

# Herbalanti-Aging Creams

Dr.T. Jaganmohan Rao<sup>1</sup>, Dr. D. Rama Brahma Reddy<sup>2</sup>, K. Malleswari<sup>3</sup>, S.Naveen<sup>4</sup>

<sup>1</sup>Dept of Pharmacology

<sup>2</sup>Dept of Phytochemistry

<sup>3</sup>Dept of Pharmaceutics

<sup>4</sup>Dept of Pharmacy

<sup>1, 2, 3, 4</sup>Nalanda Institute of Pharmaceutical Sciences, kanteputi Sattenapalli (m), Guntur (Dist.)-522438, AP, INDIA

**Abstract-** The growing interest in anti-aging skincare products has led to increased scrutiny of synthetic ingredients, resulting in a shift toward plant-based alternatives. This review provides a comprehensive analysis of the bioactive compounds present in herbal ingredients commonly used in anti-aging cream formulations and their dermatological benefits. For this purpose, anti-aging creams listed under the cosmetics section 2025 were examined, and their botanical components were identified and Web of Science to determine the bioactive constituents and their effects. The study identified a total of 215 plant species frequently used in anti-aging formulations. Among them, Aloe Vera, Simmonds chinensis (jojoba), and Vitis vinifera (grape seed) were the most commonly utilized. The presence of flavonoids, polyphenols, tannins, vitamins (A, C, E), and essential minerals such as selenium and zinc was highlighted as key contributors to their anti-aging properties. These bioactive compounds exhibit antioxidant, anti-inflammatory, moisturizing, and collagen-boosting effects, making them valuable ingredients in cosmetic formulations.

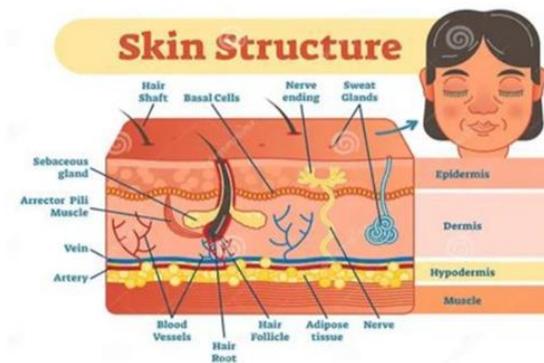
**Keywords:** Antiaging,creams,flavonoids,polyphenols.

## I. INTRODUCTION

Skin aging is a multifaceted process stemming from cellular DNA and protein damage, categorized into “sequential skin aging” and “photo-aging,” each with distinct clinical features. While sequential aging involves physiological changes like decreased lipid formation leading to dryness and wrinkles, photo-aging is induced by UV exposure, resulting in skin disorganization. Herbal ingredients have gained prominence in complementary medicine, offering potential in cosmetic formulations to combat aging signs and protect against environmental damage. Herbal cosmetics have attracted significant attention in the global market owing to their potential dermatological advantages and reduced side effects relative to synthetic ingredients. (1)

Herbal formulations have always attracted great attention due to their good activity and relatively few or no

side effects with synthetic drugs . Some natural products are used in cosmetic preparations due to their low toxicity. Uses in skin care: Dryness, eczema, acne, free radical scavenging, anti-inflammatory, anti-aging, and skin protection effects, their use in hair care; Hair growth stimulants, hair dyes, hair and scalp complaints such as dandruff . Essential oils offer aromatic and functional benefits in cosmetic formulations, such as softening and enhancing skin elasticity . Medicinal plants, rich in bioactive metabolites, exhibit various biological effects beneficial to human health as shown in fig 1.(2)



**FIGURE 1: SKIN STRUCTURE**

### Aging

Skin aging is primarily attributed to two processes: internal and external. Intrinsic aging is a process influenced by genetic predisposition that evolves . Oxidative cellular metabolism perpetually results in cumulative endogenous damage due to the generation of reactive oxygen species (ROS). This damage impacts cellular constituents, specifically membranes, enzymes, and DNA . Internal aging is influenced by both genetic inheritance and the reduction of sex hormones.(3)

### Wrinkles

Wrinkles, a natural consequence of aging, result from intrinsic and extrinsic factors like genetic predisposition and environmental exposures. The skin's reduced elasticity and collagen production lead to fine lines and sagging. Preventive measures, including sun protection and lifestyle modifications, play a pivotal role in managing wrinkles. (4)

### Human Skin

Human skin, comprising multiple layers with distinct functions, serves as a vital protective barrier. Factors like aging, UV exposure, and smoking contribute to skin deterioration, leading to wrinkles and pigmentation. Understanding skin structure and function is crucial for developing effective anti-aging strategies. (5)

### Herbal Cosmetics

Herbal cosmetics, formulated with botanical extracts, offer distinct advantages, including Antioxidant and antimicrobial properties. The demand for natural products has surged, driven by concerns over chemical-based cosmetics' potential harm. Regulations ensure the safety and efficacy of herbal cosmetics, meeting consumer preferences for natural alternatives in Skincare as shown in fig 2. (6)

### Herbal Cream

These formulations, categorized as oil-in-water or water-in-oil creams, target various dermal disorders and provide moisturization. Traditional medicine's integration with modern cosmetic technology yields safe and effective products meeting diverse skincare needs. (7)

### Anti-Aging

Aging involves complex cellular processes influenced by genetic and environmental factors. Micronutrients and biologically active substances offer potential anti-aging benefits by targeting intracellular pathways. Understanding the molecular mechanisms of aging aids in developing effective anti-aging interventions, mitigating age-related diseases, and promoting longevity. (8)

### Key Ingredients for Youthful Skin

**Humectants:** Known for its incredible hydrating properties, hyaluronic acid a popular humectant helps to retain moisture, keeping your skin plump and hydrated. (9)

**Collagen Boosters:** These ingredients stimulate collagen production, improving your skin's elasticity and firmness.

**Powerful Antioxidants:** Antioxidants protect your skin from free radical damage, promoting a healthy and youthful complexion.

**Natural Moisturizers:** Shea butter, jojoba oil, and coconut oil provide deep hydration, nourishing the skin and improving texture.

Additional Botanicals that complement the anti-aging ingredients can be used for creating a soothing and restorative environment for the skin.

**Aloe Vera:** Known for its cooling and hydrating properties, aloe vera soothes irritated skin and promotes healing.

**Chamomile:** With anti-inflammatory benefits, chamomile calms redness and reduces skin sensitivity.

**Rosehip Oil:** Rich in vitamins and antioxidants, it helps with skin regeneration and reduces the appearance of fine lines.

**Vitamin E:** A potent antioxidant that protects skin from damage and promotes healing.

**Green Tea:** Packed with antioxidants, it helps combat free radicals and reduces inflammation.



Figure 2: HERBAL BASED PRODUCTS

**TABLE 1: Ingredient Breakdown and Percentages**

Ingredient	Range
Water Phase	50-70%
Total Oil Phase	15-30%
Carrier Oils (nourishing and moisturizing)	5-10%
Butters (emollient and rich in nutrients)	3-10%
Emulsifiers	3-7%
Humectants	3-8%
Anti-Aging Actives	5-10%
Botanical Extracts	2-5%
Essential Oils	0.1-0.5%
Preservatives	0.5-1%

**Here are some of the ingredients that can be used in any organic anti-aging cream:**

### The Water Phase

**Distilled Water:** It is generally used as a main vehicle for the water phase of the emulsion. It provides the product with the desired hydration.

**Aloe Vera Juice :** Soothing, hydrating, and anti-inflammatory properties help to calm the skin, reduce redness, and provide moisture.

**The Oil Phase:** The Oil Phase which may comprise of 15-30% of the emulsion formulation, some ingredients are listed below. The ingredients which work synergistically in an anti-aging cream to provide comprehensive benefits are mentioned below as shown in table 1.

### Carrier Oils (Nourishing and Moisturizing)

**Uses:** Provide essential fatty acids, vitamins, and antioxidants that nourish and moisturize the skin. They help to maintain the skin's natural barrier, improve elasticity, and reduce the appearance of fine lines and wrinkles.(10)

**Examples:** Jojoba Oil, Rosehip Oil.

### Jojoba Oil (5-10%)

**Uses:** Mimics the skin's natural sebum, providing moisturizing and anti-inflammatory benefits. It helps balance oil production and enhances skin elasticity.(11)

### Rosehip Oil (5-10%)

**Uses:** Rich in essential fatty acids and antioxidants, it helps to regenerate skin cells, improve skin texture, and reduce the appearance of scars and fine lines.

### Butters (Emollient and Rich in Nutrients)

**Uses:** Act as emollients, providing deep hydration and locking in moisture. They are rich in vitamins and fatty acids that nourish the skin, improve texture, and enhance skin elasticity.

**Examples:** Shea Butter, Cocoa Butter.

### Shea Butter (5-10%)

**Uses:** Highly moisturizing and rich in vitamins A and E, shea butter helps to nourish the skin, improve elasticity, and reduce the appearance of wrinkles.(12)

### Cocoa Butter (5-10%)

**Uses:** Deeply hydrating and rich in antioxidants, cocoa butter helps to improve skin elasticity and tone, reduce stretch marks, and provide a smooth texture.

### Emulsifiers (3-7%)

**Uses:** Blend oil and water components in the cream, creating a smooth, stable, and homogeneous texture. They help to ensure that the active ingredients are evenly distributed throughout the product. (13)

**Examples:** Cetearyl Alcohol and Cetearyl Glucoside, Glyceryl Stearate.

### Cetearyl Alcohol and Cetearyl Glucoside (3-5%)

**Uses:** Emulsifiers that help to blend oil and water components, creating a smooth and stable cream texture. They also provide moisturizing and conditioning effects.(14)

### Glyceryl Stearate (2-4%)

**Uses:** Acts as an emulsifier and skin conditioning agent, providing a creamy consistency and helping to retain moisture in the skin.

### Humectants (3-8%)

**Uses:** Attract and retain moisture in the skin, keeping it hydrated and plump. They help to improve the skin's barrier function and enhance the effectiveness of moisturizers.

**Examples:** Glycerin, Hyaluronic Acid.

### **Glycerin (3-5%)**

**Uses:** A powerful humectant that attracts and retains moisture in the skin, keeping it hydrated and plump.

### **Anti-Aging Actives (5-10%)**

**Uses:** Target specific signs of aging such as fine lines, wrinkles, and loss of firmness. They stimulate collagen production, protect against free radical damage, and improve skin texture and tone.

**Examples:** Vitamin C, Niacinamide, Coenzyme Q10.

### **Vitamin C (3-5%)**

**Uses:** An antioxidant that helps to brighten the skin, even out skin tone, and stimulate collagen production, reducing the appearance of fine lines and wrinkles.

### **Niacinamide (2-5%)**

**Uses:** Improves skin elasticity, enhances the barrier function, evens skin tone, and diminishes dullness and fine lines.

### **Coenzyme Q10 (1-3%)**

**Uses:** An antioxidant that helps to protect the skin from oxidative stress, boosts collagen production, and improves the appearance of fine lines and wrinkles.

### **Botanical Extracts (2-5%)**

**Uses:** Provide additional benefits such as soothing, anti-inflammatory, and antioxidant properties. They help to protect the skin from environmental damage, reduce redness, and promote a more even skin tone.(15)

**Examples:** Green Tea Extract, Licorice Root Extract.

### **Green Tea Extract (1-3%)**

**Uses:** Rich in antioxidants, it helps to protect the skin from free radical damage, reduce inflammation, and soothe irritated skin.

### **Licorice Root Extract (1-2%)**

**Uses:** Contains anti-inflammatory and skin-brightening properties, helping to reduce hyperpigmentation and even out skin tone.

### **Essential Oils (0.1-0.5%)**

**Uses:** Enhance the sensory experience with pleasant aromas and provide additional therapeutic benefits. They can soothe the skin, reduce inflammation, and promote relaxation.

**Examples:** Lavender Oil, Frankincense Oil.

### **Lavender Oil (0.1-0.3%)**

**Uses:** Provides a soothing aroma, reduces inflammation, and has antiseptic properties that help to calm and heal the skin.

### **Frankincense Oil (0.1-0.3%)**

**Uses:** Known for its anti-aging and anti-inflammatory properties, it helps to tone and lift the skin, reduce the appearance of scars and wrinkles, and promote cellular regeneration.

### **Preservatives (0.5-1%)**

**Uses:** Protect the product from microbial contamination, ensuring its safety and longevity. They prevent the growth of bacteria, yeast, and mold, extending the shelf life of the cream.

**Examples:** Leucidal (natural preservative), Geogard (broad-spectrum preservative)

### **Leucidal (Natural Preservative)**

**Uses:** A natural antimicrobial preservative derived from radish root ferment, it helps to protect the cream from microbial contamination without harmful side effects.

### **Geogard (Broad-Spectrum Preservative)**

**Uses:** Provides broad-spectrum preservation, protecting the product from bacteria, yeast, and mold, ensuring its safety and longevity.

Carrier oils and butters offer deep nourishment and hydration, while emulsifiers ensure a smooth texture. Humectants retain moisture, and anti-aging actives target specific aging signs. Botanical extracts provide additional skin benefits, essential oils enhance the sensory experience, and preservatives ensure product safety and longevity Together, they create a powerful anti-aging formulation that addresses multiple aspects of skin health and aging as shown in fig 2.



**FIGURE 3: Usage of anti aging cream**

## II. CONCLUSION

Creating an effective organic anti-aging face cream involves understanding the aging process, selecting key ingredients that target specific skin concerns, and meticulously following formulation and quality control procedures. By using a blend of humectants, collagen boosters, antioxidants, natural moisturizers, and essential oils, you can develop a product that reduces the appearance of fine lines, wrinkles, and sagging skin, while also enhancing skin elasticity and firmness.

Incorporating good manufacturing practices (GMP's) into your formulation process can help you create a powerful and effective organic anti-aging face cream that nourishes, rejuvenates, and restores the skin's natural radiance, promoting a youthful glow and ageless beauty.

## REFERENCES

- [1] 1.Mohiuddin AK. Skin aging & modern age anti-aging strategies. *Int J Clin Dermatol Res.* 2019 Jul 23;7:209-240.
- [2] Michalak M. Plant-derived antioxidants: Significance in skin health and the ageing process. *Int J Mol Sci.* 2022 Jan 6;23(2):585.
- [3] Kumar MA. The skin. In: *Techniques in Small Animal Wound Management.* 2024 Feb 29;1.
- [4] Walters KA, Roberts MS. The structure and function of skin. In: *Dermatological and transdermal formulations.* CRC Press; 2002 Feb 20. p. 19-58.
- [5] Winston KR, French B, Ketch LL. Structure of Skin Epidermis is derived from ectoderm and is approximately 75-150  $\mu\text{m}$  in thickness over most of the body. Epidermis is constantly renewed at a variable rate, but complete

- renewal occurs over 36-75 days. The epidermis has five layers: stratum corneum, stratum lucidum, stratum granulosum, stratum spinosum, and stratum. In: *Plastic Neurosurgery: Opening and Closing Neurosurgical Doors in Adults and Children.* 2023. p. 3.
- [6] Del Rosso JQ, Levin J. The clinical relevance of maintaining the functional integrity of the stratum corneum in both healthy and disease-affected skin. *J Clin Aesthet Dermatol.* 2011 Sep;4(9):22.
- [7] Kligman AM. A brief history of how the dead stratum corneum became alive. *Skin Barrier.* New York: Taylor & Francis; 2006. p. 15-24.
- [8] Bragulla HH, Homberger DG. Structure and functions
- [9] of keratin proteins in simple, stratified, keratinized and cornified epithelia. *J Anat.* 2009 Apr;214(4):516-559.
- [10] Sullivan JV, Myers S. Skin structure and function, wound healing and scarring. In: *Plastic Surgery-Principles and Practice.* Elsevier; 2022 Jan 1. p. 1-14.
- [11] Swofford HJ. Individualization using friction skin impressions: scientifically reliable, legally valid. *J Forensic Ident.* 2012;62(1):62.
- [12] Dick JC. Observations on the elastic tissue of the skin with a note on the reticular layer at the junction of the dermis and epidermis. *J Anat.* 1947 Jul;81(Pt 3):201.
- [13] Gilaberte Y, Prieto-Torres L, Pastushenko I, Juarranz Á. Anatomy and function of the skin. In: *Nanoscience in dermatology.* Academic Press; 2016 Jan 1. p. 1-14.
- [14] Kwiecien K, Zegar A, Jung J, Brzoza P, Kwitniewski M, Godlewska U, et al. Architecture of antimicrobial skin defense. *Cytokine Growth Factor Rev.* 2019 Oct 1;49:70-84.
- [15] Bansode NM. Psoriasis causes and management- Ayurveda perspective.
- [16] Monteiro-Riviere NA. Structure and function of skin. In: *Toxicology of the Skin.* CRC Press; 2010 Feb 17. p. 15-32.