



FORMULATION AND EVALUATION OF FACE SERUM

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ABSTRACT

Facial wrinkles and skin aging are undesirable outcome of photo damage and ultraviolet (UV) rays. Currently no effective strategies are available to delay skin aging process. Our Rose Serum Skincare is ideal for all skin types' especially sensitive and environmentally stressed skin to balance skin barrier, improve texture and moisture loss, hydrate and rejuvenate. This is our Rose Petal Serum made with real rose petals and rose water to naturally hydrate, reduce redness, and restore skin, marine water peptides to naturally boost collagen, and Vitamin C to brighten. Flaxseed may help brighten skin and it does have some beneficial properties that may improve skin health. Flaxseed is rich in omega-3 fatty acids, antioxidants, and fiber, which can help reduce inflammation and promote healthy skin. The face serum was evaluated for its physiochemical parameters, pH, globule size, consistency. The stability study results showed that there was no change in visual appearance, homogeneity and globule size.

KEYWORDS: Rose Petals, Flex seeds, Decoction, Anti-microbial.

INTRODUCTION

I. Rose

A rose is either a woody perennial flowering plant of the genus *Rosa* (in the family Rosacea (or the flower it bears. There are over three hundred species and tens of thousands of cultivars They form a group of plants that can be erect shrubs, climbing, or trailing, with stems that are often armed with sharp prickles.^[2] Their flowers vary in size and shape and are usually large and showy, in colors ranging from white through yellows and reds.

Most species are native to Asia, with smaller numbers native to Europe, North America, and northwestern Africa.^[2] Species, cultivars and hybrids are all widely grown for their beauty and often are fragrant. Roses have acquired cultural significance in many societies. Rose plants range in size from compact, miniature roses, to climbers that can reach seven meters in height.^[2] Different species hybridize easily, and this has been used in the development of the wide range of garden roses.



Fig. 1: Rose flower.

Corolla (Petals)

The collection of all petals in a flower is referred to as the corolla. The role of the corolla in plant evolution has been studied extensively since Charles Darwin

postulated a theory of the origin of elongated corolla and corolla tubes.^[1]

A corolla of separate petals, without fusion of individual segments, is *epipetalous*. If the petals are free from one another in the corolla, the plant is *polypetalous* or *choripetalous*; while if the petals are at least partially

fused, it is *gamopetalous* or *sympetalous*. In the case of fused tepals, the term is *sympetalous*. The corolla in some plants forms a tube.

Scientific classification

Table 1: Scientific classification.

Kingdom	Plantae
Clade	Trichophytes
Clade	Angiosperm
Clade	Eudicots
Clade	Rosides
Order	Rosales
Family	Rosacea
Subfamily	Rosoideae
Tribe	Rodeae
Genus	Rosa

Synonyms^[15]

Hulthemia dumort^[10]

XHulthemosa Juz. (Hulthemia x Rosa)^[8]

Scent

The petals could produce different scents to allure desirable pollinators^[11] or repel undesirable pollinators.^[12] Some flowers will also mimic the scents produced by materials such as decaying meat, to attract pollinators to them.^[13]

Color

Various color traits are used by different petals that could attract pollinators that have poor smelling abilities, or that only come out at certain parts of the day. Some flowers can change the color of their petals as a signal to mutual pollinators to approach or keep away.^[14]

Shape and Size

Furthermore, The shape and size of the flower/petals are important in selecting the type of pollinators they need. For example, large petals and flowers will attract pollinators at a large distance or that are large themselves.^[14]

Function

Petals have various functions and purposes depending on the type of plant. In general, petals operate to protect some parts of the flower and attract/repel specific pollinators.

This is where the positioning of the flower petals is located on the flower is the corolla e.g. the buttercup having shiny yellow flower petals which contain guidelines amongst the petals in aiding the pollinator towards the nectar. Pollinators have the ability to determine specific flowers they wish to pollinate.^[9] Using incentives flowers draw pollinators and set up a mutual relation between each other in which case the pollinators will remember to always guard and pollinate these flowers (unless incentives are not consistently met and competition prevails).^[10]

Benefits

- Contains Vitamin C so helps to maintain or restore natural skin radiance.
- Soothes irritated skin.
- Promotes collagen production.
- High in antioxidants.
- Seals moisture into cells, which helps to hydrate them.
- Helps to prevent dark circles.
- Has a natural soothing aroma.

II. Flex seeds

Atasi (Linum usitatissimum Linn.) commonly known as Flax or linseed, belongs to family Linnaean, has long been cultivated in different nations due to its applications in medicine and industry.^[1] It is one of the annual herb growing up to 60-120 cm height. The flowers are tiny and are blue, bluish violet or white in terminal panicles. The fruits are capsular with five cells, each containing 2 seeds.^[2] It is commonly cultivated for the purpose of oil and fibre. It is from genus Linum and family Linaceae. The botanical name, Linum usitatissimum was given by Linnaeus in his book "Species Plantarum".^[3,4] The plant was helpful as a source of fibre for weaving, oil from the seeds and nourish from the meal, hence the species name, usitatissimum- meaning „most useful“. Due to its abundant nutritional value Acharya Charka, Sushruta and Vagbhata mentioned this drug in Aaharavarga and Tailvarga.^[5,6,7] Commonly, Flax (English), is known as linseed (English), als, tisi (Hindi) and in Sanskrit: Ooma, atasi, kshuma, malika, masina, marrma, parwati, and, sunnily. Atasi have Madhura, Tikta rasa, Guru, Snigdha guna, Katu vipaka and Ushna veerya.^[8] The Atasi beej (Flax seed) are snigdha(Oily), Balya(Tonic), Vedanasthapaka (Demulcent), Mutrajanaka (diuretic).^[8] Due to its nutritional and medicinal properties in Ayurveda it is considered to be excellent for reducing heart ailments and promoting weight loss. But most importantly, it is useful for reduce skin ageing

Scientific classification**Table 2: Scientific classification.**

<i>Kingdom</i>	<i>Plantae</i>
<i>Clade</i>	<i>Trichophytes</i>
<i>Clade</i>	<i>Angiosperms</i>
<i>Clade</i>	<i>Eudicots</i>
<i>Clade</i>	<i>Rosids</i>
<i>Order</i>	<i>Malpighi ales</i>
<i>Family</i>	<i>Linaceae</i>
<i>Genus</i>	<i>Linum</i>
<i>Binomial Name</i>	<i>L. usitatissimum</i>

**Fig. 2: Flex seed.****Benefits****1. Anti-arrhythmic effects**

Limited human study and scientific reviews suggest a possible anti-arrhythmic effect of ALA and omega-3 fatty acids.^[28,29,30] However, another study found that anti-arrhythmic effects were concentration-dependently enhanced by DHA and EPA, but not by ALA.^[31] Higher intake of dietary omega-6-fatty acid could be related to a reduced risk of abnormally prolonged re-polarization in men and ladies.^[32]

2. Laxative effects

Flaxseed (not flaxseed oil) may produce laxative effects by increasing fecal volume and fecal weight^[101] and stimulating peristalsis due to stretch reflexes. Flaxseed doesn't appear to be affected by gastric acid or intestinal alkaline conditions. It has been suggested that flaxseed can coat and protect intestinal mucosa.

3. Renoprotective effects

Flaxseed fed to rats with polycystic kidneys increases citrate excretion and reduces histological damage.^[102] A diet supplemented with 15% flaxseed for 14 weeks delays the onset of proteinuria and significantly reduces mortality during a mouse model of lupus nephritis.^[103]

4. Antidepressant

A study has been conducted to estimate the antidepressant activity of extracts of linseed in wistar albino rats by locomotor activity, forced swimming test and tail suspension test. Linseeds are found to possess smaller antidepressant activity as compared to plain fluoxetine, chlorpromazine and imipramine.^[106]

5. Antimicrobial

A trial study was administered to gauge the antimicrobial activity of ethanol and chloroform extracts of flaxseeds against five microorganisms i.e. Salmonellatyphii, Enterococcus, Escherichia coli, Bacillussubtilisand Staphylococcus aureus. The result reveals that chloroform extract is more effective than ethanol extract against microorganisms. Chloroform extracts showed antimicrobial activity against all the five microorganisms. While ethanol extract did not show any antimicrobial activity against Esherichiacoli.^[107]

Ingredients and Method**Ingredients****1. Rose petals**

Rose petals and rose water have anti-bacterial properties to fight acne. Rose are ideal for acne treatment to achieve clear & glowing skin.

2. Flex seeds

Flex seeds are used as anti-cancer, weight loss, anti-ageing, anti-pyretic, anti-inflammatory, laxative, anti-arrhythmic and for glowing skin

3. Jojoba oil

It is used as deep -hydrating, nourishing, long lasting, nutritious for skin, anti-acne, anti-ageing, not greasy, non -allergic, soothes sunburn.

4. Rose oil

Rose essential oil can also help to soothe irritated skin and calm inflamed blemishes. High quality Rose oil is an excellent choice for those looking for a natural way to improve their skin. This oil minimizes the appearance of wrinkles, fine lines, and age spots. It can also help to even out skin tone and texture

5. Alovera

Helps soothe sunburn. Aloe Vera gel has cooling properties and is anti-inflammatory, helps to moisturize the skin, boosts healing of wounds, fights skin-ageing, reduces infection and acne. Lightens blemishes on the face.

6. Glycerin

Glycerin is great for the skin because it acts as a humectant, which is a substance that allows the skin to retain moisture. It can increase skin hydration, relieve dryness, and refresh the skin's surface. It's also an emollient, which means it can soften skin.

7. Methyl parabean

Methyl Paraben is antibacterial since it's a preservative. It is effective at preventing microbial growth and germs

such as bacteria and mold in skincare and cosmetic formulations

8. Guar gum

With its usage it makes your skin smoother. Adding guar gum as an ingredient increases the life of products. It brings natural moisture to the skin. By the usage of guar gum products your scalp and hair is protected by dryness.

9. Vitamin E

Using vitamin E for skin whitening. This fat-soluble antioxidant reduces the effect of free radicals and shields the skin against damage caused by the sun's UV radiation. It also helps make the skin nourished, hydrated, and more radiant.



Fig. 3: Ingriendts used.

Method of preparation (Decoction)

1. Firstly, we take the rose petals and Wash it.
2. Keep water bath for heating.
3. Add rose petals and flex seed in it.
4. Heat it and keep boiling till it's depolarization
5. Stain it
6. Add 3- 4 drops of jojoba oil
7. Add freshly prepared alovera gel, glycerin in it.
8. Add 7-8 drops of Vit.E
9. Add Methyl Paraben as Preservative.
10. Add Guar Gum and Stabilize and add Rose Oil for Fragrance.
11. And at last Mineralized water and make volume up to 20ml.
12. Store it at cool and dry place

Compositon of face serum

Table 3: Composition of face serum

Sr. no.	ingrediants	working formula
1.	Rose petals	3 flower petals
2.	Flex seed	4 gm
3.	Jojoba oil	3-4 drops
4.	Rose oil	2-3 drops
5.	Alovera	3 gm
6.	Glycerin	3 ml
7.	Methyl parabean	2 gm
8.	Guar gum	2 gm
9.	Vitamin e.	7-8 drops
10.	Minerallised water	up to 20 ml

Preparation via photos

Step 1: Rose Petals and Flex seed ready for boiling



Fig. 4: Rose Petals and Fleec seeds.

Step 2: Boiling and Decolorization of product



Fig. 5: Boiling and Decolorization of product.

Step 3: Wait for cooling



Fig. 6: Wait for cooling.

Step 4: Adding of jojoba oil, Glycerin, Alovera gel, Rose oil, Guar gum, Methyl parabean.

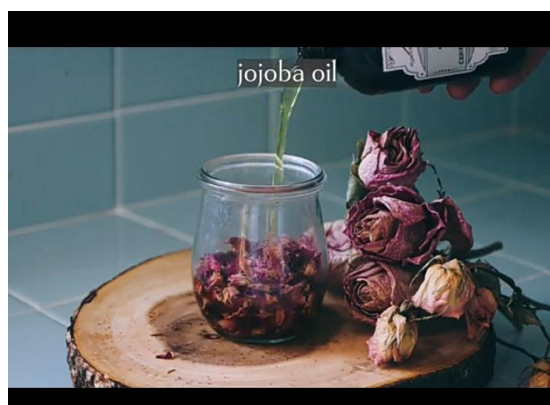


Fig. 7: Additon of ingredients.

Step 5: Strain the ingredients



Fig. 8: Strain the ingredients.

Step 6: Face serum is ready to use



Fig. 9: Face serum is ready.

Evaluation of face serum

1. Physical appearance

The Color and appearance of the formulation was observed visually. The formulation procedure uniform distribution of extracts. This test was confirmed by visual appearance and by touch.

2. pH value:

A pH meter was calibrated using a standard buffer solution. Nearly 1 ml of the face serum was properly weighed and dissolve in 50 ml of distilled water and finally its pH was calculated. The skin has an acidic range and the pH of the skin serum should be in the range of 4.1- 6.7

3. Determination of spread ability:

2ml of serum sample was placed on a surface. A slide was attached to a pan to which 20 gm weight was added. The time (seconds) required to separate the upper slide from surface was taken as a measure of Spread ability.

4. Microbial examination of product:

In this method, the mixed culture is diluted directly in tubes of liquid agar medium. The medium is maintained in a liquid state temperature of 45°C to allow thorough distribution of the inoculum. The inoculated agar medium is transferred zi pites, allowed to solidify and incubated. In the series dilution technique, the original

inoculum may be diluted by using sterile water or saline solution so that the concentration of the microbes gradually become less. Mix 1 ml dilute in 20 ml of liquid nutrient agar medium at 45°C. Shake the liquid agar nutrient agar medium & pour in a sterile petri plate, solidify and incubate it.

5. Stability studies:

Formulation and development of a pharmaceutical product is not complete without proper stability analysis carried out on it to determine physical and chemical stability and thus safety of the product. The stability studies are carried out as per ICH guidelines. Short term accelerated stability study was carried out for the period of few months for the prepared formulation. The samples were stored at different storage conditions of temperatures such as 3-50C, 250C RH-60% and 4000 2% RH-75%.

6. Cyclical temperature test:

These test is not carried out at any fixed temperature and humidity. In this test, temperature was changed cyclically every day. At room temperature and frizzing temperature to stimulates the changes in temperature.

III. RESULT AND DISCUSSION

1. Physical evaluation white translucent

Table 4: Physical evaluation white translucent.

Color	White Translucent
Odor	Characteristic Odor
Taste	Tasteless
Texture	Smooth Homogenous
Homogeneity	Good

2. Physical Evaluation

• **PH Value**

The pH of formulation was found to be 5.4. As the skin having an acidic pH around 4.1-6.7, this range of formulation is suitable for skin.

• **Determination of spreadability**

Spreadability of liquid formulation that is ability of the face serum to spread over the skin and play important

role in administration of standard dose of medicament formulation on skin. Spread ability of face serum 5 to 6 cm was found.

• **Determination of viscosity**

Viscosity is a critical parameter for topical formulation. Topical solutions with low viscosity have faster clearance than viscous solutions. In addition, highly viscous solutions can have an undesirable effect on the skin. Viscosity of the Face Serum was found to be 13759 Pa. s

• **Microbial examination of the product**

The formulation was free from microbes as they do not show zone of inhibition, when they got inoculated in the agar.



Fig. 3: Microbial examination of product.

• **Stability studies**

The formulation was undertaken stability studies for physical and chemical changes. No considerable variations in properties of formulation were observed:

Table 4: Stability studies.

Visual Appearance	White Translucent
Phase separation	Nil
Homogeneity	Good

• **Clinical Temperature Study:**

Table 5: Clinical temperature study.

Sr. No.	Parameter	Stability
1	Freezer Temperature	Unstable
2.	Room Temperature	Stable

CONCLUSION

The aim of the study was to formulate different herbals into a serum form moisturizing and glowing activity on skin. Cosmeceuticals are skin-care products that cater both cosmetics and drug. In the serum aloe Vera and olive oil are mainly used. The aloe Vera gel from the inner central part of the leaf often has a very good action in acne, pimples, and other skin problems, burns due to heat, sun exposure and in treatment of radiation dermatitis. Aloe Vera is rich in vitamins and minerals that have a good moisturizing capacity and anti-aging

effects to maintain healthy- and fresh-looking skin. Olive oil is beneficial for treating sunburn, the antioxidants in the oil used treat damaged caused by the UV rays. It also slows down and prevent premature ageing. It contains fatty acids such as omega 6 & omega 9, which help to prevent dry skin. Stability studies revealed that there was no significant difference in the physical and pH parameter. Thus, the formulation was found to be stable. Microbial examination of serum revealed that the formulation is free from micro- organism and safe for use. The Spreadability was found to be good. No residues were form and was easy to wash out. The gel stimulates cell growth and as such enhance the restoring of damage skin. So, this serum can be used treat skin related problem.

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