

INTERNATIONAL JOURNAL OF PHARMACEUTICAL SCIENCES

[ISSN: 0975-4725; CODEN(USA): IJPS00] Journal Homepage: https://www.ijpsjournal.com



Review Article

Review on Formulation Evaluation & Of Herbal Anti-Aging Cream

Vighe Sumedh*, Kharat Onkar, Vighe Yashodip, Gholap Suraj

Sarswati Wani College of Pharmacy

ARTICLE INFO

ABSTRACT

Published: 19 May 2025 Keywords: Herbal Anti-aging Cream, Aloe vera, Curcuma longa, Emblica officinalis DOI: 10.5281/zenodo.15463449

The demand for natural and safer alternatives in skincare has led to an upsurge in the development of herbal anti-aging formulations. This review presents an in-depth analysis of various medicinal plant extracts utilized in anti-aging creams, their phytochemical constituents, mechanisms of action, formulation strategies, and evaluation parameters. Emphasis is placed on antioxidant, anti-inflammatory, and collagen-boosting properties of botanicals like Aloe vera, Curcuma longa, Emblica officinalis, and Centella asiatica. The review also discusses modern techniques used in assessing the efficacy and stability of these herbal formulations. This study aims to bridge the gap between traditional herbal knowledge and modern cosmeceutical practices. Herbal anti-aging creams have gained widespread popularity due to consumer preference for natural, safe, and effective skincare products. This review explores recent advancements in the formulation and evaluation of herbal anti-aging creams, focusing on plant-derived bioactive compounds with antioxidant, anti-inflammatory, and collagen-boosting effects. Key ingredients include Aloe vera, Curcuma longa, Centella asiatica, Emblica officinalis, and Glycyrrhiza glabra. The paper briefly discusses formulation strategies, evaluation parameters, and stability testing essential for developing effective herbal skincare formulations.

INTRODUCTION

Aging is a complex biological process influenced by intrinsic and extrinsic factors, leading to visible changes in skin structure and function. Oxidative stress, glycation, and inflammation are key contributors to skin aging. Conventional antiaging products often contain synthetic compounds which may pose long-term side effects. As a result, there is a significant shift toward herbal-based cosmetics, which offer biocompatibility, minimal toxicity, and multifunctional skin benefits. Herbs like *Aloe vera*, *Curcuma longa* (turmeric), *Emblica officinalis* (amla), *Camellia sinensis* (green tea), and *Centella asiatica* have shown promising anti-aging potential due to their

*Corresponding Author: Vighe Sumedh

Email : vighesumedh8@gmail.com

Relevant conflicts of interest/financial disclosures: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.



Address: Sarswati Wani College of Pharmacy

antioxidant, anti-inflammatory, and collagen synthesis-promoting properties. Herbal creams are formulated using suitable bases, stabilizers, and natural preservatives to deliver these active compounds effectively. This review consolidates the scientific background, formulation strategies, and in vitro/in vivo evaluation methods of herbal anti-aging creams, highlighting their potential as safer and effective cosmeceuticals. Skin aging is a natural biological process, accelerated by environmental factors such as UV radiation, pollution, and oxidative stress. Synthetic antiaging agents may produce side effects with prolonged use, prompting a shift toward herbal alternatives. Herbal extracts are rich in phenolic compounds, flavonoids, vitamins, and enzymes that provide antioxidant protection, stimulate collagen synthesis, and improve skin elasticity. A comprehensive review of herbal anti-aging creams reveals a growing interest in utilizing plant-based ingredients for skin rejuvenation. Recent studies have focused on formulating and evaluating polyherbal creams that harness the synergistic effects of multiple plant extracts.

1. Poly-Herbal Anti-Aging Creams: Formulation and Evaluation:

A study published in the *International Journal of Current Pharmaceutical Research* developed a poly-herbal face cream combining Coriandrum sativum (coriander) extract and rose hip oil. The cream demonstrated significant antioxidant activity, with an IC₅₀ value of 34.25 µg/ml, outperforming ascorbic acid (IC₅₀ = 46.68 µg/ml). Stability studies indicated that the formulation remained stable for two months under ICH guidelines, suggesting its potential as a protective barrier against skin aging .

2. Development of Poly-Herbal Anti-Aging Cream:

Research published in *Current Trends in Biotechnology and Pharmacy* formulated a polyherbal anti-aging cream incorporating Tremella fuciformis extract, sea buckthorn oil, grape seed oil, rosehip seed oil, and rose water. The formulation exhibited 80% radical scavenging activity at a concentration of 2 mg/ml. Stability tests over three months showed no phase separation, indicating excellent formulation stability.

3. Comparative Review of Herbal Anti-Aging Creams:

A review article in *Jurnal EduHealth* compared various herbal anti-aging creams, emphasizing the importance of selecting appropriate plant extracts for effective formulations. The study highlighted the need for further clinical trials to validate the efficacy and safety of these formulations on human skin.

4. Evaluation of Multipurpose Herbal Cream:

An investigation published in the *Journal of Drug Delivery and Therapeutics* focused on a multipurpose herbal cream formulated with Aloe vera, Neem, Turmeric, and Amla. The cream demonstrated moisturizing, nourishing, and antibacterial properties, making it suitable for various skin conditions .

5. Green Cosmeceutical Herbal Face Cream:

A study in *MDPI Cosmetics* developed a green cosmeceutical herbal face cream containing standardized mangosteen peel extract. The formulation exhibited antioxidant and antiinflammatory properties, contributing to its antiaging effects.

6. Recent Advances in Herbal-Derived Anti-Aging Products:



A comprehensive review in *PMC* discussed recent advances in herbal-derived products with skin anti-aging properties. The article highlighted various plant-based ingredients evaluated through in vitro, ex vivo, and in vivo studies, providing insights into their potential applications in cosmetic formulations .

Key Herbal Ingredients and Their Benefits:

Herbal Extract	Major Active Constituents	Anti-Aging Properties
Aloe vera	Aloin, vitamins, enzymes	Moisturizing, anti-inflammatory
Curcuma longa (Turmeric)	Curcumin	Antioxidant, inhibits collagen breakdown
Centella asiatica	Asiaticoside, madecassoside	Promotes collagen synthesis
Emblica officinalis (Amla)	Vitamin C, gallic acid	Antioxidant, skin brightening
<i>Glycyrrhiza glabra</i> (Licorice)	Glabridin, flavonoids	Reduces hyperpigmentation

Formulation Aspects:

- **Base:** Cream bases often include emulsifying wax, stearic acid, glycerin, and natural oils.
- **Incorporation:** Herbal extracts (aqueous or alcoholic) are blended into the cream base under controlled conditions to ensure stability.
- **Preservation:** Natural preservatives like tocopherol (Vitamin E) or neem oil are preferred.

Formulation of Herbal Anti-Aging Cream:

To make a herbal anti-aging cream, herbal extracts are added to a cream base that includes ingredients like natural oils, emulsifiers, and stabilizers. The process involves:

- Choosing effective herbal ingredients based on their properties
- Preparing plant extracts (usually using water, alcohol, or oil)
- Mixing the extracts with a cream base under controlled conditions
- Adding natural preservatives to increase shelf life

Formulation Process:

The process of formulating herbal anti-aging cream includes the following steps:

- 1. Selection of Herbal Extracts: Based on traditional use and scientific studies.
- 2. **Preparation of Extracts**: Using solvents like water, ethanol, or oil.
- 3. **Base Formulation**: Natural oils, emulsifiers, and stabilizers are used to create the cream base.
- 4. **Incorporation of Extracts**: Herbal extracts are mixed carefully to preserve their properties.
- 5. Addition of Preservatives: Natural options like vitamin E or neem oil are added to ensure shelf life.

Evaluation Parameters:

- 1. **pH Stability**: Should match skin's natural pH (~5.5).
- 2. **Spreadability & Texture**: Ensures ease of application.
- 3. Viscosity: Affects consistency and user feel.
- 4. **Antioxidant Activity**: Assessed via DPPH or ABTS assays.



- 5. In vitro & in vivo Testing: Checks for irritation, hydration, elasticity improvement, and wrinkle reduction.
- 6. **Stability Testing**: Under various temperature and humidity conditions for shelf-life prediction.

CONCLUSION:

The formulation and evaluation of herbal antiaging creams have shown promising results, with various plant extracts demonstrating antioxidant, anti-inflammatory, and skin-rejuvenating properties. While these formulations exhibit potential, further clinical studies are necessary to confirm their efficacy and safety for widespread use. Herbal anti-aging creams offer promising alternatives to synthetic products due to their biocompatibility and multifunctional benefits. Future research should focus on clinical trials, novel delivery systems, and sustainable sourcing of herbal ingredients to improve efficacy and safety. Herbal anti-aging creams combine the benefits of nature and science to create products that are both effective and gentle on the skin. By using plants with known skin benefits, these formulations help reduce signs of aging while maintaining skin health. Future development in this area should focus on improving delivery systems and conducting clinical trials to validate results.

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HOW TO CITE: Vighe Sumedh*, Kharat Onkar, Vighe Yashodip, Gholap Suraj, Review on Formulation Evaluation & Of Herbal Anti-Aging Cream, Int. J. of Pharm. Sci., 2025, Vol 3, Issue 5, 3194-3197. https://doi.org/10.5281/zenodo.15463449