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FORMULATION AND EVALUATION OF POLY HERBAL VANISHING CREAM

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ABSTRACT

The present study focuses on the formulation and evaluation of a polyherbal vanishing cream prepared using natural herbal ingredients for effective skin care and cosmetic application. The main objective of the study was to develop a stable, safe, non-greasy, and easily washable oil-in-water (O/W) emulsion cream with improved skin-softening and moisturizing properties. Herbal ingredients such as Turmeric, Honey, Black Mustard, and Almond were selected due to their antimicrobial, anti-inflammatory, antioxidant, nourishing, and skin-protective activities. The polyherbal vanishing cream was prepared by emulsification method using stearic acid, potassium hydroxide, sodium carbonate, glycerin, rose water, and alcoholic herbal extracts. Different formulations (F1–F4) were developed and evaluated for physicochemical and stability parameters including pH, appearance, smear type, viscosity, washability, irritancy test, and stability studies. The evaluation results showed that the prepared formulations possessed smooth texture, good spreadability, acceptable appearance, and easy washability. Among all formulations, formulation F4 showed better pH compatibility with skin, good viscosity, no irritation, and satisfactory stability compared to other formulations. The herbal ingredients used in the formulation contributed significantly toward skin nourishment, moisturization, and protection from skin dryness and environmental damage. The study concluded that the formulated polyherbal vanishing cream is safe, stable, cosmetically acceptable, and suitable for regular skin care use with minimal side effects compared to synthetic creams.

KEYWORDS: Polyherbal Vanishing Cream, Herbal Cosmetics, Oil-in-Water Emulsion, Turmeric, Honey, Almond, Black Mustard, Skin Moisturizer.

1. INTRODUCTION

Herbal extracts are now utilized in cosmetic products to increase beauty and appeal. Herbal cosmetics are divided into categories based on dosage form, such as cream, powder, soaps, solutions, etc., and the body part or organ to which they are to be administered, such as cosmetics for the skin, hair, nails, teeth, mouth, etc.[1] Creams are semisolid emulsions meant to be used on the skin or mucous membrane. The term "vanishing cream" refers to a moisturizer with a low fat content that vanishes into the skin. It leaves no trace, yet it softens the skin.[2]

The foundation of vanishing cream is o/w emulsion, which includes an aqueous and an oil phase.[3] Cream might be thick and sticky or water miscible and simple to wash away, depending on the ratio of water to grease. It may be the most frequently recommended topical medication. Most patients find it more user-friendly because it is less greasy, messy, and sticky.[4] Prior to the introduction of allopathic system of medicine, the healthcare of the globe had been protected by the traditional medical systems, which had developed over hundreds of years. The latter system gained immediate acceptance among users and now dominates healthcare since it employed contemporary biological and chemical knowledge for both diagnosis and therapy. Despite this, the contribution of traditional, usually polyherbal, formulations is growing because of the prevalent notion that these products are safe, whereas the modern, single-molecule-based medications used in the allopathic system can have significant negative effects.[5]

The body's first line of protection against outside exposure is the skin. The skin shows the clearest indicators of aging. However, aging skin may be harmful to a person's mental health, even if it doesn't pose a risk to one's health.[6] Many cases of premature aging are a direct or indirect consequence of how the skin interacts with the environment. Sunlight exposure is known to be a significant contributor to the etiology of the gradual undesirable alterations in the skin's look.[7] Ultraviolet radiation's harmful effects on oxygen species may be avoided with photochemoprotective substances.[8]

Because they are less expensive, easily accessible, and comprehensive, particularly in poor nations, traditional medicine has been promoted by both the World Health Organization

(WHO) and our own nation. Additionally, 8% of the world's population depends on medicinal plants as their primary source of healthcare. The value of traditional medicine is acknowledged by the entire world, including industrialized nations, and it has treatment methods, guidelines, and standards for ethnomedicine. Despite the use of several types of cream for wound healing, the pace of tissue regeneration is still seen to be restricted. We have consequently started the project to create and develop an herbal cream that will be effective and have a higher rate of tissue regeneration after conducting an in-depth examination of the pathogenesis and various traditional and alternative therapies for wound healing. The herbal cream that will be produced for wound healing will be an oil/water (O/W)emulsion type, which will be less oily, less greasy, and less sticky, thereby promoting patient adherence and benefiting all types of individuals in our society.[9]

Although vanishing creams were promoted as beauty creams, they were also used as a foundation for face powders. Particularly if the skin had been washed with soap and water, early free powders did not stick well.[10]

Applying a surface cream to the skin enhanced the powder's adherence. Although a cold cream might have been used, its greasy texture made it inappropriate for the majority of women unless their skin had a really low oil content. In general, vanishing creams were seen to be a superior solution because they didn't feel oily.

Because they were non-greasy, vanishing creams were ideal for women with oily skin. Since they were typically used during the day, the Pomeroy Company promoted its vanishing cream as a day cream. To aid powder adhere to the face, Pond's may have slightly increased the oil concentration of their vanishing cream, which they called a finishing cream. In his Society Makeup line, Max Factor went a step further and marketed colored vanishing cream as Makeup Foundation Cream in the colors White, Flesh, Rachelle, and Natural.[11]

The skin, which makes up 15% of an adult's total weight, is considered to be the largest component of the body's organs. The surface area of the skin is approximately 2 m2. The skin is often quite soft. But because of aging and exposure to heat and cold, sunbeams, pressure, and abrasion, dust, microbial infection, etc., skin might get thicker and rougher, losing its smoothness. One of the easiest organs to reach in the human body is the skin. Human skin comes in two varieties: one with hair and sebaceous glands, like the face and arms, and another without, like the soles of the feet and the palms of

the hands. They carry out a number of essential functions, such as thermoregulation, preventing excessive water loss, and defending against physical, chemical, and biological attackers. They consist of nails, hair, and glands. The skin is composed of three layers: the subcutaneous tissue, the dermis, and the epidermis. The epidermis is made up of a group of cells called keratinocytes. Its purpose is to produce keratin, which has a protective function. The dermis, which rests on the subcutaneous tissue or panniculus, is made up of collagen, a structural protein, and the intermediate layer dermis. It has tiny lobes of fat cells.[12,13,14,15,16]

1.2. STRUCTURE OF SKIN

The skin consisting of following layers

a) Epidermis

b) Dermal epidermal junction

c) Epidermal appendages

d) Dermis

e) Subcutaneous fat

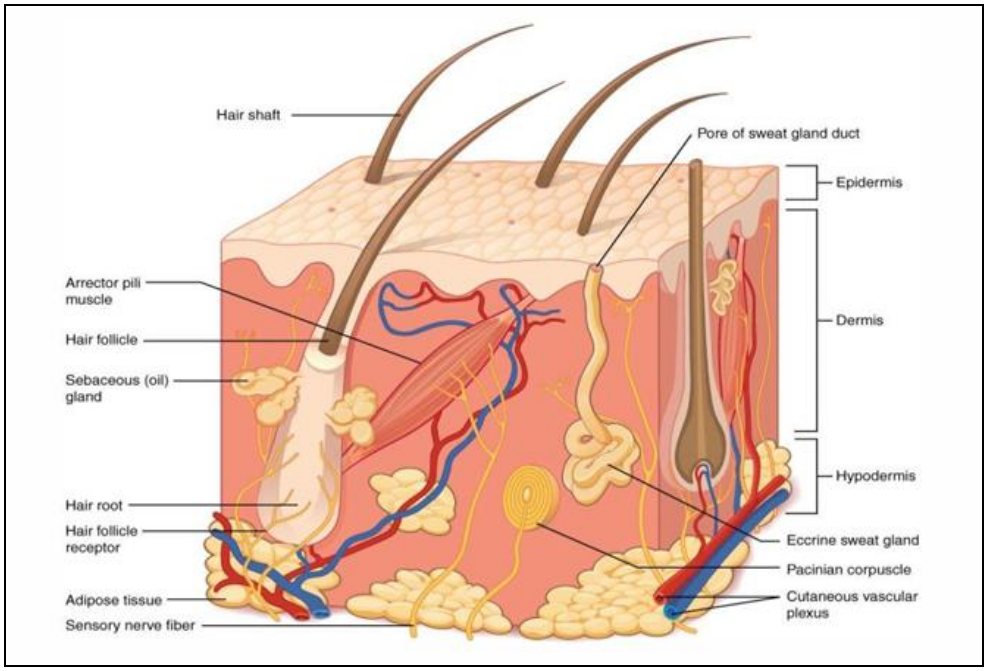

Fig. No. 1:- Structure of Skin.

1.3. FUNCTIONS OF SKIN[17,18,19,20]

- Protection
- Thermoregultion
- Heat Production

- Heat Loss
- Control Of Body Temperature
- Activity Of Sweat Glands
- Regultion Of Blood Flow Through The Skin
- Formation Of Vitamine D
- Cutaneous Sensation
- Absorption
- Excretion
- Protection: It act as a barrier against invasion by microorganism, chemical, physical agent, eg: mid trauma, uv light, dehydaration. The pigment melanin offers aome protection against halmful uv rays.
- Thermoregulation: Body remains constant at about 36. 8 egree celsous which is optimum for ezyme activity.
- Heat production: The body temperature rises when metabolic rate increases and vice versa. The energy is released during metabolic activity is in the form of heat and the most active organ produces the most heat. The organs are skeletal muscles, liver and digestive organ
- Heat loss: The small amount of heat in expired air, urine and faeces. Only the heat loss through the skin can be regulated.
- Control: of body temperature: The temperature regulating centre in the hypothalamus is sensitive to the temperature of circulating blood. This centre responds to decreasing the temperature by sending nerve impulses.
- Activity: of the sweat glands: When the body temperature is increased, the sweat glands secrete the sweat on to the skin surface.
- Regulation: of blood flow to the skin: The amount of heat loss to the skin depends largely on blood flow through dermal capillaries
- Formation of vitamin D: 7-dehydrocholesterol is a lipid based substance in the skin. Ultraviolet rays convert it into vitamin D.
- Cutaneous sensation: The dermis that are sensitive to touch, pressure, temperature or pain
- Absorption: The drugs in transdermal patches, eg:- hormone replacement therapy in menopause, nicotine as an aid to stop smoking
- Excretion: The skin is a minor excretory organ. Eg:- sodium chloride in sweat, urea when kidney function is impaired, aromatic substances like garlic and other spices.

1.4. CREAMS[21]

Creams are the topical preparations which can be applied on the skin. Creams are defined as viscous liquid or semi-solid emulsions of either the oil-in-water or water-in-oil type‖ dosage forms which consistency varies by oil and water. Creams are used in cosmetic for further purposes like cleansing, beautifying, improving appearances, protective or for therapeutic function. These topical formulations are used for the localized effect for the delivery of the drug into the underlying layer of the skin or the mucous membrane. These products are designed to be used topically for the better site specific delivery of the drug into the skin for skin disorders. Creams are considered as a pharmaceutical product as they are prepared basedon techniques developed in the pharmaceutical industry; unmedicated and medicated creams are highly used for the treatment of various skin conditions or dermatoses. Creams can be ayurvedic, herbal or allopathic which are used by people according to their needs for their skin conditions. They contain one or more drugs substances dissolved or dispersed in a suitable base. Creams may be classified as o/w or w/o type of emulsion on the basis of phases. The term ‗cream' has been traditionally applied to semisolid formulated as either water-in-oil (e.g.: cold cream) or oil-in-water (e.g.: vanishing cream).

1.5. TYPES OF SKIN CREAMS

They are divided into two types

1. Oil-in-Water (O/W) creams which are composed of small droplets of oil dispersed in a continuous phase, and an emulsion in which the oil is dispersed as droplets throughout the aqueous phase is termed an oil-in-water (O/W) emulsion.
2. Water-in-Oil (W/O) creams which are composed of small droplets of water dispersed in a continuous oily phase. When water is the dispersed phase and an oil the dispersion medium, the emulsion is of the water-in-oil (W/O) type

1.7. VANISHING CREAM[22,23]

Definition

They are oil in water type of emulsions. When applied on the surface of the skin, they spread as thin oil less film which is not visible to the naked eye. Hence, they are called as vanishing creams.

It is prepared by the process called emulsification of stearic acid and water by using alkalies like potassium hydroxide borax, sodium hydroxide etc. Stearic acid is one of the main ingredients in vanishing cream which provides a pearly white shine to the cream. Vanishing

cream when formulated by using herbal extract of turmeric and neem gives more action and less side effects.

1.6. CLASSIFICATION OF CREAMS

All the skin creams can be classified on different basis:

1. According to function, e. g. cleansing, foundation, massage, etc.
2. According to characteristics properties, e. g. cold creams, vanishing creams, etc.
3. According to the nature or type of emulsion

Based on function

1. Make-up cream (o/w emulsion).

- Vanishing creams.
- Foundation creams.

2. Cleansing cream, Cleansing milk, Cleansing lotion (w/o emulsion)
3. Winter cream (w/o emulsion) a) Cold cream or moisturizing creams.
4. All-purpose cream and general creams
5. Night cream and massage creams
6. Skin protective cream.
7. Hand and body creams.

5. ADVANTAGE AND DISADVANTAG

Advantages

- It is used as a skin moisturiser and cleanser
- It is helpful for skin softening and providing shiny texture to the skin
- It is used as a base on the skin before the application of any other cosmetics because it vanishes from skin surface once applied
- It is used to remove pimple and scares
- It is helpful to preventing skin chapping or roughening

Disadvantages

- Vanishing creams are note to be used all the time.
- It does not remove scars, not meant to be used as complexing and Anita cream.
- It should be removed or washed of when note intended to be kept on the skin.
- These products have stability issues and hence should be stored at prescribed conditions.

- It might cause skin alleges reaction-itching, peeling, Irritation, reddening due to the presence of compound in the cream.

6. DRUG AND EXCIPIENT

6.1. Turmeric[24]

Fig. No. 2: Turmeric.

Synonym

Haldi, Indian saffron, Curcuma.

Biological Source

Turmeric is a flowering plant of the ginger family, Zingiberaceae.

Family

Zingiberaceae.

Chemical Constituent

Turmeric include diarylheptanoids, a class including numerous curcuminoids, such as curcumin, demethoxycurcumin, and bisdemethoxycurcumin.

Uses

- Antiseptic.
- Anti-inflammatory.
- Antioxidant.
- Skin brightening agent.
- Helps in wound healing and acne reduction.

- **6.2. Honey[25]**

Fig. No. 3:- Honey.

Synonym

Madhu, Bee honey.

Biological source

Honey is the saccharine liquid prepared from the nectar of the flowers by the hive-bee Apis mellifica and bees of other species of Apis.

Family

Apidae.

Chemical constituents

Honey consists chiefly a mixture of dextrose and laevulose (70-80%) and water (14-20%). contains sucrose (1.2-4.5), 2) Dextrin (0.06-1.25%), volatile oil, pollen grains enzymes 3) Vitamins 4) Amino acids 5) Proteins 6) Colouring matters, etc.

Uses

- Moisturizing agent.
- Antibacterial.
- Soothing and nourishing effect on skin.
- Promotes wound healing.
- Improves skin softness.

6.3. Black Mustard[26]

Fig. No. 4: Black Mustard.

Synonym

Rai, Sarso, Black mustard.

Biological Source

These are dried ripe seeds of Brassica nigra Linn., Koch or Brassica juncea Linn, Czern & Coss, belonging to family Cruciferae.

Family

Cruciferae.

Chemical Constituents

The black mustard seed contains a thioglycoside i.e., a β-glucopyranoside termed as sinigrin. It is also known as myronate potassium or allyl glucosinolate 2) Honey Biological source Honey is the saccharine liquid prepared from the nectar of the flowers by the hive-bee Apis mellifica and bees of other species of Apis. Family Apidae.

Uses

- Paste Or Sauce Made from Mustard Seeds Used As A Condiment.
- Mustard plant, one of several plants, having seeds that are used for the condiment.
- Mustard seed, seeds of the mustard plant used in cooking.

6.4. Almond[27]

Fig. No. 5:- Almond.

Synonym

Badam, Sweet almond.

Biological Source

Comprises of the dried ripe kernels of Prunus amygdalus

Batsch. Var amara (DC) Focke; Prunus communis Arcang., P. amygdalus Bail; and Amygdalus communis Linn., belonging to Family Rosaceae.

Family

Rosaceae.

Chemical Constituents

Contains 32% monounsaturated oleic acid (an omega-9 fatty acid), 13% linoleic acid (a polyunsaturated omega-6 essential fatty acid), and 10% saturated fatty acid (mainly as palmitic acid, USDA link in table). Linolenic acid, a polyunsaturated omega-3 fat, is not present (table). Almond oil is a rich source of vitamin E.

Uses

- Bitter almonds are employed as sedative due to HCN content.
- The fixed oil of bitter almond finds its use as demulscent in skin-lotion.
- It is also employed in the preparation of amygdalin and bitter almond water.

7. METHOD OF PREPARATION

MATERIALS[28]

Stearic acid , potassium hydroxide , sodium carbonate , Alcoholic, Ethanol, Glycerine , Water, Turmeric, Honey, Almond seed, Mustard seed powder.

1) Preparation of Polyherbal Vanishing Cream

All above mentioned powdered Crude drugs of were taken into the conical flask and then ethanol was added to it, then the conical flask was capped with aluminium foil. Then this mixture was placed for maceration for 5 days.

2) Preparation Of Oil Phase

Stearic acid, potassium hydroxide, sodium carbonate was taken into one porcelain dish and this mixture was melted at 70^0c.

3) Preparation Of Aqueous Phase

Alcoholic extract of crude drugs mentioned in step 1, Glycerine. Water were taken into another porcelain dish and heated this mixture at 70^0c.

4) Addition Of Aqueous Phase To Oil Phase

To Oil Phase Cent The The aqueous phase was added to the oil Phase with continuous stirring at 70^0c. Now, once the transfer was completed it was allowed to come at room temperature, all the while being stirred. Perfume (Rose Water) was added at last just before

the finished product was transferred to suitable container. Then cream was evaluated for various physical parameters.

Table No. 1: Formulation Table.

SR NO.	INGREDIENTS	F1	F2	F3	F4
1.	Stearic acid	3 gm	3 gm	3 gm	3 gm
2.	Potassium hydroxide	0.20 gm	0.20 gm	0.20 gm	0.20 gm
3.	Sodium carbonate	0.10 gm	0.10 mg	0.10 mg	0.10 gm
4.	Alcohol Extract	2 ml	2 ml	2 ml	2 ml
5.	Glycerine	1.5ml	2. ml	1.5 ml	1.5 ml
6.	Turmeric	0.35 gm	0.35 gm	0.30 gm	0.35 gm
7.	Honey	0.8 gm	0.8 gm	0.8 gm	1 gm
8.	Almond seed powder	0.45 gm	-	0.45 gm	0.30 gm
9.	Mustard seed powder	0.15 gm	0.15 gm	-	0.15 gm
10.	Sodium benzoate	0.20gm	0.20 gm	0.20gm	0.2gm
11.	Rose water	2.ml	2.ml	2.ml	2.ml
12.	Distilled water	q.s	q.s	q.s	q.s
	Total	20 gm	20 gm	20 gm	20 gm

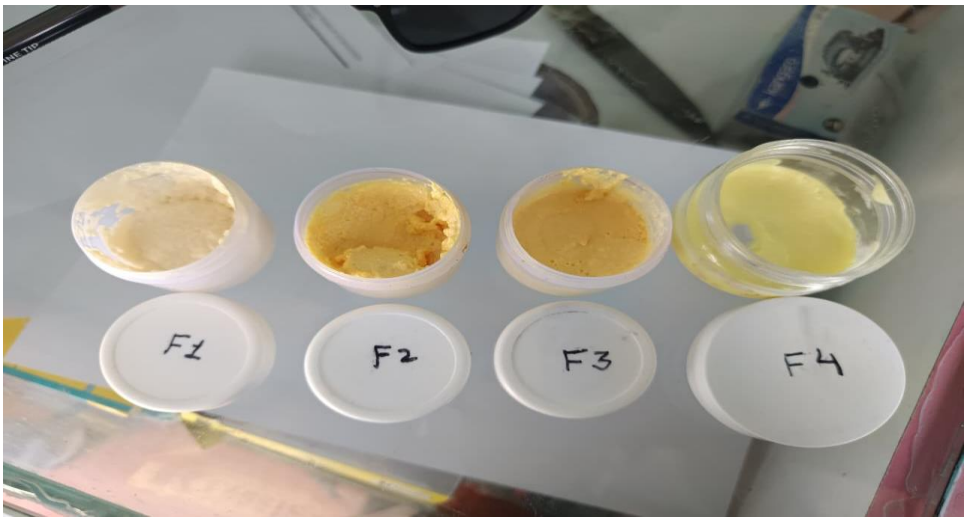

Fig. No. 6:- All batches of Vanishing Cream (F1-F4).

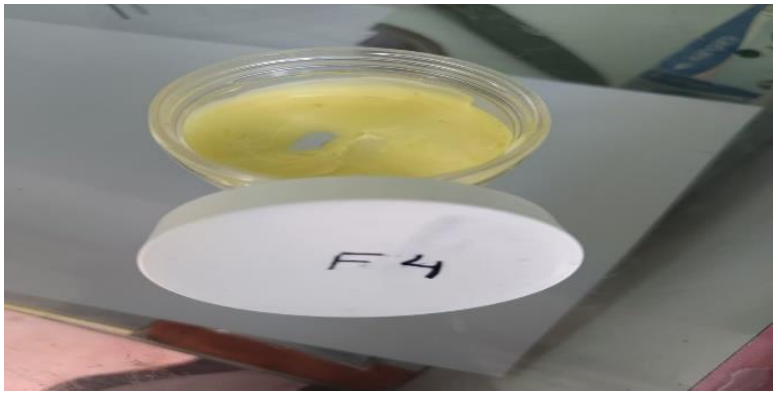

Fig. No. 7: Final Product (F4).

8. EVALUATION PARAMETER

1. pH: The pH meter was calibrated and measured the pH by placing in the beaker containing 20 mg of the cream.[29]

2. Appearance: The appearance of the cream was found by observing its color, opacity, etc.[30]

3. Smear Type: The test was conducted after the application of the cream on the skin; the smear formed was oily or aqueous in nature.[31]

4. Viscosity: The viscosity determinations were carried out using a Brookfield Viscometer (DV II+ Pro model) using spindle number S-64 at a 20 rpm at a temperature of 25 ºC. The determinations were carried out in triplicate, and the average of three readings was recorded.[32]

5. Irritancy Test: The cream was applied on the left hand dorsal side surface of 1 sq.cm and observed in equal intervals up to 24 h for irritancy, redness, and edema.(33)

Fig. No. 8: Irritancy Test.

6. Wash Ability: The removal of the cream applied on the skin was done by washing under tap water with minimal force to remove the cream.[34]

7. Stability studies: Accelerated stability studies were performed on all the formulations by maintaining at room temperature for 20 days with a constant time interval. During the stability studies, the parameters like homogeneity, viscosity, physical changes, pH, and type of smear were studied.[35]

Fig. No. 9: Stability studies.

1. p:- The pH of the cream is determined using a digital pH meter to ensure compatibility with skin and to avoid irritation. The ideal pH for skin creams is near neutral.

Table No. 2:- pH.

Sr No.	Formulation	PH
1.	F1	6.1-6.5
2.	F2	6.2-6.4
3.	F3	3.3-4.5
4.	F4	5-5.5

2. Appearance:- The prepared cream is visually examined for color, odor, texture, homogeneity, and presence of any lumps or phase separation.

Table No. 3:- Appearance.

Sr No.	Formulation	Colour	Odour	Texture
1.	F1	White	Pleasant	Smooth
2.	F2	Light Yellow	Pungent	Smooth
3.	F3	Light Yellow	Pleasant	Smooth
4.	F4	Yellow	Pleasant	Smooth

3. Smear Type:- A small quantity of cream is applied on the skin or glass slide to check the nature of smear, spreadability, and after-feel of the formulation.

Table No. 4:- Smear Type.

SR.No	Formulation	Smear Types
1.	F1	Non-greasy
2.	F2	Slightly greasy
3.	F3	Smooth
4.	F4	Smooth and non-greasy

4. Viscosity:- Viscosity is measured using a viscometer to determine the consistency and flow property of the cream.

Table No. 5:- Viscosity.

Sr. No	Formulation	Viscosity
1.	F1	1896
2.	F2	4897
3.	F3	3502
4.	F4	2090

5.Irritancy Test:- The cream is applied on the skin for a specific period to observe any redness, itching, swelling, or irritation.

Table No. 6:- Irritancy Test.

Sr No.	Formulation	Irritation
1.	F1	No Irritation
2.	F2	Irritation
3.	F3	Slightly Irritation
4.	F4	No Irritation

6. Washability:- Washability is evaluated by applying the cream on the skin and checking the ease of removal with water.

Table No. 7:- Washability.

Sr No.	Formulation	Washability
1.	F1	Washable
2.	F2	Washable
3.	F3	Washable
4.	F4	Easily Washable

7. Stability studies:- The formulation is stored at different temperature conditions and observed for changes in color, odor, pH, consistency, and phase separation over time.

Table No. 8: Stability studies.

Sr. No	Formulation	Observation
1.	F1	Stable
2.	F2	Stable
3.	F3	Stable
4.	F4	Slightly Stable

9. RESULT AND DISCUSSION

The present study was carried out to formulate and evaluate a polyherbal vanishing cream using natural herbal ingredients such as Turmeric, Honey, Almond, and Black Mustard. Four formulations (F1, F2, F3, and F4) were prepared and evaluated for different physicochemical parameters including pH, appearance, viscosity, smear type, irritancy, stability, and washability. The obtained results confirmed that the prepared formulations possessed satisfactory cosmetic and pharmaceutical properties suitable for topical application.

The evaluation results of all formulated batches indicated that formulation F4 showed the most satisfactory performance among all the prepared formulations. F4 exhibited acceptable pH suitable for skin application, good viscosity, smooth texture, non-greasy smear type, easy washability, and no signs of skin irritation during the irritancy test. In addition, the formulation remained stable during the stability study without any significant change in

appearance, consistency, or phase separation. Based on the overall evaluation parameters, formulation F4 was considered as the optimized batch and selected as the final formulation of the polyherbal vanishing cream. Therefore, F4 can be concluded as a stable, safe, effective, and suitable formulation for topical skin application and cosmetic use.

10. CONCLUSION

The present study successfully formulated and evaluated a polyherbal vanishing cream using natural herbal ingredients such as Turmeric, Honey, Black Mustard, and Almond along with suitable excipients. The cream was formulated as an oil-in-water (O/W) emulsion to obtain a non-greasy, smooth, and easily washable preparation suitable for topical application and daily skin care use. The main aim of the study was achieved by developing a stable herbal cream with good cosmetic acceptability and skin-friendly properties.The prepared formulations were evaluated for various physicochemical parameters including pH, appearance, smear type, viscosity, irritancy, washability, and stability studies. The results indicated that all formulations possessed smooth texture, acceptable appearance, and good spreadability. The washability test confirmed that the creams could be removed easily from the skin without leaving excessive oily residue. Stability studies showed that the formulations remained physically stable during the study period without significant changes in consistency, appearance, or pH.Among all the formulations, formulation F4 showed comparatively better performance with acceptable skin pH, good viscosity, non-irritant nature, and easy washability, making it more suitable for topical application. The irritancy study demonstrated that the prepared cream was generally safe for skin use with minimal or no irritation.The herbal ingredients used in the formulation played an important role in improving skin health and cosmetic properties. Turmeric provided anti-inflammatory, antimicrobial, and antioxidant effects, while Honey acted as a natural moisturizer and skin-conditioning agent. Almond contributed nourishing and emollient properties, and Black Mustard helped improve skin texture and circulation. Glycerin enhanced moisture retention and improved skin hydration.

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