

Current Insights into the Formulation and Delivery of Therapeutic and Cosmeceutical Agents for Fairness Serum

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Abstract:

Face wrinkles and skin aging are an undesirable effect of photodamage and ultraviolet radiation. Natural, eco-friendly, and ethically sourced anti-aging solutions are becoming increasingly popular as a result of customers choices and concerns about healthy ageing, youthful skin appearance, environmental protection, and sustainability. Cosmetic Serum is a highly concentrated product based on water or oil. Serum has the capacity to quickly absorb into the skin and reach the deeper layers of the skin. It also has a non-greasy finish and a very high concentration of active ingredients. Natural remedies are more acceptable because they are safer with fewer side effects than the synthetic formulations. Synthetic formulations can irritate the skin and may change the natural skin texture. Herbal formulations contain the extract of active constituents. Various herbal cosmetic formulations like serum, cream, lotions, are available in the market. The serum exhibits greater benefits since, in comparison to other formulations, it is a lighter, more concentrated extract of the active ingredients. It also has a targeted effect due to the small molecules which will penetrate into deeper skin layers.

Keywords: Wrinkles, Serum, Cosmeceuticals, Non-greasy and Penetration

Introduction:

Large Innovations in cosmetic industry over past 20 years resulting in developments in a wide range of products to protect and moisturize skin as well as to combat inflammation and age signals. Also, consumers are more concerned about their appearance. Therefore, they utilise a variety of herbal-infused beauty products to look young. Indian herbs and their importance are popular around the world. Herbal cosmetic has high demand on the global market because of their potent effects and comparably less or absence of adverse effects as compared to synthetic medications. Spices and herbs have been utilised to preserve and improve human beauty. It offers more safety for human health. These new concepts had improved the use of natural extracts as active ingredients in cosmetics.^[1]

Cosmeceuticals:

Cosmeceuticals are the next generation of skin care products. They are the new pillar of skincare as well as the advancements made in the field of dermatological products. Cosmetic-pharmaceutical hybrids known as cosmeceuticals are frequently used to improve the health and appearance of skin. All cosmeceuticals contain functional substances with either medicinal, disease-fighting, or healing capabilities, some of which are naturally derived and others of which are synthetic.^[9]

The idea of beauty is not exclusive to women; males are now becoming more conscious of how they appear. Many anti-wrinkle and fairness cream advertising today target men. Men commonly use astringents, anti-aging, antiperspirants, hair growth treatments, and antiperspirants for athlete's foot. The cosmetics that women use the most frequently are those that target wrinkles, cellulite, hair, tanning, skin whitening, antioxidants, and cell recovery products.^[9]

Classification of Cosmeceuticals:

Various terms may be used in conjunction with the phrase "cosmeceuticals." The concept of "cosmeceuticals formulations"- which includes all terms-remains the same: substances that are neither pure drugs (such as corticosteroids) nor pure cosmetics (such as lipsticks). Between prescription medications and cosmetics, this hybrid product category exists. Cosmeceuticals can also be referred to by the following other names: active cosmetics, nutricosmetics, performance cosmetics, functional cosmetics, and dermaceuticals. The following categories are a general breakdown of cosmetics: Cosmeceuticals basically can be classified into following categories:

- 1) Skin cosmeceutical products - Antiaging creams, moisturizers, Facial products and Lotions.
- 2) Hair cosmeceutical products - Gel and creams, Hair colorants and Dyes, Shampoos, Growth Stimulators and Conditioners.
- 3) Other products - Lipstick, Nail polish, Toothpaste and Powders.

Skin Cosmeceuticals:

Cosmetics known as "cosmeceuticals" have medicinal or drug-like properties and can alter how the skin functions biologically because of the functional components they include. These are skin care items that go beyond colouring and adorning the skin by promoting collagen formation and preventing the damaging effects of free radicals, and enhance the skin's functionality and texture, protecting the integrity of the keratin structure and promoting skin health. ^[10]

An exterior skin care product with an olive plant extract as a skin-beautifying component, specifically as an anti-aging and/or skin-whitening component, was patented by Kuno and Matsumoto. For cosmetic use, a dry emollient formulation with monounsaturated jojoba esters was utilised. Martin used a plant extract from the genus *Chrysanthemum* in a cosmetic formula to promote pigmentation in the skin and/or hair.

Face Serum:

Cosmetic serum is a highly concentrated product of the active ingredients. It is made up of smaller molecules that can give a very high concentration of active substances to the skin by penetrating deeply into the epidermis. This makes them an excellent tool for certain skincare issues, like as pigmentation and age indications. It made a good attention due to the rapid growth of serum formulations in cosmetic industry particularly in skin lightening products. ^[2]

Significance of face serum over other products:

Serum has a property of rapid absorption and ability to penetrate into deeper layers of the skin together with its non-greasy finish and intensive formula. When concentrates are used, the skin quickly receives the necessary amount of active ingredient to facilitate easier absorption. These product on application reduces sagging of skin, pigmentation due to ageing. Serums also help by preventing wrinkle formation and improving the appearance of the skin. ^[2]

Why serum is important?

The exposure to sunlight will result in the formation of free radicals, and free radicals that build up in the body can have negative effects on the skin, such as dull skin and uneven skin tone, rough patches, etc. The use of serum products is more popular because it is convenient and easy to use. Serum is a cosmetic product in which small molecules are rich in nutrients that are stronger than creams. ^[3] But has a lighter texture so it can penetrate deep into the skin quickly and due to its concentrated active ingredients.

Provides intense hydration, which helps skin appear lighter, smoother, and more attractive. A serum containing ten times more of biologically active substance than creams, therefore quicker and more effectively coping with cosmetic problems. As compared to other moisturizing products the serum is

very comfortable to use and more effective because it contains a higher concentration of active ingredients.

Table 1. Different types of serum and their features: [2]

| Types | Technology | Features |
|--|--|--|
| Transparent or semi-transparent Lotion type | Solubilization, Micro emulsion, Liposomes Disc like capsule | Contains more humectant than lotion, the texture may be adjusted through the selection of humectant and water-soluble polymer and varying their combination. |
| 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 |
| Oil type | Conventional technology | In which, the texture is adjusted by solid or semi solid oils, and animal fats or plants oils in different proportions |
| 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 liquid-powder combination |
| Others | Lotion with powder type. | 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 |

How long face serum take to show result?

Face Serums are formulated specially to target specific skin issues. They contain smaller molecular size ingredients that takes less time to penetrate the skin. The efficacy of a serum and the time needed for results to manifest for a specific issue are solely dependent upon the efficacy of the active component added to it and its base formulation.^[12] Various benefits like moisturization, hydration, radiance etc. takes lesser time to appear on application of a serum. They are immediately noticeable after a single application. In contrast, intense skin concerns like wrinkles, dark circles, hyperpigmentation, acne, etc. take time to show result which may vary from product to product.

Benefits of face serum:^[11]

- Absorbs quickly into the skin.
- Serum are lighter skin care formulations than moisturizers. The thinner viscosity allows the serum to be absorbed more easily into the skin.
- Soothes sensitive skin
- Serums with their light preparations are often better for individuals with acne prone or oily skin types.
- Improves the appearance of face lines and wrinkles.
- Some face serums contain ingredients like retinol that may help reduce the appearance of face lines and wrinkles.
- Protect skin from free radicals and future damage.
- Serums with ingredients like vitamin C, vitamin E, ferulic acid, green tea help to prevent oxidative damage from ultraviolet light and pollution, which can lead to premature skin aging and wrinkles.
- Has the potential to provide more visible results.
- The higher concentration of active ingredients may provide more visible results, compared to other types of skin products.
- Feels light on your skin. Because they absorb quickly into skin, a face serum doesn't feel heavy or greasy.

Comparison of Serum with other marketed formulations:

Face Serum Vs Face Creams:

Face serums are lighter and more absorbent than face creams, which are thicker and stay on the surface of the face. Face serum and face cream are two cosmetic product which helps to improve the appearance of the skin on the face. They both often be used as part of their skincare routine.

Table 2. Comparison between a face serum and a face cream:

| Face Cream | Face Serum |
|--|---|
| Face cream is a semisolid that is opaque, velvety, and viscous that we use to hydrate, shield, and enhance the appearance of the skin on our faces | Face serum is a thin, quickly absorbed liquid or gel that we use to treat our faces after washing and before moisturizing |
| Usually thicker and more emollient, and they frequently sit on the skin's surface | Usually, more fluid and lightweight than the creams |
| Consists primarily of heavier components like oils and waxes and has fewer active substances | Consists of smaller molecules and contain higher concentrations of active ingredients like antioxidants and hyaluronic acid |
| Its primary purpose is to hydrate and protect the skin, and they are typically used as moisturizers | Address particular skin issues like wrinkles, fine lines, uneven skin tone, and dullness |

From the above differentiation between face cream and face serum shows serum has more beneficial effects on the skin because of target specific action on the skin. The serum is typically lightweight, fast absorbing cosmeceutical which is made of small molecules so this leads to deep penetration in to the skin and deliver active ingredients in to the lower and the inner layer of the face skin.

Face Serum Vs Face Moisturizer:

Serum is a lightweight, highly concentrated formula infused with key ingredients that target specific skin and penetrate the skin’s surface up to 10 layers deep, targeting the appearance of damage, while discussing about moisturizers which have larger molecule size which affect only the surface layer, helping to lock in hydration and create a shield against external stressors that can exacerbate existing skin problems.

Table 3. Comparison between a face serum and a face moisturizer:

| Face Serum | Face Moisturizer |
|---|---|
| Highly concentrated active ingredients that you may want to penetrate into the skin | Hydrates the skin and protect from harmful outside elements that cause dryness and irritation |
| Designed to treat skin concerns (acne, wrinkles, antioxidant, discoloration) | Create a barrier that locks in moisture and nutrients |
| They are oil or water based, mostly are water based | They are oil or thick liquid based |
| Thin in density | Thicker in density |

Face Serum Vs Face oil:

Face oils are now being sold as serums, which might be confusing. A face oil's primary function is to hydrate, protect, and nourish the skin, whereas a face serum tackles particular skin issues. (such as wrinkles, fine lines, dullness, dryness, acne, irritation and redness). Serums are typically concentrated and contain components that influence the functions of the skin, such as antioxidants and anti-inflammatories. Because of their tiny molecules, they can be absorbed profoundly and provide numerous benefits, including rebirth, regeneration, brightness, and equilibrium. Face oils are made to keep the face moisturized, restore the skin's barrier (increasing overall resilience), keep the skin supple, and provide a source of antioxidants, fatty acids, and vitamins. They help protect the skin from changes in weather and temperature.

Table 4. Comparison between a face serum and a face oil:

| Face Serum | Face Oil |
|--|--|
| They are water based | They are oil based |
| Absorb quickly | Absorb slowly |
| Smaller molecules penetrate deep beneath the layer of skin | Larger molecules only reach the outer most layer of skin |
| Applied before moisturizer | Applied after moisturizer |
| Thin, light consistent | Thick, emollient consistent |

Face Serum Vs Face Lotion:

Lotion is a topical skin care solution with low viscosity that moisturizes skin and keeps it supple and moisturized. Lotions can be used to help smooth, hydrate, and heal dry skin for cosmetic and therapeutic purposes.

In serum with the addition of essential oils, extracts, and other components, a serum's goal is to provide the skin with specific advantages through a blend of oils or water. A serum penetrates the skin at deeper level of the skin than a lotion or cream. A serum can be formulated in any form which should be light weight emulsion, an oil, a gel etc. But in case of a lotion it is always an emulsion, but we can find serum in both forms of a light weight emulsion or lotion or a gel. Serum can be intended specifically in use for certain conditions like hyperpigmentation, wrinkles, lack of moisture in the skin.

Table 5. Comparison between a face serum and a face lotion:

| Face Serum | Face Lotion |
|--|--|
| A thin topical preparation known as serum includes a concentrated form of one or more active components | Lotion are a combination of oil and water and some Specialty ingredients for additional benefits |
| Serum contains fewer lubricating and thickening agents, like seed oils | In some cases, lotion is alcoholic and contains insoluble materials in the form of suspensions or emulsions that have a higher water content |
| Serum has a wide range of uses, including anti-aging, skin-brightening, moisturizing, exfoliating, and many others | Lotion can be used for cosmetic and medicinal purposes which help to smoothen, moisturize and repair dry skin |

Serums are specially formulated skin care products that penetrate the skin deeply and address the causes of skin damage and aging and is light weight topical product that contains high concentration of one or more specific active ingredients that serve different therapeutic effect to the skin. But in case of a lotion, it does not exert a target specific action to the skin and have minimum advantage than the serum.

Skin types which the face serum can be used:

- Dry skin
- Normal skin
- Oily skin
- Combination of both types of skin
- Sensitive
- Acne prone skin

Types of Serum-based on cosmetic use:

- **Anti -aging serums**

It encourages skin renewal and collagen production^[4]

- **Skin brightening serums**

They consist of anti-oxidants and pigment fighting ingredients to improve skin tone, like vitamin C, glycolic acid, kojic acid, mushroom extract, liquorice root or lactic acid.

- **Hydrating serums**

It contains hyaluronic acid, a molecule that physically binds water in the skin to make it look fresh and younger. These serums often contain vitamin B5, which helps to hydrate skin, making it appear smother and more hydrated.

- **Anti-oxidant serums**

Free radicals that might harm healthy skin are combatted by antioxidants. To help prevent skin damage from free radicals, choose a serum that contain ingredients like vitamin C, A, E and resveratrol.^[6]

- **Sensitive skin and acne serums**

They often contain salicylic acid on similar plant-based derivatives.^[8]

- **Skin texture serums**

To help boost skin texture and the overall appearance of skin, serum with glycolic acid is recommended. In order to expose smoother skin, it can also assist shed dulling, discolored and dead cells.

How to use serums:

Use of serum also depends on the season and climate. For normal and dry skin in hot climates, concentrates based on water are used, whereas antimicrobial concentrates are used in conjunction with them for oily skin since they have a minor drying effect. In winter or variable climate, oil bases of any cosmetics, whether a cream or a concentrate are advised. To get the maximum benefits from a serum, we must use it as per the label recommends. Serum should generally be applied before heavier products. Always apply the serum after cleansing because you want the active components to absorb as much of the skin as possible before using other creams that might form a barrier.^[12]

Conclusion:

In conclusion, face serum is a highly concentrated liquid skincare product that is designed to penetrate deep into the skin and deliver active ingredients that target specific skin concerns. It is a must-have in every skincare routine as it provides the skin with a concentrated dose of nourishment that helps to hydrate, nourish and rejuvenate it. Face serum is an essential step in achieving healthy, glowing, and youthful-looking skin. With regular use, face serum can help to reduce the appearance of fine lines, wrinkles, dark spots, and uneven skin texture, leaving the skin looking radiant and refreshed. The skin is the largest and it serves as the most protective part of the body for 24 hours, but sometimes the outer layer of skin can be dry because of many reasons such as UV rays, dirt, cosmetics left overnight can cause irritation or allergies. Skin serum is a type of skin care product that you can use on your skin to deliver the active ingredients directly to the skin after cleansing but before moisturizing. Therefore, it deals with the cosmetic problem quickly and effectively. Skin care Serums has the ability to penetrate deep to bring the active ingredients to the skin. A serum containing ten times more of biologically active substance than creams. When concentrate is used, the skin immediately gets the amount of active substance in such from the product. Within a few weeks of using them, the benefits become apparent, and they get better as you keep using them. So, if you want to step up your skincare routine and obtain healthier facial skin, consider investing in a quality face serum today.

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