



(REVIEW ARTICLE)



Apple serum for health and beauty

Lokesh N. Patil ^{1,*} and Swati P. Deshmukh ²

¹ Department of Pharmacy, Shraddha institute of pharmacy, Washim, (MS) India 444505.

² Department of Pharmacology, Shraddha institute of pharmacy, Washim, (MS) India 444505.

GSC Biological and Pharmaceutical Sciences, 2023, 25(02), 180–186

Publication history: Received on 10 September 2023; revised on 04 November 2023; accepted on 07 November 2023

Article DOI: <https://doi.org/10.30574/gscbps.2023.25.2.0438>

Abstract

In recent years, there has been a growing interest in harnessing the potential of natural ingredients for enhancing health and beauty. Apple serum, derived from apples, has gained prominence as a potent elixir with numerous benefits for both internal well-being and external appearance. This abstract provides an overview of the research and findings related to the application of apple serum in health and beauty. The primary components of apple serum include antioxidants, vitamins, and minerals that play a pivotal role in skin health, hair vitality, and overall bodily health. Apple serum is abundant in vitamin C, which aids in collagen production and provides anti-aging benefits by reducing the appearance of fine lines and wrinkles. Moreover, the antioxidants in apple serum protect the skin from environmental stressors and promote a youthful complexion. The abstract concludes that apple serum is a versatile natural product with a myriad of applications for health and beauty. Further research is warranted to explore its potential benefits, mechanisms of action, and optimal usage for maximum efficacy. With its natural origins and multifaceted advantages, apple serum stands as a promising resource for those seeking a holistic approach to health and beauty enhancement.

Keyword: Apple serum as cosmetic; Apple serum for Health; Apple serum for beauty.

1. Introduction

The desire for beauty and healthy skin has been a part of human society since ancient times. The term "cosmetic" comes from the Greek word "Kosmetikos" meaning to adorn or decorate. Cosmetology is the science and art of beautifying and enhancing skin, nails, and hair, as well as the study of cosmetics and their application[1]. A key aspect of skincare formulations is their ability to effectively deliver active ingredients into the skin. Serums are designed to do just that, reducing the need for potentially harmful chemicals and providing quick results. Serums are highly concentrated emulsions available in both water-based and oil-based forms, containing approximately ten times more biologically active substances than creams. This high concentration allows them to address skincare concerns more effectively[2]. Incorporating a few drops of face serum into your daily skincare routine can lead to noticeable improvements within a month or even less. The small molecule size of serums enables them to penetrate the skin deeply and quickly. They are packed with beneficial components like antioxidants, ceramides, and amino acids, which is why face serums are typically among the more expensive items in a skincare regimen. So, their concentrated nature and effectiveness make them stand out in the world of skincare. Serum is a concentrated product which is extensively used in Cosmetology[3]. The name comes from itself in professional cosmetology. The ornamental serum is as concentrated in water or oil painting as any other cream. Serums are defined as concentrated product that contains ten times further organic matter than cream, Cosmetology is the study and operation of beauty treatment [4].

It's an art or wisdom of beautifying and perfecting the skin, nails and hair and the study of cosmetics and their operation. A serum is a lightweight, fast-absorbing skincare product designed to deliver a concentrated dose of active ingredients to the skin. Serums are formulated with a high concentration of beneficial compounds such as vitamins, antioxidants,

* Corresponding author: Lokesh Narendra Patil

peptides, and hyaluronic acid, among others [5]. They are typically used after cleansing and toning the skin but before applying moisturizer. Face serums are popular in skincare routines because they can target specific concerns, such as fine lines, wrinkles, uneven skin tone, or dehydration. Due to their potent formulations, serums are often considered a crucial step in a skincare routine for addressing specific skin issues and promoting overall skin health. A targeted Response to the need of the epidermis. A serum is a skin care treatment for the Face, whose intensive formula was developed especially for the deep-down treatment of Various skin problems like: -

- Wrinkles
- Laxity in the shape of face, eyes or lips
- Loss of hydration.

Serum which Are used to treat specialized skincare issues Like dark spots Fine Dine, dark circle dullness. The term "serum" in the context of skincare and cosmetics has been in use for many years and is derived from the Latin word "serum," which means "whey." In the realm of skincare, the term "serum" likely originates from its similarity to the texture and consistency of whey, which is the watery liquid that separates from milk during cheese production. Serums in skincare are characterized by their lightweight, liquid or gel-like texture, and their ability to deliver a high concentration of active ingredients to the skin. This characteristic texture is reminiscent of whey, and hence, the term "serum" was adopted to describe these specialized skincare products. The use of serums in skincare became more prominent in the late 20th and early 21st centuries as research and development in the skincare industry led to the creation of products with potent, targeted formulations to address specific skin concerns. Today, serums are a common and important component of many skincare routines, valued for their ability to deliver concentrated benefits to the skin [6]. A serum is a lightweight, fast-absorbing skincare product that contains a high concentration of active ingredients designed to address specific skin concerns. Serums are formulated to penetrate deep into the skin, delivering potent ingredients directly to the skin cells. They are typically used as a part of a skincare routine after cleansing and toning but before applying moisturizer[7].

2. Apple serum

"Apple serum" in the context of beauty typically refers to skincare products or serums that contain apple-derived ingredients. These products are designed to provide various benefits for the skin, such as:

- **Antioxidant Protection:** Apple-derived serums often contain antioxidants, such as vitamin C, which can help protect the skin from environmental damage, reduce signs of aging, and promote a brighter complexion.
- **Hydration:** Some apple-based serums may have hydrating properties due to their natural water content. This can help moisturize the skin and maintain its suppleness[8].
- **Exfoliation:** Certain apple extracts contain natural acids, like malic acid, which can provide gentle exfoliation, promoting skin cell turnover and a smoother texture.
- **Anti-Inflammatory:** Apple-derived ingredients may have anti-inflammatory properties, which can help soothe irritated or sensitive skin.
- **Brightening:** The antioxidants in apple serum may contribute to a more even skin tone and reduced hyperpigmentation[9].

When using apple serum or any skincare product, it's essential to follow the recommended instructions and perform a patch test to ensure it's suitable for skin type.

2.1. Ingredients in apple serum with their benefits

The formulation of apple serum in skincare products may vary depending on the brand and product type. However, here are some common ingredients that are often used in the manufacturing of apple serum or apple-infused skincare products:

- **Apple Extracts:** These extracts are derived from apples and may include apple fruit extract, apple stem cell extract, or apple seed oil. They are used for their potential antioxidant and skin-nourishing properties.
- **Hyaluronic Acid:** Often included for its hydrating properties, hyaluronic acid helps to retain moisture in the skin[10].
- **Vitamins:** Vitamins like vitamin C (ascorbic acid) and vitamin E (tocopherol) are added for their antioxidant benefits and skin-brightening effect [11].
- **Peptides:** These are amino acid chains that may help improve the skin's texture and reduce the appearance of fine lines and wrinkles.

- **Botanical Extracts:** Additional plant extracts, such as green tea extract or chamomile extract, may be included for their soothing and calming effects on the skin.
- **Alpha Hydroxy Acids (AHAs):** AHAs like glycolic acid or malic acid derived from apples can help exfoliate the skin, improving its texture and promoting cellturnover[12].
- **Glycerin:** This humectant helps to lock in moisture and maintain skin hydration.
- **Emollients and Oils:** Ingredients like jojoba oil or squalane may be added to provide a silky texture and enhance the skin's natural barrier[13].
- **Preservatives and Stabilizers:** To ensure the product's safety and stability over time, preservatives and stabilizers are often included[14].

2.2. Role of polyphenol and pectin in serum formulation with their benefits

2.2.1. Polyphenol

Polyphenols are a group of naturally occurring compounds found in various plant-based foods and beverages. They are known for their antioxidant properties and potential health benefits. In the context of skincare serums, polyphenols, particularly those derived from plants like green tea, grape seeds, and certain fruits [15], can be used for various purposes: a) **Antioxidant Protection:** Polyphenols are potent antioxidants that can help protect the skin from damage caused by free radicals and environmental stressors. They neutralize harmful molecules that can lead to premature aging and skin damage. b) **Anti-Aging:** Some skincare serums incorporate polyphenol-rich ingredients to target signs of aging, such as fine lines and wrinkles. Polyphenols can support collagen production and promote firmer, more youthful-looking skin[16]. c) **Brightening:** Polyphenols can help reduce the appearance of dark spots and uneven skin tone by inhibiting melanin production, leading to a brighter complexion. d) **Anti-Inflammatory:** Certain polyphenols have anti-inflammatory properties that can soothe irritated or sensitive skin. They may help calm redness and reduce skin irritation. e) **Sun Damage Protection:** Polyphenols can offer some protection against UV radiation, though they should not be considered a substitute for sunscreen. They can complement sun protection by mitigating the oxidative stress caused by UV exposure[17].

2.2.2. Pectin

In cosmetic products, pectin is sometimes used as an ingredient, although its role can vary depending on the formulation. Pectin can be included in cosmetic serums for various reasons:

- **Thickening Agent:** Pectin can be used to thicken the serum, giving it a more luxurious texture and improving its overall feel when applied to the skin [18].
- **Emulsifier:** Pectin can help stabilize emulsions in cosmetic products, ensuring that oil and water-based ingredients remain well-mixed and do not separate.
- **Moisturization:** Pectin can contribute to the moisturizing properties of a serum by helping to retain water on the skin's surface.
- **Gelling Agent:** In some cases, pectin can be used to create gel-like textures in serums, which can enhance their application and absorption [19].

It's important to note that the specific role of pectin in a cosmetic serum may depend on the formulation and the intended effects of the product. Cosmetic manufacturers use a variety of ingredients to achieve different skincare goals, and pectin is just one of many possible components in these formulations

2.3. Mechanism of action of cosmetic serum

The mechanism of action of cosmetic serums can vary depending on their specific ingredients and intended benefits. However, in general, here are some common mechanisms of action:

- **Hydration:** Many serums contain hyaluronic acid or glycerin, which attract and retain moisture in the skin, helping to hydrate and plump it.
- **Antioxidant Protection:** Some serums contain antioxidants like vitamin C or E, which help protect the skin from free radical damage caused by UV rays and environmental pollutants [20].
- **Skin Barrier Repair:** Ceramides and fatty acids in serums can help strengthen the skin's natural barrier, reducing moisture loss and improving overall skin health.
- **Collagen Production:** Peptides and growth factors in serums may stimulate collagen production, leading to improved skin elasticity and a reduction in the appearance of fine lines and wrinkles [21].

- **Exfoliation:** Serums with ingredients like alpha hydroxy acids (AHAs) or beta hydroxy acids (BHAs) can help exfoliate the skin, removing dead skin cells and promoting a smoother complexion.
- **Brightening:** Ingredients like niacinamide or licorice root extract can help fade dark spots and promote a more even skin tone.
- **Anti-Inflammatory:** Some serums contain anti-inflammatory ingredients, such as chamomile or aloe vera, to soothe irritated or sensitive skin[22].
- **Targeted Treatment:** Many serums are formulated to address specific skin concerns, such as acne, redness, or hyperpigmentation, with ingredients tailored to those issues[23].

2.4. Advantages and disadvantages of apple serum

2.4.1. Advantages of apple serum

- **Hydration:** Many apple serums contain hydrating ingredients like hyaluronic acid, which can help boost skin moisture levels, leading to a smoother and plumper complexion.
- **Brightening:** The vitamin C in apple serum can contribute to a more radiant and even skin tone by reducing the appearance of dark spots and discoloration.
- **Firming and Anti-Aging:** Some apple serums include peptides or apple stem cell extracts, which may help improve the skin's elasticity and reduce the look of fine lines and wrinkles.
- **Exfoliation:** Apple-derived alpha hydroxy acids (AHAs) can aid in gently exfoliating the skin, promoting cell turnover, and improving skin texture.
- **Soothing:** Apple serum may have soothing properties, making it suitable for individuals with sensitive or irritated skin.
- **Natural Ingredients:** If we choose a natural or organic apple serum, you can benefit from using skincare products with fewer synthetic additives and potentially fewer allergens.

2.4.2. Disadvantages of apple serum

While apple serum in skincare products can offer benefits, it's important to be aware of potential disadvantages or considerations:

- **Sensitivity and Allergies:** Some individuals may be sensitive or allergic to certain components of apple serum formulations, leading to skin irritation, redness, or itching. Always perform a patch test before using a new product, especially if you have sensitive skin.
- **Photosensitivity:** Some alpha hydroxy acids (AHAs) found in apple serums, such as malic acid, can make your skin more sensitive to the sun. It's important to use sunscreen when using products containing AHAs to reduce the risk of sunburn.
- **Price:** High-quality apple serums with effective concentrations of active ingredients can be relatively expensive compared to other skincare products.
- **Results May Vary:** While some people may see noticeable improvements in their skin from using apple serums, others may not experience the same benefits. Skincare outcomes can be influenced by various factors, including genetics, lifestyle, and the overall health of your skin.
- **Overuse:** Excessive use of potent serums with active ingredients like AHAs can lead to over-exfoliation, causing redness, irritation, and a compromised skin barrier. Follow product instructions carefully and consider using serums in moderation.

2.5. Application of apple serum

Apple serum, like other skincare products, is typically used for various skin benefits. Here are some common applications:

- **Moisturizing:** Apple serum can provide hydration to the skin, helping to maintain moisture balance.
- **Brightening:** It may contain ingredients that can help even out skin tone and reduce the appearance of dark spots or pigmentation.
- **Anti-Aging:** Some apple serums contain antioxidants that can help fight signs of aging, such as fine lines and wrinkles.
- **Firming:** Certain formulations may promote skin firmness and elasticity.
- **SkinHealth:** Apple serum can help support the overall health of the skin, making it look and feel better.
-

2.6. Process of formulation of apple serum

The formulation process for apple serum can vary depending on the specific product and brand, but here's a general overview of the steps involved:

- **Ingredient Selection:** Choose the key ingredients, which typically include apple extracts or apple stem cells, along with other beneficial compounds like vitamins, antioxidants, and hyaluronic acid.
- **Ingredient Preparation:** Prepare the apple extracts by processing apples to extract the desired compounds. These extracts can be derived from apple pulp, apple skin, or apple stem cells.
- **Ingredient Blending:** Mix the apple extracts with other active ingredients and suitable carrier substances, like water, glycerin, or other botanical extracts. This creates the serum's base.
- **pH Adjustment:** Adjust the pH of the formulation to ensure it falls within the desired range, which is typically slightly acidic to match the skin's natural pH.
- **Preservation:** Add preservatives to extend the shelf life of the product and prevent microbial growth.
- **Fragrance and Additional Ingredients:** Depending on the product's purpose, fragrances and additional beneficial ingredients may be added.
- **Testing:** The formulation is subjected to various tests for stability, safety, and efficacy. This ensures that the product meets quality and safety standards.
- **Packaging:** Fill the final serum into appropriate packaging, such as glass or plastic bottles with droppers.
- **Labelling:** Add labels with information about the product's ingredients, usage instructions, and other necessary details.
- **Quality Control:** Conduct quality control checks to ensure the product meets safety and quality standards.

2.7. Evaluation test for serum

- **Clinical Trials:** These involve testing the serum on human subjects to assess its effects on various skin concerns, such as wrinkles, fine lines, hyperpigmentation, or hydration. Clinical trials often involve before-and-after assessments and can be conducted under controlled conditions.
- **Instrumental Measurements:** Skin analysis tools and devices can measure changes in skin texture, moisture levels, and pigmentation to evaluate the serum's impact objectively.
- **Patch Testing:** Patch tests are conducted on a small area of skin to check for potential allergic reactions or irritations caused by the serum.
- **Consumer Surveys and Feedback:** Gathering feedback from individuals who have used the serum can provide insights into user satisfaction and perceived benefits.
- **Dermatologist Evaluation:** Dermatologists may assess the serum's performance based on their expertise and clinical observations.
- **Stability Testing:** To ensure the serum remains effective over time, stability testing assesses how the product holds up under various environmental conditions, such as temperature and light exposure[24,20].
- **In Vitro Testing:** Some tests may involve laboratory analysis of the serum's ingredients to confirm their efficacy in targeting specific skin concerns[25].

2.8. Types of apple serum

Here are various types of apple serums or skincare products that incorporate apple extracts or ingredients for different purposes. Some common types include:

- **Apple Stem Cell Serum:** These products often contain apple stem cell extracts, which are believed to promote skin regeneration and help reduce the signs of aging[26].
- **Apple Cider Vinegar Serum:** Made from apple cider vinegar, these serums can help with exfoliation, toning, and clarifying the skin.
- **Brightening Apple Serum:** Formulated to improve skin tone and reduce dark spots, these serums often contain apple extracts or vitamin C.
- **Hydrating Apple Serum:** Designed to provide intense hydration and moisture to the skin, often suitable for dry or dehydrated skin [27].
- **Anti-Acne Apple Serum:** Some serums include apple ingredients for their anti-inflammatory properties, potentially helping to combat acne and blemishes.
- **Antioxidant Apple Serum:** These serums often feature apple extracts rich in antioxidants, which can help protect the skin from environmental damage.

- **Natural Apple Serums:** Some serums focus on using natural and organic apple ingredients, making them suitable for those seeking clean and eco-friendly skincare options.

The specific benefits and formulations can vary among different brands and products.

3. Conclusion

Apple serum is a natural product that has been used for various health and beauty purposes. While it's often touted for its potential benefits, such as providing antioxidants and vitamins for the skin, promoting hydration, and potentially improving skin tone and texture, it's important to note that scientific evidence supporting these claims may be limited. The effectiveness of apple serum for health and beauty may vary from person to person, and its results are not guaranteed. It's always advisable to consult with a healthcare professional or dermatologist before incorporating any new product into your skincare routine. In conclusion, while apple serum may have potential benefits for health and beauty, it should be used cautiously, and its effects may not be universally experienced. It's essential to rely on a well-rounded skincare routine and a healthy lifestyle for optimal results.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

References

- [1] S. Bielfeldt, F. Bonnier b, H.J. Byrne Chourpa, Y. Dancik, D.J. Lunter f E. Munnier, G. Puppels g, A. TfayliiE. Ziemon. Monitoring dermal penetration and permeation kinetics of of topical products; the role of Raman microspectroscopy Trends in Analytical Chemistry 156 (2022) 116709.
- [2] Mumtaz BT SuhaiBudden. Optimization, stability and characterization of face serum formulation A thesis submitted in fulfilment of the requirements for the award of the degree of Master of Engineering (Bioprocess) School of Chemical and Energy Engineering Faculty of Engineering UniversitiTeknologi Malaysia, July 2018 vital:119463, valet-20190123
- [3] Fred Mccall-Perez, PhD, Thomas J. Stephens, PhD, and James H. Herndon, PMID: efficacy and Tolerability of a Facial Serum for Fine Lines, Wrinkles, and Photodamaged Skin 21779421; PMCID: PMC3140905; July 2011.
- [4] Fred Mccall-Perez, PhD, Thomas J. Stephens, PhD, and James H. Herndon. Efficacy and Tolerability of a Facial Serum for Fine Lines, Wrinkles, and Photodamaged Skin PMID: 21779421; PMCID: PMC3140905; July 2011
- [5] Baki G, Alexander K. Introduction to cosmetic formulation and technology. Hoboken, New Jersey: John Wiley and Sons, Inc. 2015.
- [6] Shaji J, Lal M. Preparation, Optimization and Evaluation of Transfersomal Formulation for Enhanced Transdermal Delivery of a Cox-2 Inhibitor. Int J Pharm pharm Sci. 2014;6(1):467-77.
- [7] Barel, A.O., Paye, M. and Maibach, H.I. eds., Handbook of cosmetic science and technology. CRC press, 2014
- [8] Gudwani, N., 2022. Face serums – introduction & benefits of using face serum: Part 2. [Online] Available at: <https://thehealthmaster.com/2022/05/25/face-serums-introduction-benefits-of-using-face-serum-part-2/>
- [9] Malik, R. and Sharma, A., 2020. A Study of Customer Attitude Towards Organic Cosmetic Products: Indian Context. Mukta Shabd Journal, 2020; 9(4): 2467-2477
- [10] Baum, I., 2021. What Is Hyaluronic Acid, and Why Is It in So Many Skin-Care Products? [Online] Available at: <https://www.allure.com/story/what-is-hyaluronic-acid-skin-care>
- [11] Isaac, V., Chiari, B.G., Miglioli, K., Moreira, R., Oliveira, J.R.S., Salgado, H., Relkin, P., Corrêa, M.A., Salgado, A. and Ribeiro, H.M., Development of a topical formulation containing S. Lutea extract: stability, *in vitro* studies and cutaneous permeation. Journal of Applied Pharmaceutical Science, 2012; 2(8): 174-179.
- [12] Petrillo, d., n.d. What Exactly Are Botanical Extracts? Do They Go in a Smoothie? [Online] Available at: <https://perfectimage.com/about/blog/botanical-extracts/>

- [13] Pal, A., Panda, P. and Mukkamala, S., Recent Trends of Cosmetics in India: A Review on Marketing Strategies and Consumer Behaviour. *International Journal of Management (IJM)*, 2020; 11(7).
- [14] The ultimate guide to face serum ingredient- <https://www.faceserum.com/face-serum-ingredients/>
- [15] Muhammad Kamran Khan, Larysa Paniwnyk and Sadia Hassan. Polyphenols as Natural Antioxidants: Sources, Extraction and Applications in Food, Cosmetics and Drugs. chapter (8), page number (2)
- [16] Anti-aging properties of resveratrol: review and report of a potent new antioxidant skin care formulation Richard A Baxter, MD 6100 219th St SW, Mountlake Terrace, WA 98043
- [17] Aldona Adamska-Szewczyk, Grażyna Zgórk. Plant polyphenols in cosmetics – a review 29.09.2019; page number (2)
- [18] Farah Naqash, FA Masoodi, Sajad Ahmad Rather, SM Wani, Adil Gani. Emerging concepts in the nutraceutical and functional properties of pectin 2017; *Carbohydrate polymers* 168, 227-239
- [19] Degnechew Genene Demisu. Production of Natural Pectin from Locally Available Fruit Waste and Its Applications as Commercially Value-added Product in Pharmaceuticals, Cosmetics and Food Processing Industries. (2018) 1-11; page number (2).
- [20] Anon., n.d. Stability Testing of Cosmetics. [Online] Available at: https://www.makingcosmetics.com/Stability-Testing-of-Cosmetics_ep_59.html
- [21] Gianni, K., 2022. The Main Ingredients in a Face Serum. [Online] Available at: <https://www.annmariegianni.com/face-serum-ingredients/>
- [22] lindberg, s., n.d. What Are the Benefits of Using a Face Serum? [Online] Available at: <https://www.healthline.com/health/benefits-of-face-serum#benefits>
- [23] SANDERS, K., What's the difference between a serum, gel, cream, or lotion?, 2022.[Online] Available at: <https://www.revivalabs.com/whats-the-difference-between-a-serum-gel-cream-or-lotion/>
- [24] Guideline, I.H.T., Stability testing of new drug substances and products. Q1A (R2), current step, 2003; 4(1-24).
- [25] Akhtar, N., Ahmad, M., Masood, M.I. and Aleem, M., Formulation and in vitro evaluation of a cosmetic emulsion from almond oil. *Pakistan journal of pharmaceutical sciences*, 2008; 21(4).
- [26] Apple stem serum a type of apple serum Dr. sylvia; Available online at <https://drsylviaskinicare.com/products/apple-stem-serum>
- [27] Apple cider vinegar an type of apple serum, available online at <https://www.budsandberries.in/collections/apple-cider-vinegar>