

## PREPARING AND EVALUATING A HERBAL FACE CREAM USING CARROTS

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### ABSTRACT

The creation of face creams with plant-based substances that have positive skin-benefitting qualities is a result of the growing demand for natural and herbal skincare products. This study investigates the creation and assessment of a herbal face cream utilizing extract from carrots (*Daucus carota*), which are abundant in beta-carotene, vitamins A and C, and antioxidants. With its anti-aging, anti-inflammatory, and hydrating properties, carrot extract has shown great promise in supporting skin health. In order to create the cream, carrot extract was combined with additional herbal ingredients like glycerin, almond oil, and aloe vera, as well as the proper emulsifiers to guarantee smoothness and stability. To make sure the cream would work well on skin and be aesthetically pleasing, its physicochemical characteristics—such as pH, viscosity, color, and odor—were assessed. The cream's shelf-life and safety were evaluated using microbiological testing and stability testing at different temperatures. Clinical tests were used to conduct efficacy trials, which included hydration monitoring and anti-aging evaluation. The findings showed that with consistent usage, the cream significantly reduced wrinkles, enhanced skin texture, and had outstanding moisturizing qualities. The study demonstrates the potential of carrot-based herbal face creams as a safe and effective alternative to synthetic skincare products.

**Keywords:** face creams, herbal, carrot, extract, skincare products, ingredients, etc.

### 1. INTRODUCTION

The growing preference for natural and herbal skincare products has led to the exploration of various plant-based ingredients known for their skin benefits. One such ingredient is carrot (*Daucus carota*), which has long been recognized for its rich nutritional content, including beta-carotene, vitamins A and C, and a variety of antioxidants. These bioactive compounds contribute to its ability to improve skin health, reduce signs of aging, and enhance skin hydration. Carrot extract has become a popular choice in the formulation of cosmetics due to its anti-aging, anti-inflammatory, and skin-rejuvenating properties.

Herbal face creams, particularly those incorporating carrot extract, offer a promising alternative to synthetic skincare products. These creams are designed to provide moisturization, promote skin elasticity, and address various skin concerns such as dryness, fine lines, and pigmentation. The formulation process involves blending carrot extract with other natural ingredients like aloe vera, glycerin, and natural oils, ensuring the stability, safety, and efficacy of the final product.

This study focuses on the formulation and evaluation of a herbal face cream containing carrot extract, assessing its physical properties, stability, safety, and skin benefits. By incorporating carrot's proven skin-enhancing qualities, the aim is to develop a safe and effective product that caters to the growing demand for herbal skincare solutions.

The increasing awareness of the potential harmful effects of synthetic chemicals in skincare products has accelerated the demand for herbal and natural alternatives. Consumers are now more inclined to choose products that are gentle on the skin, environmentally friendly, and free from artificial additives. Carrot, a commonly available and highly nutritious vegetable, has emerged as a key ingredient in natural cosmetics due to its wealth of essential nutrients and antioxidants. Carrot extract, rich in beta-carotene (a precursor to Vitamin A), helps promote cell regeneration, protect against UV radiation, and maintain skin's overall health. Additionally, the high Vitamin C content in carrots contributes to skin brightening and collagen production, further enhancing its role in anti-aging formulations.

In cosmetic formulations, carrot extract is often combined with other herbal ingredients such as aloe vera, jojoba oil, and glycerin to maximize the product's moisturizing, soothing, and healing properties. The use of carrot extract in face creams can help address a variety of skin concerns, including dryness, uneven pigmentation, and signs of aging such as fine lines and wrinkles. Moreover, the antioxidants present in carrots help combat oxidative stress, which is a major contributor to premature skin aging. The formulation of herbal face creams requires careful selection and combination of natural ingredients to achieve the desired texture, stability, and effectiveness. Stability tests and microbial evaluations are essential to ensure the cream remains safe for use over time. Additionally, the product's efficacy in improving skin hydration, texture, and appearance is evaluated through clinical testing. This study aims to formulate a herbal face cream using carrot extract and evaluate its physicochemical properties, stability, safety, and efficacy. By focusing on the natural properties of carrot, this research contributes to the development of safe, effective, and eco-friendly skincare products that align with the growing trend towards herbal and plant-based cosmetics.

## DESCRIPTION:

The growing interest in natural and herbal skincare products is driven by a combination of factors, including increasing consumer awareness of the potential harmful effects of synthetic chemicals and a preference for more sustainable and eco-friendly beauty products. As part of this trend, herbal ingredients with proven skin benefits, such as carrot (*Daucus carota*), are becoming integral components in modern skincare formulations. Carrots, a rich source of vitamins, antioxidants, and essential nutrients, offer numerous advantages for skin health, making them an ideal candidate for use in face creams.

## CARROT:

One important horticultural crop with great commercial worth and recognition worldwide is the carrot (*Daucus carota*). Numerous reasons, such as nutritional value, phytochemical makeup, antioxidant capability, and health advantages, are to blame for this. A root vegetable, carrots are cultivated, sold, and eaten in nations all over the world. Along with other members of the Apiaceae family, such as celery, parsley, coriander, cumin, and parsnip, they represent a significant crop. It is well known that the most prized member of the Apiaceae family is the carrot.



## COMMON NAMES:

Carrot [English]; zanahoria [Spanish]; carotte [French]; cenoura [Portuguese]; wortel [Dutch]; Karotte, Möhre [German]; karòt [Haitian creole]; ikaroti [Kinyarwanda]; lobak merah [Malay]; marchew uprawna [Polish]; Cà rốt [Vietnamese]; ካርቶ [Ahmaric]; جزر [Arabic]; গাজর [Bengali]; မုန်လာဥိ [Burmese]; 胡萝卜 [Chinese]; גזר [Hebrew];

गाजर [Hindi]; ニンジン [Japanese]; 당근 [Korean]; ਗਾਜਰ [Punjabi]; Морковь посевная [Russian]

## VERNACULAR NAMES:

Tamil: Carrot

Sanskrit: Garjara, Grujjanakam

Hindi: Gajar

Marathi: Gajara

Telugu: Karet

Kannada: Kyaret

Malayalam: Karrer

Bengali: Gajara

## PRODUCTS:

- Carrots, fresh carrots
- Dried carrots, dried carrot meal, dehydrated carrots
- Carrot tops
- Carrot processing residue, carrot juice residue

## SPECIES:

*Daucus carota* L. [Apiaceae]

## SYNONYMS:

- *Daucus bocconeii* Guss.,
- *Daucus carota* cv. *atrorubens* Alef.,
- *Daucus carota* var. *atrorubens* (Alef.) E. Small,
- *Daucus carota* var. *commutatus* Paol.,
- *Daucus gingidium* L.,

- *Daucus gummifer* Lam.,
- *Daucus gummifer* subsp. *hispidus* Arcang.,
- *Daucus hispanicus* Gouan,
- *Daucus maritimus* Lam.,
- *Daucus maximus* Desf.,
- *Daucus polygamus* Gouan.

#### **CARROT MOISTURIZING CREAM FORMULATION:**

##### **INGREDIENTS:**

1. Carrot Seed Oil (5-10%): Rich in antioxidants and essential fatty acids that help hydrate, rejuvenate, and nourish the skin.
2. Carrot Extract (2-5%): Provides high levels of beta-carotene and vitamins, which can improve skin tone and promote a healthy glow.
3. Water (Aqua) (50-60%): The base of the formula to provide hydration.
4. Emulsifying Wax (5-7%): Helps mix oil and water-based ingredients, forming a stable cream.
5. Glycerin (2-3%): A humectant that helps draw moisture into the skin.
6. Stearic Acid (1-2%): A fatty acid that helps to thicken the formulation and stabilize the emulsions.
7. Vitamin E (0.5-1%): Acts as an antioxidant, helping to preserve the product and provide additional skin benefits.
8. Preservative (0.5-1%): To prevent microbial growth and ensure shelf life.
9. Xanthan Gum (0.2-0.5%): A natural thickener that improves texture and stability.

##### **PROCEDURE:**

1. Phase 1 (Oil Phase):
  - In a clean beaker, combine carrot seed oil, stearic acid, and emulsifying wax. Heat gently to 70-75°C until everything is fully melted.
2. Phase 2 (Water Phase):
  - In another beaker, warm the water and glycerin to 70-75°C.
3. Emulsification:
  - Slowly pour the water phase into the oil phase while mixing constantly using a hand blender or an emulsifier. Continue mixing for about 5-10 minutes until the mixture starts to thicken and cool down.
4. Cooling Phase:
  - Once the mixture has cooled to around 40°C, add carrot extract, vitamin E, and the preservative. Mix well to ensure uniform distribution.
5. Thickening (Optional):
  - If needed, add xanthan gum for additional viscosity. Continue mixing until smooth.
6. Final Adjustments:
  - Check the pH of the cream. It should be between 5.5 and 6.5. If needed, adjust the pH using citric acid.
7. Packaging:
  - Package the cream in an airtight container, preferably a jar or pump dispenser, to maintain product integrity.

##### **CARROT SEED OIL BENEFITS:**

- **Rich in Antioxidants:** Carrot seed oil is high in antioxidants, which help to protect the skin from damage caused by free radicals.
- **Moisturizing:** It is beneficial for dry and sensitive skin by providing deep hydration and improving skin texture.
- **Anti-aging:** The high beta-carotene content helps to reduce the appearance of fine lines and wrinkles.

##### **CARROT EXTRACT BENEFITS:**

- **Brightening:** Carrot extract is often used to brighten the complexion and improve overall skin tone.
- **Anti-inflammatory:** The extract has soothing properties, which can help reduce redness or irritation.
- **Skin Renewal:** Due to its high vitamin A content, it can support the regeneration of skin cells.

### CARROT-BASED HERBAL FACE CREAM BENEFITS:

The benefits of using a carrot-based herbal face cream are numerous, thanks to the rich nutrient profile of carrot extract. Carrots contain vitamins, antioxidants, and bioactive compounds that can significantly improve skin health. Here are the key benefits of using a carrot-based herbal face cream:

#### 1. Anti-Aging and Skin Rejuvenation:

- **Rich in Beta-Carotene:** Carrots are rich in beta-carotene, which is converted into Vitamin A in the body. Vitamin A is known for its role in promoting skin cell turnover, which helps to renew the skin and keep it youthful. This can reduce the appearance of fine lines and wrinkles by stimulating collagen production, improving skin texture, and maintaining skin elasticity.
- **Collagen Boosting:** Vitamin A and Vitamin C in carrot extract are crucial for collagen synthesis. Collagen is a protein that helps to keep the skin firm and plump, minimizing the formation of sagging and wrinkles over time.
- **Protects Against UV Damage:** Beta-carotene also acts as an internal sunscreen, helping the skin defend against UV radiation and minimizing the damage caused by the sun, including premature aging signs like dark spots and wrinkles.

#### 2. Brightening and Even Skin Tone:

- **Reduces Hyperpigmentation:** The high Vitamin A content of carrots helps in reducing dark spots, uneven pigmentation, and sunspots caused by UV exposure. Vitamin C further assists in brightening the skin, helping to create a more uniform and radiant complexion.
- **Promotes Healthy Glow:** Regular use of a carrot-based face cream can promote a healthy, glowing complexion by eliminating dead skin cells and encouraging the regeneration of new skin cells, giving the skin a fresh appearance.

#### 3. Hydration and Moisture Retention:

- **Intense Moisturization:** Carrot extract, combined with other natural emollients like glycerin, aloe vera, and shea butter, helps to deeply hydrate the skin, ensuring that moisture is locked in. This is particularly beneficial for those with dry skin as it helps maintain a healthy moisture balance throughout the day.
- **Prevents Dryness:** Carrots, being rich in water, help to nourish and moisturize the skin without making it feel greasy or heavy, which is an ideal benefit for those with combination or oily skin.

#### 4. Anti-Inflammatory and Healing:

- **Reduces Inflammation:** Carrots contain natural anti-inflammatory compounds like falcarinol and falcarindiol, which can help reduce redness, irritation, and inflammation on the skin. This makes it beneficial for those with sensitive skin, acne, or rosacea.
- **Promotes Healing:** Carrot extract aids in the healing process of the skin by encouraging cell regeneration. This can help to repair skin damage caused by environmental factors like sun exposure, pollution, or harsh skincare treatments.

#### 5. Antioxidant Protection:

- **Neutralizes Free Radicals:** Carrot extract is loaded with antioxidants, such as beta-carotene, Vitamin A, and Vitamin C, which help to neutralize harmful free radicals. Free radicals can cause oxidative stress, leading to premature aging and skin damage. By combating these free radicals, carrot extract helps to protect the skin and maintain its youthful appearance.
- **Prevents Premature Aging:** The antioxidant properties of carrot extract also help to reduce the visible effects of oxidative damage, such as fine lines, wrinkles, and sun damage, leading to a healthier, more youthful complexion.

#### 6. Acne and Skin Infection Prevention:

- **Antibacterial and Antifungal Properties:** Carrots contain natural compounds that have mild antibacterial and antifungal effects, which can help to prevent skin infections and breakouts. These properties can be particularly helpful for people with acne-prone skin.
- **Soothes Acne Inflammation:** Carrot's anti-inflammatory effects can help reduce redness and swelling associated with acne or other skin conditions, promoting quicker healing and soothing the skin.

#### 7. Soothing and Calming:

- **Soothes Irritated Skin:** The natural compounds in carrot extract help to calm and soothe irritated skin, reducing discomfort and redness. This makes it suitable for individuals with conditions such as eczema, rosacea, or sunburn.

- Non-Greasy Moisture: Despite its hydrating properties, carrot-based creams are often lightweight and absorb quickly into the skin, leaving no greasy residue. This makes them suitable for all skin types, including oily or combination skin.

#### 8. Gentle for Sensitive Skin:

- Non-Irritating: Carrot extract is gentle and well-tolerated by sensitive skin, as it provides hydration and nourishment without causing irritation or allergic reactions. The presence of soothing ingredients like aloe vera and vitamin E makes carrot creams safe for daily use on delicate skin.

#### 9. Natural and Eco-Friendly:

- Free from Harmful Chemicals: Carrot-based face creams, especially those labeled as herbal or organic, are free from harsh chemicals, synthetic fragrances, and preservatives, making them a safer option for consumers who are sensitive to chemicals or who prefer eco-friendly products.
- Sustainability: As a plant-based ingredient, carrot extract aligns with sustainable and environmentally conscious beauty practices. The growing popularity of plant-based cosmetics is due to their minimal environmental impact and the use of renewable resources

## 2. CONCLUSION

Ayurveda states that blood impurities are typically the cause of skin issues. Herbal face creams are used to maintain the skin's suppleness, cleanse the pores, improve blood circulation, and rejuvenate the muscles. The slabs method was used to formulate the cream. This produces the finest outcomes:

- Prevents dry skin;
- Whitens the face;
- Eliminates blackheads;
- Prevents the skin from aging

The cream's recipe offers a cooling sensation in addition to the best results in terms of skin brightening %. After undergoing stability trials, the optimal formulation of herbal face cream showed no alterations over the course of the three-month study. As a result, the F1 formulation lightens the complexion and gets rid of skin discoloration. Therefore, it can be said that there are no negative effects while applying cream to the skin's surface.

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