



INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

“Formulation And Evaluation Of Poly Herbal Face Serum”

Choudhary Nitu Mangilal ¹

Miss. Deeksha Saini²

¹Student, B. Pharmacy College Rampura

²Assistant Professor, B. Pharmacy College Rampura

ABSTRACT:

These days, the demand for skin care products and treatments has increased to a larger extent. Having a proper appearance and a beauty standard has gotten a lot of importance.

A typical skin care routine consists of a cleanser, a serum, a moisturizer and a sunscreen. Among these, it has been seen that the serums are the new go to when it comes to building an excellent skin routine. Serums come in various types of formulation be it for oily, dry or anything in between type of skin.

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. Aloe Vera, glycerin and honeybee venom face serum is a highly concentrated cosmetic product. When using aloe Vera we get not only a quick cosmetic effects but also psychological satisfactions, serum has a property of rapid absorption and ability to penetrate into deeper layer of the skin. Aloe Vera gel is commonly used to treat different skin disease, sun burn, minor cuts, insect bites, and used as wound healing, anti-inflammatory, anti-bacterial and anti-fungal effect.. 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: Aloe vera, Rose water, Vitamin-E, Salicylic acid, Jojoba oil, Glycerin.

INTRODUCTION:

Study of human skin represents an important area of research and development in dermatology, toxicology, pharmacology, and cosmetology, in order to assess the effects of exogenous agents, their interaction, their absorption mechanism, and/or their toxicity towards the different cutaneous structures. The importance of beautification to the mankind has been known since the prehistoric time and the desire to look beautiful and healthy has been developing in the society. Cosmetic is a Greek word which means to adorn (addition of something decorative to a person or a thing). Cosmetology is the study and application of beauty treatment. It's an art or science of beautifying and improving the skin, nails and hair and the study of cosmetics and their application. A skin care formulation must be able to deliver the powerful agent into the skin to fulfil the intended objective. Face serum is the answer to deliver the precious active ingredient into the skin thus eliminating the use of hazardous chemicals in giving instant Serum is a concentrated product which is widely used in Cosmetology. The name comes from itself in professional cosmetology. The cosmetic serum is as concentrated in water or oil as any other cream. Serums are defined as concentrated product that contains ten times more organic matter than cream. Therefore, deals with the cosmetic problem quickly and effectively. Face serum is a highly concentrated emulsion which is available in water based and oil based. Serums or defined a concentrate, contain approximately ten times more of biologically active substances than creams, therefore allows better skin problems treatment. Incorporating a few drops of face serum with daily skin care routine will deliver noticeable results within a month or less. This is because face serums are made of very

small molecules that help it to penetrate deep into the skin quickly. Serum is packed with a bunch of beneficiary active components and nutrients such as antioxidants, ceramides, amino acids and others. This explains why face serum always being the costliest item in a skin care set. Weather it is moisturizer, anti-wrinkle or anti-aging product or skin serum, all these products should contain antioxidants, cell-communicating ingredients and skin-identical ingredients.

HISTORY OF FACIAL SERUMS:

As defined in the dictionary – a serum is the clear, yellowish fluid obtained upon separating whole blood into its solid and liquid components after it has been allowed to clot, so it is not surprising that the precursors of modern-day serums were based on horse blood, egg albumin, and bovine placenta.

Packaging these products in sterile ampoules preserved with oxyquinoline (and later, the invention of parabens) made them available commercially. This is a practice that stayed with us since the early days of short product shelf life, which meant small batches had to be made and used up quickly before the product spoiled. Exercise, cleanliness, and skincare were all held in high regard during the 1800s. Zinc oxide was used to lighten skin, but often caused allergic reactions.

Objective of Research

The main objective of this study is to determine the optimum and stable face serum. The specific objectives of this study are:

To optimize the thickeners and emulsifiers of face serum formulation with regard to the viscosity and pH value.

To determine the most stable face serum formulation in term of its physicochemical stability study and microbiological study.

To characterise the face serum formulation in term of its flow behavior and sensory profile

Types of face serum :

1.The oil based serum :-

The oil serum is the simplest to make of all the face serums. It often starts with a base of just premium, fastabsorbing carrier oils, also referred to as "dry" oils. In addition to having moisturising and barrier-repairing characteristics, the premium oils used in the serum also include polyphenols, essential fatty acids, and other substances that may be broken down by the skin.



Figure 1: Oil serum

2.The gel based serum:-

Gel serums provide the skin a "tightening" sensation, giving your consumer the impression that their skin is momentarily lifted or tightened in particular regions of the face. The gel serum provides you the chance to include some fantastic water-based (hydrophilic) plant extracts because this formulation is water-based.



figure 2 : Gel serum

3.The Water based serum :-

Water-based serums are comparable to gel serums, although they may contain none or very little gums and thickeners. To administer high-performance hydrophilic plant extracts that are trapped against the skin beneath a cream or lotion, you would utilise a water-based face serum. Layering an anti-ageing face mist under an emulsion and then under an oil is the ideal technique to promote higher penetration of water-based compounds into the skin, delivering their high performance elements slightly deeper into the layers of the skin. The oils will form an occlusive barrier that will promote higher component penetration.



Figure 3 : Water based serum

4.The emulsion serum :-

An emulsion-based face serum is a moisturiser that strengthens the skin's barrier function while also delivering high performance components to the skin. Two "immiscible" phases-phases like oil and water that don't want to mix-are combined in an emulsion. An emulsifier is used to bind water and oil together and retain them in a stable state.



Figure 4:Emulsion serum

5.The pressed balm serum:-

A balm serum has a conventional balm basis of butters, waxes, and oils but also includes active substances that are oil-soluble (lipophilic) and may help the skin. The butters and waxes form an occlusive barrier on the skin that hydrates and nourishes it while allowing the pressed serum's active components to do their job. In a balm serum, dozens of intriguing unique butters and waxes can be combined with thousands of exquisite plant oils.



Figure 5: Pressed balm serum

Ideal Qualities of Face Serum

1.Soothes irritated skin: It is well known that aloe vera possesses antiviral and cell-regenerating capabilities. The advantages of aloe gel are comparable to how applying it to a sunburn feels.

2. Deep hydration: possess a special capacity to raise and decrease skin moisture.

3.Fight Acne and fades blemishes: Bael fruit stops the bacterial overgrowth that is the primary cause of acne and pimples.

4.Remove dark circle and puffiness: Vitamin E and antioxidants in abundance aid with eyelid discolouration, and the cooling impact reduces puffiness. It makes under-eye circles look less prominent. It removes dead skin cells, which encourages the synthesis of collagen.

5. It contains antioxidant qualities that encourage healthy-looking skin

Advantages

- Improves skin texture.
- Minimizes the skin pores.
- Hydrates and nourishes the skin.
- Improves skin elasticity

Disadvantages

- The liquid or gel-like texture of a serum can be a poor match for people with chronic skin conditions like eczema or rosacea, which weaken the skin barrier.
- For these people, serums may penetrate too quickly, causing irritation

FORMULATION OF FACIAL SERUMS

A face serum formulation is basically an emulsion consists of two immiscible liquids. In order to prevent emulsion instabilities, thickener and emulsifier are introduced to the system. In formulating a face serum, the physical properties and stability are the main characteristics in determining its quality

A chemical property which is considered important in formulating is pH value. If the pH value of the skin is changed, the skin's natural microbiology and function will be interrupted The natural skin micro flora is intact on the skin with pH value ranging from 4 to 4.5, Formulating a face serum with suitable pH range can help in improving the skin barrier function.

In formulating a face serum, the mixing of water phase and oil phase is crucial in order to create a stable system over an extended period or longer product shelf life. Naturally, the oil and water systems are thermodynamically unstable. Incorporation of emulsifiers into the system can minimize the interfacial difference between the water and oil phases thus mix the system.

Method Of Preparation:

The emulsion (o / w) was prepared according to the formula given below. The oily component consisting of Jojoba oil ,Vitamin E ,Salicylic acid, and 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 Rose water . The oil phase is added to the liquid phase by drop wise under Lab stirrer at 2500 rpm to obtain biphasic emulsion.

Ingredients Used:**1. Aloe vera:**

Aloe vera, scientifically known as *Aloe barbadensis*, is a perennial succulent plant that belongs to the Asphodelaceae family. It is a popular plant with numerous medicinal and cosmetic uses and is cultivated in various regions around the world. For your thesis, let's explore the plant profile of Aloe vera, including its taxonomy, morphology, cultivation requirements, and medicinal properties.

Taxonomy:

Kingdom: Plantae

Order: Asparagales

Family: Asphodelaceae.

Genus: Aloe

Species: *Aloe barbadensis*

Morphology:

Aloe vera is a stemless or short-stemmed succulent plant, typically reaching a height of about 60-100 cm (24-39 inches).

It features thick, fleshy, and lance-shaped leaves that grow in a rosette pattern.

The leaves are usually green, but they can vary in color depending on environmental conditions.

The leaf margins have small serrations or teeth.



Fig :Aloe vera

2 . Rose Water:

Rose water is a flavored water made by steeping rose petals in water. Additionally, it is the hydrosol portion of the distillate of rose petals, a byproduct of the production of rose oil for use in perfume

Rose water is prepared by steeping rose petals in water. Sometimes, a byproduct of the process of extracting rose oil is also used in the place of rose water. There are a number of rose water benefits

which make it a popular ingredient in cuisines and religious rituals. Rose water for skin and rose water for face are two of rose water's most well-known uses. Rose flowers are Anti-depressant, cleansing, anti-bacterial and antiseptic. They are used as toners in many pharmaceutical products.



Fig:Rose water

3.Vitamin E:

Vitamin E is a fat-soluble vitamin that can be found in many cosmetic products. It's also hydrating, as it helps your skin absorb water and traps it within the skin.



Fig:Vitamin E

4.Jojoba oil:

Moisturizing properties. Jojoba oil may be helpful as a moisturizer, Antibacterial properties and Antioxidant properties



Fig: jojoba oil

5.Salicylic acid:

Topical salicylic acid treats acne by reducing swelling and redness and unplugging blocked skin pores to allow pimples to shrink. It treats other skin conditions by softening and loosening dry, scaly, or thickened skin so that it falls off or can be removed easily



Fig: Salicylic acid

6.Glycerin

glycerine to your skin traps moisture in your skin and gives it a youthful, healthy glow.



Fig: Glycerin

Material and collection:

Ingredients	Place
Aloe vera Gel	Was collected from B. Pharmacy college Rampura, Kakanpur
Rose	Was collected from B. Pharmacy college Rampura, Kakanpur
Vitamin E	Was collected from medical store of Godhra
Jojoba oil	Was collected from online shopping site
Salicylic acid	Was collected from online shopping site
Glycerin	Was collected from medical store of Godhra

Composition and role of 30 ml Face serum:

Sr. no.	Ingredients	Quantity	Role
1	Aloe vera Gel	11ml	Soothing, anti-inflammatory.
2	Rose water	8ml	Toner
3	Vitamin E	4ml	Preservative, hydration
4	Jojoba oil	1-2drop	Treat acne, Treat dark sport and wrinkle
5	Salicylic acid	3-4drop	Treat acne , Treat wrinkle
6	Glycerin	3ml	Improve skin barrier function ,Relieve dry skin,Smoothens the skin

EVALUATION OF FACE SERUM

Physical Evaluation:

The Colour 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

Colour :- light green

Odour:- Characteristic Odour

Taste :-Tasteless

Texture:- Smooth Homogenous



Fig:Face serum

pH Test:

A pH meter / pH paper 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.

The pH of formulation was found to be 5.8. As the skin having an acidic pH around 4.1-6.7, this range of formulation is suitable for skin.



Cyclical Temperature:

This 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.

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 is 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 3-5oC, 25oC RH=60% and 40oC±2% RH=75%

Determination of Viscosity:



Viscosity is a critical parameter for topical formulation. Topical solutions with higher viscosity have

faster clearance than viscous solutions. They provide a bit more hydration and are suitable for normal to combination skin types(range for Gel based serum 30to 100mPas)

Skin Irritancy:

Apply some amount of serum on back of your hand or dorsal side of your hand and observe for 24 hours if any irritation is caused at that area of application.

RESULT:

Cyclical

Sr. no.	Parameters	Result
1	Color	Light green
2	Odor	Characteristic Odour
3	Texture	Smooth Homogenous
4	Ph	5.8
5	Irritancy	Non irritant
6	Taste	Tasteless
7	Viscosity	33.3 mPas
8	Consistency	

Temperature :

Sr no	Parameter	Stability
1	Freezer temperature	Unstable
2	Room temperature	Stable



Unstable

Stable

Stability Studies :

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

Visual appearance	White translucent
Phase separation	Nil
Homogeneity	Good

CONCLUSION

The aim of this report was to study about what exactly are facial serums and their history along with their overall importance. The study includes its proper selection and correct sequence of application. With tremendous amount of serums available in the market for each and every skin type and skin problem these days, it's essential for one to know what they are looking for in a serum precisely

Aloe vera is known for its soothing and moisturizing properties. It also possesses antimicrobial and anti-inflammatory effects, which help in combating bacteria and reducing inflammation on the skin. Aloe vera can aid in the healing process and promote healthy skin

Rose water is perfect for cleansing your skin and removing any impurities that could cause unwanted spots. 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.

Vitamin E is Strengthens your skin barrier. A strong skin barrier allows your skin to retain water and stay hydrated.

Topical salicylic acid treats acne by reducing swelling and redness and unplugging blocked skin pores to allow pimples to shrink. It treats other skin conditions by softening and loosening dry, scaly, or thickened skin so that it falls off or can be removed easily.

Jojoba oil may be helpful as a moisturizer skin and it's Antibacterial properties and Antioxidant properties.

glycerine to your skin traps moisture in your skin and gives it a youthful, healthy glow.

When a righteous formulation is selected by scrutinizing every major skin issue, it is safe to say that significant improvements can be seen, leading to good results. Skin health is a crucial element of the altogether health of the body and having a proper skin care routine with an accurate serum for you, can sustain the ageing skin and ward off the ongoing damage. It eliminates fine lines, wrinkles, dark spots, and further blemishes if paired with appropriate moisturizer and sunscreen

References:

- Tejal sejul ,kiran kudal facial serum:-"Its formulation , usage , special ingredient, in various types and benefits" Lipra journal ,International journal of pharmaceutical research and application, vol. 8(2),PP 680-692
- Smrithi ojha ,Surabhi Sinha ,Swadhapriya Das Chaudhuri ,Hina Chadha, Babhita Aggarwal ,Seema Mahor Jain ,Ajeet and Meenu. "Formulation and evaluation of face serum containg Bee Venom and Aloe vera gel"World journal of pharmaceuticals research, Edition 2019 ,vol.8(2) ,PP 1100-1105
- Miss.Purva S Rajdev, Prof.Gaikwad S.D, Miss .Akanksha A Somvanshi, Miss.Shubhangi S Gunjal "Formulation and Evaluation of face serum"IJARSCT,2022, vol.2(5), PP 255-259

- Thanapron Amnuakit, Suphatsa Khakhong, Pasarat Khongkow. "Formulation Development & Skin Evaluation of Face Serum Containing Argan oil as Moisturizing Agent". 2018,PP297-304.
- Siri Sindhura, D. K. Vikas Jain "Challenges in Formulating Herbal Cosmetics" International Journal of Applied Pharmaceuticals, 2018, Vol.10(6),PP 47
- Silvia Surini, Helmy Mubarak, Delly Ramadan "Cosmetic Serum Containing Grape Seed Extract Phytosome: Formulation and In vitro Penetration Study" International Journal of Applied Pharmaceuticals,2018, vol.10(2),PP 51-55
- Shan Sasidharan, Pyarry Joseph, Junise "Formulation of Fairness serum using Polyherbal Extract" International Journal of Applied Pharmaceuticals, 2014, vol.4(3), PP 105-112
- Sanjana Patil, Akshada Deshmukh, DR.S.V Patil, Prajakata Patil, Riya Patil, Pratiksha Patil, Sayali Hogade "Formulation and Evaluation of Face Serum" IJIRT. 2023, vol.9(12), PP1396-1400
- Ojha S, Chadha H, Aggarwal B "Formulation and Evaluation of Face Serum Containing Bee" World J Pharm Research, 2019, vol.8, PP1100-1105
- Dr Shaikh Harun Rasheed "A Text book of pharmaceutical technology "9 jan 2017 100-105.
- Saini deeksha, sonartiya sunita, P.k dubey , "Formulation and evaluation od amoxicillin containing cream to treat bacterial infection (gonorrhoea) " Vol. 24 202, issue 3 , june 2020 in international journal of pharmacy and research science.