

# Formulation and Evaluation of Polyherbal Face Gel

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DOI: <https://doi.org/10.51584/IJRIAS.2025.100500053>

Received: 27 May 2025; Accepted: 28 May 2025; Published: 09 June 2025

## ABSTRACT

This study investigates the formulation and evaluation of a polyherbal face gel incorporating extracts from *Aloe vera*, *Salvia Rosmarinus*, *Azadirachta indica* etc. known for their skin-benefiting properties. The objective was to develop a stable and efficacious topical formulation for potential cosmetic applications, leveraging the synergistic effects of multiple plant extracts. The polyherbal extracts were prepared using decoction extraction method. The gel base was prepared using agar-agar, HPMC, xanthan gum. The formulated polyherbal face gel was then evaluated for various physicochemical parameters, including homogeneity, pH, viscosity, spreadability, washability and irritancy. Furthermore, antimicrobial evaluation against staphylococcus aureus was conducted to assess the potential efficacy of the formulation. The results demonstrated that the formulated polyherbal face gel exhibited satisfactory physicochemical properties suggesting its potential as a natural and effective skincare product.

**Keywords:** polyherbal formulation, polyherbal face gel, herbal ingredient, herbs

## INTRODUCTION

The skin is the largest organ of the body. It has three main layers, the epidermis, the dermis and the subcutaneous layer. It provides a protective barrier against mechanical, thermal and physical injury and hazardous substances. It prevents loss of moisture, reduces harmful effects of UV radiation, acts as a sensory organ, helps regulate temperature and helps in production of vitamin D.

### Layers of Skin:

1. Epidermis, the top layer
2. Dermis, the middle layer
3. Hypodermis, the bottom layer

### Gel:

Gel is a two-phase elastic colloidal material, consisting of dispersed liquid incorporated in solid phase. Pharmaceutical gels are semisolid systems in which there is interaction between colloidal particles within a liquid vehicle.

### Classification of Gelling Agents:

1. By Origin
  - a. Natural Gelling Agent

- b. Semi-Synthetic Gelling Agent
  - c. Synthetic Gelling Agent
2. By Continuous Phase
    - a. Hydrogels
    - b. Organogels
    - c. Xerogels

#### **Advantages of polyherbal face gel:**

- Face gels help with skin hydration.
- They are easily absorbed into skin.
- They do not leave any greasy or oily residue.
- Provide a soothing and calming effect on skin.

#### **Experimental Method**

##### **Extraction of Neem:**

Firstly extract was prepared by decoction process. The leaves were rinsed with water and sun dried to remove moisture. Then the dried leaves were put in a beaker and boiled in water for 25-30 minutes. The boiled leaves and water was cooled to room temperature. Then the extract was filtered using muslin cloth and funnel three times.

##### **Extraction of Rosemary:**

The extract was prepared by decoction process. The leaves were rinsed and dried in sunlight. The dried leaves were put in a beaker and boiled with water for 15- 20 minutes. The boiled leaves and water was cooled to room temperature. The extract was filtered using muslin cloth and funnel three times.

#### **Method of Formulation**

##### **Composition of 30 gm formulation of polyherbal face gel:**

Sr. No.	Ingredient	Quantity	Action
1	Aleovera	15ml	Powerful hydrator and moisturizer
2	Agar-Agar	0.5 gm	Gelling agent
3	Glycerin	1.3 ml	Humectant
4	Sodium benzoate	0.4 gm	Preservative
5	Tartaric acid	0.2 gm	Gentle exfoliant and brightening of skin
6	Acacia	0.6 gm	Thickening and moisturizing
7	HPMC	0.7 gm	Gelling agent and thickening agent

8	Neem	2 ml	Anti- bacterial, anti- inflammatory
9	Rosemary	6 ml	Anti- inflammatory, combat acne
10	Orange peel powder	0.4 gm	Natural exfoliant, toner and brightening agent
11	Honey	2.5 gm	Humectants
12	Xanthan Gum	0.2 gm	Thickening agent, emulsifier and stabilizer

#### Method of preparation of polyherbal face gel:

1. Firstly weigh all the ingredients in required quantity.
2. Agar agar is dissolved in aloe vera gel and honey for 1 hour for preparation of gel.
3. The prepared gel is divided in two phases.
4. First phase with sodium benzoate, acacia, glycerin, HPMC and orange peel powder on water bath.
5. Second phase with neem extract and rosemary extract added to neutralize agar agar gel base.
6. Both phases were mixed slowly and stirred continuously.
7. Lastly tartaric acid was added.
8. The formulation was stirred well containing all ingredients to obtain a homogeneous mixture.

#### Evaluation of Polyherbal Lip Scrub:

- **Colour:** The colour of the face gel was checked visually.
- **Odour:** The formulation was evaluated for its odour by smelling it.
- **pH:** The pH of the sample was measured by diluting 1ml of the sample is dissolved in 10 ml of water and was measured using a digital pH meter at constant temperature.
- **Consistency:** It involves assessing its texture and physical properties. Observing its surface morphology and colour can reveal inconsistencies.
- **Spreadability:** Two slides are taken and herbal sample was placed on one slide. Other slide was placed on the first slide. 100g of weight was kept on the slider so that it spreads as a thin layer. Weight was been eliminated much height than the prisms. Next weight of 20g was kept on the upper slide. It was performed for 3 times and average was calculated.

$$S = \frac{m}{t}$$

Where,

S = Spreadability

m = Weight applied (g)

l = Distance traveled (cm)

t = Time taken (sec)

- **Viscosity:** Brookfield viscometer was used to measure the viscosity of our sample. Viscosity of sample and water taken in poise.
- **Washability:** Formulation when applied on the skin can be easily removed by washing with water were tested manually.
- **Irritancy:** This test will give you can and overall idea of how to product will behave on the face during application.
- **Homogeneity:** Test for a face gel is designed to assess how uniformly the ingredients are blended together in the gel. This test ensures that the product has a consistent texture and composition throughout, without any separation or uneven distribution of active ingredients, thickness or other components.
- **Microbiological test:** A microbiological test for face gel is performed to ensure the product is free from harmful microorganisms (staphylococcus aureus) and safe for skin application.

## RESULT

Evaluation Parameter:

Sr. No.	Parameter	Result
1	Colour	Yellowish brown
2	Odour	Fruity smell
3	pH	5
4	Consistency	Smooth
5	Washability	Easily washable
6	Irritability	No Irritation
7	Homogeneity	Homogeneous
8	Spreadability	5.4g-cm/sec
9	Viscosity	6 RPM
10	Microbiological test (staphylococcus aureus)	Absent

## CONCLUSION

This polyherbal face gel formulated with neem, rosemary, aloe vera, orange peel powder and honey leverages the synergistic benefits of natural ingredients for comprehensive skincare.

The prepared polyherbal formulation moisturizes, protect skin against wrinkles, gives glow and smoothens the skin, has anti-ageing properties, fights acne and pimples.

All the ingredients used in this polyherbal face gel formulation are natural so the chances for side effects are less. This formulation is suitable for normal skin type.

## Final Formulated Polyherbal Face Gel:



## ACKNOWLEDGEMENT

I would like to take a moment to thank everyone who has helped in our journey of Project report. I would like to express my gratitude towards my Guide Ms. Krupa Patel (Assistant Professor) of B. Pharmacy College Rampura- Kakanpur and Co-Guide Perna Patel for their kind co-operation and encouragement which helped me in completion of this Project. Bearing in mind previous I am using this opportunity to express my deepest gratitude and special thanks to the respective faculty members who in spite of being extraordinarily busy with his duties, took time out to hear. Guide and allowing me to carry out my Project at their esteemed organization. Last but not the least, to my dearest parents for their deep consideration for the finances and undying support throughout the making of the report. As well as for their words of encouragement which helped me in completion of my project.

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