

Formulation And Evaluation of Herbal Lotion By Containing Lemon Citrus Leaves

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Abstract

Lotions are defined as monophasic or biphasic solution, emulsion or suspension design to apply on unbroken and also broken or inflamed skin without friction. The types of lotions are simple lotion, therapeutic lotion, emulsion lotion and suspension lotion. Lotion maintains skin hydration level by locking in the moisture, keeping the skin healthy, soft and supple. Unlike a cream the lotions are less greasy and have more water content. Plant based herbal body lotions soothes and moisturizes. The herbal cosmetics are those when natural herbs and their products used for their aromatic value in cosmetic preparation the demand for natural products and natural extracts in cosmetics preparations. Lotions are liquid preparations meant for external application without friction. They are applied directly to skin with the help of some absorbent material, such as, cotton wool or gauze soaked in it. Formulation of the lotion is prepared by using different composition. These formulations were evaluated with different evaluation parameters like determination ph., wash ability test, irritancy test, determination of homogeneity, spread ability test, stability test, determination of viscosity. Herbal lotion formulations studied by many researchers and this information can be used for novel herbal cosmetic formulations with new herbs. In this formulation lemon leaves extract is a main ingredient used has showing activity against anti-aging, anti-inflammatory. Water is used as a vehicle. Bentonite is used as thickening agent. Methyl paraben and propyl paraben is used as a preservative. Honey is used as a humectant. Milk is used as a neutralizer. Cetyl alcohol and stearic acid is used as an emulsifier. Sandalwood powder is used as a thickening agent.

The lotion was prepared by using the W/O emulsion method in which water phase Bentonite, glycerin triethanolamine and oil phase cetyl alcohol, steric acid, mineral oil methyl paraben is using as a preservative. We have developed four batches of our herbal lotion, namely F1 F2 F3 F4. All four batches were evaluated for different parameters like organoleptic, pH, viscosity, spread ability, homogeneity. This article is all about the requirement of standardization and the composition of herbal product in day-to-day life. Composition of herbal products will give ever best effect in our daily life as the composition of any single and individual product. The only reason behind choosing the mixture of herbal product was to bring true upon the effectiveness of these formulation without any side-effects. Comparison includes organoleptic and physio-chemical character such as viscosity, ph., spread ability moisture free body after use. They are applied directly on the skin with the help of some absorbent material, such as cotton wool or gauze soaked in it.

The herbal preparation is research by many researchers and from new herbs obtained new herbal formulation. The herbal lotion formulation has no side effects. The formulation of herbal lotion prepared from lemon citrus leaves extract, honey, milk is useful for nourishing skin, and it also acts as

anti-inflammatory, anti-septic, antioxidant agent. The lotion is evaluating irritancy test, pH measurement frequently. As moisturization is present in lemon it is used to prevent dryness of the skin during winter and during summer and also use to prevent. The herbal lotion passes all evaluation test and has no effect hence it is safe to use for skin.

The focus of the present research was to formulate the herbal lotion for the occasion of moisturizing and nourishing the skin. All the four formulations show good appearance, pH, adequate viscosity and no phase separation was observed. Also, the formulation A, B, C, D showed no redness erythema and irritation during irritancy study and they were easily washable. The adverse effects are not present in herbal moisturizing which nourishes the skin without them. The only motive behind to choose the mixture of herbal product was to bring true upon the effectiveness of these formulation without any side-effects. According to the study gives the satisfied result.

Keywords: Lemon leaves, Herbal lotion, Herbal formulation, Herbal cosmetic

Introduction- Cosmetics-

Cosmetics are substances that are used to enhance the odor and appearance of human body. FDA defines cosmetics as “intended to be applied to the human body for cleansing, beautifying, promoting, attractiveness, or altering the appearance without affecting the body’s structure or function. Word cosmetic is originated from Greek word “kosmeticos” mean adorn and preparation. It is external preparation meant for applying on external parts of the body I.e. nails, skin, hairs for coloring, covering, softening, cleaning, nourishing, waving, setting, preservation, removal and protection. Cosmetics is item intended to be rubbed, poured, sprinkled, introduced into otherwise applied to the human body or part for cleaning, beautifying, promoting attractiveness or altering the appearance.

Classification of cosmetics based on the widely used body parts as:

- 1.Facial cosmetics
- 2.Hair cosmetics
- 3.Eye cosmetics
- 4.Dental and oral cavity cosmetics
5. Anti-perspirant and deodorants
6. Miscellaneous cosmetics
7. Skin care cosmetics

1. FACIAL COSMETICS-

It includes cleansing preparation, skin nourishing such as (sunburn, suntan) skin tone, shaving creams, makeup, (facemask, varnishing cream, powder) multipurpose (sports).

2. HAIR COSMETICS-

It includes hair dyes, hair oil, hair creams, hair gels, antidandruff preparation hair removing creams, shampoos.

3. EYE COSMETICS-

It includes eye liners, eye gloves, kajal, Surma, contact lens, eye brow pencils.

4. DENTAL AND ORAL CAVITY COSMETICS-

It includes tooth paste, tooth powder, mouth washes, teeth whitening chewing, gum.

5. ANTI-PERSPIRANT AND DEODORANTS COSMETICS-

It includes anti-perspirant- liquid, lotion, Strick, powders.

Deodorants-powder, powder, liquid, cream, sticks.

6. MISCELLANEOUS COSMETICS

It includes anti-stress mark, black head marks, toilet soaps.

7. SKIN CARE COSMETICS-

It includes creams, lotions, powders, spray.¹

Herbal 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”. The herbal lotion is 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. Lotions are also used to wash the skin and to remove the excess oil from skin. The present study collects the details of herbal plants were used in herbal lotion discusses the benefits and its activities in cosmetics preparation. The ayurveda traditionally uses herbs and plants to treat various diseases. The function of a skin lotion is to opposed to skin against different environmental condition, weather and gives soothing effect to the skin.²

Benefits of herbal body lotion-

- No side effects.
- Effective and safe to use.
- Suitable for all skin types.
- Replenish dry skin with water.
- Add some moisture back into your rough, dry skin.
- Reduce the discomfort caused by calluses.
- Make the tactile and olfactory senses happy.
- Take time for yourself and practice self- care to help you unwind.
- Reduce the roughness of your body in the place where it shows the most.
- Make your skin look more radiant.

Advantage of herbal body lotion-

- They do not provide allergic reactions and do not have any negative side effects.
- They are easily incorporated with skin and hair.
- They are very effective than other cosmetic with small quantity.
- They have more stability, purity, efficiacy,

Disadvantages of herbal body lotion-

➤ May Trigger Allergies-

Body lotions may contain some synthetic chemicals that may lead to allergic reactions in some people.

➤ **Can Clog Pores-**

Many body lotions contain oils like petrolatum (Vaseline), lanolin (sheep-wool oil), and mineral oil.

➤ **Breathing trouble.**

- Herbal lotion has slower effect as compare to synthetic lotion.
- Some people might develop a rash or skin irritation if allergy to lemon grass.
- Allergic reactions and rashes.

Ideal properties of herbal body 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. Distribute them uniformly across surface of the skin.
8. It is vital to guarantee compatibility with the PH level of the skin.

Benefits of Ayurvedic herbal cosmetic products-

1. Safe for skin
2. Natural ingredients
3. Suitable for all skin types
4. Natural fragrance
5. No side effects
6. Cruelty- free³

Aim and objective-

Aim of lemon citrus leaves herbal lotion-

The main aim of our research is to prepare the herbal lotion using the extract of lemon citrus leaves and to do the comparative study between the simple lotion and the lotion containing herbal extract and to evaluate the herbal lotion for its efficacy.

Objective of lemon citrus leaves herbal lotion-

1. To prepare an herbal lotion with effective use.
2. To prepare an herbal lotion with less side effect.
3. To evaluate the herbal lotion.
4. To treat the dry skin using herbal products.

Drugs used in the preparation of lotion are as follows:**1) LEMON CITRUS LEAVES-****Fig. no.1- Lemon citrus leaves**

Synonym	Lemon leaves
Biological source	It consists of leaves of flowering plant belonging to Citrus Limon
Family	Rutaceous

Morphology-

The lemon plant forms an evergreen spreading bush or small tree, 3-6 meters (10-20) feet high if not pruned. Its young oval leaves have a decidedly reddish tint; later they turn green in some varieties the young branches of the lemon are angular; some have sharp thorns at the axils of the leaves.³

Chemical constituents-

Vitamin A & C, Tannins, Alkaloids, Flavanoids, glycoside. water-70%, citric acid-1.3%, Carboxylic acid 0.5-2%. It contains essential oil like linalool (30.62%), geraniol (15.91%) and linalyl acetate (13.71%).

Activity

1. Lemon shows anticancer and antibacterial activity due to the presence of alkaloids constituents in different parts of lemon leaves stem, root and flower.

2. The lemon plants have also been studied and shown to exhibit numerous pharmacological activities such as anti-oxidant, anticancer, neuroprotective agent, anti-microbial, anti-diabetes,

Anti-inflammatory, anti-cholesterol emic, ant urolithiasis, and ant plasmodial activities.⁴ The lemon was thought by 18th-century Swedish botanist Carolus Linnaeus to be a variety of citron (*Citrus medica*), though it is now known to be a separate hybrid species. The lemon plant forms an evergreen spreading bush or small tree, 3-6 meters (10-20 feet) high. The distinctive sour taste of lemon juice, derived from the citric acid, makes it a key ingredient in drinks and foods such as lemonade and lemon meringue pie.⁵

Uses:

1. Lemon water

2. Stroke
3. Maintaining a health complexion
4. Detoxification AIDS in weight loss
5. Lemons contains beneficial compounds
6. Acne
7. Serve up antioxidants, Astringent property
8. As Anti-inflammatory
9. As an antioxidant
10. As an antiseptic.⁶
11. May aid digestion
12. Anemia
13. Blood pressure
14. Digestive issue
15. It has an antifungal property.
16. It helps in the skin lightening.
17. Kidney stones
18. Weight loss
19. Boosts immunity
20. Beneficial for skin

2)BENTONITE-



Fig.no.2-Bentonite

Synonym	American clay
Biological name	Zeolite
Biological sources	Bentonite are clay composed of very fine particles derived from volcanic ash.

Bentonite is an absorbent swelling clay consisting mostly of montmorillonite (a type of smectite) which can either be Na-montmorillonite or Ca-montmorillonite. In the mineral alteration process, a large fraction (up to 40–50 wt.%) of amorphous silica is dissolved and leached away, leaving the bentonite deposit in place. [citation needed] bentonite beds are white or pale blue or green (traces of reduced Fe²⁺ in fresh exposures,

turning to a cream color and then yellow, red, or brown (traces of oxidized Fe^{3+}) as the exposure is weathered further.⁷

Chemical constituents-

Silica, Alumina, Iron, Potassium, Calcium

Uses-

- Multani reduce skin pigmentation
- Multani clay can help reduce tanning caused by the sun.
- The exfoliating and bleaching properties erase pigmentation, making the skin appear brighter.

3) METHYL PARABEN-



Fig.no.3- Methyl paraben

Synonym	Methyl hydroxy benzoate
Biological name	Methyl-4 – hydroxy benzoate
Biological source	These are derived from the para hydroxy benzoic acid, which occurs naturally in a many fruits and vegetables such cucumber, cherries.

Uses:

Used as preservative.

Parabens extends product life.

Is well suited for the preservation of cosmetics most cosmetics, parabens are used at very low levels ranging from 0.01 to 0.3% the product containing parabens may be used on an occasional or a consistent basis and their use may extend product life⁹

4) HONEY-**Fig.no.4- Honey**

Synonym	Madhu
Biological source	Honey is the sugary substance deposited in the honey by the hive bee <i>Apis mellifera</i> and the other species of <i>Apis</i> belonging to the family Apidae.
Family	Apidae

Chemical constituents-

Maltose, table sugar, fructose, proteins, Amino acids.

Uses of Honey-

- 1.Nourishes your skin
- 2.Honey deeply moisturizes and hydrates the skin.
- 3.Honey diminishes the signs of premature aging.
- 4.Honey is an effective pore cleanser and gentle exfoliter.
5. for Healing Wounds.
6. as a Natural Sleeping Aid.¹⁰

5) MILK-

Fig.no.5-Milk

Synonym	Milk
Biological name	Milk
Biological source	Mammary glands of mammals including humans

Chemical composition

Water-87%, Proteins, Fats, carbohydrate, Vitamins and Minerals -13%.

Uses-**Powerful healthy benefits of milk-**

1. Boosts your immune system.
2. Improves your bone and teeth health.
3. Aids your digestive health.
4. Helps you relax.
5. Strengthens your heart health.
6. Improves your skin and hair health.
7. Aids in post-exercise recovery.
8. Benefits your emotional and mental health.¹²

BENEFITS OF MILK FOR SKIN

- Treats acne
- Mild exfoliator
- Reduces signs of ageing
- Moisturizes skin
- Lightens and brightens

6) CETYL ALCOHOL-**Fig.no.6- Cetyl alcohol**

Synonym	Palmityl Alcohol
Biological name	Cetyl Alcohol
Biological source	It is obtained from mikania cordifolia, Cichorium endivia and other organisms

Chemical constituents-

Uses:

It is used as Emulsifier,

It used as thickening agent

7) SANDALWOOD POWDER-



Fig.no. 7- Sandalwood powder

Synonym	Chandan powder
Biological source	Sandalwood is class of woods from trees of genes santalum
Family	Santalaceae

Chemical constituents-

Sandalore , ximenynic acid , santalol, Isobornyl cyclohexanol, alpha santalol, beta santalol, fatty acids, phenolic compounds, sesquiterpenic alcohol, alpha santalene, alpha Guaiene, oleic acid, alpha curcumene, Nuciferol, Acoradiene, Camphene, cis-Lanceol.

Uses of sandalwood-

1. It is primarily used for skin care and beauty purpose.
2. It is very effective in treating blemishes, rashes and acne.
3. It also helps in the removal of tan and because of its cooling properties.
4. exfoliating and astringent properties that remove tan, dead skin cells, pigmentation, and redness from the skin.¹⁸

8) MINERAL OIL-



Fig.no.8- Mineral oil

Synonym	Paraffinium liquidum
Biological sources	Mineral oil are chemical substances prepared from naturally occurring crude petroleum oil.

Chemical constituents-

Oil, liquid paraffin

Uses:

It is used as a lubricating agent.

It is used as conditioning agent.

Mineral oils create a barrier on the skin that seals in moisture and reduces trans-epidermal water loss (TEWL), which occurs when water evaporates through the skin. This is why they work best after a bath or shower when the skin is damp.¹⁹

Benefits of mineral oil-

- 1.smoothen the crack feets
- 2.lock the skeen moisture.
- 3.make up remover.

9) VITAMIN-E -



Fig.no. 9- Vitamin-E

Synonym	D- alpha tocopherols
Biological source	Vegetable oil, seeds, nuts

Chemical constituents-

Alpha tocopherols

Benefits of vitamin E-

- 1) Reduces dark spot
- 2) Reduces skin aging
- 3) Remove dirt.

10) ROSE WATER



Fig.no. 10- Rose water

Synonym	Flavored water
Biological name	Rose water
Family	Rosaceae

Chemical constituents-

- Flavonoids
- triterpenes
- tannins
- phenolic acids
- polysaccharides
- fatty acids organic acids
- carotenoids and vitamins

Uses-

- ❖ The antioxidants in rose water protect the cells in the skin against damage.
- ❖ Rose water also has anti-inflammatory properties, which means it can be put on the skin to soothe the irritation caused by conditions, such as eczema and rosacea.
- ❖ Rose water acts as an inhibitor against elastase and collagenase, which are both harmful to the skin.

❖ Because of its gentle nature, it is suitable for people with any skin type-even sensitive skin. Using rose water for face and body cleansing will ensure your skin doesn't become dry and irritated.²¹

Lemon citrus leaves extract-

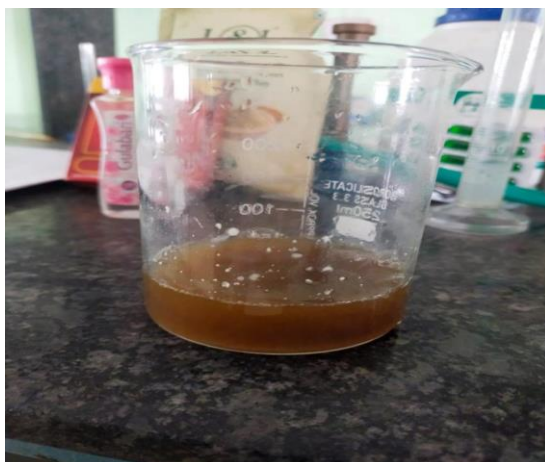


Fig. Lemon leaves extract

LEMON CITRUS LEAVES EXTRACT PREPARATION-

1. A Method for extraction of lemon leaves is collecting fresh lemon leaves
2. cleaning the all fresh lemon leaves
3. place the lemon leaves in small beaker
4. Slowly heat the water
5. Allow it to simmer for 30-40 minutes, and until it boils down to about 120 ml.
6. Remove from the heat and let your decoction cool .

Method used for preparation of herbal lotion-

By using extraction method -

The lotion was prepared using w/o type of emulsion

1. First the extract of lemon citrus leaves is prepared accurately and mixed together; this is aqueous phase.
2. Then cetyl alcohol, steric acid, mineral oil, and methyl paraben was weighed accurately and Heated at 70⁰c this is oil phase.
3. While the oil phase is hot aqueous phase is added to oil phase slowly drop wise with continuous stirring.
4. Then the prepared extract of lemon citrus leaves is added to the emulsion with continuous stirring. Here we get our homogeneous mixture.²³

PROCEDURE OF PREPARATION OF HERBAL LOTION-

1. Weigh all the ingredients as per formulation.
2. At first take lemons citrus leaves and wash them .
3. Later the extract of lemon citrus leaves is prepared by using decoction method. Mix together accurately this is aqueous phase.
4. Then cetyl alcohol, stearic acid, methyl paraben mineral oil was weight accurately and heated at 70-degree Celsius.
5. When the oil phase is hot aqueous phase is added into oil phase slowly dropwise with continuous stirring.
6. Then the prepared extract of lemon citrus leaves is added to the emulsion with continuous stirring. Here we get homogenous mixture.
7. After mixing all ingredient rose and milk added as per consistency.
8. At last our lemon citrus leaves herbal lotion gets ready.²⁵

Formulation table-**Table no.1-** List of Ingredients used in the formulation.

Sr. No.	Ingredients	Category(use)	Formulation (F1)	Formulation (F2)	Formulation (F3)	Formulation (F4)
1.	Lemon leaves	Antioxidant(fragrance)	6ml	6ml	8ml	8ml
2.	Water	Vehicle	25ml	10ml	20ml	20ml
3.	Bentonite	Thickening agent	6gm	7gm	6gm	6gm
4.	Methyl paraben	preservatives	0.05gm	0.05gm	0.05gm	0.05gm
5.	Honey	Humectant	1.5ml	2ml	1.5ml	1.5ml
6.	Milk	Neutralizer	0.45gm	0.15gm	0.15ml	0.15ml
7.	Cetyl alcohol	Emulsifier	1gm	1.5gm	1gm	1gm
8.	Steric acid	Emulsifier	2.5gm	1.25gm	-	-
9.	Vit.E	Antioxidant				
10.	Mineral oil	Lubricating	2.ml	2.5ml	2ml	2.5ml
11.	Sandalwood powder	Thickening agent	2gm	2gm	3gm	2gm

Evaluation tests-

The lotion was evaluated by the various test such as organoleptic properties, homogeneity, irritation test, viscosity, pH, stability and microbial test.

1.Determination of organoleptic properties:

The appearance of the lotion was judged by its color, odor texture, roughness, pearl scene and washing from skin.

2.Determination of pH:

The pH meter was calibrated and measured the pH by digital pH meter placing in the beaker containing 100mg of the at a temperature room temperature.



Fig. Determination of pH

3.Wash ability Test:

The removal of the lotion applied on skin was done by washing under tap water with minimal force to remove the lotion.



Fig. Washability test

4.Irritancy test:

The lotion was applied on left hand dorsal side surface of 2sq.cm and observed in equal intervals up to 24hrs for irritancy, sensitivity and edema.



Fig. Irritancy test

No redness, no edema.

5) Homogeneity test-



Fig. Homogeneity Test

Smooth, uniform mixture

6. Stability test

The stability test of final optimized lotion was measured out and it was found that the lotion was stable in room temperature for at least one week. The value of pH, viscosity and Spread ability all lay within the required range. In which no major changes in values of pH, viscosity and Spread ability as compared to the initial value of formulation.²⁶



Fig .stability test

Spredability test-

Excess sample was placed between the two glass slides and 100 g weight was placed on the glass slide for 5 min to compress the sample to a uniform thickness.



Fig. spredability test

Evaluation table-

Table no-1- List of evaluation parameters of herbal body lotion.

S.R.NO.	TEST	OBSERVATIONS		
		Formulation 1	Formulation 2	Formulation 3
1.	Appearance	Lotion type	Lotion type	Lotion type
2.	Color	Faint greenish	Faint greenish	Faint greenish
3.	Odor	Aromatic	Aromatic	Aromatic
4.	PH	5	5.5	6
5.	Spread ability test	Easily spreadable	Easily spreadable	Easily spreadable
6.	Irritation test	No irritation, no allergy	No irritation, no allergy	No irritation, no allergy.
7.	Removal test	Easily removable	Easily removable	Easily removable
8.	Stability test	No microbial growth is observed after 2 months	No microbial growth observed after 1 month	No microbial growth observed after 15 days

Result-

We formulated the four formulations of the herbal lotion is the best formulation after the observation of the evaluation tests. The stability test is carried out for 3 months and the result reveal that the all lotion shows better stability. The preparation was stable under normal storage conditions.

These results indicated that the herbal lotion had no adverse effects on the topical area. It is showed the herbal preparation is useful in inflammation and anti-aging and irritation.

Conclusion:

The present study revealed that herbal lotions are very safe and does not produce any toxic and adverse reactions compared to simple lotions. Good formulation as compared to F2 and F3 formulation. Smooth and consistence, large globules get reduced to small globules. In this study the formulation of herbal lotion was formed and evaluated in terms of their organoleptic properties. The present work focus on the herbal extract provides nutrients necessary for the healthy skin. There are numerous herbs available naturally having different uses in cosmetic preparation for skincare. The present study reveal that herbal cosmetics are very safe and does not produce any toxic and adverse reaction compare to marketed cosmetic product. Herbal lotion we will avoid many skin problems

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