



Formulation and Evaluation of an Anti-Aging Polyherbal Cream

Saraswati P. Shinde¹

¹Department of Pharmacy, Rajarambapu College of Pharmacy, Kasegaon, Maharashtra, India

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ABSTRACT

The present study aimed to formulate and evaluate a polyherbal anti-aging cream containing herbal extracts with antioxidant properties. Most creams currently available in the market are composed of synthetic chemicals that may produce adverse effects such as irritation and allergic reactions. Therefore, the present study focused on developing a natural anti-aging cream using herbal ingredients with minimal synthetic components. The formulation was based on the antioxidant potential of herbal extracts of **Tulsi (Ocimum sanctum)** and **Ashwagandha (Withania somnifera)**. The leaves of Tulsi and roots of Ashwagandha were shade dried and extracted using appropriate extraction methods. The formulated creams consisted of natural ingredients such as almond oil, grape seed oil, carrot powder, glycerin, and other excipients. Four formulations (F1–F4) were prepared by varying the concentration of ingredients. The prepared formulations were evaluated for various parameters including pH, homogeneity, appearance, spreadability, washability, irritancy, and stability. Among the four formulations, **F2 showed the most satisfactory results**, including good spreadability, appropriate pH, and better stability. The phytochemical analysis confirmed the presence of important constituents such as flavonoids, phenols, tannins, and alkaloids responsible for antioxidant activity. Real-time stability studies were conducted for 30–60 days at ambient temperature, confirming that the formulation remained stable without significant changes. The results suggest that the developed polyherbal cream possesses antioxidant properties and can act as a protective barrier for the skin, thereby helping to prevent premature aging.

Keywords : Herbal Cream, Anti-Aging, Polyherbal Formulation, Ocimum sanctum, Withania somnifera, Antioxidant

1. INTRODUCTION

Skin aging is a complex biological process influenced by both intrinsic and extrinsic factors. Exposure to ultraviolet (UV) radiation generates reactive oxygen species (ROS), which cause oxidative stress and damage cellular components such as collagen and elastin fibers. This damage results in visible signs of aging including wrinkles, fine lines, dryness, and loss of skin elasticity.

Skin aging can generally be categorized into two types:

1.1 Intrinsic Aging

Intrinsic aging is a natural aging process determined by genetic factors and physiological changes within the body. It leads to thinning of the skin, reduced collagen production, and decreased cellular activity.

1.2 Extrinsic Aging

Extrinsic aging is primarily caused by environmental factors such as UV radiation, pollution, smoking, alcohol consumption, and stress. Photoaging caused by sunlight exposure is the most significant contributor to extrinsic skin aging.

Herbal products are increasingly used in cosmetic preparations due to their safety, efficacy, and minimal side effects. Plants such as **Tulsi (Ocimum sanctum)** and **Ashwagandha (Withania somnifera)** possess strong antioxidant and anti-inflammatory properties that help protect the skin from oxidative damage and delay aging.

Tulsi contains bioactive compounds such as eugenol, flavonoids, and phenolic compounds that neutralize free radicals and improve skin health. Similarly, Ashwagandha contains withanolides and alkaloids which exhibit antioxidant, anti-inflammatory, and collagen-boosting properties.



Considering these beneficial effects, the present study was conducted to formulate and evaluate a **polyherbal anti-aging cream containing Tulsi and Ashwagandha extracts**.

2. Review of Literature

Several researchers have studied the mechanisms of skin aging and the beneficial role of herbal extracts in skincare.

Makrantonaki and Zouboulis (2007) reported that intrinsic and extrinsic aging significantly affect the structure and function of skin cells. Kaur et al. (2007) suggested that oxidative damage to cellular DNA and proteins leads to progressive skin aging.

Watson et al. (2009) explained that reactive oxygen species play an important role in accelerating skin aging through oxidative stress. Singh et al. (2011) reported that **Ocimum sanctum** possesses antimicrobial, antioxidant, and anti-inflammatory activities beneficial for skin health.

Kumar et al. (2011) highlighted the pharmacological importance of Tulsi and its ability to regulate metabolic stress and improve overall health.

3. Aim and Objectives

3.1 Aim

To formulate and evaluate a polyherbal anti-aging cream.

3.2 Objectives

- To reduce visible signs of aging such as wrinkles and fine lines.
- To improve skin firmness and elasticity.
- To enhance skin hydration.
- To promote skin cell regeneration.
- To protect skin from environmental damage.

4. Materials and Methods

4.1 Materials

The materials used for the formulation of the herbal cream are listed below.

Table no:- 1 Materials

Material	Use
Tulsi Extract	Antioxidant
Ashwagandha Powder	Antioxidant
Almond Oil	Moisturizer
Eucalyptus Oil	Antimicrobial
Glycerin	Moisturizer
Propylene Glycol	Humectant
Zinc Oxide	Skin protection
Beeswax	Base
Methyl Cellulose	Thickening agent
Carrot Powder	Vitamin A source
Vitamin E	Antioxidant
Lemongrass Oil	Perfume
Purified Water	Vehicle

4.2 Extraction of Tulsi

Tulsi leaves were collected, washed, and shade dried for seven days. The dried leaves were powdered and subjected to cold maceration using ethanol. The extract was filtered using Whatman filter paper and concentrated to obtain the final extract.

4.3 Extraction of Ashwagandha

Ashwagandha roots were dried and powdered. The powder was extracted using a hydro-alcoholic solvent mixture. The extract was filtered and concentrated using an evaporator at controlled temperature.

4.4 Formulation of Polyherbal Cream

Four formulations (F1–F4) were prepared by varying the concentrations of oils and excipients.

Table no:- 2 Formulation of Polyherbal Cream

Ingredient	F1	F2	F3	F4
Tulsi Extract	2 ml	2 ml	2 ml	2 ml
Almond Oil	1 ml	1 ml	1 ml	2 ml
Ashwagandha Powder	2 g	2 g	2 g	2 g
Glycerin	1 ml	1 ml	2 ml	2 ml
Propylene Glycol	1 ml	1 ml	2 ml	1 ml
Zinc Oxide	1 g	1 g	1 g	1 g
Beeswax	0.9 g	0.9 g	–	–
Grape Seed Oil	–	–	0.9 ml	–
Carrot Powder	1 g	1 g	1 g	1 g
Lemongrass Oil	1 ml	1 ml	1 ml	1 ml
Purified Water	Q.S	Q.S	Q.S	Q.S

5. Evaluation of Cream

The prepared formulations were evaluated for the following parameters:

- Colour
- Odour
- Texture
- Homogeneity
- Spreadability
- Washability
- pH
- Irritancy test
- Stability study

6. Results and Discussion

The prepared formulations were evaluated and the results are summarized below.

Table no:- 3 Results

Parameter	F1	F2	F3	F4
Colour	Pale Yellow	Crimson	White	White
Odour	Aromatic	Aromatic	Aromatic	Aromatic
Texture	Smooth	Smooth	Uneven	Smooth
pH	7.0	6.0	7.5	6.8
Irritancy	None	None	None	None
Spreadability	Good	Good	Poor	Poor
Washability	Good	Good	Good	Good

Among all formulations, **F2 exhibited better stability, pH, texture, and spreadability**. No irritation or adverse effects were observed during the irritancy test.

Phytochemical analysis confirmed the presence of bioactive compounds such as alkaloids, tannins, flavonoids, glycosides, and terpenoids in both extracts.

7. Conclusion

The present study successfully formulated and evaluated a polyherbal anti-aging cream containing extracts of **Tulsi and Ashwagandha**. The evaluation results demonstrated that the formulations were stable, safe, and suitable for topical application.

Among the four formulations prepared, **Formulation F2 showed the best characteristics**, including suitable pH, good spreadability, pleasant odor, and stability under storage conditions.

The antioxidant properties of Tulsi and Ashwagandha may help protect the skin from oxidative stress and prevent premature aging. Therefore, the developed polyherbal cream can be considered a promising natural alternative to synthetic anti-aging cosmetic products.

Further clinical studies are recommended to confirm its long-term efficacy and safety.

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Conflict of Interest Statement:

The authors have no conflicts of interest to declare.

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