

# Formulation and Evaluation of a Herbal Moisturizing Cream Containing Aloe Vera.

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**Abstract:** Herbal cosmetics are the preparations are used to beautify and enhance the human appearances. The aim of the present research was to formulate and evaluate the herbal moisturizing containing plant extracts prepared by using water in oil method for the purpose of nourishing and moistening the skin. The moisturizing cream is prepared by using the extract of Alovera. No change of the physical properties was observed in formulated cream. The formulated cream showed good consistency and spread ability, homogeneity, pH, nongreasy, no evidence of phaseseparation during study period of research. Stability parameters like visual appearance, nature, viscosity and fragrance of the formulated cream showed that there was no significant variation during the study period of research. The herbal extract containing moisturizing cream gives the cooling and soothing effect due to slow evaporation of water present in the emulsion. The moisturizing creams are more moisturizing as they provide an oily barrier which reduces the water loss from the stratum corneum, the outermost layer of the skin. The current study work's objectives were to create and assess an herbal moisturizing cream that contains aloe vera gel, glycerine, rose water, and vitamin E capsules. The majority of currently available creams provide more fairness to the face and are made from medications of synthetic origin, but they also have several undesirable side effects, including irritation and allergic reactions. These adverse effects are not present in herbal creams, which nourish the skin without them.

**Keywords:** Aloe vera, emulsifier, homogenization, aqueous phase, oil phase, herbal preparations

## I. INTRODUCTION

Creams are semisolid emulsions that can be applied to the mucous membranes or the skin. The cream might be thick and sticky or water-miscible and easily removed, depending on the water-to-grease ratio. This is the most commonly suggested topical medicine. Most patients like it because it's less sticky, oily, and unsanitary. [1] Herbal extracts are widely used in cosmetic products to improve look and attractiveness. Prior to the birth of allopathic medicine, traditional medicinal systems had dominated world healthcare for millennia.

Because it relied on modern biology and chemistry for both research and treatment, the latter approach was quickly adopted by consumers and currently holds a dominant position in the healthcare sector. [2] Herbal cosmetics are classified according to the body part or organ to which they will be administered (e.g., cosmetics for skin, hair, nail, teeth, and mouth) and the dosage form (cream, powder, soaps, solutions, etc.). [3] To maintain the appearance and functionality of the skin, the water content of the stratum corneum and the lipids on the skin's surface must be balanced [4, 5]. The skin is constantly exposed to a variety of external stimuli because it is the body's outermost coat [6]. Both endogenous and exogenous factors have the potential to disturb this balance [7, 8, 9]. The lipids can also be removed from the skin's surface by regularly employing cleaners, detergents, and topical irritants like alcohol and hot water [10]. Disruption of the skin barrier resulted in various skin problems. The most common problem is a decrease in water content, which causes dry skin symptoms like roughness, scaling, cracks, redness, and an uncomfortable tightness that frequently stings and itches [11].

The goal of moisturiser treatment is to maintain the integrity and health of the skin by making the person look healthy. The basic properties of humectancy, occlusivity, and emolliency are shared by all moisturisers, despite the fact that many are promoted as natural, safe, organic, and herbal [7]. To create the foundation, the majority of moisturisers on



the market use artificial adhesives, emulsifiers, thickeners, colours, surfactants, and fragrances. At the basis, natural agents must be utilised instead of dangerous synthetic ones. [12, 13] The goal of this study was to create a moisturising cream that doesn't have any negative responses or side effects. By providing an even skin tone, the cream also serves as a skin tone enhancer in daily life.

Additionally, it contains vitamin E, which gives the skin the nutrients it needs. Compared to other semisolid dosage forms or formulations, moisturising creams provide a longer contact duration at the application site. They make the skin look elegant and less oily. It gives skin emolliences because of the oil phase. The purpose of the moisturising cream is to cool the body, remove waste from the pores, and replenish moisture in dry skin [14]. It is simple to remove with water washing. When applied to the skin, they don't cause irritation. The water phase provides the skin with additional protection. At body temperature, it melts. Through the skin's natural pores, it enters the epidermis [15].

## II. MATERIALS AND METHODS

### 1. Aloe vera :

Originating from the Arabian Peninsula, this evergreen perennial grows wild in arid, tropical, and semi-tropical climates worldwide.[16] It has been grown for commercial products for centuries, mostly as a topical remedy.[16][17] The species thrives indoors as a potted plant and is visually appealing for decorative purposes.[18] Significant amounts of the polysaccharide gel acemannan, which has a variety of therapeutic uses, are found in aloe vera leaves.[19] Aloin, which is toxic, is found in the skin. Aloe vera products typically only use the gel. Acemannan from Aloe vera is used in a variety of products, such as skin lotions, cosmetics, ointments, and gels for minor burns and skin abrasions.[20].



Fig. No. 1: Aloe vera

**Synonyms** -Aloe, Musabbar, Kumari.

**Family** –Liliaceae.

**Biological source:** aloe is dried juice obtained by transversely cut Leaves of various species of Aloe barbadense Miller.

Aloeperryi Baker.

Aloe spicata Baker and Aloe Africana Miller.

**Chemical constituents:** Anthracene glycosides, Barbaloin, Isobarbaloin, aloe-emodin and aloesone. Resins Also contains Aloetic acid, homonataloin etc.

**Uses:** Aloe has several uses in cosmetics these days, including hair conditioner, body and hand lotion, moisture-based cleanser, and more. It is also a purgative, laxative, and treatment for burns and ulcers. used for ages in skin care, cosmetics, medicine, and health. Another term for it is "miracle plant." Dermatologists now use aloe vera for a number of reasons, including as moisturizing the skin, curing acne, and producing radiant skin.

### Extraction of Aloe vera gel:

- First of all, we have to collect Aloe vera leaves from botanical garden and then washed with distilled water.
- Then we have to cut the outer part of leaf longitudinally with the help of knife.

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- After that we removed colorless parenchymatous tissue and put it into beaker of 400 ml.
- Then we have to stir gel of Aloe vera with help of stirrer mixer.
- Then filtered it with help of muslin cloth to remove various types of impurities.
- At last cover beaker either by filter paper or with help of silver foil to prevent from microbial growth or any effect of environmental factor.



Fig.No. 2: Extraction of Aloe vera gel from plant

## 2. Stearic Acid:

Category: Fatty acid / emulsifier / thickener.

Role in Formulation: Acts as a co-emulsifier that helps oil and water stay mixed, and also thickens the cream to give it a rich texture.

Benefits:

Provides cream with a smooth, spreadable consistency.

Enhances the cream's stability, preventing it from separating.

Leaves a silky, non-greasy skin feel.

Why It's Included: Crucial for structure and stability in emulsions.

## 3. Beeswax:

Category: Natural wax / emollient / stabilizer.

Role in Formulation: Provides viscosity and helps form a moisture-locking barrier on the skin.

Benefits:

Protects skin by creating a breathable film that prevents water loss.

Offers natural antibacterial and anti-inflammatory properties.

Adds a firm, balm-like texture to the cream.

Why It's Included: Acts as a natural alternative to synthetic stabilizers and improves the cream's longevity on the skin.

## 4. Liquid Paraffin (Mineral Oil):

Category: Occlusive emollient.

Role in Formulation: Provides softness and smoothness by forming a barrier that traps moisture in the skin.

Benefits:

Excellent for dry and sensitive skin.

Helps prevent dehydration and flaking.

Makes the cream feel luxuriously slick and easy to spread.



Why It's Included: Offers long-lasting moisturization and enhances skin softness.

### **5. Glycerine (Glycerol) :**

Category: Humectant.

Role in Formulation: Attracts water from the environment into the skin and retains it in the outer layer.

Benefits:

Deeply hydrates the skin and helps maintain its water balance.

Improves skin texture, making it smooth and supple.

Non-toxic and well-tolerated by all skin types.

Why It's Included: Keeps skin moisturized even in dry climates; essential in most moisturizing products.

### **6. Honey :**

Category: Natural humectant and antimicrobial.

Role in Formulation: Enhances hydration and offers natural antibacterial properties.

Benefits:

Promotes skin healing due to its enzyme-rich and antioxidant composition.

Draws moisture into the skin, keeping it plump and nourished.

Mildly antimicrobial, which helps reduce acne-causing bacteria.

Why It's Included: Adds a natural glow and boosts skin health.

### **7. Vitamin (Likely Vitamin E, aka Tocopherol):**

Category: Antioxidant and skin-conditioning agent.

Role in Formulation: Helps prevent oxidation of oils in the cream and supports skin repair.

Benefits:

Fights free radicals and oxidative damage (anti-aging effects).

Supports skin elasticity and softness.

Can extend the shelf-life of the cream by reducing rancidity.

Why It's Included: Adds anti-aging properties and increases product stability.

### **8. Methylparaben**

Category: Preservative

Function: Prevents growth of bacteria, mold, and yeast in water-based products.

Purpose: Extends shelf life and ensures the safety of the cream by protecting it from microbial contamination.

Use Level: Typically 0.1%–0.3%.

Note: Widely used and effective; safe within regulated limits.

### **9. Rose Water**

Category: Natural aromatic water (hydrosol)

Function: Fragrance, toner, and skin soother

Purpose: Adds a pleasant floral scent, lightly hydrates the skin, and soothes irritation or redness.

Use Level: Can replace part or all of distilled water in the aqueous phase.

Note: Best used with a preservative if not already preserved.

### **10. Distilled Water :**

Category: Solvent.

Role in Formulation: Acts as the base of the cream, dissolving other water-soluble ingredients and providing moisture.

Benefits:

Hydrates the skin without oiliness.

Ensures product purity and prevents microbial contamination (compared to tap water).



Why It's Included: Forms the bulk of the cream's aqueous phase and provides essential hydration

**Formulation Chart :**

Sr.no.	Ingredients	Quantity	Uses
1	Aloe vera Gel	4.0 gm	Moisturizing , Healing
2	Stearic Acid	1.0 gm	Emulsifier , stabilizer
3	Beeswax	1.2 gm	Natural emulsifier , thickener
4	Liquid Paraffin	2.0gm	Occlusive moisturizer , skin softner
5	Glycerin	1.0 gm	Humactant
6	Honey	1.0 gm	Natural humactant , antimicrobial agent
7	Vitamin E	0.4 gm	Antioxident
8	Methyl parabene	0.2 gm	Preservative
9	Rose Water	1ml	Fragrance
10	Distilled Water	Q.S	Vehicle

**Procedure Of Formulating Moisturizing Cream :**

Started with weighing all ingredients accurately using a digital balance



**Prepared Aqueous Phase:**

Distilled water heated to about 70 to 75 degrees Celsius

Aloe vera gel, honey, and glycerine were added.

agitated until a homogenous blend was achieved.



**Prepared Oil Phase:**

Beeswax, liquid paraffin, and stearic acid were heated to about 70 to 75 degrees Celsius.

combined until every ingredient melted.



**Emulsification Step:**

Oil was gradually added to the aqueous phase while being constantly stirred.

For a stable emulsion, the temperature was maintained during mixing.



**Homogenization:**

agitated vigorously

made sure the cream formed evenly and smoothly.



**Cooling Phase:**

allowed the mixture to cool to about 40°C while stirring gently.



**Cool-Down Additions:**

Vitamin E and methylparaben were added.

Stirred until incorporated completely



**Final Step:**

Cream was moved into sanitised containers.

kept in a dry, cool environment





## **Evaluation Of Formulation :**

### **1. Organoleptic Evaluation :**

To evaluate the cream's organoleptic qualities—such as color, texture, odor, and appearance visual and manual inspections were conducted. Aloe vera's uniformity and pleasantness were assessed in terms of color and odor. Applying a tiny amount to the skin to check for smoothness and the lack of grit was how texture was assessed. Additionally, the homogeneity of the cream was examined to make sure there were no lumps or phase separation.

**Result:** The cream had a distinctive herbal scent and was light green in color. It looked glossy and had a smooth, non-greasy texture.

### **2. Physicochemical Evaluation:**

**pH:** 1 g of cream was dissolved in 10 mL of distilled water, and the pH was measured with a digital pH meter. It was decided that 4.5 to 6.5 was the acceptable range.

**Result:** The pH was found to be 5.8 which is within the acceptable range for topical application.

**Spreadability:** assessed using the slip and drag method, which computed the spread ability factor by applying a certain weight to two glass slides.

**Result:** The average spread diameter was 6.2 g.cm/sec suggesting good spreadability.

**Washability:** Evaluated by putting the cream on the skin and then washing it off with tap water to see how easy it is to remove.

**Result:** The cream was easily washable with water, leaving no oily residue.

**Homogeneity:** Manually assessed for consistency and particulate matter absence.

**Result :** The cream was homogeneous with no phase separation or gritty particles observed.

**Grittiness :** To feel for particulate matter, a pinch of cream was rubbed between fingers.

**Result:** No grittiness was detected, indicating proper formulation and fine particle dispersion.

### **3. Dermal Irritation Test (Patch Test) :**

To assess possible skin irritation, a patch test was performed. Healthy volunteers (n=10–20) had a small amount of cream applied to their forearms, and after a day, any indications of redness, itching, or inflammation were noted. Since no negative reactions were noted, the cream was deemed safe.

**Result :** No redness, itching, or swelling observed; cream was non-irritant.

### **4. Moisturization Efficacy:**

Using a structured questionnaire, participants were asked to rate the cream according to factors like smoothness, non-greasiness, absorption rate, and overall satisfaction.

**Result:** 90% rated the cream as very good in terms of moisturization and non-stickiness.

## **III. RESULT & DISCUSSION**

The herbal moisturizing cream's evaluation showed that the formulation had a number of desirable qualities that are expected of a successful topical skincare product. The skin's natural pH range is 5.2, which is essential for preserving the acid mantle that guards against environmental harm and microbial invasion. A pH that deviates too much from this range may cause skin irritation or damage to the protective layer. Therefore, based on the pH reading, the formulation should be well tolerated by the majority of skin types.

The findings show that the herbal moisturising cream has favourable microbiological and physicochemical characteristics. The cream appears to be stable, non-irritating, and simple to apply based on its pH and spreadability values. A key component of customer satisfaction is ease of application, which is indicated by the spreadability of 6.2 g·cm/sec. A cream that applies evenly and spreads easily without requiring a lot of work improves user satisfaction and guarantees consistent skin hydration. Customers looking for herbal skincare solutions may find the herbal formulation to be a promising alternative to traditional moisturising products because it may provide the added benefit of natural bioactives with few synthetic additives. In contrast to artificial moisturising creams sold in stores, Customers who are



concerned about their health are increasingly choosing the herbal formulation because it provides a natural substitute that stays away from artificial chemicals. Furthermore, herbal ingredients may provide an eco-friendly product life cycle if they are sourced responsibly.

#### IV. CONCLUSION

Aloe vera, the main active ingredient in the developed herbal moisturising cream, demonstrated positive dermatological and cosmetic effects. A blend of natural and functional excipients was used in the formulation's design to improve its overall effectiveness. Glycerin functioned as a humectant, drawing moisture to the skin, while aloe vera offered calming, anti-inflammatory, and moisturising benefits. Stearic acid contributed to the cream's stability and smooth texture by acting as an emulsifying agent and emollient. Transepidermal water loss was decreased by the protective barrier that liquid paraffin produced on the skin. To preserve product integrity during storage, a trace amount of methylparaben was added as a preservative. The cream was easily applied, non-greasy, rapidly absorbed, and well-liked cosmetically. With consistent use, it increased skin softness and hydration without any negative side effects.

Overall, the use of plant-based skincare formulations was supported by the successful herbal moisturising cream that was produced by the synergistic interaction of aloe vera with other excipients. These results demonstrate the importance of choosing the right excipient to improve product efficacy and user satisfaction, as well as the potential of herbal alternatives in cosmetic science.

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