

**FORMULATION AND EVALUATION OF MULTIPURPOSE HERBAL
FACE CREAM**

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ABSTRACT

Herbal cosmetics are designed to enhance physical appearance. The purpose of this research was to formulate a herbal cream that provides moisturizing, nourishing, skin-whitening effects, and helps in the treatment of various skin conditions. Key ingredients in the formulation include Aloe barbadensis (Aloe vera leaves) and Gymnema sylvestre. These components were chosen for their diverse therapeutic properties. The cream was assessed using several evaluation parameters.

KEYWORDS: Multipurpose cream, Borax Aloevera, Gymnema sylvestre, Rose oil.

INTRODUCTION

The concept of beauty and cosmetics dates back to ancient civilizations, and the use of Indian herbs has gained worldwide recognition. Herbal cosmetics are increasingly in demand globally and are considered a priceless gift from nature. These products have attracted significant attention due to their effectiveness and relatively fewer side effects compared to synthetic products. Herbal cosmetics are defined as beauty products that offer beneficial physiological effects, such as healing, improving appearance, enhancing skin condition, and providing moisturizing properties due to the herbal ingredients they contain.

The popularity of herbal remedies in the production of cosmeceuticals has grown tremendously in personal care systems, leading to a surge in demand for herbal cosmetics. Cosmetics, by definition, are substances designed for external application to cleanse,

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beautify, enhance attractiveness, and alter appearance, without affecting the body's structure or functions. However, the prolonged use of synthetic products can be harmful to both individuals and the environment. Many synthetic chemicals, dyes, and their derivatives have been shown to cause skin problems and various side effects. As a result, there is a growing preference for herbal cosmetics. The concept of skincare through herbs is deeply rooted in ancient texts such as the Rigveda, Yajurveda, Ayurveda, Unani, and Homeopathy. Herbal cosmetics often use herbs in their raw or extracted form, and these plants offer various beneficial properties, including antioxidant, anti-inflammatory, antiseptic, emollient, and antibacterial effects.

Cosmetics are formulated to address issues like wrinkles, acne, and oil production. Products like skin protectants, sunscreens, anti-acne treatments, anti-wrinkle, and anti-aging solutions are developed using a combination of natural and synthetic ingredients. For example, a herbal cream containing *Gymnema sylvestre* extract and other excipients is selected based on traditional knowledge as well as scientific validation of its modern benefits. This herbal cream offers effective protection for the skin, is free from toxicity or irritation, and remains cosmetically acceptable with regular use.^[1]

Herbal Creams

- Cream is defined as semisolid emulsions which are oil in water (o/w) or water in oil (w/o) type and these semisolid emulsion are intended for external application.
- Creams are semi-solid preparations containing one or more medicinal agents dissolved or dispersed in either a water-in-oil emulsion or an oil-in-water emulsion.
- Cream is applied on outer part of skin and its main ability is to remain for a longer period of time at site of application.
- The function of skin cream is to protect the skin against different environmental conditions, weather and gives smoothing effect to skin. There are different types of creams are available like cleansing, cold cream, vanishing cream, Sunscreen etc.
- The main aim of our work to formulate a herbal moisturizing cream which can give a multipurpose effect like moisturizer, reduce acne, anti-aging, reduce wrinkles also provides glow to the skin
- We have used two herbal ingredients to our preparation which are *Gymnema sylvestre* extract and Aloe-vera gel. These ingredients have an ability to moisturize, reduce wrinkles and also have anti-acne activity. *Gymnema sylvestre* extract used as anti-oxidant

and also anti-aging. Aloe-vera gel moisturizes the skin.^[2]

Advantages of Natural Cream over Synthetic

1. Improves skin hydration without irritation.
2. Naturally hydrates and nourish the skin.
3. Less or No side effects and allergic reactions.
4. As compare to synthetic herbal products are suitable to sensitive skin.
5. Helps to improve skin elasticity and also reduces aging signs.
6. Cost effective: Herbal creams are most affordable than synthetic products.

Characteristics of Ideal Cream

1. It should be free from contamination.
2. It should be easily available and safe to use.
3. It should be non-irritant.
4. It should have proper texture,color,odour and packaging etc.
5. It should be non-toxic.
6. It should be non-damaging to the skin.^[3]

PHYSIOLOGY OF SKIN

Dermis

The dermis is the skin layer found just beneath the outermost layer, the epidermis. It consists of connective tissue rich in collagen and elastic fibres. This layer houses blood vessels, nerve endings, hair follicles, as well as sweat and oil glands. The dermis provides the skin with both strength and flexibility. It primarily contains three types of cells: fibroblasts, macrophages, and mast cells. Underneath the dermis lies a layer of loose connective tissue (areolar tissue) along with varying amounts of fat (adipose tissue).

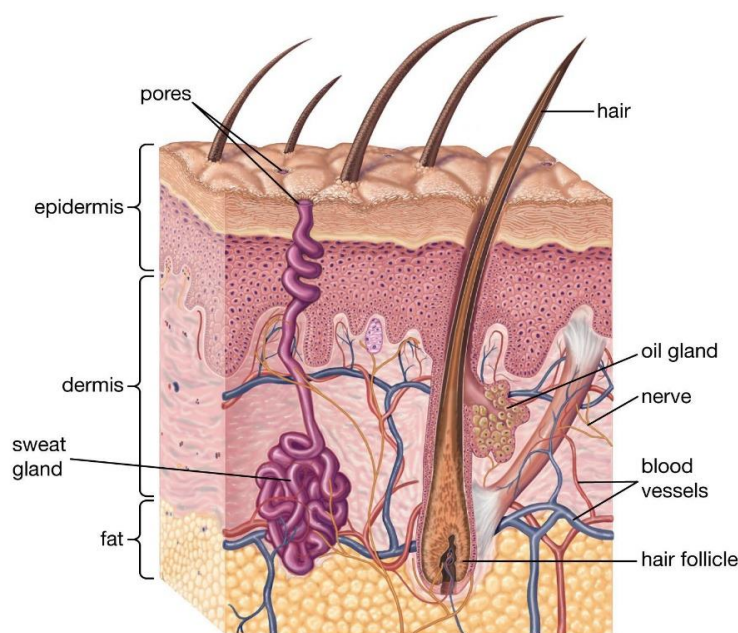


Fig. 1: Human Skin.

Epidermis

The epidermis is the outermost layer of the skin, primarily composed of cells known as keratinocytes. It serves as a protective barrier against the external environment, helps regulate water loss, and contains immune cells. This layer does not have blood vessels or nerve endings, but its lower sections receive oxygen and nutrients from the fluid in the underlying dermis, with waste removed through the lymphatic system.

Subcutaneous

The subcutaneous layer, also known as subcutaneous adipose tissue or the hypodermis, lies just beneath the dermis. It is made up of fat cells that help insulate the body, store energy, and provide cushioning and protection. In certain transitional areas of the body such as the lips, eyelids, nipples, labia minora, and glans penis there are sebaceous glands that function independently and release sebum (oil) directly onto the skin's surface.^[4-8]

Type

A. Oil in water (O/W): This type of cream has tiny oil droplets mixed into a continuous water base. It's called an oil-in-water (O/W) emulsion.

B. Water in oil (W/O): This type of cream has small water droplets mixed into a continuous oil base. It's called water-in-oil (W/O) emulsion.

Classification

Herbal moisturizing creams use natural plant-based ingredients to hydrate and nourish the skin. They can be categorized based on the specific herbs they contain:

1. **Aloe Vera Creams:** Known for its soothing and hydrating properties, aloe vera helps calm irritated skin while providing moisture.
2. **Calendula Creams:** Derived from marigold flowers, calendula helps ease inflammation and soothes the skin, making it ideal for dry or sensitive skin.
3. **Chamomile Creams:** Chamomile is valued for its calming and anti-inflammatory qualities. These creams are suitable for moisturizing and comforting sensitive skin.
4. **Coconut Oil Creams:** Rich in fatty acids, coconut oil deeply nourishes and hydrates, making these creams excellent for rough or dry skin.
5. **Shea Butter Creams:** With its thick, rich texture, shea butter is highly moisturizing and works well for dry or aging skin.^[9-12]

PLANT PROFILE

Gymnema Sylvestre

- **Common Name**-Bedki, Gudmar.
- **Botanical Name**-*Gymnema Sylvestre*.
- **Family**-Apocynaceae.
- **Part Used**-Leaves, Common Name: Bedkicha Pala.
- **Extraction Method**-Hot Maceration.^[13]



Fig. 2: *Gymnema sylvestre* Leaves.

Common Uses

Skin Brightening

Many peoples may be concerned about their uneven skin tone and hyperpigmentation. *Gymnema sylvestre* extract contains natural skin brightening properties that can help even out skin complexion.

Moisture retention

Gymnema sylvestre helps to improve the skin's ability to retain or store the moisture.

Youthful complexion

It helps to give youthful appearance by supporting skin supplements and reducing visibility of age related changes.

Skin cell Metabolism

Gymnema extract invigorate skin cell and stimulates metabolism of skin cell.

- ❖ It can helps to reduce the wrinkles and age spots.
- ❖ It can also used as a anti-oxidant in skin care.
- ❖ It also protect the skin from harmful radiations like UV rays.^[14]

2. Aloe-Vera

- **Common Name**-Aloe-vera,Korphan
- **Botanical Name**- *Aloe barbadensis miller*
- **Family**- Liliaceae
- **Part Used**-Leaves,Aloe-Vera Gel.^[15]



Fig. 3: Aloe-Vera Leave.



Fig. 4: Aloe-Vera Gel.

- **Common Uses**

Moisturizing

Aloe-Vera's gel contains mucopolysaccharides, which helps the skin to retain moisture.

Anti-aging

It can help to reduce appearance of wrinkles by promoting collagen production and fighting free radicals.

Sun-burn Relief

Aloe-vera can help soothe and hydrate sunburnt skin.

Acne Treatment

It can help to reduce inflammation and prevent scarring associated with acne.

Wound Healing

It can also help in wound healing due to its anti-inflammatory properties.^[16]

FORMULATION AND EVALUATION OF MULTIPURPOSE HERBAL FACE CREAM

Table No. 1: Ingredients and their use in skin care.

Sr.No	Ingredients	Uses
1.	White Bees Wax	Base
2.	Liquid Paraffin	Soothing agent
3.	Borax Powder	Emulsifier
4.	G.sylvestre extract	Anti-oxidant, Anti-acne, Anti-fungal, Anti-aging

5.	Methyl Paraben	Preservative
6.	Ethyl Alcohol	Anti-microbial
7.	Aloe-Vera Gel	Anti-inflammatory, Analgesic activity, Moisturising agent
8.	Rose Oil	Fragrance
9.	Water	Vehicle

Procedure

1. Take a Liquid Paraffin and Bees-Wax in a borosilicate glass beaker at 75°C and maintain heating temperature. (Phase A:Oil Phase)
2. In other beaker dissolve Borax and Methyl paraben in distilled water by maintaining temperature 75°C with water bath. Stir the solution with glass rod until all the solid particles gets dissolved. (Phase B:Water Phase)
3. Then gently add heated oil phase into heated aqueous phase with continues stirring and then immediately add aloe-vera gel during stirring then continue the mixing and also heating should be given during mixing of both phases.
4. Then remove cream from burner and keel it for cooling at 40°C and when cream is form then add 1-2 drops of rose oil fragrance.
5. Then transfer the cream into slab and mix the cream in geometric manner to provide smooth texture.^[17]



Fig. 5: F1,F2 and F3 formulations.

Preparation of different formulations

Formulation 1: This formulation is prepared as per the optimized formula given in table no-2 using the general method of preparation and subjected for evaluation test.

Table No. 2: Ingredients used in formulation 1 along with their respective quantities.

Sr.No	Ingredients	Quantity
1	White Bees Wax	5 gm
2	Liquid Paraffin	5 ml
3	Borax Powder	0.5 gm
4	G.sylvestre Extract	0.4 ml
5	Methyl Paraben	0.02 gm
6	Ethyl Alcohol	2 ml
7	Aloe-vera Gel	2 gm
8	Rose oil	1-2 drops
9	Water	q.s

**Fig. 6: Formulation F1.**

Formulation 2: This formulation is prepared as per the optimized formula given in table no-3 using the general method of preparation and subjected for evaluation test.

Table No. 3: Ingredients used in formulation 2 along with their respective quantities.

Sr.No	Ingredients	Quantity
1	White Bees Wax	5 gm
2	Liquid Paraffin	7 ml
3	Borax Powder	1 gm
4	G.sylvestre Extract	0.4 ml
5	Methyl Paraben	0.02 gm
6	Ethyl Alcohol	2 ml
7	Aloe-vera Gel	1.5 gm
8	Rose oil	1-2 drops
9	Water	q.s

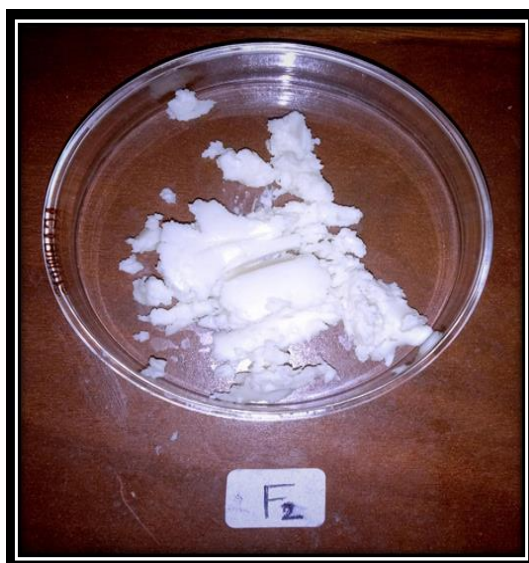


Fig. 7: Formulation F2.

Formulation 3: This formulation is prepared as per the optimized formula given in table no-4 using the general method of preparation and subjected for evaluation test.

Table No. 4: Ingredients used in formulation 3 along with their respective quantities.

Sr.No	Ingredients	Quantity
1	White Bees Wax	5 gm
2	Liquid Paraffin	10 ml
3	Borax Powder	1.5 gm
4	G.sylvetre Extract	0.4 ml
5	Methyl Paraben	0.02 gm
6	Ethyl Alcohol	2 ml
7	Aloe-vera Gel	1 gm
8	Rose oil	1-2 drops
9	Water	q.s



Fig. 8: Formulation F3.

EVALUATION PARAMETER^[18-19]**❖ Evaluation of Multipurpose Herbal Face Cream**

The prepared Herbal Face Cream were evaluated with the following parameters.

1. Organoleptic properties

The prepared Herbal Creams were evaluated for organoleptic properties such as colour, odour, Consistency and state of the formulation.

- **Colour:** The colour of the cream was observed by visual examination. It found to White in colour of both F1,F2 and F3 formulation.
- **Odour:** The odour was found to be characteristics of both F1,F2 and F3 formulation.
- **Consistency:** The consistency of formulation in examined by rubbing cream on hand manually. The cream having smooth consistency to F1 formulation it get easily rubbed on hand and other two formulation F1 and F2 have hard consistency they do not get rubbed on hand easily.
- **State:** The state of cream was examined by visually. The F1,F2 and F3 formulations have semi-solid states.

2. Determination of pH

Accurately weighed 1 gm of the sample was dispersed in 10 ml water. The pH of the suspension was determined at 27°C using digital pH meter. The pH of F1, F2 and F3 formulation was found to be in between skin pH 6.4-6.9.

Formulation 1 pH was found to be 6.78

Formulation 2 pH was found to be 6.45

Formulation 3 pH was found to be 6.68

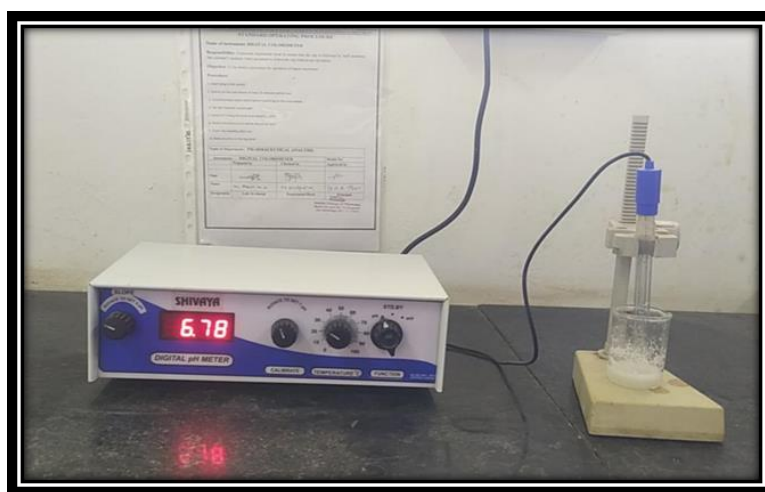


Fig. 9: Measurement of pH by using Digital pH meter.

3. Determination of Homegency

The formulations were tested for the homegency by visual appearance by touch.

4. Determination of Robouness

It includes following point,

- **Determination of Spreadability**

Spreadability is used to express extent of area to which topical application spread when applied to the affected part of skin. The therapeutic efficacy of the formulation depends upon its spreading value. Hence, it was found necessary to found spread ability of the formulation.

It is determined by formula,

$$\text{Spreadability: } m \times L / T$$

Where,

m: Weight tied on upper glass slide.

L: Length moved on glass slide

t: Time taken

The determination were carried out in triplicate and average of three readings was taken.

F1: 5.8 cm. F2: 4cm. F3: 2 cm

- **Determination of Wetness**

It was determined by applying cream on skin surface of human volunteer.

- **Determination of type of Smear**

It was determined by applying cream on skin surface of human volunteer. After application cream, the type of smear formed on the skin was checked.

- **Determination of type of emolliency**

Emolliency means the type of emulsion was checked.

- **Irritancy test**

Mark the area (1 sq.cm) on the left hand dorsal surface. The cream was applied to the specified area and time was noted. Irritancy, erythema, edema was checked if any for regular intervals upto 24 hours and reported.



Fig. 10: Determination of Irritancy Test.

- **Washability**

Formulation was applied on the skin and then ease extends of washing with water was checked. Result were shown in table no.6.

- **Stability testing**

The prepared cream was transferred in suitable wide mouth container. Set a side for storage. The separation of oil phase and aqueous phase were visualizing after 4-4.5 weeks. Result were shown in table.

RESULT AND DISCUSSION

The present research was the Formulation and Evaluation of Multipurpose Herbal Face cream. The evaluation parameter were comes under the result like the Physical evaluation, pH determination, Spreadability, Washability, Irritancy Test, Stability test, Homogeneity determination, Wetness determination, Determination of type of Smear, Determination of emolliency of the Multipurpose Herbal Face Cream is shown below in table.

Table no. 5: Evaluation parameters of Multipurpose Herbal Face Cream.

Sr.No	Parameters	F1	F2	F3
1	Colour	White	White	White
2	Odour	Characteristics	Characteristics	Characteristics
3	Consistency	Smooth	Not Good	Not Good
4	State	Semi-solid	Semi-solid	Liquid
5	pH	6.78	6.45	6.68
6	Homogeneity	Homogeneous	Not Homogeneous	Not Homogeneous
7	Spreadability	5.8 cm	4 cm	2 cm
8	Appearance	Good	Not Good	Not Good
9	Type of smear	Non-greasy	Non-greasy	Non-greasy
10	Emolliency	O/W	O/W	O/W

11	Irritancy	No	No	No
12	Washability	Washable	Washable	Washable
13	Phase Separation	No	Yes	Yes

CONCLUSION

Form the above result it is concludes that the formulated Preparation of formulation F1 showed Good Consistency, Spreadability, Homogenecity, pH, Non-greasy appearance and also there is no phase separation occurs in F1 formulation it also stable at room temperature within 24 hours of stability test during study period of research. From the above study it can be concluded that the Multipurpose Herbal Face Cream is safe to use as it is developed from herbal extract and may be applied topically. Natural remedies are more acceptable in the belief that they are safer with fewer side effects than synthetic ones. So, the values of herbs in cosmeceutical has been extensively improved in personal care system and there is a great demands for a herbal cosmetics nowadays. The *Gymnema sylvestre* extract and Aloe vera gel have multiple effects in skin care like Ant-oxidant, Anti-inflammatory, Anti-fungal, Moisturising, Nourishing etc. Also it used to treat burn and protects from UV Rays so because of this properties these ingredients are used in Herbal Cream Formulation.

Formulation of cream was done successfully and it can be concluded that the various evaluation parameters such as Physical properties, pH, Spreadability, Washability, Irritancy test a was found to be excellent in F1 formulation as compared to F2 and F3 formulation.

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