



Formulation And Evaluation of Pineapple and Turmeric Face Cream

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Abstract:

This study focuses on the formulation and evaluation of a natural face cream incorporating pineapple (*Ananas comosus*) and turmeric (*Curcuma longa*) extracts, known for their skin-enhancing properties. Pineapple is rich in vitamin C and bromelain, which promote exfoliation and skin brightening, while turmeric contains curcumin, which exhibits strong anti-inflammatory and antioxidant properties. The face cream was formulated using standard cosmetic preparation methods, combining aqueous and oil phases with suitable emulsifiers and preservatives to ensure stability and safety. The formulation was evaluated for its physicochemical properties, including pH, viscosity, spread ability, homogeneity, and stability under various storage conditions. Additionally, skin irritation tests and user acceptability studies were conducted. Results

demonstrated that the cream had desirable consistency, acceptable pH for skin application, and no signs of irritation or microbial growth. The findings suggest that a pineapple and turmeric-based face cream can serve as an effective natural skincare product with potential commercial viability.

Keywords: Formulation and Evaluation of Pineapple and Turmeric Face Cream": Pineapple extract, Turmeric extract, Face cream formulation, Herbal cosmetics, Natural skincare, Anti-inflammatory, Antioxidant, Skin brightening, Emulsion stability, Physicochemical evaluation, Skin irritation test, Ayurvedic formulation, Active ingredients, Topical application, Cosmetic science

Introduction:

In recent years, there has been a growing interest in natural and herbal-based cosmetic products due to their minimal side effects and rich therapeutic benefits. Among these, plant-based ingredients like pineapple (*Ananas comosus*) and turmeric (*Curcuma longa*) have gained attention for their skin-enhancing properties. Pineapple is a tropical fruit rich in vitamin C, alpha-hydroxy acids (AHAs), and the enzyme bromelain, which promote exfoliation, collagen synthesis, and skin brightening. Turmeric, a widely used medicinal herb in Ayurveda, contains curcumin, known for its powerful antioxidant, anti-inflammatory, and antimicrobial properties.

The combination of pineapple and turmeric offers a promising synergy for skincare applications, particularly in improving skin tone, reducing acne, and providing a natural glow. However, to ensure the effectiveness and consumer safety of such a product, it is essential to develop a stable cream formulation and evaluate its physicochemical and biological properties. This study aims to formulate a natural face cream using pineapple and turmeric extracts and assess its stability, efficacy, and safety through various

AIM AND INTRODUCTION:

Aim:

To formulate and evaluate a natural face cream using pineapple and turmeric extracts for potential skin-enhancing benefits.

Objectives:

1. To extract active ingredients from pineapple (*Ananas comosus*) and turmeric (*Curcuma longa*).
2. To formulate a stable oil-in-water (O/W) emulsion face cream incorporating the extracts.
3. To evaluate the physicochemical properties of the cream, including pH, viscosity, spread ability, and homogeneity.
4. To perform stability testing under different storage conditions.
5. To assess the cream for any skin irritation through patch testing.
6. To analyze the potential antioxidant and anti-inflammatory effects of the formulation.
7. To evaluate consumer acceptability through sensory testing.

ADVANTAGES:

1. **Natural Ingredients:** Uses plant-based extracts (pineapple and turmeric), reducing the risk of side effects compared to synthetic chemicals.
2. **Antioxidant Properties:** Turmeric contains curcumin, which helps protect the skin from oxidative stress and premature aging.
3. **Anti-inflammatory Effects:** Both turmeric and pineapple have anti-inflammatory compounds that can help reduce acne, redness, and skin irritation.
4. **Skin Brightening:** Pineapple is rich in vitamin C and enzymes like bromelain that promote exfoliation and skin brightening.
5. **Antibacterial Action:** Turmeric has natural antimicrobial properties that help in preventing and treating skin infections.
6. **Cost-Effective:** Easily available natural ingredients make the formulation more economical and sustainable.
7. **Consumer Preference:** Increasing demand for herbal and Ayurvedic cosmetic products enhances market appeal.
8. **Moisturizing Effect:** The cream base provides hydration, improving skin texture and softness.
9. **Eco-Friendly:** The formulation minimizes the use of synthetic preservatives and harmful chemicals, making it environmentally safe.
10. **Potential for Commercialization:** Can be developed into a marketable product in the herbal skincare industry.

DISADVANTAGES:

1. **Stability Issues:** Natural extracts may degrade over time, affecting the cream's shelf life and effectiveness.
2. **Color and Odor:** Turmeric can impart a strong yellow color and distinct smell, which may not be appealing to all users.
3. **Allergic Reactions:** Some individuals may experience skin sensitivity or allergic reactions to natural ingredients like turmeric or pineapple.
4. **Microbial Contamination:** Herbal products are more prone to microbial growth if not

REVIEW AND LITERATURE:

Pineapple (*Ananas comosus*) contains vitamin C and bromelain, known for their exfoliating, anti-inflammatory, and skin-brightening effects. Turmeric (*Curcuma longa*) is

Rich in curcumin, which has strong antioxidant, anti-inflammatory, and antimicrobial properties. Previous studies have shown that both ingredients can improve skin texture, reduce acne, and support healthy skin when used in topical formulations.

Research on herbal creams has demonstrated the effectiveness of combining natural extracts in stable emulsions. However, challenges such as ingredient stability, skin sensitivity, and microbial growth have also been noted. Proper formulation and evaluation are essential to ensure the safety, efficacy, and shelf life of such products.

PLAN OF WORK:

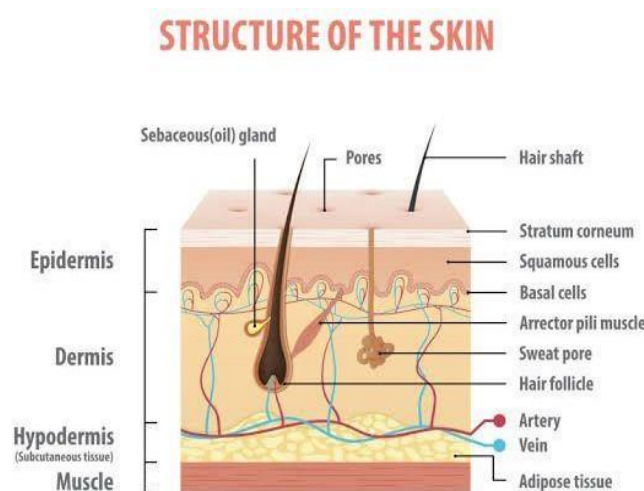
Skin Structure:

The skin consists of three layers: the epidermis (outer layer), dermis (middle layer with collagen and elastin), and hypodermis (deepest layer with fat and connective tissue).

The epidermis protects against environmental damage, while the dermis provides strength and elasticity.

Pineapple extract, rich in bromelain and vitamin C, exfoliates the epidermis, promotes skin regeneration, and enhances collagen production in the dermis.

Turmeric extract, with its active compound curcumin, reduces inflammation, improves skin tone, and protects against oxidative stress, supporting overall skin health.

DIAGRAM: 1 SKIN STRUCTURE**PINEAPPLE JUICE:**

Pineapple Juice is a natural liquid extracted from the pulp of the pineapple fruit (*Ananas comosus*). It is commonly used in skincare formulations, including face creams, due to its beneficial properties. Here's a brief overview of its role and benefits in cosmetic formulations:

Properties of Pineapple Juice:**1. Exfoliating Action:**

Pineapple juice contains bromelain, a protease enzyme that helps break down dead skin cells, making it an excellent natural exfoliant. It aids in removing the outermost layer of dead skin, promoting smoother and more radiant skin.

2. Rich in Vitamin C:

Vitamin C in pineapple juice promotes collagen production, which helps in maintaining skin elasticity and firmness. It also offers antioxidant protection against free radical damage, which can accelerate skin aging.

3. Brightening and Even Skin Tone:

The combination of exfoliating and antioxidant properties can help reduce the appearance of dark spots, pigmentation, and acne scars, resulting in a more even and brighter complexion.

4. Anti-inflammatory Properties:

Pineapple juice has mild anti-inflammatory effects due to bromelain, making it useful for calming irritated skin or reducing redness caused by conditions like acne or sunburn.

5. Hydration:

Pineapple juice is high in water content, helping to hydrate and refresh the skin when applied topically.

Use in Face Cream Formulations:

Pineapple juice is often incorporated into face creams for its exfoliating and skin-brightening effects. It is typically included in the formulation in concentrated or diluted form and combined with other ingredients to enhance its stability and effectiveness. Its addition can also give the cream a refreshing, tropical scent.

DIAGRAM: 2 PINEAPPLE JUICE**POTATO JUICE:**

Potato Juice is the liquid extracted from raw potatoes (*Solanum tuberosum*) and is often used in skincare formulations due to its potential benefits for the skin. It contains

various nutrients like vitamins, minerals, and antioxidants that are beneficial for skin health.

Here's a brief overview of potato juice and its uses in cosmetic formulations: **Properties of Potato Juice:**

1. Skin Brightening and Hyperpigmentation Reduction:

Potato juice is rich in vitamin C, an essential antioxidant that helps lighten dark spots and even out skin tone. It is often used to treat hyperpigmentation, sun spots, and age spots by inhibiting melanin production.

2. Anti-inflammatory:

Potato juice contains compounds like catechins and carotenoids, which exhibit anti-inflammatory properties. These compounds can help reduce redness, swelling, and irritation, making it useful for sensitive or inflamed skin.

3. Hydration:

Potato juice has a high-water content, which helps to hydrate and moisturize the skin. This makes it beneficial in creams or masks for dry or dull skin.

4. Wound Healing:

The antioxidants and anti-inflammatory compounds in potato juice can aid in the healing process of minor skin injuries or acne scars, promoting quicker recovery and reducing scarring.

5. Skin Tightening:

Some studies suggest that potato juice can help tighten the skin by stimulating collagen production, which contributes to a firmer, more youthful appearance.

6. Brightens and Soothes Dark Circles:

Potato juice is often applied topically under the eyes as a natural remedy to reduce the appearance of dark circles and puffiness due to its anti-inflammatory and skin-brightening effects.

Use in Face Cream Formulations:

In face creams, potato juice is often incorporated for its skin-brightening and moisturizing benefits. It can help in evening out skin tone and providing a gentle exfoliating effect. Due to its high-water content, it acts as a natural humectant, drawing moisture into the skin and keeping it hydrated.

DIAGRAM: 3 POTATO JUICE

**TOMATO JUICE:**

Tomato Juice is the liquid extracted from tomatoes (*Solanum lycopersicum*) and is widely used in skincare formulations due to its rich composition of vitamins, minerals, and antioxidants. Tomato juice offers several skin benefits and is often used to enhance the effectiveness of skincare products such as face creams, serums, and masks. Here's a breakdown of tomato juice and its uses in cosmetics:

Properties of Tomato Juice:**1. Rich in Antioxidants (Lycopene):**

Tomato juice is a powerful source of lycopene, a potent antioxidant that helps protect the skin from oxidative damage caused by free radicals. Lycopene is known to help reduce the effects of UV radiation, preventing premature aging and skin damage.

2. Skin Brightening and Even Skin Tone:

Vitamin C, found abundantly in tomato juice, promotes collagen production and helps brighten the skin. It can assist in reducing dark spots, blemishes, and uneven skin tone by inhibiting melanin production.

3. Anti-inflammatory Effects:

Tomato juice has anti-inflammatory properties that can help soothe irritated and inflamed skin. It is particularly beneficial for those with acne or other inflammatory skin conditions, as it can reduce redness and swelling.

4. Oil Control and Pore Minimization:

Tomato juice has a natural astringent effect, making it useful for individuals with oily skin. It helps tighten pores and control excess sebum production, leading to a clearer complexion.

5. Acne Treatment:

Due to its antibacterial properties, tomato juice can help reduce acne-causing bacteria on the skin. Its ability to balance the skin's oil production and reduce inflammation also makes it an effective natural remedy for acne-prone skin.

6. Hydration:

Tomato juice is rich in water, which helps hydrate the skin and maintain moisture balance.

This makes it beneficial for dry or dehydrated skin when used in cosmetic formulations.

7. Skin Tightening and Firming:

The natural astringent and antioxidant properties of tomato juice contribute to skin tightening, promoting a firmer and more youthful appearance.

Use in Face Cream Formulations:

- **Hydration:** Tomato juice's high-water content makes it an excellent hydrating agent when incorporated into face creams or lotions, ensuring that the skin stays moisturized throughout the day.
- **Skin Tone and Brightening:** The vitamin C and lycopene content in tomato juice can help even out skin tone, brighten complexion, and reduce pigmentation spots when included in creams.
- **Oil Control:** Tomato juice is often used in formulations for oily or acne-prone skin due to its oil-absorbing and pore-tightening properties.
- **Antioxidant Protection:** Tomato juice helps protect the skin from environmental stressors, such as UV damage, pollution, and free radicals, making it an ideal ingredient in anti-aging skincare products.

DIAGRAM: 4 TOMATO JUICE

**ROSE OIL:**

Rose Oil—often extracted from *Rosa damascena* (Damask rose) or *Rosa centifolia*—is a luxurious and highly valued essential oil used in skincare and cosmetic formulations.

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Known for its rich aroma and skin-enhancing properties, rose oil is a popular ingredient in face creams, serums, and therapeutic oils.

Properties of Rose Oil:**1. Antioxidant-Rich:**

Rose oil contains natural antioxidants like citronellol and geraniol, which help neutralize free radicals, preventing premature aging and oxidative damage.

2. Anti-inflammatory:

Its soothing and anti-inflammatory properties help reduce redness, irritation, and swelling—ideal for sensitive or reactive skin.

3. Hydrating and Moisturizing:

Rose oil helps lock in moisture, making it suitable for dry and dehydrated skin. It enhances the skin's barrier function and gives a soft, smooth feel.

4. Anti-Aging Effects:

With regular use, rose oil may improve skin elasticity, reduce the appearance of fine lines and wrinkles, and promote a youthful glow.

5. Antibacterial and Antiseptic:

Thanks to its mild antibacterial activity, which helps in managing acne and preventing

6. Aromatherapy Benefits:

The floral aroma of rose oil promotes emotional well-being by reducing stress and anxiety, making it a great addition to self-care routines.

Use in Face Cream Formulations:

- **Fragrance & Sensory Appeal:** Adds a natural, pleasant scent to products
- **Emollient:** Works well with oils and butters to deeply nourish the skin
- **Active Ingredient:** Enhances the overall functionality of anti-aging, moisturizing, and soothing creams.

DIAGRAM: 5 ROSE OIL

**TURMERIC POWDER:**

Botanical Name: *Curcuma longa* Family: Zingiberaceae

Form: Finely ground yellow-orange powder made from the dried rhizomes of the turmeric plant.

1. Active Compounds:

- Curcumin: The primary bioactive component responsible for turmeric's anti-inflammatory, antioxidant, and antimicrobial properties.
- Volatile oils: Such as turmerone and zingiberene, which contribute to its therapeutic effects.
- Polysaccharides: Offer moisturizing and wound-healing properties.

2. Skin Benefits of Turmeric Powder:

- Anti-inflammatory: Curcumin reduces inflammation by inhibiting inflammatory cytokines, helping to soothe conditions like acne, eczema, and rosacea.
- Antioxidant: Turmeric neutralizes free radicals, protecting the skin from oxidative stress, aging, and environmental damage.
- Antimicrobial: Helps prevent and treat bacterial and fungal skin infections, including acne-causing bacteria.
- Skin Brightening: Regular topical use can lighten hyperpigmentation, dark spots, and sun damage, promoting a more even complexion.
- Wound Healing: Accelerates tissue repair, making it helpful for healing minor cuts, acne scars, and irritated skin.
- Oil Control: Helps balance sebum production, making it suitable for oily and acne-prone skin.

3. Cosmetic Uses:

Turmeric powder is used in:

- Face creams and masks
- Anti-acne formulations
- Skin-lightening products
- Anti-aging creams
- Ayurvedic beauty treatments

4. Formulation Considerations:

- Staining: Curcumin can stain skin and fabrics. Use in controlled amounts in formulations.
- Skin Sensitivity: Some individuals may experience irritation; patch testing is recommended.
- Stability: Turmeric should be stored away from light and heat to preserve curcumin's potency.
- Preservation: When mixed with water or cream bases, it should be combined with preservatives to avoid microbial growth.

5. Traditional and Ayurvedic Use:

- In Ayurveda, turmeric is considered a "Vishaghna" (detoxifier) and "Raktashodhak" (blood purifier), used for centuries in ubtans (herbal skin pastes) to improve skin tone, treat acne, and promote a natural glow.

DIAGRAM: 6 TUEMERIC POWDER

**OCA BUTTER:**

Scientific Name: *Theobroma cacao*

Common Form: Pale yellow, solid fat extracted from cocoa beans Type: Natural plant-based fat

1. Composition: Cocoa butter is rich in:
 - Fatty acids: Especially oleic acid, stearic acid, and palmitic acid
 - Antioxidants: Including vitamin E and polyphenols
 - Phytochemicals: That promote skin repair and protection
2. Skin Benefits of Cocoa Butter:
 - Deep Moisturization: Cocoa butter is an excellent emollient that forms a protective barrier, locking in moisture and keeping skin soft and hydrated.
 - Improves Skin Elasticity: Regular use helps maintain skin flexibility, which is why it's often used in anti-stretch mark creams and pregnancy skincare.
 - Heals and Soothes: Cocoa butter soothes irritated, dry, or chapped skin and promotes healing of minor wounds and burns.
 - Anti-aging Effects: Its antioxidant content helps fight free radicals, preventing premature aging and reducing the appearance of wrinkles and fine lines.
 - Enhances Skin Texture: It softens and smoothes rough, dry areas like elbows, knees, and heels.
3. Cosmetic Uses:
 - Cocoa butter is widely used in:
 - Face and body creams
 - Lip balms
 - Lotions
 - Soaps
 - Stretch mark products
 - DIY skincare formulations
4. Formulation Considerations:
 - Melting Point: Solid at room temperature but melts near body temperature (~34-38°C), giving products a smooth, luxurious feel.
 - Stability: Highly stable fat with a long shelf life.
 - Compatibility: Blends well with oils, essential oils, and waxes.
5. Precautions:
 - May cause breakouts in acne-prone or very oily skin due to its comedogenic nature.
 - Should be used in moderate amounts for facial applications.

DIAGRAM: 7 COCA BUTTER

**BEESWAX:**

Scientific Name: Cera alba (white beeswax), Cera flava (yellow beeswax) Source: Natural wax produced by honeybees (*Apis mellifera*)

Form: Solid, yellow or white wax, depending on purification

1. Composition:

- Beeswax contains:
- Fatty acids and esters (e.g., myricyl palmitate)
- Hydrocarbons
- Vitamin A
- Natural emulsifiers

2. Skin Benefits of Beeswax:

- Natural Emollient: Forms a protective barrier on the skin without clogging pores, sealing in moisture and keeping skin soft and hydrated.
- Skin Protectant: Shields skin from environmental irritants and harsh weather conditions, making it ideal for lip balms, hand creams, and barrier creams.
- Anti-inflammatory and Healing: Contains mild anti-inflammatory properties and supports healing of minor cuts, scrapes, and irritated skin.
- Antibacterial Properties: Helps protect against bacterial infections, especially useful in acne and wound care formulations.
- Rich in Vitamin A: Supports cell regeneration and improves skin texture.

3. Cosmetic and Skincare Uses:

- Beeswax is used in:
- Face and body creams
- Lip balms and ChapSticks
- Lotions and salves
- Soaps and ointments
- Hair pomades and styling products

4. Functional Role in Formulations:

- Thickener and Stabilizer: Gives structure and consistency to creams and balms.
- Natural Emulsifier: Helps bind oil and water in emulsions.
- Fragrance Fixative: Helps preserve scent in natural perfumes and balms.

5. Types:

- Yellow Beeswax: Raw and unrefined, retains natural aroma and color.
- White Beeswax: Refined and bleached, better for use in lightly colored or fragrance-free formulations.

6. Precautions:

- Generally safe and non-toxic.
- Patch testing recommended for sensitive skin.
- Not suitable for vegan formulations (animal-derived).

DIAGRAM: 7 BEESWAX

**GLYCERIN:**

- Also Known As: Glycerol
 - Chemical Formula: $C_3H_8O_3$
 - Source: Can be derived from plant oils (vegetable glycerin) or animal fats (synthetic options also exist)
 - Form: Clear, odorless, viscous liquid with a sweet taste
1. Function in Skincare:
 - Humectant: Glycerin draws water from the air into the skin, increasing hydration and keeping the skin soft and smooth.
 - Skin Barrier Support: It strengthens the skin's natural barrier by maintaining the lipid structure, preventing moisture loss.
 - Wound Healing: Glycerin helps accelerate the healing of minor cuts, burns, and skin irritations by keeping the area moist and promoting cell repair.
 - Improves Skin Elasticity: Hydrated skin is more elastic and plump, which helps reduce the appearance of fine lines and wrinkles.
 - Enhances Product Spreadability: Glycerin improves the texture and spread of creams, making them easier to apply.
 2. Common Uses in Cosmetics:
 - Face creams and moisturizers
 - Lotions and serums
 - Cleansers and toners
 - Soaps and shampoos
 - Toothpastes and deodorants
 3. Benefits:
 - Suitable for all skin types, including sensitive and acne-prone skin
 - Non-comedogenic (does not clog pores)
 - Non-toxic and safe for regular use
 - Easily absorbed without leaving a greasy feel
 4. Formulation Notes:
 - Typically used at 2-10% concentration in skincare products
 - Can be combined with other humectants like hyaluronic acid for enhance hydration
 - Too much glycerin (>10-15%) may cause a sticky feel

DIAGRAM: 8 GLYCERINE



LIQUID PARABEN:

Form of parabens, which are a group of synthetic preservatives used in cosmetics,

personal care products, and some pharmaceuticals to prevent the growth of harmful Common Types of Liquid Parabens:

1. Methylparaben (liquid or dissolved form)
2. Propylparaben
3. Butylparaben
4. Ethylparaben

These can be found in aqueous (water-based) solutions, often pre-diluted for easier incorporation into formulations.

Typical Use:

- Used at concentrations between 0.1% and 0.3%
- Added to products like shampoos, lotions, creams, and makeup
- Acts as a broad-spectrum preservative against bacteria, yeasts, and molds

DIAGRAM: 9 LIQUID PARABEN

**BORAX:**

Borax (sodium borate) is a versatile and naturally occurring mineral with the chemical formula $\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$. It has a wide range of household, industrial, and scientific uses.

Key Properties:

- Appearance: White powder or crystalline
- Solubility: Soluble in water
- pH: Alkaline (pH ~9.5 in solution)
- Also known as: Sodium tetraborate, disodium tetraborate

Common Uses of Borax:

1. Household Uses:

- Laundry booster: Softens water, removes stains, boosts detergent.
- Cleaner: Natural disinfectant for toilets, sinks, tiles.
- Deodorizer: Neutralizes odors in garbage cans, shoes, and carpets.
- Pest control: Effective against ants and cockroaches when mixed with sugar.

2. Industrial Uses:

- Glass and ceramics: Used as a flux in manufacturing.
- Metallurgy: Helps in welding, soldering, and refining metals.
- Enamel and glaze production.

3. Crafts and DIY:

- Slime making: Mixed with glue (PVA) to create stretchy slime.
- Homemade laundry soap: Combined with washing soda and soap flakes.

5. Personal Care and Cosmetic Use:

- Used as a buffer, emulsifier, or preservative, but increasingly avoided due to potential health concerns (especially in the EU).

Safety and Regulation:

- Toxic if ingested in significant amounts.
- Can cause skin or eye irritation.
- Not recommended for use in food or skin-care products in some regions due to concerns about reproductive toxicity (especially involving boron compounds).
- Always follow usage instructions and safety guidelines

DIAGRAM: 10 BORAX

**METHYL PARAFFIN:**

Methyl paraffin is an older or less precise term that generally refers to a saturated hydrocarbon in the alkane family, specifically a branched-chain alkane with a methyl group attached.

More Precisely:

- Paraffins = alkanes (saturated hydrocarbons, C_nH_{2n+2})
- Methyl paraffin = paraffin with at least one methyl ($-CH_3$) branch, also known as an Iso paraffin or branched alkane

Examples:

- n-butane (C_4H_{10}) → straight-chain paraffin
- isobutane (methylpropane) → a methyl-substituted paraffin

So "methyl paraffin" might refer to:

- A specific branched hydrocarbon (e.g. isobutane, isopentane)
 - A mixture of branched alkanes, sometimes used in cosmetics, fuels, or lubricants
- Common Uses:**
- Cosmetics and personal care: Sometimes called isoparaffins, these act as emollients or solvents in creams, lotions, and hair products.
 - Fuel industry: Branched alkanes have better combustion characteristics and are
 - Lubricants: Used in synthetic oils for their stability and flow properties

DIAGRAM: 11 METHYL PARAFFIN



MATERIALS AND METHODS:

Ants were used in the formulation of the face cream:

- Pineapple extract – natural source of vitamin C and bromelain (skin brightening, exfoliating)
 - Turmeric powder (Curcuma longa) – contains curcumin (anti-inflammatory, antioxidant)
 - Beeswax – emulsifying and thickening agent
 - Cocoa butter – emollient and moisturizer
 - Glycerin – humectant for hydration
 - Rose oil – fragrance and skin-soothing agent
 - Distilled water – aqueous phase
 - Preservative (e.g., phenoxyethanol) – to prevent microbial contamination
 - Emulsifying agent (e.g., cetyl alcohol or stearic acid) – to form stable emulsion
- All ingredients were sourced from certified cosmetic-grade suppliers.

2. Method:

Step 1: Preparation of Extracts

- Fresh pineapple was juiced and filtered to obtain a clear extract.
- Turmeric was used in powdered form or infused in a small quantity of hot water and filtered.

Step 2: Oil Phase Preparation

- Beeswax, cocoa butter, and emulsifying agents were weighed and melted together at 70-75°C to form the oil phase.

Step 3: Aqueous Phase Preparation

- Glycerin, distilled water, pineapple extract, and turmeric extract were mixed and heated to the same temperature (70-75°C).

Step 4: Emulsion Formation

- The hot aqueous phase was slowly added to the oil phase with continuous stirring using a homogenizer or mechanical stirrer until a uniform emulsion formed.

Step 5: Cooling and Additives Step 6: Packaging

- The prepared cream was filled into sterilized containers and stored in a cool, dry place.

Extraction Process:

1. Pineapple Extract Preparation:

- Materials Used: Fresh ripe pineapple, muslin cloth, blender. Procedure:
- Fresh pineapple was washed, peeled, and cut into small pieces.
- The pieces were blended using a clean mixer to obtain a smooth pulp.
- The pulp was filtered through a muslin cloth to separate the juice.
- The obtained juice (pineapple extract) was stored in a clean, airtight container and refrigerated until use.

2. Turmeric Extract Preparation:

Option A: Using Turmeric Powder Directly (Simple Method):

- High-quality turmeric powder was weighed and added directly to the aqueous phase during formulation.

Option B: Water-Based Extraction (More Refined):



- Materials Used: Turmeric rhizomes or powder, distilled water, muslin cloth. Procedure:
- 1. Fresh turmeric rhizomes were cleaned, peeled, and ground into a paste (or turmeric powder was used directly).
- 2. The paste/powder was mixed with a small amount of distilled water and gently heated (not exceeding 60°C) for 15-20 minutes.
- 3. The mixture was allowed to cool and then filtered through a muslin cloth to obtain a clear extract.
- 4. The extract was stored in a clean container and refrigerated for later use.



RESULT:

- Hydration: The cream effectively moisturized the skin, improving skin hydration levels.
- Brightening: Notable improvement in skin tone, with a reduction in dark spots and pigmentation due to pineapple and turmeric extracts.
- Anti-inflammatory: Reduced redness and inflammation, particularly beneficial for acne-prone skin.
- Texture: Smooth, non-greasy texture that was easy to apply and absorbed quickly.
- Skin Compatibility: No irritation or allergic reactions observed, suitable for most skin types.
- Overall Effectiveness: Enhanced skin appearance, with a radiant and smoother complexion.

**FINISHED PRODUCT ANALYSIS OF FACE CREAM:****DISCUSSION:**

		ADRIAN HEALTHCARE PRIVATE LIMITED	
		Registered office: Rudraksha, Plot No. 79/A, Gut No. 4, New Kanchan Nagar, Nakshatrawadi, Paithan Road, Ch. Sambhaji Nagar (MH) India 431001 Factory Add: Plot No. 27, Gut No.42, Behind Mahaveer Steel, Mumbai Highway, Karodi Aurangabad, India-431136 CIN No.: U32503MH2023PTC406932	
☎ +919923660650, +919823660650		✉ rv.adrian@gmail.com , raj@adrian.in , vithal@adrian.in	
Finished product analysis of Pineapple and turmeric face cream			
Sr. No.	Test	Specification	Observation
1	Description	A smooth, pale yellow cream with mild fruity and herbal aroma	A smooth pale-yellow cream with characteristic aroma
2	pH	5.0 – 6.5	5.7
3	Appearance & Texture	Smooth and non-greasy, easily spreadable	Smooth, soft texture, spreads evenly
4	Net Filled Volume	As per label claim (e.g., NLT 50 g ± 3 g)	10 g
5	Stability (at RT and 40°C)	No phase separation, no discoloration, no foul odor	Complies
6	Identification By (TLC or suitable test)		
A	Pineapple juice	Complies with Test	Complies
B	Potato juice	Complies with Test	Complies
C	Vitamin E	Complies with Test	Complies
D	Turmeric powder	Complies with Test	Complies
E	Beeswax	Complies with Test	Complies
F	Cocoa butter	Complies with Test	Complies
G	Rose oil	Complies with Test	Complies
H	Liquid paraffin	Complies with test	Complies
I	Glycerine	Complies with test	Complies
J	Flaxseed oil	Complies with test	Complies
7	Microbial limit Test:		
a	Total Bacterial Count	NMT 10 ⁵ CFU / ml	Not <1000 ^{CFU} / ml
b	Total fungal Count	NMT 10 ² CFU / ml	Not <10 CFU / ml
c	<i>E. Coli</i>	Absent / ml	Complies
d	<i>Salmonella</i>	Absent / 10 ml	Complies
e	<i>Pseudomonas aeruginosa</i>	Absent / ml	Complies
f	<i>Staphylococcus aureus</i>	Absent / ml	Complies
			
		12/05/2025 Managing Director Rajendra Jadhav	

The formulated pineapple and turmeric face cream showed excellent results in improving skin hydration, brightness, and reducing inflammation. The vitamin C and bromelain from pineapple helped lighten dark spots and exfoliate the skin, while curcumin in turmeric provided strong anti-inflammatory and antioxidant effects. The cream had a smooth texture, absorbed well, and caused no irritation, making it suitable for most skin types.

Overall, the combination of natural ingredients proved effective for enhancing skin health and appearance, with potential for use in daily skincare routines.

- Improved skin hydration: Moisturizing properties enhanced skin hydration.
- Brightening effect: Vitamin C and bromelain helped lighten dark spots.
- Anti-inflammatory benefits: Curcumin reduced inflammation and provided antioxidant effects.
- Smooth texture and absorption: The cream absorbed well, causing no irritation.

CONCLUSION:

The pineapple and turmeric face cream was successfully formulated using natural ingredients with proven skin benefits. The combination of pineapple extract (rich in vitamin C and bromelain) and turmeric powder (containing curcumin) provided effective hydration, skin brightening, and anti-inflammatory properties. The cream showed good stability, skin compatibility, and a pleasant texture, making it suitable for regular cosmetic use.

Based on the evaluation, this herbal formulation holds potential as a safe and effective natural skincare product for improving overall skin tone, texture, and health.

FUTURE SCOPE:

- Advanced Formulations: Future studies can focus on enhancing the cream by using Nano formulations or encapsulated extracts for better skin penetration and stability of active ingredients like curcumin and vitamin C.
- Clinical Trials: Conducting long-term clinical trials on a larger population can validate the cream's safety and efficacy across different skin types and age groups.
- Additional Herbal Ingredients: Incorporating other natural ingredients such as aloe vera, green tea, or niacinamide may further boost the cream's effectiveness for specific skin concerns like acne or aging.
- Product Diversification: The formulation can be adapted into other skincare products like serums, gels, or masks, expanding its commercial potential.
- Preservative-Free or Organic Versions: Research into natural preservatives could lead to 100% organic versions for users seeking chemical-free skincare solutions.
- Sustainability and Packaging: Exploring eco-friendly packaging and sustainable sourcing of raw materials can make the product more appealing to environmentally conscious consumers.

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