



ISSN: 2348-6295

## Journal of Pharma Creations (JPC)

JPC | Vol. 13 | Issue 2 | Apr - Jun -2026

www.pharmacreations.com

DOI: <https://doi.org/10.61096/jpc.v13.iss2.2026.189-198>

### Design and Evaluation of Poly Herbal Vanishing Cream

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Published on:  
11.06.2026  
Published by:  
Futuristic  
Publications  
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**Abstract:** The purpose of the present research work was to formulate and evaluate vanishing herbal cream. Herbal creams offer several advantages over other creams. The majority of existing creams which has prepared from drugs of synthetic origin and give extras fairness to face, but it has several side effects such as itching or several allergic reactions. Herbal creams do not have any of these side effects, without side effects it gives the fairness look to skin.

Herbs are used in vanishing cream like fruits of muskmelon, cucumber and aloe-vera. Synthetic compounds such as stearic acid, cetyl alcohol, isopropyl, potassium hydroxide, preservative and perfume are used in formulation of vanishing cream.

The physical parameters such as pH, homogeneity by visual and by touch, appearance, wash ability, consistency, Patch test, irritancy test accelerated stability studies, type of smear were determined. Further studies are needed to investigate this formulation for its performance

**Keyword:** Herbal extracts, Vanishing cream, Evaluation, Topical Drug Delivery, Aloe Vera, Cucumber, Muskmelon, Emollients, Moisturizing Agents, Skin Hydration and Oil In Water Emulsion.

#### Introduction

Topical drug delivery systems involve the application of drugs or formulations directly onto the skin to produce a local effect. These systems are widely used in both pharmaceutical and cosmetic fields due to their ease of application and effectiveness. One of the major advantages of topical delivery is that it bypasses first-pass metabolism, thereby improving drug availability at the site of action. It also minimizes systemic side effects, enhances patient compliance, and allows for targeted therapy. Topical formulations are available in various forms such as creams, ointments, gels, lotions, and emulsions, among which creams are the most preferred due to their non-greasy nature and better patient acceptability.<sup>[22]</sup>

The skin is the largest organ of the human body and serves as a protective barrier against external environmental factors. It consists of three main layers: the epidermis, dermis, and hypodermis. The epidermis is the outermost layer and is primarily responsible for protection. The dermis lies beneath it and contains blood vessels, nerves, and connective tissues, playing a vital role in nourishment and temperature regulation. The hypodermis, or subcutaneous layer, provides insulation and acts as a shock absorber. The outermost layer of the epidermis, known as the stratum corneum, is rich in lipids and plays a key role in controlling the penetration of substances through the skin. Lipophilic substances are more easily absorbed compared to hydrophilic substances due to this lipid-rich structure.

Vanishing creams are a type of topical cosmetic formulation that are widely used for skincare purposes. These creams are oil-in-water (O/W) emulsions that get rapidly absorbed into the skin without leaving a greasy residue, giving a smooth and matte finish. The term “vanishing” refers to their ability to disappear quickly upon application. They are commonly used as moisturizers and also serve as a base for

makeup due to their lightweight and non-sticky nature. Vanishing creams help in maintaining skin hydration, improving skin texture, and providing a soothing effect, making them suitable for daily use.<sup>[21]</sup>

In recent years, there has been a significant shift towards the use of herbal and natural products in cosmetics. This is mainly due to increasing awareness about the potential side effects of synthetic ingredients such as skin irritation, allergies, and long-term damage. Herbal cosmetics utilize plant-based ingredients that are considered safer, more biocompatible, and environmentally friendly. These products are derived from traditional medicinal systems and are gaining popularity due to their holistic approach to skincare.

Herbal vanishing creams incorporate natural ingredients such as aloe vera, cucumber, and muskmelon, which are known for their beneficial effects on the skin. Aloe vera possesses moisturizing, anti-inflammatory, and healing properties, making it useful for soothing irritated skin and promoting hydration. Cucumber has cooling and astringent properties that help reduce inflammation, tighten pores, and improve skin tone. Muskmelon is rich in vitamins and antioxidants, which nourish the skin and protect it from oxidative damage. These natural ingredients work together to enhance skin health and provide a refreshing effect.

In addition to herbal components, vanishing creams also contain other essential ingredients such as stearic acid, cetyl alcohol, potassium hydroxide, glycerine, and preservatives. Stearic acid acts as an emulsifying agent and helps maintain the structure of the cream. Cetyl alcohol provides stability and improves texture, while glycerine acts as a humectant that retains moisture in the skin. Potassium hydroxide is used to adjust the pH and aid in emulsification. The ideal pH of a vanishing cream should be close to the natural skin pH (approximately 4.5–6.5) to ensure compatibility and avoid irritation.

Herbal vanishing creams offer several advantages, including better skin compatibility, reduced side effects, moisturizing properties, and a non-greasy feel. They are suitable for all skin types and can be used regularly for maintaining healthy and radiant skin. However, they may have certain limitations such as the possibility of mild allergic reactions in some individuals and a relatively shorter shelf life compared to synthetic formulations.

Overall, herbal vanishing creams represent a combination of traditional herbal knowledge and modern formulation techniques. They provide an effective, safe, and natural approach to skincare, meeting the increasing demand for herbal cosmetic products.

### **Classification of Topical Formulations available are**<sup>[20]</sup>

Solid preparations: Topical Powders, Plasters, Ointments, Poultices.

Semi solid preparations: Creams, Poultices, Gels, Pastes, Ointments.

Liquid preparations: Liniment, Lotions, Solution, Tinctures, Emulsions, Suspensions, Paints.

Miscellaneous Preparations: Transdermal drug delivery systems, Tapes, & Gauzes, Rubbing alcohols, Liquid Cleanser, & Topical aerosol

### **Advantages**

Avoidance of first pass metabolism

Self – medication

Convenient and easy to apply

Better patient compliance

Drug delivered selectively to a specific site

There will no intensive sonication

Easily to terminate the medications

### **Disadvantages**

Excessive irritability of the skin

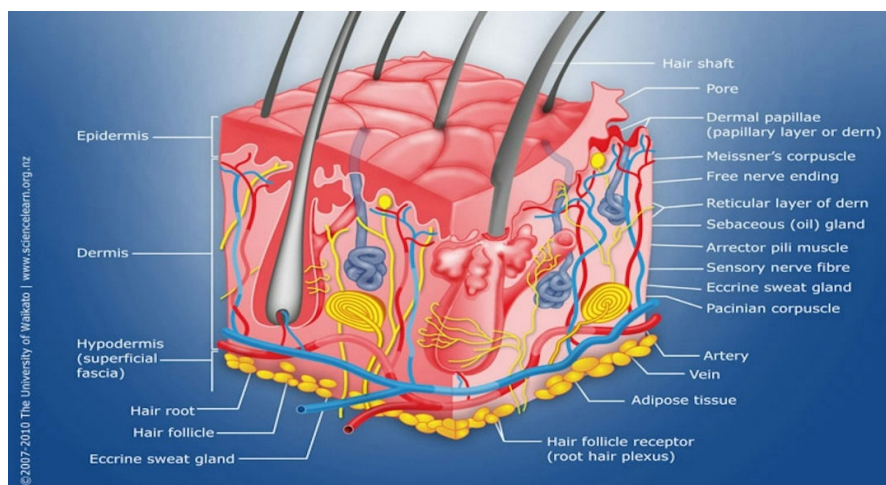
The risk of an allergic response

Poor permeability of some drugs through the skin

Enzyme in epidermis may denature the drugs.<sup>[1]</sup>

## Physiology of Skin <sup>[2]</sup>

Skin is the largest organ in the body. It consists of three layers. The outer layer is Called epidermis, the middle layer is dermis and the inner most layer is hypo-dermis or subcutaneous



**Structure of the skin**

### Epidermis

Consists of epithelial cells. Among these cells, both living cells and dead cells can be found. These new cells at the bottom of epidermis divide fast and push the older cells upward. The epidermis does not have any direct source of blood veins to provide nutrition. It takes its nutrients from the diffusion of necessary molecules from a rich vascular network in the underlying dermis. Epidermal cells are connected very strongly by desmosomes.

Desmosomes are in contact with the intracellular keratin folates. Keratin folates produce keratin.

### Dermis

Dermis is positioned under epidermis and is characterized by lots of elastin fibres that provide the stretching ability as well as lots of collagen that provides the strength to the skin. Blood vessels found in dermis provide nutrients for both dermis and epidermis. Dermis also plays a major role in temperature regulation. Nerves present there are responsible for pressure and pain sensations. Dermis has a thickness of 3-5 mm. In addition to elastin fibres, blood vessels and nerves, lymphatic cells and sweat glands are parts of dermis.

### Hypodermis\subcutaneous glands

The hypo-dermis or subcutaneous layer, is the inner most layer of the skin. It performs like an absorber to any shock drawn towards the body and facilitate insulation. Hypo-dermis is consisting of different Cells including connective tissue, adipose tissue, fibro-blast, blood vessels and macrophage. <sup>[3]</sup>

### Methodology

The Chemicals that were AR/LR grade or the best possible grade available were used as supplied by manufacturer without further purification or investigation.

### Ingredients <sup>[4]</sup>

**Table List of Instruments**

SINO	EQUIPMENTS	MODEL/COMPANY
1	Electronic balance	Systronics, Gujarat
2	Digital PH Meter	Aczet PVT, Ltd
3	Viscometer	Brookfield DV-II+PRO
4	Digital apparatus	Lab india pvt Ltd, Navi Mumbai

**Formulation Table** <sup>[6]</sup>

SI.NO	INGREDIENTS	F1	F2	F3	F4
1	Muskmelon Extract	1.0 ml	1.2 ml	1.3ml	1.5 ml
2	Cucumber Extract	1.0 ml	1.2 ml	1.3 ml	1.5 ml
3	Aloe vera Extract	1.0 ml	1.2 ml	1.3 ml	1.5 ml
4.	Stearic acid	3g	4g	2.5g	3.75 g
5.	Cetyl alcohol	0.1g	0.1g	0.1g	0.125g
6.	Sodium Carbonate	0.1g	0.1g	0.1g	0.125g
7.	Potassium hydroxide	0.1g	0.11g	0.1g	0.125g
8.	Glycerine	1.2 ml	1.3 ml	1.4ml	1.5 ml
9.	Methyl paraben	0.1g	0.11g	0.1g	0.125g
10.	Distilled Water	14.4 ml	15 ml	16.5ml	18.125ml
11.	Rose Water	Q.S	Q.S	Q.S	Q.S

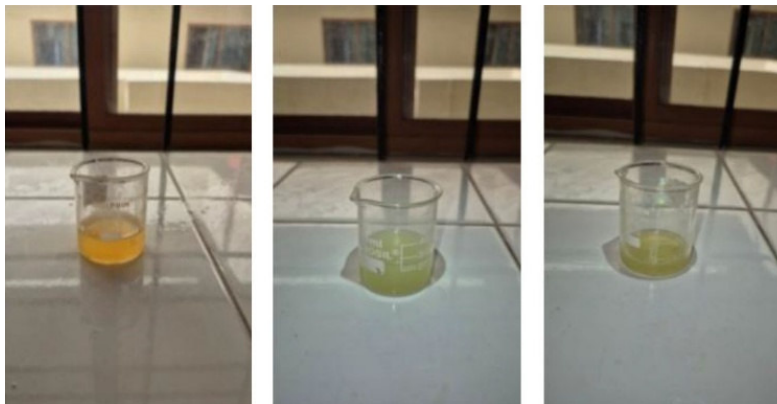
**Method of Preparation of Herbal Vanishing cream** <sup>[7]</sup>**Step 1: Preparation of Herbal Extracts**

Take fresh muskmelon, aloe vera, and cucumber.

Wash thoroughly and cut into small pieces.

Grind separately and filter using muslin cloth.

Collect clear extracts and keep aside.

**Figure:** Preparation of Extract**Step 2: Preparation of oil phase**

Take Stearic acid and Cetyl alcohol in a beaker.

Heat on a water bath at 70-75° C until completely melted.

**Step 3: Preparation of aqueous phase: -**

In another beaker, take distilled water and add:

Glycerine

Methyl paraben (dissolved properly)

Heat this mixture to 70-75°C.

#### **Step 4: Preparation of Alkali solution**

Dissolve potassium hydroxide (KOH) in a small amount of distilled water'

Warm slightly to ensure complete dissolution.

#### **Step 5: Emulsification**

Slowly add the KOH solution into the melted oil phase with constant stirring.

Then gradually add hot aqueous phase into the oil phase.

Stir continuously to form a smooth emulsion.

#### **Step 6: Addition of Herbal Extract**

Allow the temperature to drop to about 40° C.

Add the prepared;

Muskmelon extract

Aloe vera extract

Cucumber extract

Mix thoroughly.

#### **Step 7: Cooling and finishing**

Continue stirring until the cream cools and thickens.

Check for smooth texture and uniformity.

#### **Step 8: Packaging**

Transfer the prepared cream into clean, dry containers.

Store in a cool place.

#### **Evaluation of Herbal Vanishing Cream <sup>[9]</sup>**

The evaluation of herbal vanishing cream is a critical step to ensure its quality, efficacy, stability and safety. This process involves several physicochemical, microbiological and performance-based tests. Here's a comprehensive overview

1. Determination of organoleptic properties:

The appearance of the cream was judged by its colour, pearlescence, roughness and graded.

2. pH:

The pH meter was calibrated and measured the

pH by placing in the beaker containing 20mg of the cream.

#### **Determination of homogeneity: <sup>[10]</sup>**

The formulations were tested for the homogeneity by visual appearance and by touch.

#### **Spreadability test: <sup>[19]</sup>**

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 20g load was applied. Time taken by upper slide to slip off was noted down.

$S = m \times l / t$  Where,

S – Spread ability

m- Weight tied to upper glass slide. l- Length moved on a glass slide

t- Time taken.

The determinations were carried out in triplicate and the average of three readings was recorded.

### **Dye test:** <sup>[18]</sup>

The test was done by mixing the cream with red dye then place the drop of cream was placed on a slide and covered with cover slip, observed under microscope. If the dispersion phase appears in red coloured globules the cream was o/w type. If the continuous phase appears red colour the cream was w/o type.

### **Homogeneity** <sup>[11]</sup>

The test was done by physical touch with hands.

### **Patch Test**

About 1-3g of material to be tested was placed on a piece of fabric or funnel and applied to the sensitive part of the skin e.g. skin behind ears. The cosmetic to be tested was applied to an area of 1sq.m. of the skin. Control patches (of similar cosmetic of known brand) were also applied. The site of patch is inspected after 24 hrs. As there was no reaction the test was repeated three times. As no reaction was observed on third application, the person may be taken as not hypersensitive.

### **Appearance** <sup>[17]</sup>

The appearance of the cream was found by observing its colour, opacity, etc.

### **Smear type**

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

### **Determination of emollience** <sup>[16]</sup>

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

### **Determination of viscosity** <sup>[15]</sup>

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°C. The determinations were carried out in triplicate and the average of three readings was recorded.

### **Wash ability** <sup>[14]</sup>

The removal of the cream applied on skin was done by washing under tap water with minimal force to remove the cream.

### **Irritancy test** <sup>[13]</sup>

The cream was applied on left hand dorsal side surface of 1sq.cm and observed in equal intervals up to 24hrs for irritancy, redness and edema.

### **Accelerated stability studies:** <sup>[12]</sup>

Accelerated stability studies were performed on all the formulations by maintaining at room temperature for 20 days with constant time interval. During the stability studies the parameters like homogeneity, viscosity, physical changes, pH and type of smear were studied. <sup>[3][4][5]</sup>

## **Results**

Evaluation Studies for Herbal Vanishing Cream

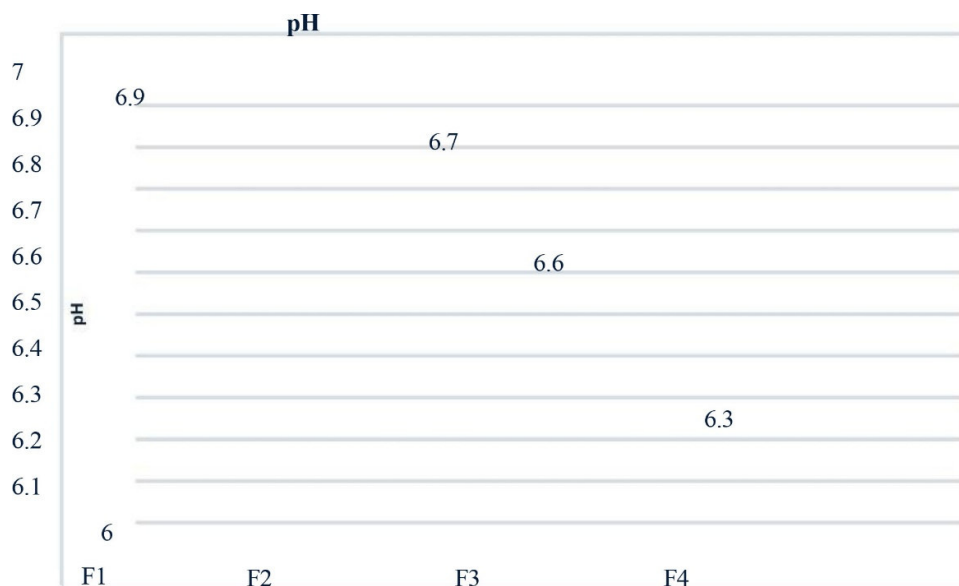
### **Physical evaluation**

#### **pH and Viscosity**

**Table pH and Viscosity**

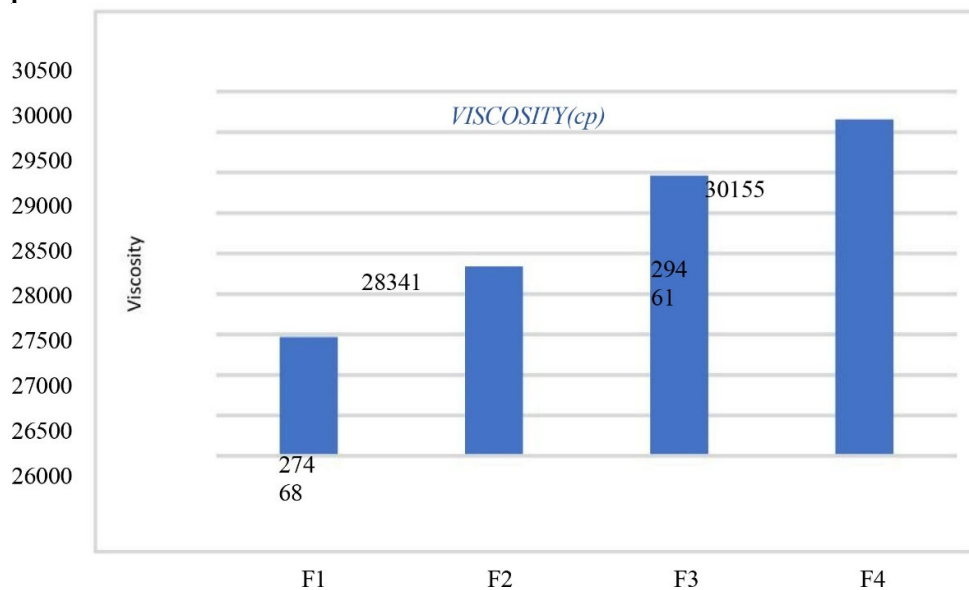
<b>Trial. No</b>	<b>pH</b>	<b>Viscosity(cp)</b>
F1	6.9	27468
F2	6.7	28341
F3	6.6	29461
F4	6.3	30155

**pH**



**Formulation**

**Figure pH**



**Formulation**

Figure Viscosity

**Spreadability, Washability and Homogeneity**

**Table Spreadability, Washability and Homogeneity**

Trial Number	Spreadability	Washability	Homogeneity
F1	7.8	Easily	No.
F2	8	Easily	No.
F3	8.2	Easily	No.
F4	9	Easily	No.

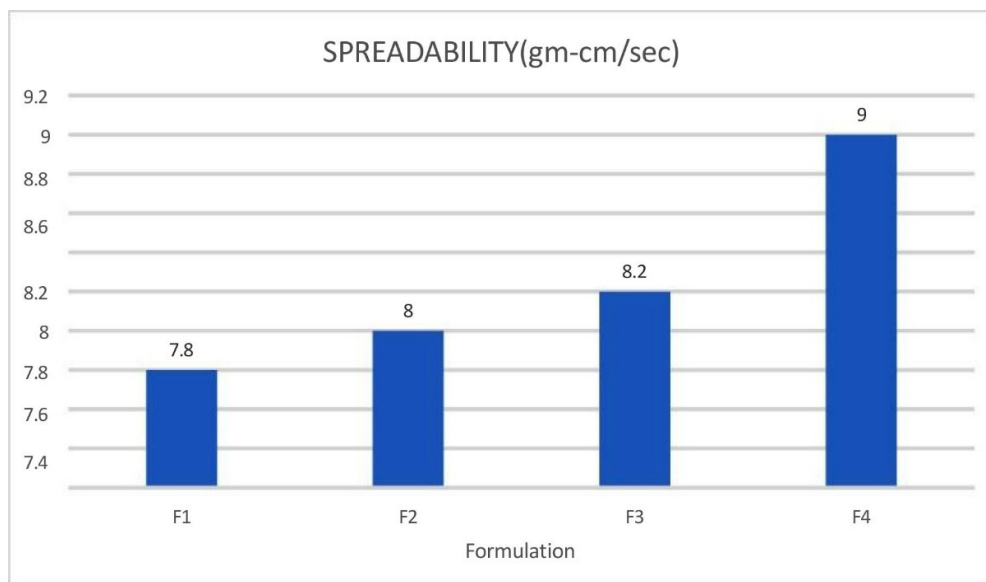


Figure: Readability

**Other Parameters**

Parameters F1-F4	Observations
Dye test with scarlet red/Amarnath	o/w type
Patch Test	Not hypersensitiveness
Irritancy test	No redness and oedema
Accelerated stability study	Stable
Grittiness	No gritty particle

Table Other Parameters

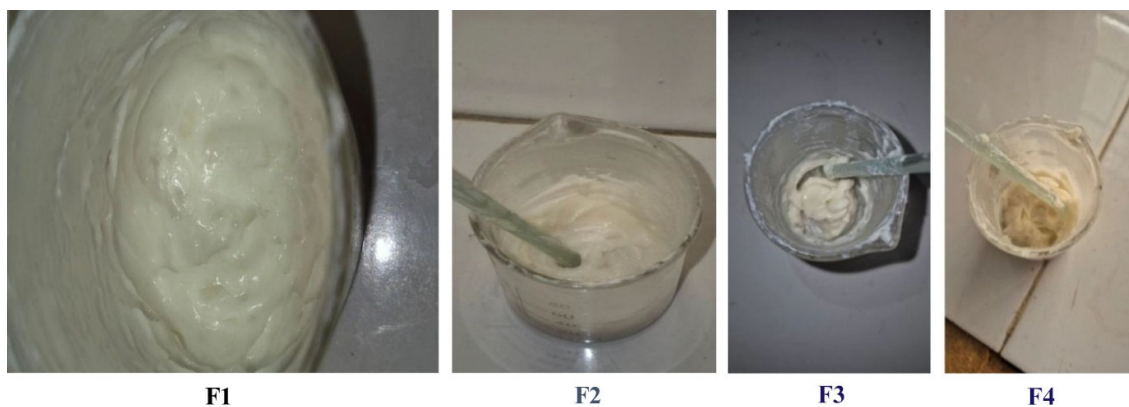


Figure: F1, F2, F3, F4

**Conclusion**

Herbal vanishing cream offers a compelling option for those seeking a natural and gentle approach to skincare. Throughout this exploration, we've delved into its key characteristics and benefits.

The infusion of herbal ingredients, known for their soothing and rejuvenating properties, distinguishes this cream from conventional products. By harnessing the power of nature, it aims to provide effective moisturization, even skin tone, and a reduction in the appearance of blemishes.

Herbal vanishing cream's potential to address a range of skin concerns without relying heavily on synthetic chemicals is a promising aspect. However, individual experiences may vary, and it's essential to conduct a patch test before regular use to ensure compatibility with one's unique skin type and sensitivities.

As with any skincare product, consistency and patience are crucial. While herbal vanishing cream might not deliver instant or drastic results, its gradual and holistic approach could lead to healthier, more radiant skin over time. Remember that achieving optimal skincare outcomes often involves a holistic approach that includes a balanced diet, proper hydration, adequate sleep, and a consistent skincare regimen.

Ultimately, the decision to incorporate herbal vanishing cream into your skincare routine should be based on a careful consideration of its ingredients, benefits, and compatibility with your skin's needs. As with any product, it's wise to consult with a dermatologist or skincare professional before making any significant changes to your skincare regimen.

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