

Synonym:- Danthapala

Botanical Name:-Wrightia tinctoria

Part used: Leaf

Colour: Green

Wrightia tinctoria is a medium sized ever green tree grows up to 18 m tall which produces milky white latex from the leaves which is directly applied on inflammation. Along with its medicinal uses the leaves of this plant yield blue coloured dye known as pala Indigo. In Siddha system of medicine there is evidence of use in the treatment of psoriasis and other skin diseases. Oil prepared out of the fresh leaves of the plant has been assigned to analgesic, anti-inflammatory activities and to be effective in the treatment of psoriasis. Wrightia tinctoria which is commonly known as 'Danthapala' is a known potential medicinal plant, the leaves of which are traditionally used in the treatment of psoriasis and non-specific dermatitis.[5]

Uses: It is an established plant for the treatment of Psoriasis, Scalp infection and other skin disorders. The leaves are used in the treatment of psoriasis and other skin conditions. The prepared paste of stem bark and leaf acts as local analgesic in headache. It also acts as aphrodisiac and as antipyretic. The oil obtained from fresh leaves has analgesic, anti-inflammatory and antipyretic activity.

ii) Sapindus mukorossi

Synonym:- Reetha

Botanical Name:-Sapindus mukorossi

Part used: - seed

Colour: - Brown

Uses: - Detergent, surfactant

It have de tanning properties, helps to moisturise the skin and lightens skin complexion and evens out skin tone. Reetha can be mixed with other ingredients to create face masks and cleansers that leaves the skin feeling refreshed and rejuvenated.[6]

iii) Aloe barbedensis miller

Synonym:- Aloe

Botanical Name:- Aloe barbedensis miller.

Part Used: - Leaves

Colour: - Green colour

Uses[7]: - It is used for getting a smoothening effect on the skin. It nourishes the skin to

improve the normal function. It haydrates the skin to get a cooling effect. Also it have antiseptic properties.

iv) Curcuma longa

Synonym:- Turmeric

Botanical Name:-Curcuma longa

Part Used:-Rhizome

Colour:-Bright yellow colour

Uses[8]:- Turmeric is a traditional and natural anti-infective agent for the skin. It improves the tone of the skin. It have a good antioxidant property. Turmreic, when used topically will regulate excessive oil secretions and cleans up the pores. It lightens acne scars, cures dermatitis.

v) Azadirachta indica

Synonym:- Neem

Botanical Name:-Azadirachta indica

Parts Used:-Leaves

Colour:-Green

Uses[9]:- Neem has antibacterial and antimicrobial properties in purifying the skin. It pacifies irritated skin. Neem fights signs of ageing. Neem in the form of soap removes the bacteria in clogged pores.

vi) Coconut Oil

Botanical Name:-Cocos nucifera

Parts used:- Fruit

Colour:-Clear or light yellow colour

Uses[10]:- Virgin coconut oil have the activity to fight against eczema and acne, it slows down the skin aging, promote the moisture content of skin. It has the property to form a good lather in the preparation of soap.

B) METHODOLOGY

Herbal soap preparation was proceeded by incorporating the ingredients as furnished in the formulation chart by using non glycerinated soap base. According to the ratio specified, different batches were prepared. The ratio change only depends on the active ingredient danthapala. Different ratios of reetha was also performed for the consumer acceptability, related with the lather formation. The preparations were undergone for different evaluation parameters to get the conclusion of the ideal formulation that have more acceptability in consumers. The formulation chart is furnished in table No:1.

The plant Wrightia tinctoria was collected from Nooranadu, Alappuzha District, Kerala. The whole plant was authenticated by Dr Jacob Thomas, Herbarium curator, Asst. Professor and research guide P.G and Research Dept. of Botany, Mar Thoma college, Thiruvalla and submitted the specimen for further reference.[12]

Danthapala oil was prepared by soaking freshly collected danthapala leaves with coconut oil in an earthen pot under direct sunlight for a period of 21 days. Over this period, the leaves will dissolve in the oil and the essence from the leaves will give the oil a deep reddish-brown colour. The obtained extract was filtered and the oil was collected.[13] Melt and pour process was adopted here for preparation of soap. Soap making was done with melt and pour process by using a soap base and mix other ingredients into it and pour them to attractive soap moulds. The quantity was fixed as per the volume of soap mould.

Accurately weighed and chopped soap base was added to the glass measuring cup. Alternatively melt the soap base using double boiling method. Care was given to avoid overheating. To the molten soap base, gently stirred with the Danthapala oil, reetha powder, aloevera gel, neem powder, turmeric powder, and essential oil as per the stated quantities in the formulation chart. The additions were made with the principle of geometric mixing. It

was denoted as formulation numbers S1 to S5.The mixture was poured into the moulds and place them on a levelled surface. The poured content was allowed to become cool, which usually takes at least two hours. When the soap is cool, pop it out of the moulds and was evaluated for various parameters. Other batches were also prepared and kept for evaluation. Those were not used immediately should be wrapped tightly in plastic wrap and stored in a cool, dry place The results were tabulated to arrive at the ideal formulation Formulation chart is described in Table No: 1 and the prepared herbal soap furnished in Figure No:1.

Table No. 1: Formulation Chart of Herbal Soap Preparation.

Sl.No	INGREDIENTS	Formulation Identity				
		S-1	S-2	S-3	S-4	S-5
1	Danthapala oil	0.5ml	1ml	1.5ml	2ml	2.5ml
2	Reetha	2gm	1.5gm	1gm	0.5gm	0.0 gm
3	Turmeric	0.5gm	0.5gm	0.5gm	0.5gm	0.5gm
4	Aloevera	0.25gm	0.25gm	0.25gm	0.25gm	0.25gm
5	Neem	0.5gm	0.5gm	0.5gm	0.5gm	0.5gm
6	Jasmin oil	1.5ml	1.5ml	1.5ml	1.5ml	1.5ml
7	Soap Base	qs to50gm	qs to50gm	qs to50gm	qs to50gm	qs to50gm

Figure No. 1: Formulated Herbal Soap Preparation.

EVALUATION PARAMETERS

The different evaluation parameters were performed for each batch and the results were tabulated in corresponding tables. The evaluation parameters include.

Physical Appearance

Different physical parameters were identified for each batch to identify any air entrapment or any physical imperfections of the formulated soaps. All the formulations were reported with

good texture and odour.

Determination of pH

For a cosmetic preparation, pH is very important, If it does not comply with skin pH serious irritation may occur that leads to rejection of the product. Thus the pH should be compatible with skin pH. pH of the formulation was determined by using digital pH meter. It was observed that all the formulation having the range of 8.2 to 9.0 which is compatible with the skin pH.

Determination of Percentage free alkali content

The percentage free alkali content of prepared formulation was also evaluated and the results found between 1.83% to 2.03%. The result falls within the standard value of ISO.

Determination of Foaming Index

The foaming index of herbal soap was conducted by cylinder shake method to find out the presence of saponins.

Foam Height

The foam height of the formulations was conducted with the help of a calibrated measuring cylinder. The quantity was mixed with standard water content and kept for until the form having a uniform form height for the consecutive three time interval. The values were recorded and tabulate in table No: 2.

Determination of Saponification value

Saponification was another evaluation parameter for the formulated soaps. Randomly selected soap from each batch was evaluated for the saponification value and was recorded in table No: 2.

Determination of Total Fatty Matter

The total fatty mater evaluation also performed to find out the fatty matter present in the formulation. The obtained readings were computed and recorded in table No: 2

Table No. 2: Table showing different consolidated evaluation parameters of the formulated Herbal Soap.

Sl No	Evaluation Parameter*	S1	S2	S3	S4	S5
1	Physical Appearance	Heart shaped, Yellowish orange colour	Heart shaped, Yellowish orange colour	Heart shaped, Yellowish orange colour	Heart shaped, Yellowish orange colour	Heart shaped, Yellowish orange colour
2	pH	8.5±0.11	8.2±0.09	8.9±0.10	9.0±0.08	8.5±0.12
3	Percentage Free Alkali Content	1.95±0.10	1.83±0.12	2.15±0.08	2.03±0.09	1.94±0.06
4	Foam Height	9.8±0.09cm	10.1±0.12cm	9.7±0.11cm	10.2±0.10cm	10.0±0.08cm
5	Saponification Value	251.45±0.09 mg	246.75±0.10 mg	268.75±0.08 mg	266.475±0.10 mg	276.53±0.08 mg
6	Total Fatty Matter	64±0.10%	70±0.12%	71±0.10%	73±0.09%	68±0.12%

* Readings of Three observations ±SD

RESULTS AND DISCUSSION

The aim was to formulate a soap containing all natural ingredients. In the formulation, different natural ingredients were incorporated with the help of non-glycerinated soap base. The ingredients not only act for its medicinal values but also serve for its cosmetic actions. The formulated herbal soap was evaluated for different parameters. From the parameters, ideal formulation was identified and that formulation will be beneficial for the consumers. The different parameters includes.

Physical appearance

The prepared formulations was evaluated for their shape, colour and for any physical imperfections and was reported for its heart shape mould (by selection), yellowish orange colour for all formulations. But in physical imperfection studies, certain batches showed the entrapment of air. From the parameters, the formulations, S2, S3,S4 and S5 found to be good. Even though all the batches were taken for further evaluation studies.

pH

pH of the formulation were determined by using digital pH meter. It was observed that all the formulation is having the pH range between 8.4 and 9.0, which is compatible with the skin pH.

Percentage free alkali content

The percentage free alkali content of all herbal soap was found to be in the range of 1.83% and 2.03%. The result complies with the standard value of ISO.

Foaming Index

The foaming index of herbal soap was conducted by cylinder shake method. From the parametrs it was found to be the formulation S1 having more foaming index because of the higher quantity of reetha. All other formulations were reported with lower foaming index as compared with S1.

Foam Height

The foam height was performed with a calibrated measuring cylinder and the batch S4 reported for its value of 10.2 as the highest as compared with other formulations. This may be due to the presence of foam producing property of all the ingredients. This result has met the requirement for the height of the herbal soap foam.

Saponification value

Saponification is key step in the soap making process and result in the formation of a cleansing agent that is essential for cleanliness. The saponification value of the batch S4 was found to be 266.475mg as compared with other batches.

Determination of Total Fatty Matter

The TFM value of formulated herbal soap is found to be 73% for the batch S4. All other formulations reported for the total fatty matter content above 60% so that all the formulation comes under grade-I soaps.

From all the evaluation parameters, the formulation S4 met all the evaluation criteria and selected as the ideal formulation. This ideal formulation will be very beneficial for the consumers having any skin disorders.

SUMMARY AND CONCLUSION

Soap is a cosmetic preparation used for removing dirt and cleansing the skin. In view of theoretical aspects, soaps are surfactants usually used for removing dirt from the skin and to provide a refreshing feeling to the skin. Herbal soap contains natural ingredients so it has less side effects than synthetic soaps. The herbal soaps serve as a good choice for the people of all age, because of the presence of natural ingredients. Here the herbal soap preparations were

attempted utilising natural ingredients. The various quality control parameters were evaluated to arrive at the ideal formulation. All parameter complies with the standard evaluation results. This herbal soap effectively cleanse the skin, by removing dirt, oil and impurities without stripping away the skin's natural oils. From results, it is concluded that the formulation S4 is ideal as compared with other batches, that fulfils the aim of this study. The prepared formulation of herbal soap is useful for various skin disorders. Moreover, the formulated herbal soap is free from artificial fragrance, colours, and preservatives that can be found in synthetic soap, making them a healthier choice for both the skin and the environment. So, it can be marketed and the consumers will get the benefit.

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