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Article

Formulation and Evaluation of Herbal Multipurpose Skincare Cream

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Abstract: The goal behind designing this multipurpose herbal skincare cream is to prepare an herbal cream which is suitable for various skincare needs. Multipurpose creams are designed to fulfill various purposes, including hydrating, calming, preventing aging, and offering antioxidant advantages. Customers searching for a single product to streamline their skincare routine may find this adaptability appealing. In this multipurpose cream, the blend of essential oils and plant extracts can be used to address particular skin issues such as uneven skin tone, dryness, irritation, or acne. The cream's formulation includes essential oils, natural extracts, and other herbal ingredients that work together to benefit the skin in multiple ways. It contains pineapple extract which has antioxidant property and several other benefits like skin brightening, moisturizer and anti acne benefits. Also Aloe Vera provides the skin and pores with intense moisture, leaving the skin smooth, clear, and nourished. Natural ingredients with antibacterial and anti-inflammatory properties, such as turmeric, neem, and tulsi, help to reduce inflammation and prevent breakouts of pimples. In addition, these antioxidants promote the synthesis of collagen, which improves skin suppleness and delays the appearance of fine lines and wrinkles. It has multiple benefits it helps in various skin disorders and also improves the look and enhances the skin appearance.

Keywords: Multipurpose; Herbal Cream; Skin; Skincare

1. INTRODUCTION

A cream is a skin preparation that is typically applied topically. Herbal creams are those pharmaceutical preparations which contain natural ingredients. Herbal creams are beneficial in multiple ways and useful in various skin disorders, Herbal skincare creams are made with botanical ingredients and natural plant extracts to offer hydration, nourishment, and other skincare advantages. Because natural components are thought to be gentler than synthetic ones, these creams are popular and appealing to people looking for more holistic skincare solutions. Plants, herbs, flowers, and fruits are used as ingredients in herbal skincare treatments. Aloe Vera, green tea, chamomile, calendula, rosehip, lavender, and other essential oils like tea tree or lavender oil are among the often utilized botanic.

Natural ingredients are used to produce herbal creams, which are frequently devoid of artificial chemicals and additives seen in traditional skincare products. They may therefore be the go-to alternative for people looking for more natural skincare solutions.

1.1. Types of Multipurpose Herbal Creams:

Herbal creams are chosen on behalf of skin type, moisture needs and climate conditions where it is to be used. Different people have different type of skin like some people have oily skin and some people have dry skin so skin type is an important factor while choosing the skin cream, Same as different people have different moisture needs and different people reside in different climate conditions so these two factors should also be considered while choosing the skin cream. Basically there are two types of skin cream:

- a) Oil-in-water (o/w) creams
- b) Water-in-oil (w/o) creams

- a) Oil-in-water (o/w) creams:** Water is the continuous phase in O/W emulsions, which indicates it makes up the majority of the cream. Emulsifiers are used in O/W creams to help in the dispersion of oil droplets inside the water phase. Because of their increased water content, these creams tend to be more moisturizing and have a lighter texture. O/W creams are the best for providing the skin with moisture and hydration. They are appropriate for normal to oily skin types because they are lighter and less greasy than W/Creams. In order to improve skin absorption, herbal oils and extracts are added to the water phase of O/W creams. O/W herbal creams are good for daily moisturizing, particularly for people with oily or combination skin types or in warmer areas. Because of their quicker absorption into the skin and lighter consistency, they are frequently included in skincare products meant for use during the day.
- b) Water-in-oil (w/o) creams:** W/O creams use emulsifiers that allow water droplets to be dispersed within the oil phase; they also have a richer, more emollient texture and are generally more occlusive, helping to seal in moisture. W/O emulsions have oil as the continuous phase, meaning oil forms the main component of the cream. Herbal extracts and oils are incorporated into the oil phase of W/O creams, giving a more concentrated and nourishing effect. w/o creams are richer, more emollient in texture and are generally more occlusive, helping to seal in moisture. W/O creams provide intense hydration and are suitable for dry or sensitive skin types.

They create a protective barrier on the skin's surface. For dry, dehydrated or older skin that needs intense moisturizing and protection, W/O herbal creams are helpful. In order to stop moisture loss and preserve the quality of the skin barrier, they are frequently used in night creams or thicker moisturizers for areas that are colder.

Actions produced by multipurpose herbal cream:

a) Moisturizing action b) Anti aging action c) Acne fighting action d) Calming and soothing action e) Brightening and whitening action f) Sunlight protecting action.

1.2. Advantages of Multipurpose Cream

Because it is multipurpose and includes natural components, it has several benefits. The following is a bulleted list of the benefits of utilizing multipurpose herbal skincare cream:

- ❖ **Natural components:** Unlike synthetic components, which are harsh on the skin and more prone to produce irritation or unfavorable reactions, natural ingredients including plant extracts, essential oils, and herbal compounds are used in this formulation.
- ❖ **Simplicity:** By combining several advantages into a single product, this cream makes skincare procedures simpler. A multifunctional cream can provide hydration, anti-aging benefits, sun protection, and more in one step, saving your time and effort compared to applying many products (e.g., moisturizer, anti-aging serum, and sunscreen).
- ❖ **Cost-effective:** Purchasing a single multipurpose cream instead of several specialty skincare products may save money. It lessens the need to buy numerous products for various skincare requirements.
- ❖ **Time-saving:** By simplifying your skincare routine, a multifunctional cream helps you save time. It's convenient for people with busy schedules because you don't have to apply different products one after the other.
- ❖ **Long-Term Benefits:** Over time, regular application of this cream can promote healthier skin by encouraging a more vibrant and balanced complexion.
- ❖ **Rich in Nutrients:** Minerals, vitamins, and antioxidants found naturally in plant substances are often added to this cream. These nutrients shield the skin from harm from the environment, nourish it, and encourage cell regeneration.

1.3. Disadvantages of Multipurpose Cream

This cream may have many advantages, but depending on personal tastes and skin types, it may also have certain drawbacks. The following are some possible drawbacks of using this cream:

- ❖ **Allergy responses:** Although the ingredients in this cream are typically thought to be benign, some people may still be sensitive to certain plant extracts or essential oils, which can cause allergic responses or skin irritation.
- ❖ **Particular Skin Concerns:** Although it can heal a variety of skin issues, it might not be appropriate for addressing some dermatological diseases that call for more advanced medical care.
- ❖ **Texture and Consistency:** Compared to traditional skincare products, it may have a different texture or consistency. It may be overly heavy, greasy, or difficult for certain people's skin to absorb.
- ❖ **Restricted Shelf Life:** Compared to goods with synthetic preservatives, this cream with less preservative may have a shorter shelf life. If not properly stored or not consumed soon after opening, it can go bad more quickly.
- ❖ **Fragrance Sensitivity:** Many people find the natural scents that are made from plant extracts to be pleasing. However, these smells could be overbearing or annoying to people who are sensitive to fragrances.

2. Literature Review:

2.1. Imrana Siddiqua (2022) et.al worked on "Preparation and Evaluation of Herbal Cold Cream with Incorporated Curcuma longa"

To create and assess a cooling and radiant herbal cream cold cream with turmeric. Bee's wax, liquid paraffin, borax, distilled water, and rose oil were used to make the cream base. The cream was made by combining all of the excipients and herbal extracts in a geometric and uniform mixture using the slab technique, also known as the impromptu approach. A cream was made and assessed based on several factors, including appearance, pH, viscosity, stability, patch test, homogeneity 12 test, spread ability test, smear test, emolliency assessment, and microbiological growth test. Findings: there was no phase separation; the cream had a good PH, appropriate viscosity, and a nice look. Additionally, throughout the patch research, the formulation did not exhibit any redness, erythema, or irritation, and it was stable at room temperature and easily washable. An appropriate evaluation of the prepared herbal cold cream's organoleptic qualities was conducted. In accordance with the evaluation of other physical parameters, such as pH, homogeneity, smear type, emolliency, viscosity, and emulsion type, the pH was found to be compatible with the pH of skin secretions and to exhibit a proper pH range of about pH 6. The prepared formulation demonstrated good emolliency and spreadability. A month of heat stability experiments was also carried out, and no evidence of an aqueous-oily phase separation was seen. It is safe to use the prepared herbal turmeric cold cream as there were no signs of irritation or redness after the cream was studied for microbial contamination and no signs of microbial growth were visible after the prescribed incubation period of 24 hours. Additionally, a patch test was performed.

2.2. X Fatima Grace et.al (2014) Worked on "Formulation and Evaluation of Polyherbal Cosmetic Cream"

Formulating and assessing a polyherbal cosmetic cream with natural ingredients is the work's primary goal. Dried, powdered, and packaged aloe vera, turmeric, green tea leaves, and Carica papaya extracted with the use of ethanol. After being dried out, the extracts were preserved for further use. The cream had a pH of 6.8, was easily spreadable, washable, and didn't contain any gritty particles. The color test verified that the cream was of the o/w variety. A cream with an oil-in-water emulsion base was created and tested with natural components. It is possible to conclude that this cream can be used for multiple purposes and that the ingredients when combined can have a synergistic impact on one another. It is possible to conduct additional research on stability. And the cream's skin irritancy test. Oil in water emulsion-based cream was formulated using natural ingredients and was evaluated. By combining all these ingredients it can be concluded that this cream can be used as a multipurpose cream and the ingredients mixed can produce synergistic effect of the other. Further studies can be carried out on stability and skin irritancy test of the cream.

3. Objective

The main objective of this study is to design a multipurpose cream having multiple benefits like moisturizing, nourishing, acne fighting, anti aging & multiple benefits.

Multipurpose herbal skincare creams often contain natural elements that moisturize, nourish, protect, and revitalize the skin. Their goals may include providing hydration, lowering inflammation, preventing aging symptoms, balancing out skin tone, and supporting overall skin health without using synthetic chemicals.

Our herbal multipurpose cream uses natural ingredients to address many skin concerns, including hydration, nourishment, protection, and rejuvenation. This seeks to offer a safer, more sustainable alternative to traditional skincare products that may contain synthetic chemicals and additives.

4. Material and Methodology

Collection of Materials:-

All the ingredients and herbs were collected locally or brought from local market. The following ingredients are required for preparing herbal multipurpose cream:-

- a) **Aloe vera** : - Aloe vera is a succulent plant that has been used for ages for medicinal and cosmetic purposes. Aloe vera, also known as *Aloe barbadensis* miller, belongs to the genus *Aloe*, which encompasses approximately 500 species of blooming succulent plants. It is native to the Arabian Peninsula and thrives in hot, dry settings, but it is currently grown all over the world in tropical and subtropical locations. The plant has thick, fleshy green leaves that are serrated around the edges and filled with a transparent gel-like fluid. Aloe vera gel is the plant's most commonly utilized therapeutic component. It has various skin care properties like moisturizer, wound healing, etc.



Figure 1. Aloe vera plant.

- b) **Turmeric** : - Turmeric (*Curcuma longa*) is a perennial herbaceous plant from the ginger family (Zingiberaceae) that is native to South Asia, including India and Southeast Asia. It is known for its culinary use, medicinal benefits, and traditional importance. Turmeric is distinguished by its rhizomatous root structure, which produces oblong, pointed leaves that are brilliant green on top and pale green underneath. Turmeric is used topically for skin care. It is added to face masks, creams, and ointments to improve skin radiance, decrease acne, and soothe skin irritations. Turmeric has many medicinal properties such as anti-inflammatory, antioxidant, anti-microbial etc.



Figure 2. Turmeric.

- c) **Neem:-** Neem (*Azadirachta indica*) is a multifunctional tree found in the Indian subcontinent, specifically India, Pakistan, Bangladesh, and Sri Lanka. It has a wide range of medical, agricultural, cosmetic, and environmental applications. Neem has long been venerated in Ayurveda, the traditional Indian system of medicine, for its healing powers. Neem is an evergreen tree from the mahogany family (Meliaceae) that can grow to reach 15-20 meters tall. The tree has a dense, spreading canopy with dark green, complex leaves made up of several leaflets. Neem has multiple health benefits as antibacterial, antifungal, anti-inflammatory and various skin disorders.



Figure 3. Neem Plant.

d) **Orange peel:-**

Orange peel, the zesty outer skin of oranges (*Citrus × sinensis*), is rich in taste and nutrients. Orange peel is the outer skin of oranges from the Rutaceae family. The peel has two main layers: the flavedo (outer colorful layer) and the albedo (interior white, spongy layer). Oranges are citrus fruits that grow on evergreen trees and are cultivated in subtropical and tropical climates around the world. Orange peel's exfoliating and brightening characteristics make it suitable for use in DIY skincare treatments. It can be pounded into a powder and used with other substances to create face masks or scrub. It has anti oxidant and anti inflammatory properties.



Figure 4. Orange Peel.

e) **Pineapple extract:-**

Pineapple extract is obtained from the fruit of the pineapple plant (*Ananas comosus*), a tropical fruit with a sweet and acidic flavor. The extract is created by processing various sections of the pineapple, such as the fruit meat, core, or even the leaves, in order to concentrate its beneficial compounds. Pineapple extract is often used in skincare products such as cleansers, toners, masks, and exfoliants. It has anti inflammatory, wound healing and various other skin care benefits.



Figure 5. Pineapple extract.

Extraction of Materials:-

- a) Preparation of Turmeric extract:-
Place 10ml of distilled water in a beaker. Weigh and dissolve 1 gram turmeric powder in purified water. Heat in a water bath at 80-100 degrees Celsius for 10 to 15 minutes. After filtration, turmeric extract is received.
- b) Preparation of neem extract:-
Shining neem leaves are collected and dried after washing. Then it is far powdered. Fill a beaker with 20 ml of distilled water. Add five grams of neem powder to it. Heat it in a water bath at 80- 100 degrees Celsius for 10 to 15 minutes. Following filtration, neem extract is received.
- c) Preparation of orange peel extract:-
The orange peel is dried after washing. After washing, orange peel is pulverized. Fill a beaker with 20 ml of distilled water. Add 4 gm orange peel powder to it. The response is heated in a water bath at 80 to 100 degrees Celsius for 10-15 minutes. After filtration, orange peel extract is received.
- d) Preparation of pineapple extract:-
Pineapple extract can be derived from several parts of the pineapple plant.
The most typical process is to crush and press the pineapple fruit to extract the juice, which is then condensed into an extract.
Another way is to extract bromelain, a major enzyme contained in pineapple, from the stem or core of the fruit. Bromelain extract is known for its therapeutic effects and is frequently used apart from pineapple juice extract.

FORMULATION TABLE:-

S.No.	Ingredients	(F1)	(F2)	(F3)	(F4)
1.	Aloe vera	3 ml	3 ml	5 ml	5 ml
2.	Neem	1.5 ml	2 ml	1.5 ml	2 ml
3.	Orange peel	3 ml	4 ml	5 ml	5 ml
4.	Pineapple extract	1.5 ml	2 ml	3 ml	3 ml
5.	Turmeric	3 gm	3 gm	2 gm	3 gm
6.	Distilled water	q.s.	q.s.	q.s.	q.s.
7.	Total	10 gm	12 gm	15 gm	18 gm

Method of Preparation

To formulate multipurpose herbal skin care cream following process was followed:-

- a) Weigh all the ingredients correctly using the weighing balance.
- b) Transfer the aloe vera gel to beaker and add all the ingredients one by one.
- c) Keep stirring the mixture with help of glass rod.
- d) Make up the volume using distilled water.
- e) To mix all the ingredients properly slowly heat them over water bath
- f) After all the ingredients are mixed properly a uniform texture is appeared.
- g) Evaluate the cream on various evaluation parameters.

Evaluation Parameters

There are various evaluation parameters for the testing of safety and efficacy of the herbal multipurpose skincare cream as:-

- a) Physical parameters
- b) Wash ability test
- c) Phase separation test
- d) Irritancy test
- e) pH test
- f) Viscosity test

a) Physical parameters test:-

Examine physical characteristics such color, odor, texture, and consistency. Any changes or irregularities could suggest problems with formulation or stability.

b) Wash ability test:-

To determine if the product is washable, a tiny amount of produced cream is put to the topmost layer of the hand and then rinsed with tap water.

c) Phase separation test:-

To test the phase separation, cream was kept in an airtight container. It needs to be kept out of sunlight. After that, for 30 days, separation of phases was evaluated every 24 hours. Any alteration or separation of phases is tracked and documented.

d) Irritancy test:-

On the posterior part of the left hand, a 1 cm² area is indicated. Then cream was put to the skin's the outside, and time was taken. The skin is then evaluated for irritation during a period of 24 hours and reported.

d) pH test:-

Check the cream's pH level to verify it is within the acceptable range for skincare items. The optimum pH level for skincare products is normally between 4.5 and 6.5 for maintaining skin balance.

e) Viscosity test:-

Determine the cream's viscosity or thickness, as this influences spreadability and satisfaction with the product.

5. Result

By doing the above experiment we formulated 4 creams using ingredients like Turmeric, Neem, and Pineapple Extract Orange Peel & Aloe Vera. Out of all these formulations Formulation 4 (F4) was found to be best. It gave the best outcome all these creams produce multiple benefits for skin such as moisturizing, soothing, anti acne, anti aging etc.

All these formulations were evaluated on various parameters as pH, spreadability, irritancy etc. the result have been mentioned in tabular form above.

Evaluation of all above formulations is given below:-

a) **Physical Parameter test:-**

S.No.	Parameters	Formulation1	Formulation2	Formulation3	Formulation3
1.	Colour	Yellowish green	Yellowish green	Yellowish green	Yellowish green
2.	Odour	Pleasant	Pleasant	Pleasant	Pleasant
3.	Texture	Coarse	Smooth	Smooth	Very smooth
4.	State	Semisolid	Semisolid	Semisolid	Semisolid

b) **Wash Ability Test :-**

S.No.	Formulation	Wash ability
1.	F1	Easily washable
2.	F2	Easily washable
3.	F3	Easily washable
4.	F4	Easily washable

c) **Phase separation test :-**

S.No.	Formulation	Phase separation
1.	F1	No phase separation
2.	F2	No phase separation
3.	F3	No phase separation
4.	F4	No phase separation

d) **Irritancy test :-**

S.N o.	Formu lation	Irrita ncy
1.	F1	Not show n
2.	F2	Not show n
3.	F3	Not show n
4.	F4	Not show n

a) **pH test :-**

S.No.	Formulation	pH
1.	F1	5-6
2.	F2	6-7
3.	F3	6-7
4.	F4	5-6

6. Discussion

The discussion analyzes the data in light of the cream's composition, efficacy, and safety. It emphasizes the multipurpose herbal cream's potential as a comprehensive skincare treatment that addresses a wide range of skin issues using natural and herbal components. The conversation also delves into the findings' ramifications for the skincare business, highlighting the significance of botanical-based formulations and the growing desire for multipurpose skincare products.

Formulating and evaluating a multipurpose herbal skincare cream requires a comprehensive approach that includes ingredient selection, formulation optimization, efficacy testing, safety assessment, market analysis, regulatory compliance, and continuous improvement in order to effectively meet consumer needs and expectations.

7. Conclusions

The use of several substances such as turmeric, neem, aloe vera, and pineapple in the development of a multifunction cream showed remarkable action. These natural compounds are thought to be useful for treating a variety of skin issues, including dryness, pimples, and aging. Based on the previously mentioned evaluation results, F4 formulation was determined to be the best of the three formulations.

The current study focuses on the ability of botanical extracts as cosmetics. Multipurpose herbal creams are often made with a blend of plant extracts and oils that have long been used in medicine and skincare.

One of the primary advantages of herbal creams is that they frequently are free of toxic substances such as parabens, phthalates, and sulfates, which can cause skin irritation and other unpleasant effects. This makes them a better choice for persons with sensitive skin or allergies. Overall, multipurpose botanical creams may prove a useful addition to a skincare regimen for people seeking a natural and complete approach to skincare.

8. Summary

Skin care issues are now regarded as the most serious condition. There are several products available on the market, the bulk of them are synthetic items. Natural products are less dangerous than synthetic ones. It is vital to adjust some herbal formulations that provide good effects while reducing skin damage. Many natural herbs are useful against itching, rashes, acne, psoriasis, and skin care issues in both men and women. So we created a herbal disappearing cream to alleviate the dermatological problem. In this formulation, herbs such as neem and turmeric have antibacterial action. The ethanolic extracts of neem and turmeric are more effective in fighting microorganisms. Stearic acid determines the cream's consistency and gives it its pearlescent appearance. Glycerin (humectants) helps to keep the layers of skin moist, damp, cold, and provides an emollient effect. Potassium hydroxide provides fine texture and consistency without being harsh. Water is utilized as a solvent, while methylparaben is employed as a preservative to prevent degradation caused by microorganisms. The vanishing cream was created (o/w type emulsion) and assessed using invitro methods such as ph, spreadability, dye test, appearance, irritancy test, homogeneity, removal, and smear test, and the findings were good.

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