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A Review: Formulation and Evaluation of Face Serum

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Abstract: ***The formation of wrinkles and skin aging are unwanted consequences of UV radiation and photodamage. The serum is quickly absorbed and effectively penetrates the deeper layers of the skin, providing a non-greasy finish and a potent formula rich in active ingredients. Cosmetic serums are concentrated products formulated with either water oil.Acne is a prevalent skin condition impacting millions globally, often leading to both physical discomfort and psychological issues. Recently, there has been a growing interest in natural skincare solutions, prompting the exploration of plant-based compounds for their potential anti-acne effects, particularly aloe vera, known for its rich phytochemical profile and historical use in skincare. The objective was to develop and identify an effective anti-acne facial serum. Five different formulations were created, each containing aloe vera, almond oil, rose oil, coconut oil, rose water, and glycerin.***

Keyword: Face Serum, Skin, Types, Ingredient, Composition, Evaluation Parameter

I. INTRODUCTION

Serums are a type of skin care product that can penetrate deeper to deliver active chemicals to the skin. They might have a gel, light lotion, or hydrating consistency. Your skin may feel firmer after using a quality skin serum. smoother texture, reduced pore size, and higher moisture content. Serum offers a non-greasy finish, rapid absorption, and a very high concentration of active substances. There are several distinct types of serums that serve certain purposes, such as hydrating or whitening the skin. To evaluate the effects of exogenous agents, their interactions, their absorption mechanisms, and their toxicity toward the various skin structures, research and development in the fields of dermatology, toxicology, pharmacology, and cosmetology are crucially focused on the study of human skin[1].

Serum;- It is quickly absorbed and effortlessly reaches the deeper layers of the skin. Additionally, it has a non-greasy finish and a potent formula that includes high levels of active ingredients. The formula features skin-smoothing elements that improve skin texture, leaving it soft, silky, and fair.

Its good spreadability reduces the appearance of pores and elevates moisture levels [2].

A. *Functions of skin:-*[1]

1) Acts as a protective barrier against harmful agents, as well as mechanical, thermal, and physical injuries.
2) Helps prevent the loss of moisture.
3) Reduces the harmful effects of ultraviolet (UV) radiation. 4. Functions as a sensory organ (detects temperature, etc.).
4) Assists in regulating body temperature.
5) Contains an immune system capable of recognizing infections, among other things.
6) The skin is the starting point for the sensations of pain, temperature, touch, and deep pressure.
7) serves as a storage space for lipids and water.

B. *Advantages:-*[3]

1) Enhance skin texture.
2) Reduce the appearance of pores.
3) Moisturize and nourish the skin.
4) Boost skin elasticity.

C. *Disadvantages:-*[3]

5) Not Suitable for All Skin Concerns.
6) Can be expensive.

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7) Challenging to choose the right one. 4.If not applied correctly, it may not be effective.

D. Types Of Serum:-[4,5]

1) *Oil serum:-* An oil serum represents the most basic type of face serum, consisting of a carrier oil as its foundation that is well-absorbing, particularly beneficial for dry skin. High-quality oils have been utilized to enhance the hydrating qualities of the oil serum.
2) *Gel Serum:-* The gel serum provides a tightening effect on the areas of skin where it is applied. Adding a waterbased plant extract to the gel serum can amplify its serum benefits.
3) *Water serum:-* A liquid serum composed of some gum and viscosity. A water- base serum is meant to be applied beneath creams or lotions to help the hydrophilic plant extract stay on the skin. Water-based serums are better at delivering the active ingredients to the skin and penetrating deeply.
4) *Emulsion Serum:-* The emulsion serum is a hydrating product that enhances the skin's resilience and facilitates the delivery of active ingredients. An emulsion combines two non-mixable phases, oil and water. To create a stable emulsion, an emulsifier is utilized. This serum efficiently transports the active ingredients deep within the skin. The moisturizing effect provided by the serum fortifies the skin's protective barrier.
5) *The pressed balm serum:-* A balm serum consists of a traditional base made up of butters, waxes, and oils, but it also contains active ingredients that are fat-soluble (lipophilic) and can benefit the skin. The butters and waxes create a barrier on the skin that provides hydration and nourishment.while allowing the active ingredients of the applied serum to work optimally. In a balm serum, a wide range of unique butters and waxes can be mixed with numerous exquisite plant oils.

E. Ideal Properties Of Face Serum:-[1]

1) Enhances radiance.
2) Combats signs of aging.
3) Alleviates inflammation.
4) Lightweight on the skin.
5) Diminishes dark circles and puffiness.

II. ACTIVE INGREDIENTS USED IN FACE SERUM[2,6,11]

1) Aloe Vera:-

Aloe Vera is utilized to combat skin damage resulting from ultraviolet (UV) and gamma radiation exposure. Its protective attributes consist of:

Moisturizing and anti-aging properties: The gel from Aloe Vera contains muco polysaccharides, which help retain moisture in the skin, enhancing its hydrating qualities. Moreover, aloe encourages fibroblast activity, leading to an increase in collagen and elastin production, which improves skin elasticity and minimizes the appearance of wrinkles.



Fig1.Aloe Vera

2) vitamin E capsules:-

Vitamin E serves several functions in your body, such as bolstering your immune system and shielding you from oxidative stress. Some foods and dietary supplements are excellent sources of vitamin E. Besides safeguarding your cells against oxidative harm. by scavenging dangerous molecules known as free radicals, vitamins also support healthy immune function, cellular signaling, and metabolic processes.



Fig2.Vitamin E Capsules

3) Almond oil –

Also referred to as Oleum amygdalae, it is a glyceryl oleate that has a nutty flavor and a slight fragrance. It is nearly insoluble in alcohol but easily dissolves in chloroform or ether, making it a favored alternative to olive oil. Almond oil provides various advantages for your skin, such as: • Hydration: Almond oil functions as an emollient, assisting in retaining moisture and maintaining skin hydration.

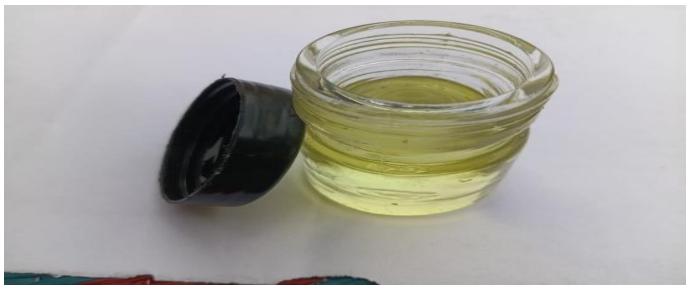


Fig3.almond oil

4) Coconut Oil:-

The meat or kernel of mature coconuts that are harvested from the coconut palm (Cocos nucifera) is used to make coconut oil, a multipurpose oil. It is well-known for its unique flavor and scent as well as its many applications in cosmetics, cooking, and medicine. Moisturizing does not cure wounds.



Fig4. coconut oil

5) Rose Oil :

Rose oil's antiseptic . skin toner property promotes the skin's healing process, reduces early signs of aging, and leaves your skin looking younger and more refreshed.

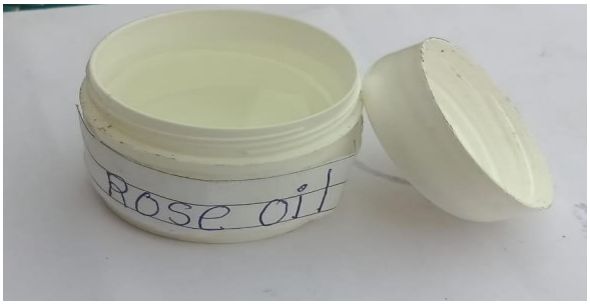


Fig5.rose oil

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6) Rose Water :-

Rose water acts as a botanical skin toner that helps balance pH levels.. Incorporating almond oil, glycerin, and rose water into your skincare everyday can afford numerous benefits, includingmoisturization, anti-inflammatory properties, skin nourishment, hydration, and pHbalancing effects.



Fig6. rose water

7) Glycerin:-

Glycerin is a safe and effective ingredient for facial use, as supported by scientific studies. It functions as a humectant, helping the skin retain moisture, which can enhance hydration, soothe dryness, and rejuvenate the skin's surface.



Fig7. Glycerin

III. COMPOSITION OF FACE SERUM [2]

Ingredients	Formula(20ml)
Aloe vera (juice)	9 ml
Vitamin E capsule	1 ml
Almond oil	2 ml
Coconut oil	2ml
Rose oil	2ml
Rose water	1ml
Glycerin	4 ml

IV. METHOD OF PREPARATION[1]

1) Combine aloe vera with rose water and strain the mixture.
2) Next, in a different beaker, blend almond oil and coconut oil thoroughly.
3) Create a mixture of glycerin, aloe vera gel, and an adequate amount of water.
4) Mix all these components thoroughly to formulate a face serum.
5) Assess the properties of the face serum.

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V. EVALUATION PARAMETER [8,1]

1) *Physical evaluation:-* The colour and look of the formulation were assessed through visual inspection. The formulation process ensured an even distribution of extracts. This evaluation was validated through both visual assessment and tactile examination.
2) *pH value:* The pH meter was calibrated using a standard buffer solution. The pH of the face serum was measured after precisely weighing 1 milliliter and dissolving it in 50 milliliters of distilled water. The pH of the skin serum should be between 4 and 6 points because the skin's pH is typically acidic.
3) *Spreadability assessment:* A two-gram serum sample was placed on a surface. A pan with a slide attached was filled with a 20 g weight. Spreadability was measured by the amount of time (seconds) needed to separate the upper slide from the surface.
4) *Microbial examination of the product :-* In this procedure, the mixed culture is directly diluted in tubes containing liquid agar medium. The medium is kept in a liquid form at a temperature of 45°C to ensure even distribution of the inoculum. The inoculated agar medium is then poured into petri plates, allowed to solidify, and subsequently incubated. With the serial dilution technique, the initial inoculum can be diluted using sterile water or saline solution, resulting in a gradual decrease in the concentration of microbes. Mix 1 ml of the diluted sample into 20 ml of liquid nutrient agar medium at 45°C. Shake the liquid nutrient agar medium and pour it into a sterile petri plate, let it solidify, and incubate it.
5) *Stability studies:-* The formulation and development of a pharmaceutical product cannot be deemed complete without conducting proper stability analysis to assess both its physical and chemical stability, thereby ensuring the product's safety. The ICH guidelines were followed when conducting stability studies. A short-term accelerated stability study was performed over a few months for the formulated product. The samples were kept under various storage conditions, with temperatures set at 3-5°C, 25°C with a relative humidity of 60%, and 40°C ± 2% with a relative humidity of 75%.
6) *Homogenicity:-* Visual confirmation of the preparation's homogenicity was obtained by looking for any particulate matter and by touching the product to feel its homogeneity.
7) *Cyclical temperature test:-* This test is conducted without a constant temperature and humidity. During this test, the temperature was varied daily in a cyclic manner. The room temperature and freezing temperature were used to simulate temperature fluctuations.

VI. APPLICATION OF FACE SERUM

Begin with a Fresh, Clean Face: Before applying a serum, it is crucial to cleanse and exfoliate your skin to eliminate excess sebum, dirt, or toxins that may hinder the serum's absorption.

Apply a Small Amount: Applying serum less is more on the application of serum. Take a small amount on your palm or use a dropper, then gently massage it onto your skin.

Use Gentle Circular Motions: Use gentle circular motions when applying the best popular face serum. This will help the fixings be absorbed into the skin more evenly. You can also use the tap strategy in conjunction with that.

After feel: Following distribution among participants and application, the individuals informed us that the serum had a calming and pleasant effect, suggesting that it had moisturizing and emollient properties and was non-irritating and non-sensitive to the skin[9].

VII. CONCLUSION

The goal of the current study is to create a herbal face serum that is safe and has no negative effects. The herbal serum offers glowing activity and moisturizing properties. Sesame oil contains vitamin E terpenoid, which exhibits hyperpigmentation properties and can help shield skin cells from environmental factors like pollution and UV rays. Aloe vera contains a variety of vitamins and minerals that have strong moisturizing properties. It has been reported that licorice provides UVB protection and antioxidant properties. Lemon oil has antibacterial, antimicrobial, and antioxidant qualities.

VIII. ACKNOWLEDGMENT

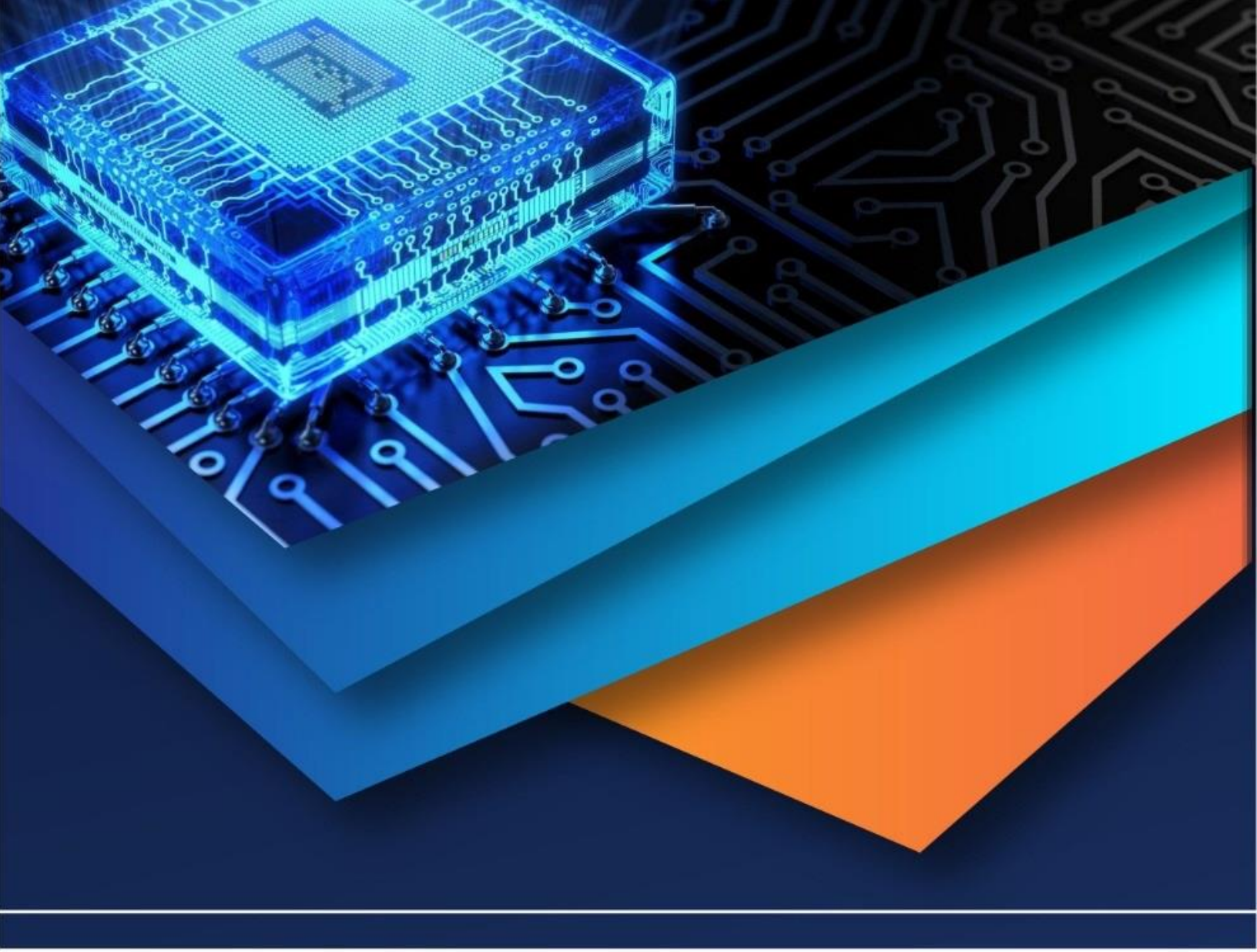
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