



Formulation and Characterization of Orange Peel Extract Vitamin C Containing Herbal Face Serum for Hydrating and Brightening Effects on Skin

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ABSTRACT

Beauty products plays an important role in skin care. Herbal products have good activity and no side effects so they attract people very quickly. The largest and most visible organ that may be influenced by environmental variables is the skin. The skin is harmed by shifting lifestyles as well. Our serum contains benefits of anthracephalus Kadamba to help fight all of these issues. This fruit has been utilised in numerous traditional medicines since ancient times. This fruit extract is used in cosmetics to cure skin conditions like pigmentation, wrinkles, acne, and ageing. Tannic acid, vitamin C, phenolic compounds like gallic acid and ferulic acid, alkaloids, and flavonoids with anti-microbial, antioxidant, and wrinkle-preventing qualities are all present in the extract of Kadamba fruit. The face serum's PH, viscosity, and stability were assessed physically.

This outcome demonstrates that the consistency, colour, and appearance did not alter. The face serum's ability to swiftly reach the skin's deeper layers. Examining elements such as concentration, composition, and extra components is necessary when comparing various vitamin C face serums. A serum's proportion of vitamin C can fluctuate, usually falling between 5% and 30%. Greater concentrations may provide more powerful benefits, but they also carry a higher risk of causing irritation, particularly in cases when the skin is sensitive.

It's essential to find a balance that suits your skin's needs and tolerance. Always patch test new products and consult with a dermatologist for personalized recommendations. A comparative study of vitamin C phase serums would involve analyzing factors such as the formulation, stability, effectiveness, and concentration of vitamin C. To determine the percentage of vitamin C in a serum, you typically look at the product label or consult the manufacturer's specifications. Using the serum effectively involves applying a few drops to clean, dry skin once or twice a day, followed by sunscreen during the day. The results can vary depending on individual skin types and routines. A comparative study of vitamin C phase serums would involve analyzing factors such as the formulation, stability, effectiveness, and concentration of vitamin C. To determine the percentage of vitamin C in a serum, you typically look at the product label or consult the manufacturer's specifications. Using the serum effectively involves applying a few drops to clean, dry skin once or twice a day, followed by sunscreen during the day. The results can vary depending on individual skin types and routines.

INTRODUCTION

The term "herbal cosmetics" refers to goods that are made with different approved cosmetic elements as the foundation, then one or more herbal compounds are added to provide specific cosmetic benefits. [12] In the field of cosmetics, serum is a concentrated product that is often utilized. The name in professional cosmetology is self-explanatory. [6] Serums are a type of skin care product that have a gel, light lotion, or hydrating consistency that can penetrate the skin more deeply to introduce active ingredients. A quality skin serum may improve the firmness and smoothness of your skin, reduce the appearance of pores, and boost moisture levels. [1] Serums are a type of skin care product that have a gel, light lotion, or hydrating consistency that can penetrate the skin more deeply to introduce active ingredients. A quality skin serum may improve the firmness and smoothness of your skin, reduce the appearance of pores, and boost moisture levels. [2]. All skin type needs these ingredients to be as healthy as possible. Gel and liquids preparations are best for oily and combination skin, serums and light lotions are best for normal to dry skin, more emollient lotions and moisturizing creams are best for dry to very dry skin. [5]. Worldwide, a wide range of skin care and protection cosmetics, including gel, sunscreen lotion, face cleanser, skin serum, and anti-pigmentation creams, are accessible. A serum is a type of skin care product that can penetrate the skin more deeply to deliver active ingredients, resembling a gel, light lotion, or moisturizing consistency. [7].

Face serum benefits

- Soothes irritated skin.
- Absorbs quickly into the skin[3]
- Improves the appearance of fine lines and wrinkles.
- Protects your skin from free radicals and future damage.
- Has the potential to provide more visible results.
- Feels light on your skin[4]
- Improves skin texture. ...
- Minimizes the skin pores. ...
- Reduces fine lines and wrinkles. ...
- Evens the skin tone. ...
- Hydrates and nourishes the skin. ...
- Improves skin elasticity. ...

Different types of Serums and their features

Type	Technology	Features
Transparent Or semi – transparent Lotion type.	Solubilization, Micro emulation, Liposomes, Disc like capsule	In general, contains more umectants than lotion. The texture may be adjusted through the selection of umectants and water-soluble polymer and varying their combination. This is most general form of serum preparation.
Emulsion type	O/W type W/O type W/O/W type	As the type contain large amount of emollient, it is suitable for preparation containing large amount of U.V. absorber and oily ingredients. The w/o type is suitable for preparation requires water repellence.
Oil type		In which, the texture is adjusted by solid or semi solid oils, and animal's fats or plants oils in different proportions. As texture of this type is not good as that of other preparation it is disappearing from market.
Two agents mix together type	In addition to above, spray dry, freeze dry, Microcapsule technology are used	In order to prevent instability in pharmaceutical agent and preparation or to affect a visual Change two agents are mixed together to use. They are liquid-liquid or liquidpowder combination. In order to prevent instability in pharmaceutical agent and preparation or to affect a visual Change two agents are mixed together to use. They are liquid-liquid or liquidpowder combination.
Others	Lotion with powder type. Much alcohol types.	Serum for t- zone which secretes a lot of sebum including sebum absorbing powder increases lasting power of make-up essence having a germicidal effect for acne preparation.

[8]

Orange peel

It is possible to use commercial skin-whitening products as cosmetics to make skin appear lighter. Additionally, they are employed in the clinical treatment of skin pigmentation disorders such as melasma and post-inflammatory hyperpigmentation..[11] Oranges, which are high in vitamin C, can effectively reduce the appearance of wrinkles, fine lines, and hyperpigmentation. They can also easily promote the creation of collagen, which will give you firm, plump skin. Orange peel is an excellent way to maintain your skin clear of toxins.[18]The appropriate skincare regimen and the necessary nutrients are

crucial in this case. And vitamin C is the one super component you constantly need for skin that looks better and is brighter. Vitamin C is an essential component of beauty products for the skin since it brightens and heals.

1. Anti-Aging Benefits
2. Acne Benefits
3. Dark spots
4. Lightens Skin
5. ExfoliatesBG [9]



Step #1: Vitamin C Powder

- Break it into small coin-sized pieces, and set them in a single layer on a large baking sheet.
- Place the baking sheet in the oven at 150F for about 3 to 5 hours. The peel should be very dry and crisp.



STEP #2: SERUM

- i. Combine the Vitamin C powder and distilled water first.
- ii. Add the organic aloe vera gel, and stir until dissolved.
- iii. Add the other ingredients and mix thoroughly.
- iv. You can adjust the consistency, adding more water to thin it, or more glycerin to thicken

Aloe vera gel

Aloe vera gel is a fantastic moisturizer. Its abundance in polysaccharides, which also give it a gel-like look, explains this. The polysaccharides attach to moisture because they are very hygroscopic (loving water). Conversely, its composition creates a barrier for the skin, contributing to its restorative

qualities. It also supports the skin's capacity for self-healing and epidermal protection. According to some research, the gel may have analgesic and anti-inflammatory qualities. These would be especially helpful for skin wounds, burns, and the repair of radiation damage. Aloe vera gel's skin-soothing properties are also attributed to the presence of vitamins, amino acids, minerals, and enzymes.[9]

Use

1. **Moisturization**
2. **Skin rejuvenation**
3. **Skin hydration**
4. **Anti-inflammatory effects**
5. **Skin repair[10]**



ROSE WATER

The primary phytoconstituents in rose water include flavonoids, triterpenoids, tannins, and polyphenolic chemicals. These constituents are primarily in charge of the antioxidant and anti-inflammatory qualities of the water. [13]Rose water contains antioxidants that shield skin cells from harm. The largest organ in the body, the skin serves as a barrier against physical contaminants, toxins, and UV rays. Elastase and collagenase are two skin-damaging enzymes that are inhibited by rose water. This in turn can function as an anti-aging agent by lessening the appearance of lines and wrinkles and soothing the skin and lowering redness. [17]



Glycerin

As a humectant—a kind of moisturizing agent—glycerin draws water from the air and deeper layers of your skin to the surface of your skin. To retain the moisture that it draws into the skin, occlusives—another class of moisturizing agent—are frequently used with glycerin in skin care products. The American Academy of Dermatology Association states that glycerin can:

- 1) hydrate the outer layer of the skin ([stratum corneum](#))
- 2) improve skin barrier function
- 3) provide protection against skin irritants

- 4) accelerate wound-healing processes
- 5) relieve dry skin
- 6) may help with [psoriasis](#)[14]

Almond oil

The powerful antioxidant vitamin E can be found in abundance in almond oil. Almond oil can enhance skin tone and complexion enhancer that goes beyond just relieving dry skin. Because it is highly emollient, it helps to maintain a balance between the absorption of moisture and water loss. Almond oil can be used to treat acne since it is rich in vitamin A and antimicrobial properties. The high content of vitamin E in it can also aid in healing sunburn, minimizing aging symptoms, and lightening scar.[15]



Coconut oil

It contains nourishing fatty acids and linoleic acid which help retain the moisture in the skin and help protect and hydrate your skin.



Vitamin E

Vitamin E is another beneficial ingredient commonly used in face serums for its skin-nourishing and protective properties. Here's why vitamin E is often included in skincare products:

1. **Antioxidant Protection:** Like vitamin C, vitamin E is a powerful antioxidant that helps protect the skin from damage caused by free radicals. It can neutralize these free radicals, which contribute to premature aging and skin damage.

Moisturizing and Hydrating: Vitamin E is known for its moisturizing properties. It helps strengthen the skin's barrier function, locking in moisture and preventing dehydration. This can result in softer, smoother skin.

2. **Anti-inflammatory Benefits:** Vitamin E has anti-inflammatory properties that can help calm and soothe irritated or sensitive skin. It's often used to alleviate symptoms of inflammatory skin conditions like eczema or rosacea.
3. **Enhances Skin Healing:** Vitamin E supports skin repair and regeneration. It can aid in the healing of wounds, scars, and minor burns by promoting cell regeneration and reducing the appearance of scars.
4. **Combats UV Damage:** Vitamin E can help protect against UV damage and sunburn. While not a substitute for sunscreen, it can enhance the effectiveness of sunscreen by providing additional antioxidant support.

When using a vitamin E serum or skincare product, consider the following:

- **Formulation:** Look for serums containing tocopherol or tocopheryl acetate, which are stable forms of vitamin E commonly used in skincare.
- **Combination with Other Ingredients:** Vitamin E is often combined with other antioxidants like vitamin C for enhanced benefits. This combination can provide synergistic effects in protecting and repairing the skin.
- **Application:** Apply vitamin E serum after cleansing and toning, but before moisturizing. Use a small amount and gently massage it into the skin until fully absorbed.
- **Suitability for Your Skin Type:** Vitamin E is generally well-tolerated by most skin types, but those with oily or acne-prone skin may want to use it sparingly or choose lighter formulations to avoid clogging pores.

FORMULA FOR FACE SERUM

Composition	F1	F2	F3	Purpose
Aloe vera gel	50%	40%	40%	Botanical
Vitamin c	10%	20%	30%	Anti-oxidant
Vitamin E	2%	2%	2%	Anti-oxidant
Glycerin	25%	25%	20%	Toner (skin hydrate)
Almond oil	1%	2%	1%	Anti-wrinkle
Rose water	5%	5%	5%	Anti-bacterial
Coconut oil	2%	2%	2%	Moisturizer
Distilled water	Qs to 100ml	Qs to 100ml	Qs to 100ml	Vehicle
Phenoxy ethanol	0.2 %	0.2 %	0.2 %	Preservative

Method of preparation

The emulsion (o / w) was prepared according to the formula given below. The oily component consisting of vitamin E oil, almond oil and coconut oil is mixed together for 10 minutes to obtain a uniform solution. At the same time the water phase was prepared by mixing aloe Vera gel, glycerin, and a small amount of distilled water uniformly. Added vitamin c and oil phase is added to the liquid phase by drop wise under mechanical vibration at 2500 rpm to obtain oil in water based on biphasic emulsion.



Evaluation of face serum

Organoleptic properties

The formulations were characterized for organoleptic properties such as colour, odour. The formulations are visually inspected for its clarity and presence of any foreign particles.

Homogeneity

The formulation was tested for the homogeneity by visual inspection and touch

Determination of PH

A pH meter was calibrated using a standard buffer solution . Nearly 1 ml of 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.

Determination of spread ability

2gm of serum sample was placed on the surface. A slide was attached to a pan to which 20 gram weight was added

. The time (s) required to separate the upper slide from surface was taken as a measure of spreadability .

Stability studies

The stability study is conducted by keeping the drug substance in their proposed pack or prototype container in the

[Error! Hyperlink reference not valid.](#) Case of bulk drugs, in sufficient number in room temperature away from light

RESULT AND DISCUSSION

Organoleptic properties

Colour	Yellow	Yellow	Yellow
Odour	Characteristic odour	Characteristic odour	Characteristic odor
Taste	Tasteless	Tasteless	Tasteless
Texture	Smooth homogenous	Smooth homogenous	Smooth homogenous
Homogeneity	Good	Good	Good

Homogeneity

The homogeneity of the formulated serum was judged by visual appearance and touch. The appearance and touch of the serum was good.

Stability studies

	SETRUM1	SERUM2	SERUM3
Visual appearance	Yellow	Yellow	yellow
Phase saperation	Nil	Nil	Nil
Homogeneity	Good	Good	Good

CONCLUSION

The ideal percentage of vitamin C in a face serum can vary depending on individual skin sensitivity and tolerance. Generally, concentrations between 10% and 20% are common and effective for most people. Higher concentrations, like 30%, can be more potent but may also increase the risk of irritation, especially for sensitive skin types. It's best to start with a lower concentration and gradually increase if needed while monitoring how your skin reacts.

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