



(REVIEW ARTICLE)



The role of serums in addressing skin concerns: Exploring efficacy, safety and Trends in Beauty and Skincare

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GSC Biological and Pharmaceutical Sciences, 2024, 29(02), 066–076

Publication history: Received 15 September 2024; revised on 02 November 2024; accepted on 04 November 2024

Article DOI: <https://doi.org/10.30574/gscbps.2024.29.2.0400>

Abstract

The significance of cosmetics has escalated as individuals aspire to maintain youthfulness and allure. This article provides an overview of cosmetics, their history, classification, and significance. Cosmetics have evolved from ancient times to address various skin and hair concerns, including acne, aging, and hair loss. Cosmetics, including serums, play a significant role in promoting individual confidence and enhancing physical attractiveness. Serums, with high concentrations of active ingredients, provide intensive nourishment to the deeper layers of the skin, addressing cosmetic concerns efficiently. Nail and lip serums also offer aesthetic benefits. However, consistent application of skin care products with active compounds can mitigate skin damage. Natural and organic options can help minimize adverse effects. Proper usage, storage, and awareness of potential side effects are crucial. Nail and lip serums also offer aesthetic benefits.

Keywords: Personal care; Anti-Aging; Skin types; Nail Serum; Lip Serum; Hair Care.

1. Introduction

In the beginning, women were attentive to their beauty and particularly focused on their skin type (1). The term "cosmetic" originates from the Greek word "kosm-tikos" signifying the capacity to organize and adorn (2). In antiquity, cosmetics were utilized only as a means of enhancing attractiveness (3). Make-up items, usually referred to as cosmetics, are frequently utilized by young adults to enhance their appearance and convey a nice impression (4). Cosmetics, generally referred to as make-up items, are frequently utilized by young adults to enhance their look and present themselves attractively. Currently, dark circles, blackheads, and pimples are prevalent among young individuals, along with issues such as acne, wrinkles, and signs of aging (1). "Herbal cosmetics" or "natural cosmetics" are products prepared using a variety of legal cosmetic ingredients as well as one or more herbal elements that are used only to provide certain cosmetic advantages (5). A serum is a cosmetic formulation that provides a high concentration of active ingredients (6). It promotes individual confidence and enhances physical attractiveness (4). The skin is the biggest organ and functions as a barrier against microbial infiltration into the body (7). The characteristics of biological significance encompass elevated viscoelasticity, biocompatibility, hygroscopicity, and moisture retention capabilities. The physiological activities of interest include skin hydration capacity, lubrication, and the reduction of aging signs (8).

The escalation in global living standards has resulted in heightened demand for cosmetic items (9). Hair loss is a pervasive and unpleasant disorder influenced by genetic, dietary, medicinal, and environmental variables (10). Hair loss is a disorder that profoundly affects patients' psychological functioning, especially in women. A significant proportion of patients reported diminished self-esteem, adverse impacts on social life, and heightened symptoms of despair associated with hair loss (11). Skin aging is a complicated, multifaceted process influenced by inherent and

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external factors. Intrinsic skin aging refers to the natural aging process associated with the passage of time, marked by dry skin, fine wrinkles, a degree of laxity, and benign neoplasms (12).

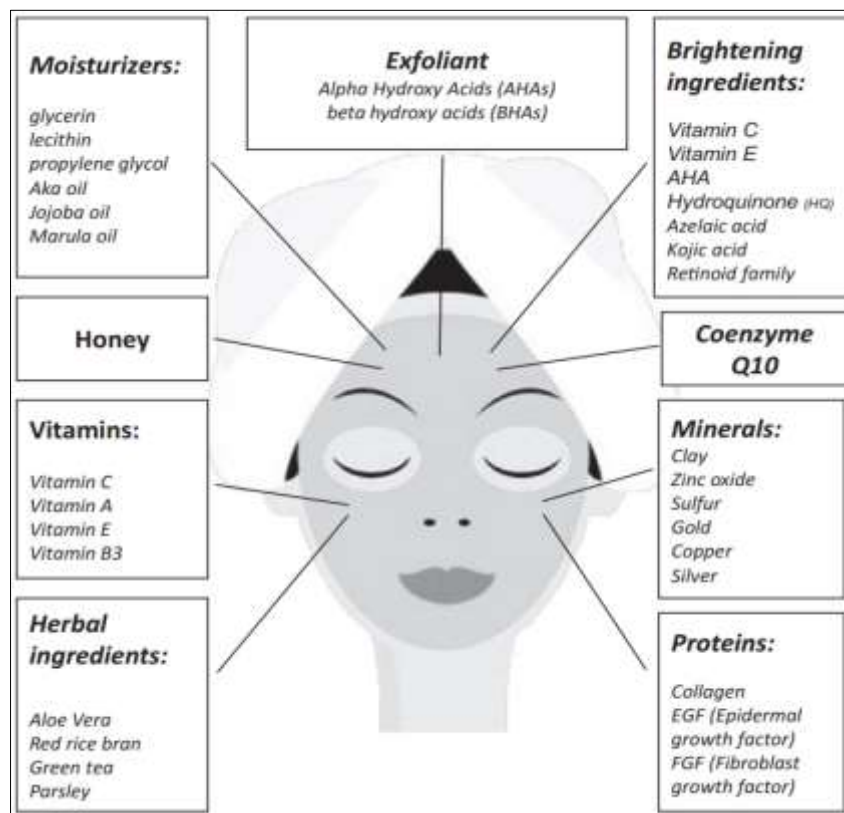


Figure 1 Essential Ingredients in Facial Masks (7)

Cosmetic formulations for the skin are tailored to certain skin types. The cosmetics must hydrate the skin and eliminate sebum and impurities to promote healthy skin (7). The significance of cosmetics has escalated as numerous individuals aspire to maintain youthfulness and allure dermatological conditions (9). Acne commonly starts in adolescence and diminishes by the age of 20, although other people struggle with acne into their 40s and 50s. It is often seen as a self-limiting disorder that is seldom life-threatening. It receives diminished attention at graduate and undergraduate institutions (2). The significance of cosmetics has escalated as numerous individuals aspire to maintain youthfulness and allure. Cosmetic items are primarily categorized into five classes: skin care products, hair care products, colour cosmetic products, personal care products, and scents (9). Cosmeceutical components are active substances employed to improve the look and health of the human body, constituting a hybrid category situated between cosmetics and medicines (13). Human skin is a highly intricate tissue characterized by a three-layered structure: the epidermis, the outermost layer; the dermis; and the lowest layer, the hypodermis (14). Hyaluronic acid (HA) and derivatives are the most popular cosmetic agents with promising aesthetic results. Delivering HA in variable routes of administrations such as topical, internal, and injectable showed confirmed anti wrinkles properties, skin hydration, aging marks reversal, and grooves filling (8).

Observable indicators of skin aging encompass modified skin texture, dryness, diminished firmness, and the presence of wrinkles (15). The escalation in global living standards has resulted in an increased demand for cosmetic items (9). The significance of cosmetics has escalated as numerous individuals aspire to maintain youthfulness and allure. Various varieties of hair serums exist to achieve distinct hair objectives. A hair serum, contingent upon its formulation, may diminish frizz, enhance shine, or straighten hair, serving as a topical agent that significantly contributes to the body's overall aesthetic appeal (16). The skin, as the body's primary organ in interface with the external environment, serves as a complicated barrier and an intuitive indicator of age (17). Eyelash serums are a developing market with a substantial customer demographic (18). A significant proportion of patients reported diminished self-esteem, adverse impacts on social life, and heightened symptoms of despair associated with hair loss (11). Skin aging is a complicated, multifaceted process influenced by inherent and external factors (12). The cosmetics must hydrate the skin and eliminate impurities and pollutants to promote healthy skin (7). Observable indicators of skin aging encompass modified skin texture, desiccation, diminished elasticity, and the presence of wrinkles. These are unfavourable, and

customers seek solutions that deliver both instant and sustained efficacy. Although several cosmetic anti-aging treatments are available, their efficiency and component potency vary significantly. Ampoules of serum appeal to several consumers because to their association with elevated component concentrations and their perception as premium luxury items (15).

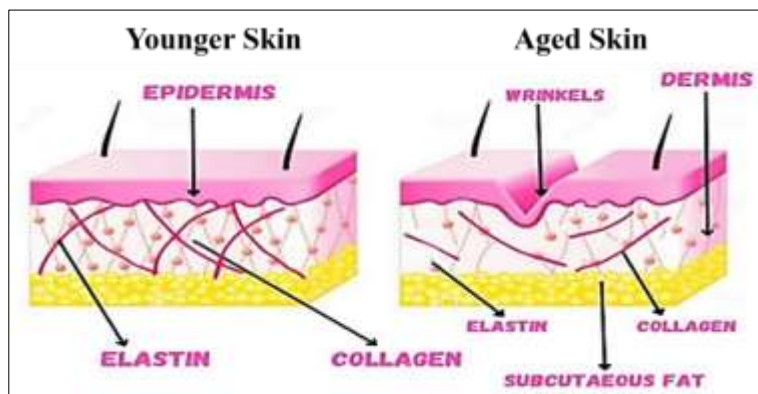


Figure 2 Difference Between Young and Aged Skin (6)



Figure 3 Investigating the therapeutic efficacy of fig tree (*Ficus Carica*) in various Skin Diseases. (19)

1.1. Cosmetics

The cosmetics market in India is seeing fast growth, necessitating stringent regulation of the industry. Cosmetics that are regularly applied to human skin, mucous membranes, hair, and nails must be health-safe, and there have been increasing worries about this aspect in recent years (20).

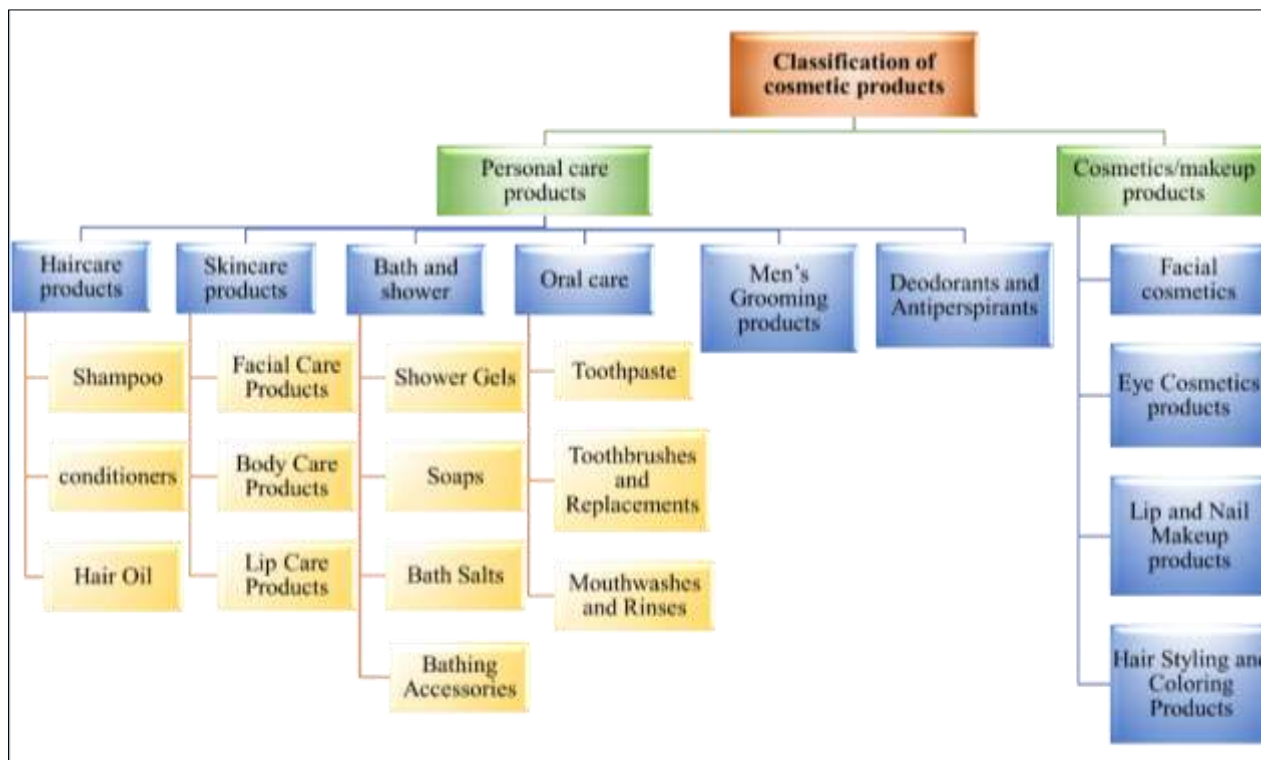


Figure 4 Classification of Cosmetic Products (21)

1.2. Collagen

Collagen proteins have several activities throughout the body. The primary functions include preserving structural integrity and overseeing the processes of cell adhesion, differentiation, growth, survival, and regeneration (22).



Figure 5 Categories of collagen-based products. (22)

1.3. Serums

This study utilized serum as a formulated dosage form due to its increasing proliferation in the cosmetic sector, specifically in facial lightening products (23). To achieve greater speed and efficacy than cream treatments, serums, or concentrates, contain tenfold the amount of biologically active substances. Due to its lesser viscosity compared to other moisturizers, serum has the advantage of enhanced comfort during application and facilitates easier distribution throughout the skin's surface (6). Serum contains several advantageous active ingredients and nutrients, including antioxidants, ceramides, and amino acids, among others (24). Serums, or concentrates, possess around tenfold the

concentration of physiologically active chemicals compared to creams, hence addressing cosmetic issues more rapidly and efficiently (4). Serum is a cosmetic product characterized by a high concentration of active ingredients designed to deliver intensive nourishment to the deeper layers of the skin, resulting in a non-greasy finish ideal for the skin (9). Serums, or concentrates, contain approximately ten times more physiologically active compounds than creams, hence facilitating superior therapy of skin issues (24). Serums or concentrates, include approximately tenfold the concentration of physiologically active chemicals compared to creams, enabling them to address cosmetic concerns more rapidly and effectively (2).

1.4. Types of skin (21)

Based on Hydration State and Lipid Composition

Maintaining skin hydration is essential for preserving the integrity of the skin barrier and preventing water loss. Scientists categorize skin types as oily, dry, combination, normal, and sensitive skin.

1.4.1. Normal Skin

Normal skin is generally described as neither too oily nor too dry. Normal skin is structurally and functionally balanced has small pores and it is smooth.

1.4.2. Dry Skin

Dry skin is a skin condition that is caused by a lack of adequate water in the epidermis. People can experience dry skin due to various factors. Dry climates, cold weather, sunlight affects skin to dry. Dry skin can also cause precursors of some diseases such as hypothyroidism, diabetes and atopic dermatitis.

1.4.3. Oily Skin

Oily skin usually develops with puberty and affects young people. Genetic factors, hormonal changes, diet, stress and external factors such as cosmetics, chemicals and UV light can lead to oily skin. People who have oily skin generally suffer from acne and dandruff.

1.4.4. Combination Skin

It can be characterized by normal and oily skin or oily and dry skin. In combination skin, T-zone of the forehead, nose and chin seems oily, the other parts of skin are normal or dry.

1.4.5. Sensitive skin

Sensitive skin's reactions can be caused by various chemicals such as cosmetics, soaps, water and pollution, physical factors such as UV light, heat, cold and wind, microorganisms, physiologic factors such as stress and hormones such as menstrual cycles. It can be seen in all skin types against some various irritants.



Figure 6 Illustrates several skin types based on moisture levels and lipid content. (21)

2. In accordance with Sensitivity to UV Light-

Sensitive skin is characterized by atypical sensory complaints. The American Academy of Dermatology (AAD) identifies four types: tingling, chafing, burning or prickling, and contact dermatitis. Their shared trait is inflammation. Reactions in sensitive skin may be triggered by a range of chemicals, including cosmetics, soaps, water, and pollutants, as well as physical elements like UV radiation, heat, cold, and wind, microbes, and physiological variables such as stress and hormonal fluctuations, including menstrual cycles. It is observable across all skin types in response to numerous irritants (21).

Type 1: Type 1 People with freckles, blue eyes, red and blond hair, and extremely light skin are examples of skin. Individuals with this skin type are extremely sensitive to the sun and have trouble getting burned or tanning.

Type 2: Type 2 skin comprises those with red or blond hair and light skin. These folks are extremely photosensitive. They are difficult to tan yet can burn easily.

Type 3: Includes those with light, typically brown, sandy hair, cream white to olive skin, and any hue of eyes. These individuals are photosensitive; their skin might burn and gradually turn pale brown.

Type 4: Includes those with green, hazel, or brown eyes, as well as those with dark brown complexion and hair. This skin type tans to a moderate brown, burns easily, and is sun sensitive.

Type 5: Includes people with dark brown skin, tan well and rarely burn and insensitive to sun. usually, they have dark black hair and dark brown eyes.

Type 6: People who have type 6 skin type have deeply pigmented black skin. They have black hair and dark brown eyes. They are insensitive to sun and they always tan and never burn (21).



Figure 7 Application of Collagen in Cosmetic Products (22)

2.1. Types of serum according to applications

2.1.1. Facial Serum

Face serums frequently incorporate active substances such as hyaluronic acid or glycolic acid for targeted effects. Face serum is a concentrated formulation composed of water or oil, like other creams. Serums or concentrates, include approximately tenfold the concentration of physiologically active chemicals compared to creams, enabling them to

address cosmetic concerns more rapidly and effectively. Face serum has a substantial concentration of active compounds that effectively target various skin concerns (2). Face serums consist of tiny chemicals that enable rapid and profound skin absorption (6). Face serums not only absorb rapidly but also enter the deeper layers of the face to address diverse regions and provide optimal efficacy. The composition contains skin-friendly penetrators that reach 6-7 layers deep and nourish the skin with essential ingredients (4). Acne and post-acne scarring provide the greatest incidence of suicidal thoughts and suicide among dermatological conditions (25). Face serum is a concentrated formulation composed of water or oil, like other creams (2).

2.1.2. Hair Serum

Hair serum imparts natural luster while protecting hair from environmental and thermal damage due to its abundant moisturizing properties (5). Hairs are defined as an "enhanced epithelial structure resulting from the keratinization of germinative cells," and they are outgrowths from the follicles located on the skin (26). In humans, hair has an aesthetic purpose that influences our look (16). Hair is a specialized variation of skin and a distinguishing feature of the integumentary system. Hair significantly influences social connections and psychological well-being in people and is essential for controlling body temperature (27). Hair loss is a pervasive and troubling disorder influenced by genetic, dietary, medicinal, and environmental variables. Androgenic alopecia, or male-pattern baldness, is the predominant cause of hair loss in males, whereas women experience hair loss due to medical problems such as hypothyroidism, the use of oral contraceptives, and nutritional deficiencies (10). Hair serum is a silicone-based hair care product used to enhance softness and shine. Hair serum creates a protective barrier on the hair, facilitating the management of dry, frizzy strands (28).

Table 1 Ingredients and their purpose (28)

Ingredients	Purpose
Dimethicone	Shine and Smooth
Cyclomethicone	promotes the distribution of products
Argan Oil	Hydration and nourishment
Jojoba Oil	Calming
Vitamin E	Antioxidant, encourages radiance.
Panthenol	improves and fortifies
Silicone Compounds	Smoothness and fizz control

2.1.3. Nail Serum

Keratin is the primary protein component of human nails (29). Nails are seen as a manifestation and extension of an individual's personality. The utilization of nail cosmetics is experiencing an increase (30). The nail serves as a translucent surface and acts as a medium for cosmetic application and aesthetic enhancement. Nail cosmetics are utilized by millions globally, irrespective of gender, seeking aesthetically pleasing, smooth, glossy, and embellished nails, with an increasing array of products available (31).

Gel nails are a widely utilized cosmetic method employed to enhance attractiveness, especially in cases of disease-induced nail deformity (30).

2.1.4. Lip Serum

The lips are the most significant feature of the face. It requires adequate sustenance and moisture, as it is the sole area of our body devoid of pores. Cosmeceuticals such as lip balms, lip serums, lip rouges, lip oils, lip masks, lip scrubs, lipsticks, and exfoliators have advanced to safeguard the lip skin from dryness, hyperpigmentation, and inflammation. Lipstick is an essential component of the everyday makeup regimen (3).

2.1.5. Under-eye circles

Eye cream is a topical formulation designed to address skin issues specific to this area, including hydration and the reduction of fine lines and wrinkles. Moreover, eye creams often have a higher concentration of active ingredients aimed at addressing particular issues of the periorcular skin, potentially alleviating symptoms such as dark circles, puffiness,

and wrinkles. Periorbital dark circles are a significant dermatological problem across all age groups. Hypervascularity, age and tear trough depression contribute to the formation of dark under-eye circles (32).

2.2. Categories of serum according to texture

2.2.1. Oil Type

Oil serums are among the most fundamental facial serums. These oils include skin-metabolizable compounds such as polyphenols and essential fatty acids, along with moisturizing and barrier-repairing properties. Oil serums enhance and hydrate the skin's protective barriers (6). The texture is modified by varying amounts of solid or semi-solid oils, as well as animal fats or plant oils. This sort of texture is inferior to that of other preparations, leading to its decline in the market (4).

2.2.2. Emulsion serum

It is suitable for formulations with elevated concentrations of oily constituents and UV absorbers because to its substantial emollient content. In circumstances necessitating a repelling characteristic, the water-in-oil (w/o) formulation is suitable (6). Due to its high emollient content, it is appropriate for formulations with significant U.V. components. Absorbent and lipidic components. The w/o type is appropriate for formulations necessitating water repellence (4). The composition of face serum is fundamentally an emulsion comprising two immiscible liquids (24).

2.2.3. Transparent or semi-transparent lotion type

Typically possesses a greater humectant concentration than lotion. A humectant and a water-soluble polymer may be used, and their combination may be modified to adjust the texture (6). Generally, it has a higher concentration of humectants than lotion. The texture may be modified by selecting humectants and water-soluble polymers and altering their combinations. This is the most fundamental method of serum preparation (4).

2.2.4. How to use the serum



Figure 8 Steps use of hair serum (28)

The application of serum is contingent upon the season and climate of an individual's permanent residence. In warm climates, serums are formulated with water for normal and dry skin or combined with antiseptic agents for oily skin

due to their mild drying properties. Generally, serums should be applied prior to heavier products. In the morning, apply serum post-cleansing, before moisturizer and sunscreen. In the evening, apply serum after cleansing, but before night cream. Always prioritize serum application after cleansing to ensure the absorption of valuable active ingredients before applying other creams that may create a barrier (4). Participants assigned to the Serum group cleansed their faces, used a regular moisturizer, and applied the research serum bi-daily (33).

2.2.5. Benefits of the serum

When concentrates are applied, the skin promptly receives the requisite quantity of active compounds in a form that is more readily assimilated. The active ingredients in high concentrations function similarly to creams, providing moisturization, rejuvenation and lifting effects. The sole distinction is that when concentrates are utilized appropriately, observable outcomes will be attained more rapidly (4).

2.2.6. Side effects of serum

Consistent application of skin care products containing active compounds or antioxidants from a young age might yield substantial advantages in mitigating skin damaging effects (34). To mitigate the detrimental effects of chemicals, choose for homemade, natural, and organic lipsticks (20). Acne impacts more than 85% of adolescents, rendering it one of the most prevalent dermatological conditions (2). Currently, cosmetics and personal care items are essential components of everyday grooming and attire. As we cannot forgo the usage of cosmetic items, the following considerations should be noted to mitigate any adverse effects (24). Lipsticks include abrasive compounds that may damage the surrounding skin; thus, exfoliate a minimum of twice weekly (20).

- The product must be securely sealed after use. (20)
- The product should not be utilized in the presence of an eye infection. (20)
- The merchandise must not be shared with others. (20)
- The odour, consistency, and hue of the deteriorated product alter. It is seen as divided into phases consisting of water and oil. (20)
- Nail cosmetics and their related procedures can be detrimental to the natural nail. The adverse effects can be categorized into those associated with treatments and salon services, and those resulting from items such as nail polish and artificial nails (30).

3. Conclusion

Face serums are a crucial component of contemporary living, mostly utilized for beauty, resulting in a significant increase in demand. The functional qualities of cosmetic face serums are much superior to those of most cosmetics. Lipstick has historically been seen as an essential item for ladies. They enhance women's self-assurance and appearance. The domain of nail aesthetics is rapidly evolving to accommodate the growing global customer demand. Nail cosmetics are generally regarded as harmless; yet they may cause considerable contact allergy or irritating dermatitis, infections, and nail damage. Cosmetics are items that have been utilized since Ancient Egypt for cleansing, fragrance, altering look, and/or correcting and/or safeguarding bodily odours or maintaining their condition. Nail cosmetics have gained significant popularity and are extensively utilized. Collagen has several roles throughout the body. It preserves the requisite flexibility of blood vessels, imparts mechanical strength to cartilage and bone tissue, is found in the cornea of the eye, and, notably, in the skin, to which it confers suitable density and elasticity.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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