

# Herbal Skincare: Formulation, Testing and Analysis of Moisturizer and Lip Balm

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## ABSTRACT

The herb is a plant that is valued for its aromatic and therapeutic properties. The products used to enhance a one's look are known as herbal cosmetics. An herbal face moisturizer and lip balm are created and evaluated using plant-based ingredients that have skin-nourishing, moisturizing, and healing properties. Natural oils and waxes like beeswax, emulsifying wax, shea butter, and coconut oil and olive oil were combined with herbal extracts like calendula officinalis, Narcissus tazetta and citrus sinensis to create the face moisturizer and lip balm. The aim of this study is to create herbal moisturizer and lip balm with various herbal plants. Both formulations were evaluated for their physicochemical properties, stability, spread ability, skin friendliness, and moisturizing ability. This study demonstrates the development of a skin compatible formulations with suitable pH, texture and consistency. Stability test under various storage conditions indicates a good shelf life supporting the potential for practical applications. The natural compounds improved the hydration and preservation of the skin and lips without causing any negative side effects. This study also shows the possibility of herbal cosmetics as a safe, efficient, and ecologically friendly substitute for synthetic formulations.

**Keywords-** Herbal, cosmetics, skincare, lip balm, Calendula, Narcissus, Citrus, oils, beeswax, shea butter, eco-friendly, moisturizing.

## I. INTRODUCTION

Face moisturizer and lip balm are cosmetics that have cleaning and softening properties. Most of the moisturizers and lip balm provide better benefits and

are produced from synthetic drugs, but they also come with several kinds of adverse effects, including as allergic reactions and inflammation. Herbal moisturizing creams nurturing the skin without causing any negative side effects. The objective of this

research work is to formulate and evaluate face moisturizer and lip balm using herbal plants extract. These formulations, which seek to nourish and preserve the skin without causing negative effects, frequently include plant-based substances with therapeutic qualities. Herbal extracts are employed in cosmetic preparations nowadays to enhance appearance and beauty. The demand for herbal cosmetics as a result of new components being available and the financial incentives for creating profitable products while maintaining standards of quality. In cosmetics, face creams are used for their cleaning and softening properties [1,2]. Ayurveda is one of the most important medicinal systems that uses herbal plant extracts and therapies for a range of illnesses. A person's general well-being and sense of self-worth are greatly impacted by facial beauty and skin protection. People frequently notice the face first, and for centuries, preserving healthy, glowing skin has been a key component of beauty standards in all cultures [3]. Despite being the largest and most protective organ in the body, the skin can occasionally develop dry patches due to a number of factors, including pollution, UV rays, and cosmetics that is left on overnight and can irritate or create allergic reactions. Similarly, the skin of the lips is more sensitive and vulnerable to harm from environmental conditions, dryness, and cracking, lip protection is often ignored. Herbal lip balms are a good way to give the lips the moisturizing and healing qualities they need, just like facial skin needs protection. In order to maintain the lips' softness and health, these balms are enhanced with plant-based oils and extracts. Numerous ingredients in the face moisturizer and lip balm have been connected to better barrier function and the reduction of wrinkles and fine lines [4,5,6]. So, we have evaluated the herbal face moisturizer and lip balm, this formulation aims to provide a number of therapeutic benefits, such as protection, hydration, moisturization, and effective active ingredient management because among the most often used skincare products are herbal face moisturizers lip

balms. The potential of herbal products in modern skincare is highlighted by the use of well-known botanical extracts, such as aloe vera, calendula flower, and Narcissus tazetta flower, all of which are known for their numerous therapeutic benefits [7,8,9].

It has been proven that ingredients including Narcissus tazetta, Calendula officinalis, and Aloe vera to improve skin health by having calming, restorative, and revitalizing properties. Aloe vera's anti-inflammatory and moisturizing qualities are well known. Calendula extract provides antibacterial protection and promotes skin renewal. While the floral extract of Narcissus tazetta, on the other hand, has antioxidant and antiaging properties. So, we evaluate the herbal face cream and herbal lip balm to take care of the face skin. To formulate lip balm and herbal face moisturizer with natural components it is important to make sure that the herbal composition is safe for use on the skin and free of dangerous chemicals. To facilitate the development of naturally approachable products using sustainable, plant-based ingredients in cosmetic formulations, and to determine the physical properties of the prepared herbal products. Using natural plant-based components, the herbal face cream effectively hydrates, improves skin texture, and maintains stability without generating negative side effects [10,11,12].

#### **Major features of the herbal face cream and lip balm:**

- ❖ They are simple to use.
- ❖ Spread easily on the skin.
- ❖ Shouldn't lead to dry skin, which occurs when the skin is cleansed with soap or water.
- ❖ Maintains skin well-hydrated, silky smooth and soft all day long.
- ❖ Improves skin texture by reducing cracking and roughness.
- ❖ Protects skin from drying out caused by wind, pollution, or sun exposure.
- ❖ Herbal anti-inflammatory components aid in skin tone smoothness and redness reduction.

## II. MATERIALS & METHODS

Ingredients used in this formulation are Beeswax, emulsifying wax, shea butter, coconut oil, calendula flower oil, Daffodil flower oil, water, aloe vera, glycerine, sodium benzoate. All of the components are from fresh plants and leaves.

**Preparation of Extraction** – Preparation of extraction is done by the Maceration in this investigation. Maceration is the process of soaking herbs in an appropriate solvent for a certain amount of time. During this time, the cells relax and aid in the passage of solvent into the mixture, causing the soluble element to dissolve.

### Extraction of Calendula flower oil:

Fresh flower petals of Calendula were collected and washed with water. Flower petals were weighed properly and recorded. Flower petals were crushed into fine paste using mortar and pestle. A 1:1 acetone-hexane solvent mixture was prepared. Flower paste was added to a beaker and covered with the solvent mixture. Beaker was kept for 24 hours at a room temperature. Mixture was filtered using Whatman filter paper and kept stable. Filtrate was transferred to Eppendorf tube and centrifuged at 10,000 rpm for 10 minutes. The upper solvent layer containing the extracted oil was collected. The solvent was evaporated to obtain pure calendula oil. Extracted oil was stored in a cool and dark place [13].



Figure 1: Extraction of oil from calendula.

**Extraction of Narcissus tazetta flower oil:** Narcissus tazetta flowers were washed and air-dried. Flowers were weighed and recorded carefully. The flowers were crushed into a fine powder using mortar and pestle. The flower powder was transferred to a clean beaker. Ethanol was added to a beaker until the powder was fully immersed. The beaker was covered and kept in dark room for 24 hours at room temperature. After 24 hours, the mixture was filtered using Whatman filter paper. The filtrate was poured into Eppendorf tube and centrifuged at 10,000 rpm for 10 minutes. The clear supernatant containing oil and ethanol was collected. Ethanol was evaporated from mixture to isolate the flower oil. Extracted oil was stored in a cool and dark place [14].



Figure 2: Extraction of oil from Daffodils.

**Extraction of Aloe Vera:** Fresh aloe vera leaves were collected and washed thoroughly with distilled water. The thick outer layer of leaves was carefully removed with sterile scalpel. The transparent inner gel was separated using a sterile spatula. The extracted gel was transferred to a clean beaker. Gel was homogenized to obtain a uniform consistency. Homogenized gel was filtered through Whatman filter paper to remove fibrous residues. Vitamin E was added to the gel to act as an antioxidant and improve shelf life. The filter was collected in a sterile flask and stored at 4degree temperature [15].



**Figure 3: Extraction of aloe vera gel.**



**Extraction of Orange peel extract:** Orange peels were washed and cut into small pieces. The peels were crushed into a paste using a mortar and pestle. The paste was filtered through Whatman filter paper. The filtrate was collected in a clean beaker [16].





**Figure 4: Orange peel extraction.**

**Herbal Drug information:** Medicinal plants are a wide category that includes a variety of plants used in herbalism, some of which have therapeutic properties. Because of their advantageous qualities, these medicinal plants are regarded as a wealth of substances that can be utilized in cosmetics.

**Table 1. Therapeutic properties of the herbal components.**

Name	Part used	Uses	Figures	References
Daffodil (Narcissus Tazetta)	Flower (oil)	<ul style="list-style-type: none"> <li>• Anti-aging</li> <li>• Antioxidant</li> <li>• Anti-inflammatory</li> <li>• Skin healing</li> </ul>		[17]
Pot Marigold (Calendula officinalis)	Flower (oil)	<ul style="list-style-type: none"> <li>• Wound healing</li> <li>• Antiseptic and antimicrobial</li> <li>• natural UV protection</li> </ul>		[18]



Name	Part used	Uses	Figures	References
Aloe Vera (Aloe barbadensis Miller)	Leaf (gel)	<ul style="list-style-type: none"> <li>Cleansing</li> <li>Soothing</li> <li>Skin brightening</li> <li>Moisturizing</li> </ul>		[19]
Orange (Citrus sinensis)	Peel (extract)	<ul style="list-style-type: none"> <li>Vitamin C</li> <li>Cleansing</li> <li>Depigmentation</li> <li>Pore minimizer</li> </ul>		[20]

**PREPARATION OF FACE MOISTURIZER** Consists two phases – Oil phase and water phase.

**Table 2. Components for face moisturizer-**

Sr. No.	Ingredients	Quantity
	<b>OIL PHASE -</b>	
1.	Beeswax	2 gm
2.	Emulsifying Wax	1.5 gm
3.	Shea butter	3 gm
4.	Coconut oil	4 ml
	<b>WATER PHASE -</b>	
5.	Water	5 ml
6.	Aloe vera	3 ml
7.	Glycerine	2.5 ml
	<b>AFTER COOLING</b>	
8.	Sodium Benzoate	0.3 gm
9.	Calendula oil	3 ml
10.	Daffodil oil	2 ml
11.	Orange peel extract	2.5 ml
12.	Lavender oil	3-4 drops

- **Oil Phase** – Beeswax, emulsifying wax, shea butter, coconut oil was weighed properly and added to a clean beaker. The mixture was heated in water bath to about 60degree. Stirring continuously until everything melted and blended properly.

- **Water Phase** – In separate beaker take distilled water, aloe vera gel and glycerine were added. Mixture was gently heated around 60degree to mix them properly.
- **Mixing of both phases (A & B)** – The warm water phase was slowly poured and mixed into melted oil phase while stirring continuously. The mixture was stirred well for 20-25 minutes to ensure the uniform mixture. Keep it stable to cool down to room temperature while stirring to avoid any separation.
- **Cooling and addition of natural ingredients** – The mixture was allowed to cooldown to below 40degree, while stirring to avoid separation. Then calendula oil, daffodil oil, orange peel extract and lavender oil were added and mixed well. A few drops of vitamin E were added for antioxidant preservation. The mixture was stirred gently to make uniform blending.
- **Storage** – The final product was transferred into sterilized container and stored in a cool and dry place [21,22].

## PREPARATION OF LIP BALM

**Table 3. Ingredients of lip balm –**

Sr. No.	Ingredients	Quantity
1.	Beeswax	2 gm
2.	Emulsifying Wax	1.5 gm
3.	Carnauba wax	1.5
4.	Shea butter	2 gm
5.	Coconut oil and olive oil	2 ml
6.	Water	3 ml
7.	Beetroot	0.5 ml
8.	Aloe vera	1.5 ml
9.	Glycerine	2.5 ml
	<b>AFTER COOLING</b>	
10.	Sodium Benzoate	0.3 gm
11.	Calendula oil	1.5 ml
12.	Daffodil oil	1.5 ml
13.	Orange peel extract	1.5 ml
14.	Lavender oil	2 drops

**Oil Phase Preparation:** Coconut oil and olive oil were first measured and mixed carefully in a clean beaker. To this mixture, beeswax, emulsifying wax, carnauba wax, and shea butter were added one by one wisely. The complete oil phase mixture was then heated using a water bath at approximately 70–75°C, until all waxes and butters melted completely and a uniform, clear blend was obtained.

**Aqueous Phase Preparation:** In a separate beaker, the aqueous phase was prepared by mixing water, beetroot, aloe vera gel, and glycerine. This mixture

was also gently heated to around 70°C to match the temperature of the oil phase.

**Emulsification Process:** The heated aqueous phase was slowly added to the oil phase with continuous stirring to ensure proper emulsification. Stirring was continued until a smooth and semi-thick emulsion formed.


**Cooling and Addition of Heat-Sensitive Ingredients:** The emulsion was allowed to cool while stirring gently. Once the temperature of the mixture was below 40°C, the following heat-sensitive ingredients were added: Sodium benzoate, Calendula oil, Daffodil oil, orange peel extract, Lavender oil (2 drops). These ingredients were mixed thoroughly to ensure even distribution throughout the balm.

**Storage:** The final lip balm mixture was poured into pre-cleaned lip balm containers. It was left undisturbed at room temperature until it solidified completely [23,24].

## III.RESULT AND DISCUSSION

**PHYTOCHEMICAL TESTS FOR ALOE VERA AND CALENDULA FLOWER EXTRACT –** The extract's phytochemical study shows the following compounds: Flavonoids, alkaloids, Triterpenoid, Saponins, Tannins, Phenol, Terpenoid. These components give medicinal plants their therapeutic qualities. The phytochemical tests were conducted using standard methodologies, with methodological adjustments taken from previously studies [25, 26].

**Table 4. Phytochemical tests for aloe vera and calendula flower extract.**

Phytochemical	Test Name	Aloe Vera	Calendula	observation
Flavonoids	Alkaline reagent test	✓	✓	 flavonoids detection

Phytochemical	Test Name	Aloe Vera	Calendula	observation
Alkaloids	Mayer's test	✓	✓	
Triterpenoid	Salkowski's test	✓	✓	
Saponins	Foam test	✓	✓	
Tannins	Ferric chloride test	✗	✓	
Phenol	Ferric chloride test	✗	✓	
Terpenoid	Salkowski's test	✓	✓	
Glycosides	Keller-killiani test	✓	✓	

## EVALUATION OF FACE MOISTRIZER

### PHYSIOCHEMICAL PARAMETERS OF FACE

**MOISTURIZER** After the herbal moisturizing cream was formulated and tested, we used a variety of methodologies and procedures, including physical evaluation, skin irritancy, phase separation,

Organoleptic properties, appearance, pH, colour, and stability, to observe a range of outcomes. Physicochemical evaluations of the face moisturizer were carried out according to established methods, with essential modifications [27, 28, 29].

**Table 5. physicochemical parameters of face moisturizer.**

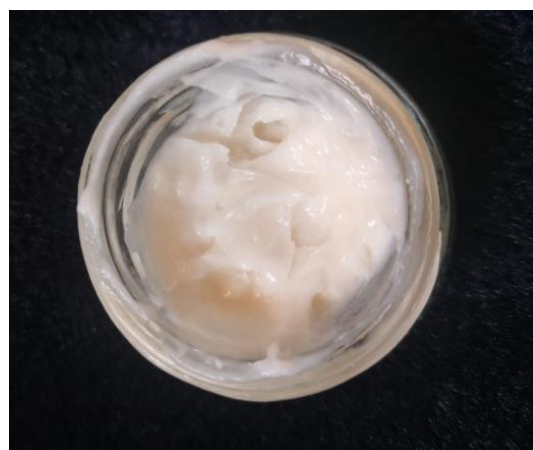
Sr. No	Parameters	Result
1.	pH	6
2.	Stability	Under various storage circumstances, there is no phase separation, colour change, or odour change.
3.	Spread ability	easily spreadable
4.	Organoleptic properties (simple visual and sensory observation)	Consistent look, nice feel, and smooth, smooth texture
5.	Skin irritancy	Non-irritating, confirmed by patch test
6.	Retention test	4-8 hours
7.	Colour	White, uniform
8.	Fragrance	Mild lavender scent
9.	Appearance	Smooth and creamy, no clumps absorbed
10.	Hedonic test	Users liked the soothing scent and soft feel (tested by volunteers)

**pH** – The pH of the prepared face moisturizer was found to be 6, which is suitable for human skin.

**Stability** – The moisturizer remained stable with no phase separation or change in texture.



**DAY ONE**



**AFTER ONE MONTH**

**Figure 5:** After a month, the cream was unchanged from Day 1 and stayed stable.

**Spread ability** – The cream exhibited good spread ability with smooth and even application on the skin.



The spread ability of the prepared cream was measured by inserting the sample between two slides and then compressing it to a constant thickness for a predetermined amount of time with a predetermined weight. Spread ability was defined as the amount of time needed to separate the two slides. Spread ability was determined using the formula below: The formula is  $S=M \times L / T$ . where S stands for spread ability. M is the weight of the upper slide. L is the glass slide's length. T is the amount of time needed to split the slides.



BEFORE



AFTER

Figure 6: Spread ability of moisturizer.

**Skin irritation** – No sign of redness, itching, or irritation was observed on human volunteers.



BEFORE



AFTER

Figure 7: Before and after applying moisturizer on skin.

**Organoleptic properties** – The cream showed acceptable organoleptic properties in terms of colour, texture and fragrance.

**Retention test** – The moisturizer showed good skin retention remaining effective up to 7-8 hours after application.

**Colour and Appearance** – The formulation had a uniform and aesthetically pleasing white colour. And the cream had a smooth semi-solid consistency with a glossy finish.



Figure 8: Colour and Appearance of the final product.

**Fragrance** – A pleasant Lavender fragrance was retained throughout the stability period.

## EVALUATION OF LIP BALM

### PHYSIOCHEMICAL PARAMETERS OF LIP BALM

After the herbal moisturizing cream was formulated and tested, we used a variety of methodologies and procedures, including physical evaluation, lip irritancy, phase separation, Organoleptic properties, appearance, pH, colour, and stability, to observe a range of outcomes. Physicochemical evaluations of the lip balm were carried out according to necessary methods, with essential modifications [30, 31, 32].

Table 6. Physiochemical parameters of lip balm

Sr. No	Parameters	Result
1.	pH	5
2.	Stability	No phase separation, colour change, or odour change Under various storage conditions.
3.	Spread ability	Smooth and easily spreadable.
4.	Melting point	65-67 degree Celsius
5.	Organoleptic properties (simple visual and sensory observation)	Soft and smooth texture.
6.	Lip irritancy	No redness, dryness, and irritation observed.
7.	Retention test	2-3 hours
8.	Colour	Red, uniform
9.	Fragrance	Mild lavender scent
10.	Appearance	Smooth and glossy.
11.	Hedonic test	Users liked the gentle effect, softness and soft feel (tested by volunteers)

**pH** – Ph of the lip balm is 5 which is safe to use on human lips.

**Stability and Spread ability** – No phase separation in lip balm and has smooth texture and Lip balm is easy to spread.

**Lip irritancy and organoleptic property** – There is no irritation observed and irritation and have smooth and glossy texture.

**Retention test** – Remain Stable for 3 hours.

**Colour, Fragrance and Appearance** – Natural deep red colour with pleasant lavender fragrance and smooth texture.



**BEFORE**



**AFTER**



**LIP BALM**

**Figure 9: Before and after applying the lip balm.**

#### **IV. CONCLUSION**

The cream had a multipurpose impact with the use of Calendula flower, Narcissus tazetta, aloe vera, orange peel and each of the herbal constituents shown different and important activity. We can conclude from the results that formulations were stable at room temperature and could be applied to the skin without risk. This study focuses on the potential of plant

extracts for cosmetic applications. The cream was formulated using the slab process, and it was evaluated on a number of factors that produced positive findings about its efficacy and safety. These formulations were formulated by adding and mixing of herbal components which provides many benefits for human skin. The pharmacological examination revealed that *Narcissus tazetta* has antibacterial, antifungal, antiviral, antimalarial, anticancer, antioxidant, dermatological, cardiovascular, immunomodulatory, and acetylcholinesterase inhibitory activities. And *Calendula* flowers are processed into tinctures, extracts, and salves, utilized topically to improve and treat wounds, burns, and various skin inflammations. There have been reports that aloe vera gel protects the skin from radiation damage because aloe vera has healing properties at the epithelial level of the skin, which is a layer of cells covering the body, it helps with sunburn. It serves as the skin's protective covering. In this formulation natural components are added because they are thought to be safer and have fewer adverse effects than synthetic ones, natural therapies are more widely accepted.

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#### **VI. AUTHOR CONTRIBUTIONS**

Experimentation was done by Beenakshi Thakur. The manuscript preparation was done by Beenakshi Thakur and Gurinder. The proof reading was done by Dr. Puneet and lab facility was provided by Harpreet Kaur.

#### **VII. CONFLICTS OF INTERSET**

There was no conflict of Interest.

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