Formulation and Evaluation of Herbal Anti-Aging Cream Using Flaxseed Gel

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Abstract*—Skin aging is a gradual biological process influenced by internal factors and external conditions such as ultraviolet exposure, pollution, and oxidative stress. The present study aims to develop and evaluate a herbal anti-aging cream prepared using flaxseed extract derived from Linum usitatissimum. Flaxseed is a rich source of essential fatty acids, lignans, and natural antioxidants, which are known to support skin hydration, improve elasticity, and reduce the appearance of fine lines in this work, an oil-in-water type cream was formulated using flaxseed extract as the active ingredient along with suitable natural excipients. The prepared formulations were evaluated for key physicochemical properties such as colour, odor, texture, pH, viscosity, spread ability, and homogeneity. Stability studies were also carried out under different storage conditions to assess the consistency and performance of the cream over time. The results showed that the formulated cream possessed good physical stability, skin-compatible pH, smooth texture, and satisfactory spread ability. The inclusion of flaxseed extract contributed to antioxidant potential, indicating its usefulness in protecting the skin from premature aging. Overall, the study suggests that flaxseed-based herbal cream can serve as a promising, safe, and effective approach for anti-aging skincare. Further investigations can be performed to confirm its long-term benefits and clinical effectiveness. Skin aging is associated with loss of moisture, reduced elasticity, and formation of wrinkles due to oxidative damage and environmental exposure. The present study was designed to formulate a herbal anti-aging cream incorporating flaxseed extract obtained from Linum usitatissimum. The extract is known for its high content of omega-3 fatty acids and phenolic compounds that help in nourishing and protecting the skin. An oil-in-water emulsion-based cream was prepared using appropriate natural ingredients. The developed formulation was evaluated for its physical characteristics including appearance, consistency, pH, spread ability, and viscosity. Additionally, stability testing was performed to determine the product's durability under different storage conditions.

***Index Terms*—Flaxseed extract, Linum usitatissimum, Herbal cream, Anti-aging, Antioxidant activity, Skin aging, Emulsion, Physicochemical evaluation, Stability study, Natural cosmetics**

I. INTRODUCTION

Skin is the largest organ of the human body and serves as a protective barrier against environmental factors such as ultraviolet radiation, pollution, and microbial attack. With increasing age, the skin undergoes structural and functional changes that lead to dryness, loss of elasticity, fine lines, and wrinkles. This aging process is influenced by intrinsic factors, such as genetics and metabolism, as well as extrinsic factors like sun exposure and environmental stress. One of the major contributors to skin aging is oxidative stress caused by free radicals, which damage cellular components and accelerate the breakdown of collagen and elastin. In recent years, there has been growing interest in herbal cosmetics due to their safety, effectiveness, and minimal side effects compared to synthetic products. Natural ingredients rich in antioxidants are widely used in skincare formulations to prevent premature aging and improve overall skin health. Among these, flaxseed obtained from Linum

usitatissimum has gained attention for its beneficial properties. Flaxseed is a rich source of omega-3 fatty acids, lignans, and other bioactive compounds that exhibit antioxidant, anti-inflammatory, and moisturizing effects on the skin. Topical application of flaxseed extract can help maintain skin hydration, enhance elasticity, and protect against oxidative damage. These properties make it a suitable candidate for incorporation into anti-aging formulations. Herbal creams, especially oil-in-water emulsions, are commonly preferred as they are non-greasy, easily spreadable, and compatible with different skin types. The present study focuses on the formulation and evaluation of a herbal anti-aging cream using flaxseed extract as the active ingredient. The developed formulation is assessed for its physicochemical properties and stability to ensure its safety, quality, and effectiveness. This research aims to explore the potential of flaxseed as a natural alternative in anti-aging skincare products. Flaxseed gel also possesses soothing, hydrating, and skin-tightening properties, making it suitable for anti-aging cream formulation. Herbal creams prepared with flaxseed gel can nourish the skin naturally and enhance skin texture without causing major irritation. The present study focuses on the formulation and evaluation of a herbal anti-aging cream using flaxseed gel. The prepared cream is evaluated for various parameters such as appearance, pH, viscosity, spread ability, stability, washability, and skin irritation to ensure its effectiveness, safety, and quality. The use of herbal ingredients in anti-aging formulations may provide a natural and effective approach for maintaining healthy and youthful skin.

II. PLANT PROFILE

1.Flexseed: of Linum usitatissimum, which belongs to the family Linaceae.

Synonyms: Linseed, Common, flax, Alsi, Flax, Teesi

Biological source: Flaxseed is obtained from the dried and mature seeds of Linum usitatissimum, which belongs to the family Linaceae

Fig 1: Linum usitatissimum

Chemical Constituents: Omega-3 fatty acids (alpha-linolenic acid), Lignans, Proteins, Dietary fiber, Mucilage gum, Vitamins such as vitamin E and B-complex vitamins, Minerals like calcium, magnesium, potassium, and phosphorus, Antioxidant compounds, Phenolic compounds

Geographical Source: Flaxseed is cultivated in many parts of the world with moderate climatic conditions. It is widely grown in countries such as India, Canada, China, Russia, and the United States. In India, flaxseed cultivation is common in Madhya Pradesh, Maharashtra, Chhattisgarh, and Uttar Pradesh. The plant grows well in fertile, well-drained soil and cool weather conditions.

Uses

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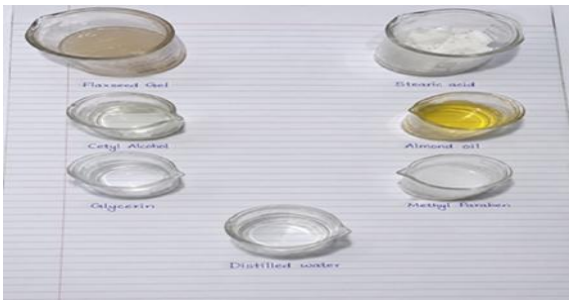
- In India, flaxseed cultivation is common in Madhya Pradesh, Maharashtra, Chhattisgarh, and Uttar Pradesh.
- The plant grows well in fertile, well-drained soil and cool weather conditions.

Pharmacological Uses: Antioxidant activity, Anti-inflammatory action, Cholesterol lowering effect, Mild laxative property

III. MATERIALS REQUIRED



Ingredients	Quantity required	Properties
Flaxseed Gel	10g	Rich in antioxidants
Stearic acid	12g	Excellent moisturizing property
Cetyl Alcohol	2g	Soothing and skin-protective effect
Almond oil	5g	Good gel-forming ability
Glycerin	5g	Contains omega-3 fatty acids
Methyl Paraben	0.2 g	Improves skin elasticity
Distilled water	qs	Vehicle

Fig 2 Material Required

IV. PREPARATION OF FLAXSEED GEL

1. Preparation of Flaxseed Gel

Flaxseed gel was prepared by soaking flaxseeds in distilled water for a few hours. The soaked seeds were then heated with continuous stirring until a thick gel was formed. After cooling, the mixture was filtered using a muslin cloth to separate the gel from the seeds. The obtained gel was collected in a clean container and stored for further use in cream formulation.

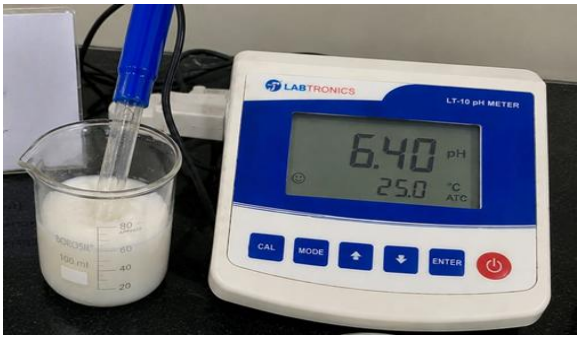


Fig 3. Preparation of Flaxseed Gel

V. PROCEDURE

1. Preparation of oil phase

- Take stearyl alcohol, cetyl alcohol, stearic acid, and almond oil in a beaker.
- Heat the mixture to about 70–75°C until all ingredients melt and form a uniform oil phase.

2. Preparation of aqueous phase

- In another beaker, take distilled water, glycerin, and methyl paraben.
- Heat this phase also to 70–75°C until all components dissolve properly.
- Add flaxseed gel and mix well

3. Emulsification

- Slowly add the oil phase into the aqueous phase with continuous stirring.
- Stir using a mechanical stirrer or glass rod until a smooth cream is formed.

4. Cooling process

- Continue stirring while the mixture cools to room temperature.
- This helps in forming a stable and uniform cream base.

5. Finishing

- Check the consistency and pH of the cream.
- Transfer the prepared cream into a clean, sterilized container.
- Store in a cool place.

VI. EVALUATION PARAMETER

1. Physical Appearance

- Colour – Creamish white
- Odor – Mild pleasant
- Homogeneity – Uniform smooth
- Texture – Soft Cream

2. pH Determination

- 6.4 was the pH of the above formulation found by using pH meter.

Fig 4 Determination of pH

3. Viscosity

- The prepared Flaxseed gel cream showed good viscosity with a smooth semi-solid consistency. The formulation spread easily on the skin and remained stable without phase separation. Proper viscosity helped in easy application and better retention of the cream on the skin surface.

4. Spread ability

- The flaxseed gel cream spread easily on the skin with little pressure. The formulation produced a smooth and even layer during application. The cream showed good consistency and was simple to apply without causing stickiness

Fig 5 Spread ability

5. Washability

- The prepared flaxseed gel cream was easily removed from the skin using normal water.
- The formulation showed good washability without leaving excessive oily residue.

VII. CONCLUSION

The herbal cream formulated with flaxseed extract demonstrates promising cosmetic benefits due to its rich composition of bioactive compounds such as omega-3 fatty acids, lignans, and antioxidants. These constituents contribute to improved skin hydration, enhanced elasticity, and protection against oxidative stress, which are key factors in anti-aging activity. The formulation shows good stability and suitable consistency for topical application. Overall, flaxseed-based cream can be considered an effective, natural, and safe alternative in herbal skincare preparations for maintaining healthy and youthful skin.

The developed flaxseed herbal cream represents a natural and effective formulation for skin care purposes. Flaxseed extract, being rich in essential fatty acids, antioxidants, and phytochemicals, helps in nourishing the skin and maintaining its moisture balance. The prepared cream shows good spread ability, smooth texture, and acceptable cosmetic properties suitable for topical use.

VIII. RESULT

The anti-aging cream formulated using flaxseed gel was successfully prepared as an oil-in-water (O/W) emulsion. The cream showed a smooth, homogeneous, and white to off-white appearance with no signs of phase separation. The texture was soft, non-greasy, and easily spreadable on the skin, indicating good cosmetic acceptability. The prepared formulation exhibited a slightly acidic pH, which is suitable for skin application and helps maintain skin compatibility. The viscosity of the cream was found to be moderate, ensuring easy application and good retention on the skin surface. The cream also showed good stability under normal storage conditions without any significant changes in color, odor, or consistency.

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