

Formulation and evaluation of herbal cream

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ABSTRACT

Herbal cosmetics are a product that improves your appearance. The aim of the research was to develop an herbal cream with moisturizing, nourishing, whitening and healing properties for various skin diseases. Curcuma longa (turmeric powder), Carica papaya (papaya), Aloe barbadensis (aloe leaves), Azadirachta indica (neem leaves) and Ocimum sanctum (tulsi leaves) are some of the raw ingredients from which the cream is made. The selection of ingredients is based on the different therapeutic properties of the active ingredients. Different evaluation parameters apply to the cream.

Keywords: Cosmetic, Herbal cream, Turmeric, Papaya, Aloe-vera, Neem, Tulsi

I. Introduction

The concept of beauty and cosmetics is as old as humanity and civilization. Indian herbs and their meanings are popular all over the world. Herbal cosmetics are becoming increasingly popular on the world market and are a useful gift of nature. Herbal preparations have always been in high demand because they have good effects and relatively few or no side effects compared to synthetic drugs. Herbal cosmetics are cosmetic products that use herbal ingredients to develop the desired physiological effects such as healing, smoothing, strengthening and revitalizing effects. Nowadays, the utility of herbs in producing cosmeceutical products in healthcare has increased significantly and the demand for herbal cosmetics is huge. Cosmetics are substances intended for use on the physical body to cleanse, beautify, enhance attractiveness and alter appearance without altering the structure and functions of the body. However, the use of synthetic products recently is very harmful to young people, but also to our environment. Various synthetic compounds, chemicals, dyes and their derivatives have been

proven to cause various skin diseases with numerous side effects. That's why we use plant-based cosmetic products as much as possible. The basic idea of skin care cosmetics is deeply rooted in the medical systems Rigveda, Yajurveda, Ayurveda, Unani and homeopathy. These are products that use herbs in raw or extract form. These herbs are said to have different properties such as antioxidants and antioxidants. These herbs were selected based on the idea of a standard system and scientific rationale with modern applications. An herbal cream that provides effective protection to the skin and, when used regularly, is free of toxins, toxic residues or irritations and is also cosmetically acceptable.[1]

Herbal Cream This is essentially a water in oil emulsion. The natural ingredients selected to prepare the herbal cream are turmeric, papaya, aloe, tulsi and neem. The selection of these ingredients depends on their individual properties. Aloe is used as a moisturizer and anti-acne agent (Christaki EV and Florou-Paneri PC, 2010) (Figure 1). Turmeric is an Asian cosmetic that gives the skin a golden glow. It also has anti-inflammatory and antiseptic properties (Dhyani A, et al., 2019) (Figure 2). Neem is useful for treating a variety of skin conditions including eczema, psoriasis and dry skin (Bhowmik D et al., 2010) (Figure 3). Tulsi is used to add shine to the skin and promote wound healing (Figure 4). In addition to these health-promoting properties, tulsi is recommended as a medicine for a number of conditions, including anxiety, cough, and skin disorders (Sah AK et al., 2018). Papaya has wrinkle-cleansing, enzymatic and anti-inflammatory properties (Fig. 5). The main goal of our work is to develop a herbal cream that can provide multitasking effects such as moisturizing, reducing acne and skin irritation, dry skin, wrinkles, rashes, etc. Cosmetics are products that are applied to the body. [2]

Excipients and herbal ingredients with their roles

S. No.	Ingredients	Roles
1.	Aloe Vera gel	Anti-ageing, anti-inflammatory, moisturizer, reduce acne and pimples.
2.	Tulsi	Antibacterial, adds glow to the face.
3.	Neem	Promote wound healing, relieves skin dryness, itching and redness.
4.	Bees wax	Emulsifying agent, stabilizer and gives thickness to the cream.
5.	Liquid paraffin	Lubricating agent
6.	Borax	Alkaline agent which reacts with emulsifying agent to form soap
7.	Methyl paraben	Preservative
8.	Rose oil	Fragrance[3]

Extraction Process:

- 1) **Aloe vera gel**
- 1) Aloe Vera Gel –

Ripe, healthy and fresh aloe leaves were harvested and washed with distilled water. Subsequently, after the leaves were appropriately dried in a hot air oven, the outer part of the leaf was cut lengthwise with a sterile knife. The aloe vera gel, i.e. the colorless pulp tissue, was then removed with a sterile knife. Extraction of neem leaves It is then filtered with a muslin cloth to remove fibers and impurities. The filtrate or filter product, which is the transparent gel of Aloe

Vera, is then used for the preparation.[4]



2) Extraction of Neem Leaves

Methanol Extract: Mature Azadirachtaindica plants were used for the extraction method. Leaf extract with methanol: Completely dried leaves were coarsely pulverized and 50 g was used for further extraction in 250 ml

methanol. It was shaken regularly for three days. The extract was then filtered and the filtrate was collected. The filtered liquid extracts were evaporated on a rotary evaporator and then concentrated under reduced pressure (under vacuum at 40 °C). The extracts were then evaporated to dryness and stored in a sealed bottle at 4 °C.

Agar well diffusion method for screening methanolic neem extract: The agar well diffusion method was used to determine the antimicrobial activity of methanolic neem extract. Muller-Hinton agar plates were rinsed with 8-hour culture broth of gram-positive or gram-negative bacteria using a cotton swab. [6]



3) Turmeric

Turmeric is one of the plants on which scientific research has been carried out to treat plant diseases. The general public uses turmeric as a culinary spice. The main content of turmeric is curcumin (77%), demethoxine (17%) and bisdemethoxine (3%). Turmeric extract is one of the research samples that have great potential in overcoming diseases due to its antioxidant, antitumor, anti-inflammatory, anti-allergic and anti-diabetic effects. The most commonly used methods to obtain turmeric are maceration, tapping, refluxing and suction. However, this extraction method has disadvantages such as long extraction time and non-constant temperature in the heating process, as well as a labor-intensive extraction process as tools and many synthetic solvents are required. But around this time, a new extraction method began to be developed, environmentally friendly microwave extraction, which uses microwaves to speed up the extraction process. [8th]



4) Tulsi

Tulsi extract for research purposes was obtained by finely pulverizing the dried leaves. The powder was then macerated with 100% ethanol and filtered. Eighteen grams of tulsi extract (residual 6% w/w) was obtained by dissolving 300 g of tulsi powder in 1 L of ethanol.[10] TulsiEthanol extract was prepared by cold extraction method. The extract was diluted with the neutral solvent dimethylformamide to obtain five different concentrations (0.0).5%, 1%, 2%, 5% and 10%). Doxycycline was used as a positive control and dimethylformamide was used as a negative control. The extract and controls were subjected to microbiological tests against *Aggregatibacter actinomycetemcomitans*, *Prevotella intermedia* and *Porphyromonas gingivalis*. An agar well diffusion method was used to determine the concentration at which tulsi formed an inhibition zone similar to that of doxycycline. Data were analyzed using one-way analysis of variance and Tukey

Post hoc test was used for between and within group comparisons.



5) Papaya

Papaya and bay leaf extracts were prepared by infusion. 1200 g of papaya leaf powder was dipped into a container containing 6000 ml of distilled water. 1000 g of bay leaf powder was immersed in a container with 4000 ml of distilled water. Each vessel was then heated and stirred occasionally for 15 minutes. The temperature was gradually increased from 15 °C to 90 °C. The resulting liquid extract was sieved and dried in a vacuum oven to obtain concentrated papaya and bay leaf extracts.[13] Papaya leaves have been shown to contain many active ingredients that can increase the total antioxidant activity in the blood and reduce the level of lipid peroxidation, such as: B. Paper chymopapain, cystatin, tocopherol, ascorbic acid, flavonoids, glucosinolates and cyanogenic glycosides. Alkaloids, flavonoids, saponins, tannins

and glycosides are associated with anti-inflammatory effects. C. papaya leaf extract has also been shown to have antibacterial, antitumor and immunomodulatory effects.[14]



Formulation of Cream

Heat liquid paraffin and beeswax in a borosilicate glass beaker to 75°C and maintain this heating temperature. (Oily phase). In another jar, dissolve borax and methylparaben in distilled water and heat the jar to 75°C to dissolve borax and methylparaben to obtain a clear solution. (Aqueous phase). Then slowly add this aqueous phase to the heated oil phase. Then add a measured amount of aloe vera gel, neem extract and tulsi extract and mix vigorously until a smooth cream is formed. Then add a few drops of rose oil for fragrance. Place the cream on the baking board and add a few drops of distilled water if necessary and mix the cream geometrically on the baking board so that the cream has a smooth consistency and all the ingredients are well mixed. This method is called the hair straightening technique or the ad hoc cream preparation method.[16]



Formulation Table:

Sr.No.	Ingredients	F1	F2	F3
1.	Aloe Vera Gel	1.5 ml	1ml	1ml
2.	Neem Extract	0.5ml	0.2ml	0.4ml
3.	Tulsi Extract	1.5ml	1ml	1ml
4.	Cucumber Extract	0.5ml	0.5ml	0.5ml
5.	Liquid Paraffin	10ml	15ml	12ml
6.	Borax	0.2gm	0.4gm	0.3gm
7.	Methyl paraben	0.02gm	0.04gm	0.03gm
8.	Beeswax	3gm	3.5gm	3.2gm
9.	Rose oil	Q.S	Q.S	Q.S
10.	Distilled water	Q.S	Q.S	Q.S

Evaluation of cream

•Physiochemical Evaluation of cream

After preparing the herbal cream preparation, the following parameters were evaluated:

Properties of the preparation

The properties of the herbal preparation were studied based on its appearance and properties.[19]

Evaluation of in vitro skin permeation:

A) Determination of the amount of active ingredient deposited in the skin:

In this method, the in vitro drug release test is carried out in two phases using a diffusion cuvette at 32 ± 1 °C. First, 10 ml of PBS (pH 6.5) is used as a recording medium for a period of 10 hours and in vitro skin permeation is carried out. After 10 hours, the donor chamber is rinsed five times with warm recipient fluids (45 °C). The second stage uses 50% v/v ethanol as a recording solution for another 12 hours and works without a donor stage. At this point, the ethanol receptor diffuses into the skin and disrupts the transport system that may have penetrated and deposited in the tissue, releasing both the drug bound to the transporter and the free drug that accumulates in the receptor.

A) Assessment of skin sensitivity

•Open patch test:

The irritation profile is determined by applying 0.025 mm of different concentration to 2 cm² of the surface

of the shaved flanks of 6-8 guineas for pigs. The test sites are visually assessed 24 hours after application of the test solutions to the erythema. A dose is determined that does not cause a reaction in 25% of the animals (minimum concentration of the irritant). As defined above, topical dosage forms are those intended to be applied to the skin for the treatment of a local disease. Some penetration below the stratum corneum may not occur and may or may not be desirable. In contrast to transdermal preparations, the topical product is not intended to cause significant absorption into the systemic circulation. The ideal topical product is one that (1) achieves sufficient concentration in the target tissue to produce the desired pharmacological response; (2) has an acceptable level of systemic toxicity (3) leaves an inactive form on the skin.

II. RESULT AND DISCUSSION:

Three formulations F1, F2 and F3 were prepared, with formulation F2 having good color, pH, viscosity and consistency compared to other formulations. In addition, all preparations do not cause itching, redness or irritation of the skin and are easily washed off. The preparation was stable at room temperature. Azadirachtaindica extracts promote wound healing, relieve dry skin, itching and redness. Ocimum Sanctum extract has antibacterial properties. Aloe vera gel also has a smoothing effect, a viscosity modifier, reduces acne and pimples, while cucumber has a refreshing and soothing effect, reducing dark spots on the skin.

III. Conclusion

By using the names Aloe Vera and Tulsi Gel, the print has a multitasking effect. All of these herbal ingredients have very different effects. Based on the results and discussions, it was concluded that the preparations F1H, F2H, F3H are stable at room temperature and can be safely applied to the skin. Results and Discussion: The global population in developing countries still relies on herbal medicine to meet their health needs and due to their extensive research, research is currently underway in this area. The pH of the cream prepared with the extract was found to be around 6:00, which is ritual when applied topically since the pH of the skin fluctuates around 4. From 5 to 6. The spreadability test shows that the preparation has better spreadability than the commercially available cream. This represents a major challenge for the cream market when combining PH and spreadability. Studies on the stability of various parameters such as visual appearance and pH value of the preparation show that there were no significant changes after two months of anamnesis and the results are summarized.

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