

# Formulation And Evaluation of Herbal Lotion

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## Abstract-

The herbal cosmetics are those when natural herbs and their products used for their aromatic value in cosmetic preparation among consumers for herbal products triggered the demand for natural products and natural extracts in cosmetics preparations. Lotions are liquid preparations that is for external application without friction. They are applied directly on the skin with the help of some absorbent material, such as, cotton wool or gauze soaked in it. Formulation of aloe Vera lotion, formulation of menthol lotion and with arrow root powder is prepared using different composition. The focus of the present research was to formulate the herbal lotion for the occasion of moistening and nourishing the skin.

**Keywords:** Herbal Formulation, Sunflower Leaf, Wound Healing, Herbal Cosmetic, Decoction.

## 1.INTRODUCTION

The cosmetics are the utility product used extensively throughout the world for maintaining and improving general appearance of face and other part of body e.g. skin, eye, hair, hand, etc. herbal cosmetics are the preparation which represent cosmetics associated with active bio-ingredients, nutraceuticals and pharmaceuticals.

Cosmetics are products that are used to cleanse and beautify the skin. The first recorded use of cosmetics is attributed to Egyptians in 4000 B.C. Pharmaceuticals are essentially drug products and are defined as products that prevent, mitigate, treat or cure disease and affect the structure or function of the body.<sup>[1]</sup>

By the European directive (European commission).The cosmetic products are defined as —any substance or preparation intended to be placed in contact with the various external parts of human body (epidermis, hair system, nails, lips, etc.) or with the teeth and the mucous membranes of the oral cavity with a view exclusively or mainly to cleaning them perfuming them changing their appearance or correcting body odours and the protecting them or keeping them and good conditions.<sup>[2]</sup>

The cosmetics, according to the Drugs and Cosmetics Act is defined as articles intended to be rubbed, poured, sprinkled or sprayed on, introduced into or otherwise applied to the human body or any part thereof for cleansing, beautifying, promoting attractiveness or altering the appearance.

creates a hydrating, long-lasting protective barrier against environmental pollutants. Beeswax is also a natural exfoliator, ideal for sloughing away dead skin cells. By making beeswax into a lotion bar, it will work double-duty to keep your skin soft and hydrated. Treats Diaper Dermatitis, Psoriasis and Eczema. Beeswax is a great choice for many skin conditions. ...

- Moisturizes Skin.
- Protects the Liver.
- Lowers Cholesterol Levels.
- Relieves Pain and Is Anti-Inflammatory.
- Clears Acne.
- Heals Dry Cracked Lips. [3]

In Pakistan sunflower was cultivated on an area of 384 thousand acres with total production of oilseed 190 thousand tonnes and oil production 76 tonnes (Govt. of Pakistan, 2014). To increase yield and quality in

sunflower cultivation, nitrogen fertilizer is used insensitively, because nitrogen (N) is an essential mineral nutrient for plant growth and development.[4]

### 1.1 HERBAL COSMATICS

referred as Products, are formulated, using various permissible cosmetic ingredients to form the base in which one or more herbal ingredients are used to provide defined cosmetic benefits only, shall be called as –Herbal Cosmetics

### 1.2 HARBAL LOTION

Herbal Lotion, here referred as Products, are formulated, using various permissible cosmetic ingredients to Form the base in which one or more herbal ingredients are used to provide defined cosmetic advantages only, Shall be called as –Herbal Cosmetics

#### 1.2.1 Ideal properties of Herbal Lotion:

1. They should give cooling effect on application
2. They should be free from particles.
3. They should produce emollient effect.
4. They should remove the oily secretion upon application.
5. They should spread uniformly on the skin surface.
6. They should not cause any skin toxicity.
7. They should be compatible with skin pH.[6]

### 1.3 Advantages of Herbal Cosmetics

Herbs are important for their disease prevention and health promotion properties having following advantages which are described below:

#### 1.4 Natural products

Herbal cosmetics are natural and free from all the harmful synthetic chemicals which generally may turn out to be lethal to the skin.

#### 1.5 Safe to use

Natural cosmetics are protected to utilize. They are hypoallergenic and tested and proven by dermatologists to be safe to use anytime, anywhere. Since they are made of natural ingredients, people don't have to worry about getting skin rashes or experience skin itchiness.

#### 1.6 Compatible with all skin types

No matter if you are dark or fair; you will find natural cosmetics like foundation, eye shadow, and lipstick which are appropriate irrespective of your skin tone. Women with oily or sensitive skin can also use them and never have to worry about degrading their skin condition.

#### 1.7 Wide selection to choose from

These products are more affordable than synthetic ones. They are offered at economical prices and are sold for a cheap price during sales. An estimate of WHO demonstrates about 80% of world population depends on natural products for their health care, because of side effects inflicted.

#### 1.8 No side effects

The synthetic beauty products can irritate your skin, and cause pimples. They might block your pores and make your skin dry or oily. With natural cosmetics, one need not worry about these. The natural ingredients used assure no side effects; one can apply them anytime, anywhere.

#### 1.9 Cosmeceutical

Cosmeceuticals is fastest growing segment of the beauty industry. Cosmeceuticals are cosmetic- pharmaceutical products intended to improve the health and beauty of the skin by providing a specific result, ranging from acne-control and antiwrinkle effects, to sun protection.

#### 1.10 Lotion Benefits

1. Re-hydrate dried skin..
2. Replenish extra dry or rough spots on the skin.
3. Smooth calluses.
4. Feel and smell good.
5. Help yourself relax.
6. Soften the roughest parts of your body.
7. Make your skin glow.

Applying lotion is one of the few cheap ways that people can pamper themselves. Bath body lotion seal moisture into the skin to prevent drying, while body care lotion softens rough elbows and heels, along with other dry areas of the skin. A quality body skin lotion can work wonder on scaly, dehydrated skin that feels rough and looks unattractive, and hand body lotion works especially well on the hands and feet, but can be applied all over the body. As millions of users will agree, body lotion provides many benefits to people who make time to use it on a regular basis. [7]

**AIM** – Formulation And Evaluation Of Herbal Lotion.

### **OBJECTIVES-**

1. Providing hydration and moisture to the skin
2. Soothing and calming irritated or inflamed skin
3. Improving skin texture and elasticity
- Reducing the appearance of fine lines and wrinkles
4. Enhancing skin tone and radiance
- Protecting the skin from environmental stressors
5. Minimizing the risk of allergic reactions or skin irritation

### **4.1 DRUG PROFILE:**

**PLANT:- Helianthus annuus L**



**Fig 1: Sunflower leaf (Helianthus annuus L)**

**Synonyms:** *Helianthus tubaeformis* Nutt., *Helianthus platycephalus* Cass. *Helianthus ovatus* Lehm.

**Geographical sources:** Karnataka, Orissa, Haryana, Maharashtra and Bihar

**Taxonomical classification:**

Kingdom- Plantae

Infrakingdom -Streptophyta, Family- Asteraceae

Genus- Helianthus

Species- H.annuus[9]

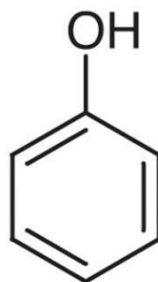
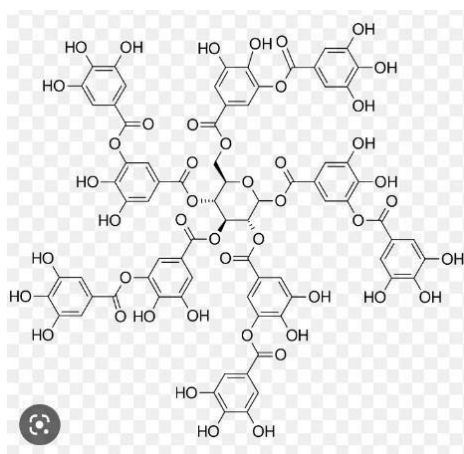
**Chemical constituent:** phenol, flavonoids and alkaloids, tannins. [8]

### **4.2 Chemical structure-**

#### **1. Phenol-**

**Molecular formula-** C<sub>6</sub>H<sub>5</sub>OH

**Molar mass-**94.11g/mol

**STRUCTURAL FORMULA-****Fig 2: Structure of Phenol****2. Tannins-****Molecular formula** –  $C_{76}H_{52}O_{46}$ **Molar mass-** 1701.2**Structural formula** –**Fig 3: Structure of Tannic acid****4.3 . ORGANOLEPTIC PROPERTIES****Colour-** sunflower leaves are light green or dark green in colour**Odour-** Slightly sweet, grassy or hay-like aroma.**Taste-** Bittersweet or a little nutty.**Height-** 5-6 feet tall with heads 8-10 inches across.**Seed-** Cylindrical or drop-shaped.**Therapeutic category** – Antioxidant, Antimicrobial.**4.4 Plant description-**

The sunflower is an erect, coarse, tap-rooted annual with rough-hairy stems 6-30 dm [100-300 cm] tall. The leaves are mostly alternate, egg-shaped to triangular, and entire or toothed. The flower heads are 7.5-15cm [3-6 in] wide and at the ends of branches. Ray flowers are yellow and disk flowers are reddish-brown. [10,11]

**4.5 Pharmacological Activities of *H. annuus*****4.5.1 Anti-inflammatory Activities**

Sunflower exhibits anti-inflammatory activity. From an n-Butanol-soluble fraction of a methanol extract of a flower petals of sunflower, two new oleanane-type triterpene glycosides, helianthosides 4(4) and 5(5), along with four known triterpene glycosides, helianthosides 1(1), 2(2), 3(3) and B (6) isolated which possess distinct anti-inflammatory activities on 12-O-tetradecanoylphorbol-13-acetate induced ear edema in mice. All of the triterpene glycosides exhibit potent inhibitory effects and are more potently inhibit.[12]

**4.5.2 Anti-asthmatic Activity**

The effect of *H. annuus* L. seed aqueous extract is analyzed on an in vivo anti-asthmatic model on ovalbumin induced mice and their lungs are assess by hemotoxylin and eosin staining. By these findings it is conclude that the extract has extensive potential to reduce the asthma.[13]

#### 4.5.3 Antioxidant property

Sunflower plant has excellent anti-oxidant property. The intake of this seed may prevent cancer and other oxidative reaction related diseases.[14]

#### 4.5.4 Antigen property

Different extracts from *H. annuus* exhibit inhibitory effect on Epstein-Barr virus. It is analyze that from the diethyl ether extract of the pollen grains of *H. annuus* following compounds are isolated such as four free triterpene alcohols, eight fatty acid esters of triterpene alcohols, two tochopherol-related compounds, four estolides, three syn-alkane-4, 6-diols, 1, 3-dioxoalkanoic acid and one aliphatic ketone along the mixture of free fatty acids and showed inhibitory effects on Epstein-Barr virus and early antigen induced by tumor promoter induction. [15]

#### 4.5.5 Antimicrobial activities

The antimicrobial activity of methanolic extract of seeds is evaluated from *Helianthus annuus* L[16]. The polar oil from the seeds of sunflower (*Helianthus annuus*) shows antimicrobial activity against *Staphylococcus epidermis*, *E. coli*, *Pseudomonas aeruginosa*, *Candida albicans*, *Staphylococcus aureus* and *Proteus vulgaris* [17].

#### 4.5.6 Antihypoglycemic effects

Ethanollic extracts of *H. annuus* exhibit antidiabetic potential. Seeds show antihyperglycemic effect in rats. It is detected that the oral administrations of ethanolic extract which contain polyphenols from *H. annuus* L. cause a decline in diabetes[18].

### 4.6 EXCIPIENTS-

Table 3- Excipients used and their physical properties

Sr.no	Excipients	IUPAC Name	Chemical formula	Melting point	Boiling point	Uses
1)	Mineral oil(Liquid paraffin)	2-(3,4,5-trihydroxyphenyl)chromenylium-3,5,7-triol;chloride	$C_nH_{2n+2}$	280-350 <sup>0</sup> c	280-350 <sup>0</sup> c	Emollient
2)	Petroleum Jelly	1,1,2-Trimethylbenzo[e]indole	$C_{15}H_{15}N$	322 <sup>0</sup> c	70-80 <sup>0</sup> c	Moisturizer
3)	Cetyl alcohol	Hexadecane-1-ol	$CH_{13}(CH_2)_{15}OH$	49.3 <sup>0</sup> C	344 <sup>0</sup> C	Emulsifier
4)	Methyl paraben	Methyl 4-hydroxybenzoate	$C_8H_8O_3$	125-128 <sup>0</sup> c	270-280 <sup>0</sup> c	Preservative
5)	Propyl paraben	Propyl 4-hydroxybenzoate	$C_{10}H_{12}O_3$	95-98 <sup>0</sup> c	113 <sup>0</sup> c	Preservative
6)	Fragrance (Rose Water)	-	-	-	-	-

7)	Glycerine	Propane-1,2,3-triol	C <sub>3</sub> H <sub>8</sub> O <sub>3</sub>	290 <sup>o</sup> c	17.8 <sup>o</sup> c	Preservative
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#### 4.7 EXPERIMENTAL WORK-

##### 4.7.1 Collection of plant material

The plant material like leaves of species such as *Helianthus annuus* L are collected from our locality. Leaves of sunflower were dried about a period of one week to remove moisture. Then the dried leaves crushed by using a mortar and pestle and it is finely grinded.

##### 4.7.2 Process of decoction –

1. The decoction is used for active ingredients that doesn't modify with temperature.
2. In this process the drug is boiled in water for 15 to 60 minutes (depending on the plant or the active ingredient to extract), it's cooled, strained and added enough cold water through the drug to obtain the desired volume.
3. Depending on the consistency of the parts to extract, **decoction** times will be more or less long; generally roots, leaves, flowers and leafy stems are boiled in water for about 15 minutes, while the branches and other hard parts can require up to an hour, during this time the evaporated water must be replaced.
4. Once the decoction is done it's necessary to filter the liquid through a cloth, squeezing very well the obtained liquid.
5. Doses are similar to the infusion ones, i.e. a plant part per ten of water, except for the plants with high mucilage content in this case will be 1/20 to prevent the solution takes much viscosity.
6. The **decoctions** are prepared for using in the moment and shouldn't be stored for more than 24 hrs



fig 4: Powder of sunflower leaf

##### 4.7.3 Method of preparation –

- The formulation components used were listed in table.
- Oil in emulsion [cetyl alcohol] were dissolved in oil phase [part a] and heated up to 80<sup>o</sup>c.
- Extract and water soluble components [glycerin methyl paraben, propyl paraben] were dissolved in [part b] and heated up to 80<sup>o</sup>c.
- After heating the aq. phase was added in portions to the oil phase with constant stirring until cooling of emulsifier took place.
- Perfume was added when temp dropped to 45<sup>o</sup>c to 50<sup>o</sup>c.
- water emulsion of 1 and 2% drugs were formulated.
- The emulsifier [glycerol monostearate] and other oil soluble components. [Sunflower oil, mineral oil, petrol]



#### 4.7.4 Formulation of herbal lotion :

**Table 4- formulation batches for herbal lotion**

Sr.no	INGRIDENTS	F1	F2	F3
1	Extract	1	1	1
2	Glycerin	2.0	2.0	2.0
3	Water	q.s	q.s	q.s
4	Sunflower oil	4.0	4.0	4.0
5	Mineral oil	2.0	2.0	2.0
6	Petroleum jelly	1.0	1.0	1.0
7	Cetyl alcohol	1.5	1.5	1.5
8	Glyceryl monostearate	2.0	2.0	2.0
9	Methyl paraben	0.2	0.2	0.2
10	Propyl paraben	0.2	0.2	0.2
11	fragrance	0.1-1	0.1-1	0.1-1

#### EVALUTION TEST:

##### 1. Physical evaluation :

In this test, the cream was observed for color, odor, texture, state.

##### 2. Appearance :

The appearance of the lotion

##### 3. After feel :

Emolliency, slipperiness and amount of residue left after the application of fixed amount of lotion was checked.

##### 4. pH measurement :

The pH meter was calibrated using standard buffer solution. About 0.5gm of lotion was weighed and dissolved in 50ml of distilled water and its pH was measured using digital pH meter.

##### 5. Irritancy Test :

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

##### 6. Viscosity :

Viscosity of the formulation was determined using brookfield or oswald viscometer at 100 RPM, using spindle no. 7 at temp 25°C. The determinations were carried out in triplicate and the average of three readings was recorded.

Consistency, feel on application and irritation parameters are determined.

##### 7. Spreadability :

Two glass slides of standard dimensions (20 × 5cm) were selected. The formulation was spread over one of the slides. The other slide was placed on top of the first such that the formulation was sandwiched between the two slides in an area occupied by a distance of 7.5 cm, alongside 100 gm weight was placed uniformly to form a thin layer. The weight was removed and the excess of lotion adhering to the slides was scrapped off. The two slides in a position were fixed to stand (45° angle) without slightest disturbance and in such a way that only the lower slide held firmly by the opposite fangs of the clamps allowing the upper slide to slip off freely by the force of weight tied to it. 60 gm of weight was tied to the upper slide carefully. The time taken for the upper slide to travel the distance of 5 cm and separate away from the lower slide under the direction of weight was noted. The experiment was repeated for 3 times and the mean time taken for three such dimensions was calculated. The results were recorded.

The Spread ability is calculated by using formula:

$$S = M \times L/T$$

Where,

S= Spread ability,

L= Length of glass slide,

M= Weight tied to the upper slide and T= Time.

### 8. Sensitivity Test :

A portion of lotion was applied on the forearms of 6 volunteers and left for 20 minutes. After 20 minutes any kind of irritation if occurred was noted.[18]

### 9. Wash ability Test :

A portion of lotion was applied over the skin of hand and allowed to flow under the force of flowing tapwater for 10 minutes. The time when the lotion completely removed was noted.[19]

## RESULT AND DISCUSSION:

1. **Physical evaluation :** In this test, the lotion was observed for colour, odour, texture, state

**Table No 5 : Test color, odor, texture and state of the three formulations**

Sr.No.	Batch	Colour	Odour	texture	state
1	Batch 1	white	Pleasant	Smooth	Semisolid
2	Batch 2	white	Pleasant	Smooth	Semisolid
3	Batch 3	white	Pleasant	Smooth	Semisolid

2. **Irritancy:** Mark the area (2 cm<sup>2</sup>) on the left-hand dorsal surface. Then the lotion was applied to that area and the time was noted. Then it is checked for irritancy, erythema, and edema any for an interval up to 24 h and reported.

**Table No.6: Irritancy**

Sr.no	Formulation	Irritant effect	Erythema	Edema
1	A	Nil	Nil	Nil
2	B	Nil	Nil	Nil
3	C	Nil	Nil	Nil

3. **Wash ability :** Wash ability test was carried out by applying a small amount of lotion on the hand and then washing it with tap water. All three formulations were easily washable.

**Table No 7: Wash ability of Formulations**

Sr. no.	Batches	Wash ability
1	A	Easily washable
2	B	Easily washable
3	C	Easily washable

4. **Ph :** According to the results, the pH of all the three formulations that is A, B and C were found to be nearer to skin pH so it can be safely used on the skin.

**Table No 8 : pH of Formulations**

Sr. no.	Batches	pH
1	A	6.6
2	B	6.4
3	C	6.2



## 5. Spreadability:

The spread ability of the three formulations that is A, B, and C was carried out and out of that for B the time taken by the 2 slides to separate is less so as said in the description of evaluation test lesser the time taken for separation of the two slides better the spreadability so according to this statement B showed better spreadability.

**Table No 9 :Spreadability of formulation**

Sr. no.	Batches	Time	Spreadability
1	A	10	25.50
2	B	07	28.20
3	C	15	30.10

## 6. After feel:

Emolliency, slipperiness and amount of residue left after the application of a fixed amount of lotion were found.

**Table no. 11:After feeling of formulations**

Parameter	Formulation		
	A	B	C
After feel	Emollient	Emollient	Emollient

## 6. CONCLUSION:

Oil in water type lotion was properly formulated by using formulation of Ajania fruticulosa: meyer lemon: Tithonia Diversifolia: Psidium guajavaat the ratio of 1:1:1:2. This is possible as optimum different plant extracts as well as synergize the cosmetic properties of prepared products differentiate to individual extracts. From this present invention it has been revealed that lotion was stable in room temperature and accelerated temperature for at least three months. In this research there is a problem that's for memorize I named the F1- Muzzpiydeemon as like others F2 to F13

## 7. FUTURE SCOPE

### Herbal Beauty Products Market Analysis

The market for herbal beauty products is projected to be worth USD 111.11 billion in 2024 and rise at a compound annual growth rate (CAGR) of 6.90% to reach USD 155.11 billion by 2029. Throughout the projection period, it is expected that consumer adoption of herbal products and the trend toward improved appearance and looks would support the growth of the herbal beauty products market globally. Because more people are becoming aware of the negative consequences of the chemicals added to beauty products, there is a growing demand for herbal beauty products.

Additionally, in an effort to reach a growing number of consumers who are increasingly passionate about clean, green, and herbal products, beauty corporations have begun purchasing herbal beauty and personal care brands. Additionally, in an effort to reach a growing number of consumers who are increasingly passionate about clean, green, and herbal products, beauty corporations have begun purchasing herbal beauty and personal care brands. The increasing use of cosmetics containing organically derived herbal compounds, such as lavender, chamomile, rosemary, jojoba oil, Aloe Vera, etc., to treat skin, acne, and hair disorders, is expected to fuel demand for herbal beauty products.

Herbal extracts are mostly used in cosmetic products due to the potent antibacterial, antioxidant, and pigmentation-inhibiting properties of herbs. Herbal elements such as vitamins, witch hazel, willow herb, green tea extract, and botanical extracts also shield skin from UV radiation and pollutants. The market for herbal beauty products will grow as a result of all of these considerations.

### Herbal Beauty Products Market Trends

According to our research analysts, the following are the main key trends influencing the herbal beauty products market: The Herbal Beauty Products Market Will Be Driven by the Popularity of Cruelty-Free Beauty Products Global demand for herbal beauty products is being driven by consumers' growing choice for chemical-free goods and their increasing appeal as environmentally sustainable products. Growth in the market is supported by

rising consumer demand for chemical-free skin and hair care products as well as rising awareness of cruelty-free cosmetics.

According to our research analysts, the following are the main key trends influencing the herbal beauty products market: The Herbal Beauty Products Market Will Be Driven by the Popularity of Cruelty-Free Beauty Products

Sales of herbal beauty products are anticipated to be impacted by the notable increase in the influence of social media and beauty blogs that highlight the advantages of these products. Consumer decisions are influenced by animal experimentation because social media is rife with passionate debates opposing animal abuse. Consumers openly support certain brands while denouncing those that don't live up to their moral standards. Additionally, because herbal beauty products are appropriate for all skin tones, they are sold in large quantities. Examples of these items are foundation, eye makeup, and lipstick. The expansion of the market is mostly being driven by the availability of a wide range of herbal beauty products and expanding distribution networks.

### **The market with the fastest growth is Asia-Pacific.**

Due in large part to a number of safety laws, rising consumer knowledge, and consumers' willingness to pay a premium for high-quality herbal goods, the market for herbal beauty products is growing in Asia-Pacific. Market expansion is driven by consumers' propensity for better lifestyles and the rising demand for goods with less environmental impact. Moreover, millennial' growing embrace of vegan lifestyles will probably fuel the market's expansion. The growing popularity of traditional Chinese ingredients in skin care products is also supporting market growth among domestic consumers.

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