Formulation And Evaluation of Herbal Soap

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***Abstract*: Herbal Soap preparation is a medicine it contains. Antibacterial, anti-aging, antioxidant, anti- septic properties which make mainly use of part of plant like seeds, Rhizomes, nets and papal to treatment for an injury or disease or to achieve health. The invention discloses a flaxseed oil extraction. Handmade soap which is characterized by comprising the following materials in parts by weight: 1-7 parts of coconut oil 21-41 parts of Glycerin 0.2-0.8 part of orange peel oil 10-30 parts of dilute water as 75 gm of Soap base the handmade soap has beneficial effects that by using the handmade soap various useful. Constituent in that Soap like Nagarmotha, Betal leaf can be useful for the antioxidant, improve skin whitening and antiseptic. And also useful for dry skin and skin damaging. The main use of Flex seed is glowing the skin.**

Keywords: Flex Seed, Nagarmotha, Betal Leaf, Anti-Oxidant, Anti-Septic.

Introduction

Soaps are used for staying fresh and for hygienic purposes but after effect of using chemical soap is dry skin, skin damage and skin allergies[1]. Soaps made from chemicals lead to many skin infections and diseases also[2]. They clog the pores of skin and hinder the cells from breathing[3]. By delaying the natural renewal process of skin, it makes the skin age faster. Moreover, the use of chemicals leads to severe damage to the environment also[4]. Being the largest sense organ of the human body, skin not only as first line of protection but also prevent damage of the body by protecting the pores[5]. Chemicals like SLS, DEA, BHT, triclosan, isopropyl alcohol, various smell perfumes, and color dyes can even lead to cancers in individuals [6].

Herbal soaps are usually handmade and have 100% organic ingredients which impart only goodness to skin and are safe to environment too. Some herbs work well to naturally color your products. Some herbs are wonderful for relaxing and stress relief[7]. Other herb additives will provide benefits to the skin, such as reducing acne or soothing irritation. Plus,there are herbs that contain a variety of healthy minerals and vitamins that are very beneficial[8].

Herbal soaps are made of organic natural substances; they result in smoothening and rejuvenating the skin[9]. Even the fragrance of herbal soap relaxes the mind without affecting environment. They will be devoid of artificial color and aroma. Moreover, chemical soaps have animal fat and lack the essential oils from plant extract which give a natural and pleasing aroma[10].

Flaxseeds

Flax seed (LINUMUSITATISSIMUM) is belonging to family LINEACEAE, popularly known as Alsi, Jawas, Aksebija in Indian languages. The ALA fats in flax seeds benefits the skin and hair by providing essential fats as well as bvitamins which can help reduce dryness and flakiness. It can also improve symptoms of acne, rosacea, and eczema. Flax seed oil is another great option since it has an even higher concentration of healthy fats. You can take 1-2 tbsp internally to hydrate skin and hair. It can also be mixed with essential oils and used asa natural skin moisturizer[11].

Fig 01: Flaxseed

Synonyms : linseed
Kingdom: plantae
Class: Magnoliopsida
Order : Malpighiales
Family: Linaceae
Genus: linum L
Species: Linum usitatissimum L

CHEMICAL COMPOSITION OF FLAXSEED: The seed contains approximately 40% lipids, 30% dietary fibre and 20 % protein. The chemical composition varies considerably among varieties and also depends on the environmental conditions in which the plant is grown. Cotyledons contain 75% of the lipids, and 76% of protein is found in the seed. The endosperm contains only 23% of the lipids and 16% of protein. Table 1 shows the chemical flaxseed composition.Lipid flaxseed composition makes it animportant source of Omega 3 fatty acids,especially α-linolenic acid (ALA) whichmay constitute up to 52% of the total fattyacids. Furthermore, flaxseed is animportant source of phenolic compounds,known as lignans, a colloid gum, andprotein of high quality. Although thesecompounds are located in different partsof the seed, they interact during oilextraction and processing. Thus, it's processing presents serious challenges.

Nagarmotha

Nagarmotha (Cyperus rotundus) commonly known as Nagarmotha is found throughout India. It belongs to the family Cyperacea. The genus name Cyperus is derived from Cypeiros, which was the ancient Greek name for the genus, rotundus is Latin word forround and refers to the tuber[12]. The family comprises about 104 genera and more than 5000 species world-wide, although number vary greatly due to differing taxonomic concepts of individual researchers. The largest genus is Carex with about 2000 species world-wide, followed by Cyperus with about 550 species[13]. It is a pestiferous perennial weed with dark green glabrous culms, arising from underground tubers. It is actually a field weed known in all the Southern States as nut grass. The plant produces rhizomes, tubers, basal bulbs and fibrous roots below ground and rosettes of leaves, scapes and umbels above ground[14].

TAXONOMICAL CLASSIFICATION

Fig 02: Nagarmotha

- Kingdom :plantae
- Subkingdom: Tracheobionta
- Super division: Spermatophyta
- Division: Magnoliophyta
- Class: Liliopsida
- Subclass: Commelinidae
- Order: Poales (Cyperales)
- Family: Cyperacae
- Genus: Cyperus
- Species: Rotundus

PHYTOCHEMISTRY

Phytochemical studies has shown that the major chemical components of this herb are essential oils, flavonoids, terpenoids, and mono sesquiterpenes. The plant contains the following chemical constituents; cyprotene, acopaene, cyperene, aselinene, rotundene, valencene, cyperol, gurjunene, trans-calamenene, dcadinene, gcalacorene, cadalene, amuurolene, gmuurolene, cyperotundone, mustakone, isocyperol, acyperone[15].4,11- selinnadien-3-one and 1,8-cineole. The oil of C.rotundus was mainly composed of cyperol, α-cyperene, rotundine, α-cyperone, α-copaene, valerenal, myrtenol, β-pinene, α-pinene and α-Selinene, sesquiterpene hydrocarbons (Caryophyllene)[16].

PHARMACOLOGICAL ACTIONS

Diuretic, carminative, emmenagogue, anthelminthic, stomachic, stimulant, analgesic, hypotensive, anti-inflammatory, antidysenteric, antirheumatic[17].

THERAPEUTIC USES

The essential oil (0.5-0.9%) from the tuber is used in perfumery, soap making and insect repellent cream.Decoction of rhizome with stem bits of Tinospora cardifolia and dried ginger is given to treat malarial fever. Decoction of rhizome with leaves of Fuaria indica, Swertia chirayita, black pepper and ginger was used to treat typhoid fever. Rhizome juice is given in the dose of 25 ml thrice daily for 3 days to treat constipation. The rhizomes are scrped and pounded with green ginger mixed with honey prescribed in dysentery, gastric and intestinal troubles. Fresh tubers are applied to the breast as a galactagogue[18].

BETEL LEAVES :

Fig 03:Betel Leaf

Kingdom: plantae
Division: magnoliophyte
Class: magnolipsida
Family: piperaceae
Genus: piper
Species: betel

Topical skin infections commonly occur and often present therapeutic challenges to practitioners, Despite the numerous existing antimicrobial agents available today. The necessity for developing new Antimicrobial means has increased significantly due to growing concerns regarding multidrug-resistant bacterial, Viral, and fungal strains[19] .
The scientific name of betel Vine is Piper betel L. belongs to the family Piperaceae, i.e. the Black Pepper family. In spite of its alienness, the plant is much more Popular in India than in any other country of the World since the antiquity. This would be evident From the numerous citations laid down in the Ancient literature, particularly the Indian scriptures. In these citations, significance of the leaves has Been explained in relation to every sphere of Human life including social, cultural, religious and Even day-to-day life, which is very much relevant Even these days. It is also used as a special item offered to the Guests in order to show respect and for such Traditional use of betel leaf in the Indian society, The leaf really stands alone without any parallel Even today[20].

1. Betel leaf also an amazing anti-fungal, antiseptic & antibacterial remedy .

2. Topical antibacterials are commonly used for superficial pyodermas such as impetigo and treatment or prevention of infections such asminor cuts, abrasions,burns, and surgical wounds

Chemical Constituents: Plant contains a terpinine, P-cymene, carvacrol, chavicol and its derivatives, Allyl catechol, eugenol, estragol, oxalic acid, malic Acid and amino acids. Leaves contain good Amounts of vitamins particularly nicotinic acid, Ascorbic acid and carotin. They also contain Significant amounts of all essential amino acids Except lycine, histidine and arginine. Large Concentrations of asparagines are present while Glycine and proline occur in good amount. Essential oil of leaf gives it the aromatic flavour. B-Sitosterolis present in the root[21].

Content of betel leaves: Betel leaves contain Tannins, sugar and diastases and an essential oil. The essential oil is a light yellow liquid of aromatic Odor and sharp burning in taste. It contains a Phenol called chavicol which has powerful Antiseptic properties. The alkaloid in it has Properties resembling cocaine in some respects .An Analysis of the betel leaf shows itto consist of Moisture 85.4 per cent, protein 3.1 per cent, fat 0.8 Per cent, minerals 2.3 per cent, fiber 2.3 percent And carbohydrates 6.1 per cent per 100 grams.Its minerals and vitamin contents are calcium, Carotene, thiamine, riboflavin, niacin and vitamin C. Its calorific value is 44 [22].
Almond oil has been used for hundreds of years to treat dry skin conditions, including eczema and psoriasis. The oil may reduce the appearance of acne, enhance cell development and reverse sun damage.
During COVID -19 pandemic the frequent and increased use of synthetic hand washing products may result in cellular damage. Using synthetic components in soap has caused severe health concerns for human and the ecosystem. So the poly herbal soap formulatedfrom natural sources to reduce the environmental effect and improve public health.

MECHANISM OF ACTION OF SOAP

When soap is dissolved in water, its hydrophobic ends attach themselves to the dirt and remove it from the cloth. Then the molecules of soap arrange themselves in micelle formationand trap the dirt at the centre of the cluster. These micelles remain suspended in the water.

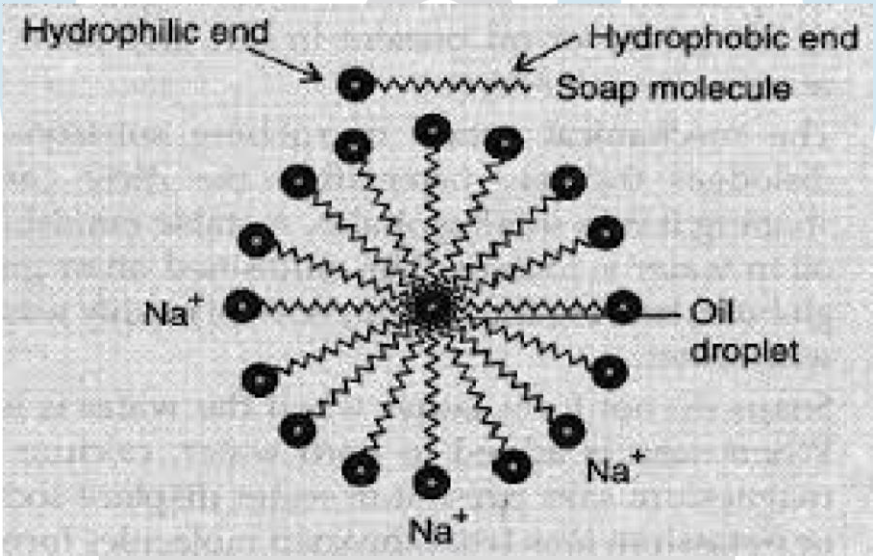

Fig 04:Mechanism action of soap

Materials & Methods

Natural products could be found in the treatment of almost all diseases and skin problems owing to their high medicinal value. Herbal products have proven its cost-effectiveness, availability and compatibility to all types of formulations. The active constituents responsible for such medicinal values are isolated and employed as creams, soaps and ointments for treating skin related diseases.

Flax seed (LINUM USITATISSIMUM) is belonging to family LINEACEAE. Flax seeds are rich in essential fatty acids, antioxidants as well as fibre, and greatly moisturize and nourish your skin. Generally, fewer side effects have been observed in herbal soap as compared to other chemical preparations. The present study focuses on a novel soap formulation with the Flaxseed extract, Betel leaves extract, and Nagarmotha having medicinal properties which can also be used as regular bath soap.

Materials

Collection of active ingredients were collected from different botanical garden flex seed Nagarmotha and betel leaves.

Table 1: *List of Herbs with its Functional Properties use to Formulate Herbal Soap*.

Flaxseed(LINUM USITATISSIMUM)		• They contain lignans and antioxidants that help in skin tightening. • It has moisturizing properties
Nagarmotha (CYPERUS SCARIOSUS)		• It has astringent property which benefits skin by reducing melanin. • It has anti-microbial property
Betel leaf (PIPER BETLE)		• It reduces dark spots on skin • It contains antibacterial and skin lightening agents.
Almond Oil (PRUNUS DULCIS)		• It help to heal sun damage. • It has antifungal property.
Orange Peel Powder (CITRUS SINENSIS) RUTACEAE		• It has lovely citrus scent • It has anti-microbial and anti-bacterial properties.
Neem oil (AZADIRACHAT INDICA) MELIACEAE		• It cures the burning and soreness while lessening the redness of the erratic lesions.

Formulation of soap base :

Sr. no	Ingredient	Quantity	Uses
1	Dilute Water	10 gm	A.q. Vehicle
2	Sodium hydroxide	2 gm	Lye
3	Coconut oil	16 gm	Antiagein moisturiser
4	Steric acid	8 gm	Hardening agent
5	Glycerine	3 gm	Humectant
6	Alcohol	16 gm	Thickning agent
7	Propylene glycol	20 gm	Moisture retention

Table 2 *: Soap base ingredient .*

Procedure for Soap Base:
Take 10 gm of water mix with 2 gm of NaOH and make the lye solution, and leave for 30 min After that take a steel pot on gas under 45 °c . add 16 gm of coconut oil, 8 gm of stearic acid, dissolve it then add lye solution, cook for 10 min Add 3 gm of Glycerin, than add 16gm of Alcohol mix and cover the pot for 5 min. Than add 20gm of propylene glycol. mix and cook for 2 min. then set for few min. Blend it for the solution get thicker and again cook for 5 min. Add to any mold or container. Leave for 1 hr. This is the soap base.

Formulation of herbal soap :

Sr.no	Ingredient	F1	F2	Uses
1	Soap base(gm)	50 gm	75 gm	Removing dirt from skin
2	Flax seed	5.25	7 gm	Expoliant
3	Nagarmotha	3	4 gm	Antibacterial
4	Betal leaf	3.75	5 gm	Antiseptic
5	Menthol	1.5	2 gm	Cooling agent
6	Neem oil	0.75	1 gm	Skin condition, Antibacterial
7	Almond oil	0.75	1 gm	Antioxidant
8	Orange peel oil	3.75	5 gm	Perfume

Table 3 *: formula of poly herbal soap .*

HERBAL SOAP FORMULATION PROCEDURE

Melt the Soap base and add 7 gm of flax seed extraction, 4 gm of Nagarmotha extraction. 5 gm of Betel leaves extraction. Heat all the ingredient and also add 1 gm Neem oil, 1 gm Almond oil and to orange peel oil 1 gm, add Menthol for cooling agent.

Fig5: Preparation of soap

Fig 6 : Extraction of Flaxseed

EVALUATION PARAMETERS

Colour & shape: Colour and shape was checked by naked eye.
Odour: The smell of formulation was checked by applying preparation on hand and feels the fragrance of perfume.
pH: The pH of the prepared soap was assessed by touching a pH strip to the freshly formulated soap and jointly by dissolving 1 gram in 10 ml water with the help of digital pH meter[38].

Foam Height: 0.5 grams of sample of soap was taken dispersed in 25 ml distilled water. Then, transferred it in to 100ml measuring cylinder; volume was make up to 50 ml with water. 25 strokes were given and stand till aqueous volume measured up to 50 ml and measured the foam height, above the aqueous volume was measured.
Foam Retention: 25 ml of the 1% soap solution was taken in to a 100 ml graduatedmeasuring cylinder. The cylinder was covered with hand and shaken 10 times. The volume offoam at 1 minute intervals for 4 minutes was recorded[39.]
Irritation: It is carried out by applying soap on the skin for 10 minutes. If no irritation then it is considered as non-irritant product.

Fig7 : Herbal soap

RESULT AND DISCUSSION

S.NO	PARAMETERS	F1	F2
1.	Colour	Yellowish brown	Yellowish brown
2.	Odour	Aromatic	Aromatic
3.	Shape	Round	Round
4.	pH	6.7	7.2
5.	Foam height	2.2 cm	3 cm
6.	Foam retention	3min 11sec	3min 45sec
7.	Irritation	Non irritant	Non irritant

The above given table describes the colour, odour, shape, pH, irritation, foam height and foam retention of the poly herbal soap. The colour of all the five formulation were yellowish brown. The odour of all the five formulation was aromatic. The shape of all the five formulation was Round. As per evaluation test formulation F2 is may be the most standard formulation compared to other formulation because the pH of formulation F2 is 7.2 which is likely close to skin pH and there is no irritation beside foam retention and foamability of F2is may be much better than other formulations.

CONCLUSION:

Herbal soaps have a strong impact on the skin, in terms of making it soft, smooth and supple. On the contrary, chemical soaps are full of damaging substances that can harm the skin as well as health. The multiple benefits of herbal soaps make them the right choice for better skin care and optimal health outcomes. From the scent to the therapeutic value and the aromatic benefits to medicinal properties, herbal soap heals, soothe and rejuvenate the skin.

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