

Formulation and Evaluation of Polyherbal Vanishing Cream

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Abstract— In the present study polyherbal vanishing cream was formulated based on the antimicrobial, anti-inflammatory, skin soothing and anti-aging potential of Turmeric, Nutmeg, Alovera, Coconut oil.

All herbs were extracted by using the maceration method using ethanol as solvent. The formulated polyherbal vanishing cream was evaluated for various parameters, to determine its quality they obtained results within acceptable values.

Stability studies of the formulation was performed as per the guidelines of International Council for Harmonization (ICH) at different temperatures for a period of a month. Results have shown that formulations have good stability.

It can be concluded that the formulated polyherbal vanishing cream was elegant without side effects and can be utilized to protect, nourish, moisturizes, and smoothen the skin and also acts as antiacne formulation.

I. INTRODUCTION

Skin Health and Safety: Free from synthetic fragrances and harsh detergents, herbal soaps reduce the risk of irritation, allergies, and dryness. They often contain natural glycerin and essential oils that moisturize, rather than strip, the skin's natural oils.

Nutrient-Rich Ingredients: Ingredients like neem, turmeric, aloe vera, and coconut provide antioxidants that combat free radicals, promoting skin rejuvenation and treating conditions like acne or eczema.

Environmental Friendliness: Unlike petroleum-based synthetic soaps, herbal soaps are biodegradable and do not pollute waterways with chemical residues.

Aromatherapy Benefits: Natural essential oils used for scent (e.g., lavender, eucalyptus) provide calming or invigorating therapeutic effects.

Better pH Balance: Herbal soaps are often closer to the skin's natural, slightly acidic pH, which helps maintain the skin's protective barrier.

Vanishing creams are oil-in-water Emulsion-based topical drug delivery systems, characterized by high water content and stearic acid, which evaporate upon application, leaving a non-greasy, invisible, and moisturizing therapeutic film. They are ideal for delivering drugs for dermatological conditions, providing quick absorption, non-greasy application, and enhanced drug permeation through the skin.

Stearic Acid: Forms a protective, thin, non-greasy film on the skin.

Alkali (Potassium Hydroxide/Sodium Hydroxide): Saponifies part of the stearic acid, creating a soap that emulsifies the rest of the oil phase.

Humectants (Glycerin): Soften the skin and prevent cream evaporation in the container.

Water: Provides the cooling effect and constitutes the continuous phase.

II. DRUG DELIVERY CHARECTERS

Mechanism: Upon application, the water phase evaporates, increasing the concentration of the drug in the remaining film, which enhances the driving force for penetration into the stratum corneum.

Advantages: Non-staining, easy to wash off, and provides a matte finish, making them suitable for oily skin.

Applications: Primarily used for topical applications, including medicated creams (e.g., antiacne, anti-inflammatory), vanishing creams, and cosmetic foundations.

Evaluation Parameters: pH (viscosity, spread ability, drug content, irritation tests)

Importance of Herbal medicine:

Herbal medicine is the use of plants for medicinal purposes. Modern society recognizes herbalism as one of the alternatives systems of medicine.

According to WHO a vast majority of people about 80% in the developing world relies on herbal medicine for their primary health care needs. There are 89 plant derived drugs currently prescribed in the industrialized world.

Herbal cosmetics also known as natural cosmetics or ayurvedic cosmetics. With the beginning of the civilization, mankind had the magnetic dip towards impressing others with their looks. The best thing of the herbal cosmetics is purely made by the herbs and herbs does not have any side effect on the human body. Polyherbal formulations are now a day's one of the new drug delivery system in India. Using this concept we aimed to prepare the polyherbal vanishing cream formulation.

III. SKIN

The skin is the largest organ of the body and skin and its derivatives make up the integumentary system. The main function of the skin is protection of the body from external factors such as temperature, chemicals and bacteria.

The skin consists of a three main layers:

- Epidermis layer
- Dermis layer
- Subcutaneous or Hypodermic

Epidermis layer:-

Is the outermost layer of skin on the body and it protects the body from harm, keeps the body hydrated, produces new skin cells and contains melanin, which determines the colour of the skin.

Dermis layer:-

Is the dermis layer exist between the epidermis and hypodermis and middle layer of skin that contains connective tissue, hair follicles, blood vessels, lymphatic vessels and sweat glands.

Subcutaneous or Hypodermic:-

Is the deepest layer of skin and made up of fat and connective tissue. The hypodermis insulates the body, and bones and also regulates the body temperature.

Cosmetics For Skin

Cosmetics also known as make-up, are substances or products used to enhance the appearance or fragrance of the body. Many cosmetics are designed for use of applying to the skin. Herbal cosmetics also known as natural cosmetics or ayurvedic cosmetics. With the beginning of the civilization, mankind had the magnetic dip towards impressing others with their looks.

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Some Benefits of Vanishing Cream:-

- Moisturiser.
- Providing a smoothing, hydrating effect to the skin.
- The cream visibly reduces wrinkles and supports anti-ageing.
- Neutralises environmental damage

Recommended font sizes are shown in Table 1.

TABLE I

Sl.NO	DISCIP TION	PLANT-I TURMERIC	PLANT-II NUTMEG	PLANT-III ALOVER A	PLANT-IV COCONU T OIL
1.	Scientifi c name	Curcuma longa	Myristic afragrans	Aloebarbad ensis Miller	Cocosnucif era
2.	Family	Zingiberaceae	Myristica ceae	Liliaceae	Arecacea e
3.	Parts used	Root of curcuma longa	Fruit of Myristica fragrans	By cutting and scraping the self from the matrix of Aloevera	By Coconut
4.	Chemical Constitue nts	Curcumin, dimethoxycurc umin, curcuminoids, 3-6%of polyphenolic compounds.	alphapine ne, (20.16%), sabinene(1 4.45%), andbetapin ene (13.26 %) with great antimicro bial actions.	Aloevera contains more than 75 chemical constituents include, vitamin A,C,E&E12, zinc, copper,calciu m and enzymes called Amylase, catalase, etc	fatty acids, caprylic acid C -8:0 (8%), capric acid, C- 10:0,(7%), lauric acid C- 12:0,(49%) , myristic acid etc

IV. OBJECTIVES

The objective of this research work is to formulate vanishing cream containing natural extracts. Such as turmeric extract, aloe-Vera, nutmeg these natural extracts are rich in vitamins and minerals. Apart from providing soothing, hydrating effect and rejuvenating the skin, the formulated cream can have therapeutic value. Such as antiseptic, protective, anti-inflammatory, and in the treatment of dermatitis and skin allergies. This trio is effective for enhancing skin health, reducing acne, and treating hair issues.

Acne and Scar Treatment: Turmeric's anti-inflammatory properties fight acne-causing bacteria, while aloe vera reduces redness and moisturizes. A mixture of these with nutmeg helps in fading acne marks and controlling oily skin.

Skin Brightening and Anti-Aging: Turmeric inhibits melanin production (reducing pigmentation and tanning), and its antioxidant action combats aging. Aloe Vera provides deep hydration without clogging pores. Dark Spot/Blemish Remover.

V. MATERIALS AND METHODS:

All the materials used in formulation, evaluation and other experiments are listed below.

Distilled water is used in all experiments.

SL.NO	CHEMICALS	SUPPLIER/MANUFACTURER
1	Turmeric	A.G.M, College of Pharmacy, Varur
2	Nutmeg	A.G.M, College of Pharmacy, Varur,
3	Aloevera	A.G.M, College of Pharmacy, Varur,
4	Coconutoil	A.G.M, College of Pharmacy, Varur,
5	Stearicacid	Lobachemie Pvt Ltd
6	Potassium hydroxide	Titan Biotech Ltd
7	Glycerine	Oxford Lab Finechem LLP
8	Methyl paraben	Oxford Lab Finechem LLP

VI. METHODS OF EXTRACTION:

Extraction Of Termeric:

Preparation of the alcoholic extract of the crude drug by Take 5 grams of turmeric in an Erlenmeyer flask and then 100 ml of ethanol was added to it, then the Erlenmeyer flask was sealed with aluminum foil. This mixture was then left to soak for 5 days and filtered the alcoholic extract.

Evaluation Test For Alcoholic Extract Of Turmeric

Chemical Test:

Alcoholic extract of turmeric is treated with sulphuric acid it gives crimson red colour.

Tlc Method:

Sample preparation: Alcoholic extract of turmeric.

Stationary phase: silica gel G

Mobile phase:

Chloroform: Ethanol:

Glacial acetic acid (94:5:1)

Colour spot: Bright yellow fluorescent.

Extraction Of Coconut Oil:

Hot extraction method: Coconut oil is traditionally extracted by boiling coconut milk to evaporate the water, leaving the oil behind. The processes all the oils get separated from the mixture.

Evaluation Test For Coconut Oil:

1. Acid Value Test For Coconut Oil:

Weigh accurately 10 ml of coconut oil in a conical flask. The weight of the oil taken for the test and the strength of the alkali used for the titration shall be such that the volume of alkali required for the titration does not exceed 10 ml. Add 75 ml of freshly neutralized hot ethyl alcohol and about 2 to 3 drops phenolphthalein indicator solution. Boil the mixture for about Five minutes and titrate against 0.1N KOH alkali solution, shaking vigorously during titration.

Calculation:

Formula for Acid value

$$\text{Acid value} = \frac{\text{Molecular weight of KOH} \times \text{Normality of KOH} \times \text{volume of KOH}}{\text{Weight of sample}}$$

Weight
of
sample

Determination Of Total Phenolic Content Using The Folin-C Assay

Principle:

Phenols are first extracted in water and then reacted with the Folin-C reagent (a complex mixture of hetero poly phosphor tungstate- molybdate) in the presence of sodium carbonate to form a blue-colored complex. The intensity of the blue color is proportional to the amount of Reactive phenolic compounds in the sample. Phenolic content is determined by measuring the absorbance of the sample solution at 765 nm and comparing with a calibration curve using gallic acid as a standard. The method is able to quantify total polyphenolic content of about 5-100% (w/w) in the extracts. The method will also yield positive results for extracts containing ascorbic acid, amino acids, or sugars.

Preparation of Standard:

The total phenolic content in Extract (coconut oil) was determined by using Folin-C method by using U-V visible Spectra photometer. Various concentration of Gallic acid solutions (100, 200, 300, 400 µg/ml) were prepared in 10ml of test tube. 1ml of each concentration was added and to that 5ml of F-C reagent (10%) and 4ml of 7% Na₂CO₃ were added to get total volume 10ml. The blue colored mixture is Shaken well and the keep aside for 1 hour in the dark place. The Absorbance was measured at 760nm against blank. The average absorbance value obtained at different concentration of the Gallic acid was used to plot calibration curve.

Extraction Of Nutmeg:-

Preparation of the alcoholic extract of the crude drug by Take 5 grams of Nutmeg in an Erlenmeyer flask and then 100 ml of ethanol was added to it, then the Erlenmeyer flask was sealed with aluminum foil. This mixture was then left to soak for 5 days and filtered the alcoholic extract.

Evaluation Test For Alcoholic Extract Of Nutmeg:

Chemical test

Alcoholic extraction of nutmeg is treated with Sudan III develops red colour it show the presence of volatile oils.

TLC Method:

Sample preparation: alcoholic extract of Nutmeg
 Stationary phase: silica gel G

Mobile phase:
 Toluene: Ethyl
 acetate: Methanol
 (7:2.5:0.5) Colour
 spot: Bright yellow
 fluorescent.

Extraction Of Aloe vera

Aloe gel was extracted directly by cutting and scraping the gel from matrix of aloe vera.

Evaluation Test For Aloe Vera Gel:

1. Borax test:

Take 10ml of aloe vera solution and to add 0.5gm of borax and heat a green coloured produced in anthranol. Fluorescence indicating the presence of aloe is indicating emodin

2. Nitric acid test:

2ml of concentrated nitric acid is added to 5ml of aloe I solution. It gives pale yellow colour.

Evaluation of vanishing cream was performed by using different parameters: pH:

Weighed 10 mg of cream, dissolved it in 10ml of distilled water and its pH was measured with the help of digital pH meter.

1. Spread ability test:

500mg of the cream was sandwiched between 2 slides. A weight of 100gm was placed on upper slide. The weight was removed and extra formulation was scrapped off. The lower slide was fixed on board of apparatus and upper slide was fixed with non-flexible string on which 20gm load was applied. Time taken by upper slide to slip off was noted down. $S = \frac{m \times l}{t}$

Where, S-Spread ability, m-weight tied to upper slide. l- Length moved on glass slide, t-Time taken.

2. Irritancy test:

Marked an area (1sq. cm) on the left - hand dorsal surface. The cream was applied to the specified area and time was noted. Irritancy, erythema, edema, were checked if any for regular Intervals up to 24hrs and reported.

Homogeneity:

Homogeneity was tested via visual appearance.

Patch Test:

About 1g of material to be tested was applied directly to the hands of skin. The cosmetic to be tested was applied to an area of 1sq. m of the skin. The site of patch was inspected after 24 hrs. As there was no reaction the test was repeated three times. If reaction not observed on third application, the person may be taken as non – hypersensitive.

Smear type:

The test was conducted after the application of cream on the skin. The smear formed can be oily or aqueous in nature.

Emolliency Test:

Emolliency, slipperiness and amount of residue left after the application of fixed amounts of cream was checked.

Stability studies:

Stability studies were performed on the formulated cream by maintaining at room temperature for 20 days.

Formulation:

SL NO	Ingredients	F1	F2	F3
1	Turmeric extract	1.5ml	1ml	1ml
2	Nutmeg extract	1ml	1ml	1ml
3	Aloe vera gel	1.5ml	1ml	1.5ml
4	Coconut oil	1ml	2ml	1.5ml
5	Steric acid	4gm	4gm	4gm
6	Potassium hydroxide	0.28gm	0.28gm	0.28gm
7	Glycerine	0.8ml	0.8ml	0.8ml
8	Methyle parabin	0.02gm	0.02	0.02gm
9	Water	14.90ml	14.90ml	14.90ml

VII. RESULTS

Physical Evaluation Of Cream

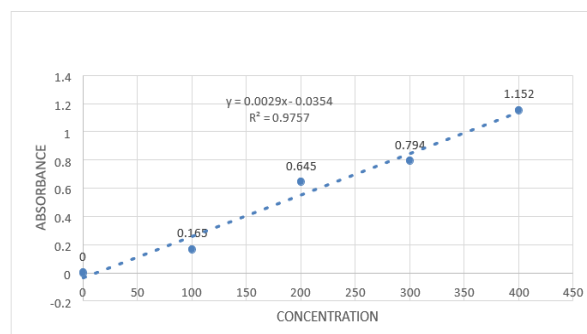
In this test cream was observed for colour, odor, texture and state.

SL NO	Parameters	F1	F2	F3
1	Colour	Dark yellow	Pale yellow	Light yellow
2	Odour	Pleasant	Pleasant	Pleasant
3	Texture	Smooth	Smooth	Smooth
4	State	Semisolid	Semisolid	Semisolid

Standard Calibration Curve:

Tabular column:

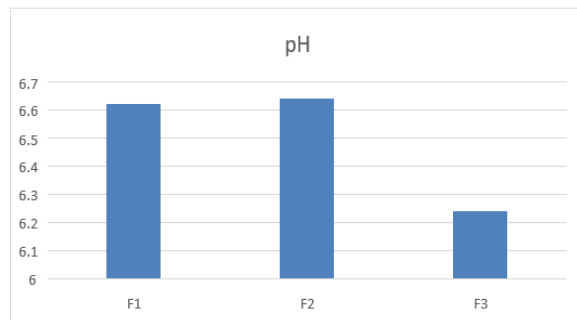
SL No	CONCENTRATION	ABSORBANCE
1	100	0.165
2	200	0.645
3	300	0.794
4	400	1.152



pH:

The pH was found to be,

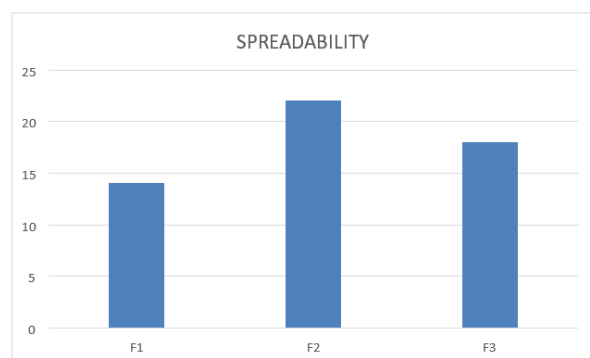
SL NO	FORMULATION	PH
1	F1	6.62
2	F2	6.64
3	F3	6.24



Spreadability:

The spread ability of the formulated cream was judged by spreading over slides.

SL NO	FORMULATION	SPREADABILITY
01	F1	14cm square.
02	F2	22cm square.
03	F3	18cm square.



Irritancy:

The Irritancy was found to be,

SL NO	Formulation	Irritant effect	Erythema	Edema
1	F1	Mild irritant	Mild erythema	Nil
2	F2	Mild irritant	Mild erythema	Nil
3	F3	Nil	Nil	Nil

Washability:

The Wash ability was found to be,

SL NO	Formulation	Washability
1	F1	Not easily washable
2	F2	Not easily washable
3	F3	Easily washable

Greasiness:

The Greasiness was found to be,

SL NO	Formulation	Greasiness
1	F1	Greasy
2	F2	Greasy
3	F3	No greasy

VIII. DISCUSSION

The formulation and evaluation of polyherbal vanishing cream were focus of the current work. This focuses on the potential of combining various herbal components to get a multipurpose effect on the skin for cosmetic purposes. The uses of cosmetics have been increased in the personal care system, and the bioactive ingredients in it influence the biological functions of skins.

The natural herbs used in the preparation of polyherbal vanishing cream was previously reported to have anti-fungal, anti-microbial, anti-inflammatory, skin-soothing activities for which it retards aging signs and pimple formation reduces wrinkles and protects from sunlight.

The prepared formulation is devoid of any phase separation activity, showed good spreadability and consistency during the entire study period. Various parameters, such as visual appearance, nature, and fragrance of the formulations further elaborated that there was no significant variation during the study period. These studies suggest that the polyherbal composition of extract and base of vanishing cream are stable and safe without side effects due to the presence of many natural compounds. Further studies are required for verifying the synergistic potential of selected scientifically Polyherbal vanishing cream formulation.



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IX. CONCLUSION

The vanishing cream of crude drugs with the best properties and having nutritional value was to be prepared by simple methods and less equipment are required. The prepared herbal cream also has antioxidant and antibacterial activity due to this it retards aging signs and pimple formation on the face. Further studies are required for this vanishing herbal cream. It was found that this type of formulation of the vanishing herbal cream was not prepared earlier. 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 polyherbal cream and the ingredients mixed can produce synergistic effect of the other.

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