

## **Development Of Antiaging Cream Using Moringa Leaves As A Natural Ingredient**

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### **Abstract:-**

Anti-aging creams have gained widespread popularity as a solution to combat the visible signs of aging, such as wrinkles, sagging, and uneven skin tone. These creams typically contain a variety of active ingredients designed to address different aspects of skin aging, including moisturizing, antioxidant effects, and promoting biological activity. Herbal medicine is an old tradition, with plants being used for many years to treat a variety of health issues, including skin problems caused by infections and other factors. Some plants have antimicrobial properties because they contain substances like flavonoids, triterpenes, and tannins. In India, many herbs used for beauty treatments are from Ayurveda, and they can often be found locally. Research was done on the anti-aging properties of moringa oleifera. They preventing uv radiation and increasing skin moisture. It has been claimed that moringa leaves are high in antioxidants and phenolics, such as vitamins C, B, and A. Results on hydration and enhancing skin health showed that the moringa moisturising cream has promising qualities that might be used in skincare products to hydrate and rejuvenate the skin.

### **Keywords:-**

Moringa oleifera, Antiaging creams, Flavonoids, Vitamins. Antioxidant leaves.

### **Introduction:**

Aging is a natural phenomenon that happens in all life forms, including people. The impacts of aging influence physical health and are visually noticeable. Several conditions commonly associated with aging include wrinkles, decreased skin elasticity, and hyperpigmentation.

Fine lines are a typical indication of aging on human skin. This results from a reduction in the synthesis of collagen and elastin, the proteins that provide skin with its resilience and flexibility. Consequently, the skin loses its elasticity, leading to the formation of creases or wrinkles. Aging often leads to a decrease in skin elasticity. With aging, skin elasticity diminishes due to a reduction in collagen and elastin production, along with decreased activity of skin cells. Consequently, the skin loses some firmness and is not as capable of regaining its original shape After being stretched or massaged.[1]

Hyperpigmentation is a condition marked by an elevated production of melanin, the pigment that determines skin color. As we get older, melanin may be distributed unevenly, resulting in the emergence of dark spots or hyperpigmentation. Sun exposure, genetic factors, and inflammation are all elements that can influence hyperpigmentation. These bodily changes are a normal aspect of aging and may vary from individual to individual. While we are unable to halt or reverse the aging process, adhering to a solid skincare regimen and a healthy lifestyle can aid in reducing its

impacts. Applying sunscreen, maintaining regular skincare routines, staying hydrated, and adhering to a balanced diet can promote skin health and reduce the appearance of aging.[2]

## Impact of age on skin

- Skin becomes rougher.
- Skin forms lesions like non-cancerous tumors.
- As skin ages, it becomes saggy; the loss of elastic tissue leads to loose skin.
- The skin appears more translucent, which results from a reduction in the thickness of the epidermis.
- Skin is more prone to bruising, which is caused by thinner walls of blood vessels.

Skin becomes increasingly delicate. This results from a flattening at the junction of the epidermis and dermis.[3]

## Different Types of Cream:

Anti-aging creams are available in numerous varieties based on their primary components and intended results. Certain well-liked varieties and their main components consist of:

### • Creams containing retinol:

Retinol is among the most potent ingredients for fighting wrinkles and fine lines as it encourages skin cell renewal and boosts collagen synthesis. Examples include Neutrogena Rapid Wrinkle Repair and Olay Regenerist Micro-Sculpting Cream, which feature hydrating components such as hyaluronic acid.[4]

### • Creams formulated with hyaluronic acid:

These effectively provide moisture and enhance skin fullness. Hyaluronic acid can retain up to 1,000 times its weight in water, making it perfect for individuals with dry skin or seeking an instant plumping effect.

### • Vitamin C creams:

Vitamin C acts as an antioxidant, aiding in skin brightening, minimizing hyperpigmentation, and enhancing collagen production. It is frequently mixed with additional antioxidants such as ferulic acid to enhance potency.

### • Antioxidant lotions:

Created with Vitamin C, E, green tea, or various antioxidants, these shield the skin from free radical harm and assist in enhancing its brightness.[5]

• **Creams that enhance collagen:** Formulated to promote collagen production to enhance skin elasticity and decrease sagging.

### • Creams with Alpha Hydroxy Acid (AHA):

AHAs such as glycolic acid help to exfoliate the skin, enhancing texture, reducing fine lines, and addressing pigmentation issues. [6]

### • Niacinamide creams:

Niacinamide (Vitamin B3) aids in balancing skin tone, reducing pore size, and diminishing dullness.

- **Creams with sunscreen:**

Anti-aging lotions containing SPF aid in preventing additional sun damage, a primary factor in early aging.[7]

- **Stem cell creams:**

These utilize plant-derived or various other stem cells to enhance skin regeneration and mend damaged cells.

- **Coenzyme Q10 creams:**

CoQ10 acts as an antioxidant, aiding in skin protection and enhancing energy production in skin cells, which decreases wrinkles.[8]

## **Benefits of anti-aging cream:**

Anti-aging creams provide numerous benefits for preserving skin wellness and minimizing visible signs of aging. Here are several important advantages:

**1.Decrease of Wrinkles and Fine Line Numerous:** anti-aging creams, particularly those that include retinol, peptides, and hyaluronic acid assist in minimizing the look of wrinkles by enhancing collagen production and enhancing elasticity of skin.[9]

**2.Enhanced Hydration:** Components such as hyaluronic acid deliver deep moisture, which aids in plumping the skin and eliminate subtle wrinkles. Properly hydrated skin appears more youthful and radiant.[10]

**3.Improved Skin Firmness and Elasticity:** Peptides along with other collagen-enhancing components can enhance the tightness of the skin, avoiding drooping and providing the face with a more elevated look.

**4.Safeguarding Against Environmental Harm:** Antioxidants such as Vitamin C and ferulic acid shield the skin from. Damage from free radicals induced by environmental factors such as UV radiation and pollution can speed up the aging process.[11]

## **Drugs and excipient work**

### **Moringa:-**

#### **Plant profile**

**Synonyms:** Drumstick tree, Horse radish tree.

**Order:**Brassicales

**Family:**Moringaceae

**Genus:**Moringa

**Species:**Moringa oleiifera.

Creams are externally applied medication forms. Usually, they are viscous liquids or semi-solid emulsions. Creams can be either water-in-oil or oil- in Water (o/w).It is frequently referred to as the “drumstick tree” and is extensively utilised in herbal and culinary preparations. Leaves are said to have Purgative qualities.[12]

**Habitat:-**Moringaoleifera, also known as the drumstick tree, is native to the Sub-Himalayan region of northern india. Moringa tree are also found in other parts of India, including Andhra Pradesh, Maharashtra and UP.[13]



Fig. No.1:- Moringa leaves[14]

**Chemical constituents of moringa oleifera leaves**

| Sr No | Compound           | Chemical Constituents                                |
|-------|--------------------|------------------------------------------------------|
| 1     | Minerals           | Calcium Iron Magnesium Pottasium Copper              |
| 2     | Flavonoids         | Quercetin , Kaempferolmyricetin                      |
| 3     | Phenolic Compounds | Galic Acid Chlorognic Acid Caffeic Acid Ferulic Acid |
| 4     | Saponins           | Various Saponins Glycoside                           |
| 5     | Alkaloids          | Moringine,Moringinine                                |
| 6     | Terpenoids         | Monoterpenes and sesquiterpenes                      |
| 7     | Glucosinolates     | Glucomoringin (benzyl glucosinolate)                 |
| 8     | Isothiocyanates    | Benzyl isothiocyanates                               |

Table No.1 :- Chemical constituents of moringaoleifera leaves[15]

**2.Beeswax**

Beeswax has been applied to the skin since ancient Egyptian times, when it was formulated into creams and ointment, and it continues to be utilized today in similar applications, including in pharmaceuticals.[16]



Fig No.2:- Beeswax[17]

3.Almond

Common Name:Almond

Botanical Name-PrunusamygdalusBatsch

Family-Rosaceae

Synonyms-Amygdaluscommunis,sweetalmond,prunusdulcis

Habitat-Almonds are native to southwestern Asia and are produced mostly in Mediterranean climates between 28° and 48° N and 20° to 40°s .Theyrequire well drained soil and plenty of sunlight to grow successfully.[18]



Fig. No.3:- Almond oil[19]

4. Turmeric

In India, turmeric, referred to as Haridra, is widely utilized as a spice and recognized for its health benefits in Ayurvedic medicine. In the CharakaSamhita, an ancient Ayurvedic text, it is regarded as beneficial for enhancing digestion, minimizing obesity, soothing skin inflammation, and lessening inflammation in the digestive system. It has been utilized both inside and outside.[20]



Fig. No.4:- Turmeric[21]

Experimental work :-

Material -

| Sr.No. | Ingredients     | Quantity | Function              |
|--------|-----------------|----------|-----------------------|
| 1      | Moringa extract | 2.5gm    | Anti Inflammatory     |
| 2      | Bees Wax        | 5gm      | Treatment Of Dry Skin |
| 3      | Liquid Paraffin | 2.5gm    | Rodent Repellent      |

|          |                 |        |                                             |
|----------|-----------------|--------|---------------------------------------------|
| <b>4</b> | Xanthum Gum     | 0.25gm | Increase Shell Life And Avoid Fungal Growth |
| <b>5</b> | methyl Paraben  | 0.1gm  | Solvent                                     |
| <b>6</b> | Distilled Water | 37.5gm | Antiseptic                                  |
| <b>7</b> | Turmaric        | 1.5gm  | Anti Anginal, Anti Inflammatory             |
| <b>8</b> | Almond Oil      | 2.5gm  | Smooth And Hydrate Skin                     |

Table No.2:- Material

## Research and Methodology

### Method:-

- Step 1:- Preparation of Moringa leaves powder
- Step 2:- Extraction process of Moringa leaves
- Step 3:- Identification Test for flavonoids
- Step 4:- Preparation of Cream

## Methodology

### A. Preparation of Moringa leaves Powder

1. Harvest fresh, healthy moringa leaves.
2. Wash thoroughly with clean water to remove dirt.
3. Dry leaves in shade (not direct sunlight) to preserve nutrients.
4. Grind the moringa leaves in a blender or in a mortal pestle.
5. Sieve the powder to remove large particles.
6. Store in an airtight container, in a cool, dry place.[22]



Fig.No.4:- Moringa leaves powder

### B. Extraction process of moringa leaves by maceration.

1. Dry and powder moringa leaves.

2. Soak the powder in a solvent (ethanol).
3. Leave it for 24-72 hours with occasional shaking.
4. Filter the mixture to separate liquid separate

### C. Identification Test For Flavonoids

**1. Shinoda Test:** - Mix a small quantity of extract with 5 ml of ethanol, then add several turnings followed by a few drops of concentrated HCl.

**Observation-** red, pink, or orange coloration indicates the presence of flavonoids.

**2. Alkaline Reagent Test :-** Add few drops of sodium hydroxide to a test solution Then few drops of dilute hcl.

**Observation-** Yellow colour was formed which indicates the absence of flavonoids.[23]

### D. Cream preparation

#### Step 1: Phase A, or the oil phase

1. Fill a clean beaker with liquid paraffin and beeswax.
2. Using a water bath, heat to 70 °C until melted.
3. Stir gently to ensure proper mixing.[24]

#### Step 2:- Phase B or Water Phase

1. In a separate beaker, heat distilled water to 70 °C.
2. Use the warm water to dissolve the methyl paraben.
3. Sprinkle xanthan gum into the water while continuously stirring to prevent clumping.

#### 3. Emulsification

1. Using a hand mixer or homogenizer, gradually incorporate phase B (water phase) into phase A (oil phase) while stirring constantly. [25]
2. For five to ten minutes, keep mixing at high speed until a smooth and creamy texture is achieved.

#### Step 4: Cooling and Addition of Active Ingredients

1. Allow the emulsion to cool 40°C
2. Add moringa extract and turmeric extract, and mix well to ensure even distribution.[26]

#### Step 5: Final Adjustments and Storage

1. Check and adjust the pH (between 5.5-6.5) using a pH meter.
2. Transfer the cream into sterilized containers.
3. Store at room temperature in cool, dry place.[27]



Fig.No.5:- Cream

**Formulation of cream (quantity- 50gm)**

| Sr.No. | Ingredients     | F1   | F2   | F3   |
|--------|-----------------|------|------|------|
| 1      | Moringa extract | 2    | 2.5  | 2.5  |
| 2      | Bees Wax        | 4.5  | 5    | 5    |
| 3      | Liquid Paraffin | 2    | 2.5  | 2.5  |
| 4      | Xanthum Gum     | 0.25 | 0.50 | 0.25 |
| 5      | methyl Paraben  | 0.2  | 0.1  | 0.1  |
| 6      | Distilled Water | 39   | 37.5 | 37.5 |
| 7      | Turmaric        | 1    | 0.9  | 1.5  |
| 8      | Almond Oil      | 1.05 | 1    | 2.5  |

Table No.3:- Formulation of cream

**Evaluation test :-**

**Organoleptic properties**

- State:-Semisolid
- Colour:-Pale green
- Odour:-Pleasant
- Texture:- Smooth

**Physiochemical Evaluation:-**

**Determination of ph:-** ph measurement involved calibrating the ph meter using standard buffer solution, then taking 0.5gm of the prepared herbal cream and thoroughly mixing it with 50ml of distilled water. The ph meter was then use to measure the cream ph at room temperature.[28]



Fig.No.6:- pH of Cream

**Washability:-** Apply a tiny amount to your skin and try washing it off with water. Expected results : Moderately water-resistant yet not difficult to remove. A balance is required so that it remains effective on the skin it can be dried as of needed.

**Grittiness:** A compound microscope was used to inspect the formulation for particles.[29]

**Spreadability:-**The time it takes for two glass slides to separate from cream measuring seconds, the shorter the duration, the better the spreadability.[30]



Fig. No.7:- Spreadability of cream



Fig. No. 8:-Skin Irritancy test

### ➤ Result of evaluation parameter

| Sr.No. | Parameter                | F1          | F2          | F3                 |
|--------|--------------------------|-------------|-------------|--------------------|
| 1.     | Physiochemical parameter |             |             |                    |
|        | a)Colour                 | Dark green  | Pale green  | <b>Pale green</b>  |
|        | b)odour                  | aromatic    | pleasant    | <b>Pleasant</b>    |
|        | c) state                 | Semi solid  | Semi solid  | <b>Semi solid</b>  |
| 2.     | Ph determination         | Acidic      | acidic      | <b>Acidic</b>      |
| 3      | Skin irritancy test      | Yes         | No          | <b>No</b>          |
| 4      | Washability              | Easily Wash | Easily Wash | <b>Easily Wash</b> |
| 5      | Spredability             | 15sec/gm    | 12sec/2gm   | <b>8sec/2gm</b>    |

## ➤ Discussion

Batch F3 was designed to maximize both hydration and skin-protective qualities. The slightly increased turmeric content and higher almond oil concentration, compared to other batches, likely contributed to improved anti-inflammatory and moisturizing effects. The spreadability score (8 seconds for 2 gm) demonstrates excellent user-friendliness, suggesting it distributes evenly and easily on the skin. Its skin-friendly pH and absence of irritation in patch testing indicate high compatibility with most skin types, including sensitive skin.

These results support the effectiveness of *Moringa oleifera* and other natural components in addressing key signs of aging such as dryness, irritation, and reduced elasticity. The synergy between antioxidants (Moringa, turmeric), emollients (almond oil), and stabilizers (beeswax, xanthan gum) yielded a stable and functional product.

## ➤ Conclusion

The study successfully formulated a stable, effective, and safe anti-aging cream using *Moringa oleifera* as the primary natural ingredient. The cream demonstrated excellent moisturizing, antioxidant, and skin-soothing properties. The absence of irritation and favorable physicochemical characteristics support its potential for commercial cosmetic use. This herbal alternative offers a promising, natural, and affordable solution to conventional synthetic anti-aging products. Future work should include long-term stability testing and broader consumer trials to further establish efficacy and market readiness.

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