



Formulation And Evaluation Of Multipurpose Herbal Cream

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ABSTRACT :

Herbal multipurpose creams offer a natural and holistic approach to skincare, combining botanical ingredients with therapeutic properties. This study focuses on formulating an herbal multipurpose cream enriched with butterfly pea flower (*Clitoria ternatea*), cocoa butter, honey, and neem (*Azadirachta indica*) to provide hydration, nourishment, and protection for various skin concerns.[1] Butterfly pea flower is rich in antioxidants that help improve skin elasticity and reduce oxidative stress. Cocoa butter deeply moisturizes and enhances skin barrier function, while honey acts as a humectant with antibacterial properties, promoting skin healing.[2] Neem, known for its antimicrobial and anti-inflammatory effects, supports acne-prone and sensitive skin. The synergistic action of these herbal ingredients results in a versatile cream suitable for moisturizing, soothing, and revitalizing the skin, making it an effective natural skincare solution.[3]

KEYWORDS: Cosmetic, Herbal cream, Butterfly Pea Flower, Neem, Honey, Cocoa butter.

INTRODUCTION:

Herbal multipurpose creams offer a natural and holistic approach to skincare, combining botanical ingredients with therapeutic properties. This study focuses on formulating an herbal multipurpose cream enriched with butterfly pea flower (*Clitoria ternatea*), cocoa butter, honey, and neem (*Azadirachta indica*) to provide hydration, nourishment, and protection for various skin concerns.

Multipurpose herbal creams are natural skincare formulations designed to provide moisturization, nourishment, protection, and therapeutic benefits to the skin. These creams are enriched with herbal extracts, essential oils, and natural emollients to address various skin concerns, including dryness, acne, inflammation, aging, and minor wounds. With increasing awareness of natural and chemical-free skincare, herbal creams have gained popularity due to their biocompatibility, safety, and minimal side effects. Herbal ingredients offer a holistic approach to skincare by providing antioxidant, anti-inflammatory, antimicrobial, and healing properties.[4]

Butterfly pea flower (*Clitoria ternatea*) is a potent natural ingredient with various skin-enhancing properties due to its rich composition of antioxidants, flavonoids, and peptides. Its multipurpose activity on the skin includes:

1. Antioxidant Protection – Rich in anthocyanins, butterfly pea flower helps fight oxidative stress, reducing signs of aging like fine lines, wrinkles, and dullness.
2. Skin Brightening – It naturally enhances skin tone, reduces pigmentation, and provides a radiant glow by improving blood circulation.
3. Hydration & Moisture Retention – Helps lock in moisture, keeping the skin soft, supple, and well-hydrated.
4. Anti-Inflammatory Action – Soothes irritated, sensitive, or inflamed skin, making it beneficial for eczema, redness and allergic reactions.
5. Acne and Blemish Control – Its antibacterial properties help combat acne-causing bacteria and reduce breakouts and blemishes.
6. Collagen Boosting – Supports skin elasticity and prevents premature aging by promoting collagen synthesis.
7. UV Protection – Contains natural compounds that help shield the skin from UV damage, reducing sun-induced pigmentation and aging.[5]

DRUG PROFILE:**BUTTERFLY PEA FLOWER :**

Family: Fabaceae

Biological Source: Butterfly pea, is a perennial herbaceous plant from the Fabaceae family.

Biological Name: Clitoria ternatea L.

Chemical Constituents: Anthocyanins, Flavonoids, Tanins, Alkaloids, Saponins, Peptides, Phenolic Compounds.

Benefits of Butterfly Pea Flower for Skin:1. Rich in Antioxidants:-

Contains anthocyanins, which help fight free radicals, reducing premature aging and protecting skin from environmental damage.

2. Boosts Collagen Production:-

The flavonoids in butterfly pea flower help stimulate collagen and elastin production, promoting firmer, youthful skin.

3. Hydrates and Nourishes:-

Often used in skincare formulations to provide deep hydration, making skin appear plumper and more radiant.

4. Anti-Inflammatory Properties:-

Regular use may help reduce hyperpigmentation, dark spots, and dullness, giving skin a natural glow.

5. Anti-Aging Effects:-

Helps reduce fine lines, wrinkles, and sagging skin due to its potent antioxidant content.[6]

NEEM :

Family: Mahogany

Biological Source: Neem leaves are collected from Neem tree, Azadirachta indica

Biological Name: Azadirachta indica

Chemical Constituents: Flavonoids, Phenols, Tannins, Vitamins, Minerals, Limonoids

Benefits of Neem for Skin:1. Treats Acne & Pimples:-

Neem has strong antibacterial properties that help fight acne-causing bacteria, reducing breakouts and preventing future ones.

2. Controls Excess Oil:-

It helps regulate sebum production, making it beneficial for oily and acne-prone skin.

3. Soothes Irritated Skin:-

Its anti-inflammatory properties help calm redness, itching, and swelling, making it great for eczema, psoriasis, and other skin conditions.

4. Fades Dark Spots & Pigmentation:-

Regular use of neem can help lighten scars, dark spots, and pigmentation, giving the skin a more even tone.

5. Anti-Aging Benefits:-

Neem is packed with antioxidants that fight free radicals, reducing fine lines, wrinkles, and other signs of aging.

6. Deep Cleans & Unclogs Pores:-

Its antibacterial and detoxifying properties help cleanse the skin, removing dirt, toxins, and impurities from the pores.

7. Heals Wounds & Skin Infection:-

Due to its antifungal and antiseptic properties, neem can speed up the healing of wounds, cuts, and minor skin infections.[7]

Honey

Family: Apidae

Biological Source: Derived the bees from flower nectar, pollen, and other plant secretions.

Biological Name: Apis

Chemical Constituents: Carbohydrates, Water, Minerals, Vitamins, Enzyme, Organic Acids.

Benefits of Honey for Skin:1. Deeply Moisturizes & Hydrates:-

Honey is a natural humectant, meaning it draws moisture from the air into the skin, keeping it soft and hydrated.

2. Fights Acne & Bacteria:-

Contains antibacterial and antimicrobial properties that help kill acne-causing bacteria and reduce breakouts. Hydrogen peroxide and methylglyoxal in honey help disinfect and heal acne wounds.

3. Soothes & Heals Irritated Skin:-

Anti-inflammatory properties help calm redness, swelling, and irritation, making it great for conditions like eczema and psoriasis.

4. Brightens Skin & Fades Scars:-

Gently exfoliates the skin, removing dead cells and promoting an even skin tone. Helps fade acne scars, dark spots, and hyperpigmentation over time.

5. Slows Down Aging & Reduces Wrinkles:-

Rich in antioxidants that fight free radicals, reducing fine lines and wrinkles. Boosts collagen production, improving skin elasticity and firmness.

6. Heals Wounds & Minor Burns:-

Has natural wound-healing properties, speeding up the recovery of cuts, burns, and sunburns. Used in traditional medicine for treating wounds due to its antiseptic nature.[8]

VITAMIN E :

Vitamin E is a popular ingredient in herbal shampoos due to its antioxidant, moisturizing, and scalp-nourishing properties. It enhances hair health by preventing oxidative stress, promoting hair growth, and improving scalp condition.

Benefits of Vitamin E for Skin:**1. Powerful Antioxidant Protection:-**

Neutralizes free radicals that cause premature aging, wrinkles, and skin damage. Protects skin from environmental stressors like pollution and UV rays.

2. Deep Moisturization:-

Acts as a natural emollient, preventing dryness and keeping skin soft and hydrated. Helps repair the skin barrier and locks in moisture, especially for dry skin.

3. Fades Scars & Dark Spots:-

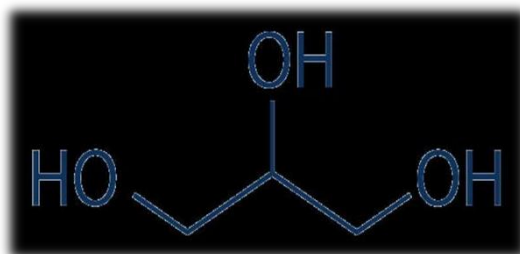
Promotes skin regeneration, reducing the appearance of acne scars, dark spots, hyperpigmentation. Helps heal minor wounds and burns faster.

4. Reduces Signs of Aging:-

Boosts collagen production, improving skin elasticity and reducing fine lines and wrinkles. Prevents oxidative stress, which leads to sagging and dull skin.

5. Soothes & Repairs Damaged Skin:-

Has anti-inflammatory properties that calm redness, irritation, and sunburn. Beneficial for skin conditions like eczema and psoriasis.[9]

GLYCERINE :

Chemical Name: Trihydric alcohol

Formula: C₃H₈O₃

Structure: Glycerine is a simple polyol (sugar alcohol) compound. It contains three hydroxyl (–OH) groups, which are responsible for its hygroscopic (water-attracting) properties.

Appearance: It is a colorless, odorless, viscous liquid that is sweet-tasting and non-toxic.

Benefits of Glycerine for Skin:**1. Deep Hydration & Moisture Retention:-**

Helps to maintain the skin's natural moisture barrier, reducing water loss.

2. Softens & Smoothens Skin:-

Works as an emollient, making the skin soft, smooth, and supple. Ideal for rough, dry, or flaky skin.

3. Soothes Irritated & Sensitive Skin:-

Has anti-inflammatory properties that calm redness, itching, and irritation. Suitable for eczema, psoriasis, and other sensitive skin conditions.

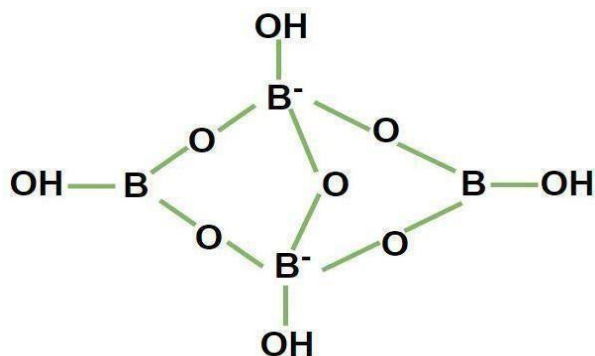
4. Fights Acne & Controls Oil Production:-

Non-comedogenic, meaning it doesn't clog pores.

Helps balance sebum production, making it beneficial for both dry and oily skin types.

5. Acts as a Natural Skin Cleanser:-

Removes dirt and impurities without stripping the skin of its natural oils. Helps maintain a balanced skin pH.[10]

Borax

Borax is salt, hydrate or anhydrous borate of sodium. It is colourless crystalline solid that dissolve in water to make basic solution. It is use as cleaner. It also found in household product like –toothpaste and mouthwashes. Also used in cosmetic like lotions, skin, cream, moisturizers, sunscreen etc.

Molar mass: 381.37g/mol

Formula: $\text{Na}_2 [\text{B}_4\text{O}_5 (\text{OH})_4] \cdot 8\text{H}_2\text{O}$

IUPAC name- Sodium tetraborate decahydrate

Melting point: 743°C

Appearance: White or colourless crystalline solid.[11]

LAVENDER OIL :

Family: Lamiaceae

Biological Source: Extracted from the flowers and top growth of the lavender plant.

Biological Name: Lavandula

Chemical Constituents: linalool, linalyl acetate, 1,8-cineole, camphor, and terpinen-4-ol.

Benefits of Lavender oil for Skin:**1. Anti-Aging & Wrinkle Reduction:-**

Rich in antioxidants that fight free radicals, reducing fine lines and wrinkles. Boosts collagen production for firmer, youthful-looking skin.

2. Moisturizes Dry Skin:-

Works well for dry and dehydrated skin by locking in moisture. Best when mixed with carrier oils like coconut or jojoba oil.

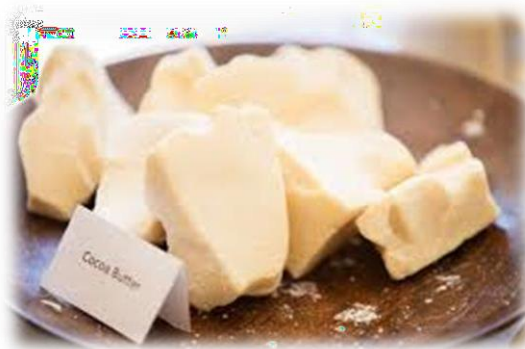
3. Brightens & Evens Skin Tone:-

Helps fade dark spots, scars, and hyperpigmentation for a clearer complexion.

4. Calms Stress & Promotes Relaxation:-

The aroma of lavender reduces stress, which can help prevent stress-related skin issues .

Acts as a Natural Insect Repellent & Soothes Bug Bites:- Keeps mosquitoes and bugs away while soothing itchy bites.[12]

COCOA BUTTER :

Family: Malvaceae

Biological source: Theobroma cacao seeds

Biological name: Theobroma cacao

Chemical constituents: Fatty acids (stearic acid, palmitic acid, oleic acid) ,Triglycerides, Polyphenols, Vitamin E.

Benefits of Cocoa Butter for Skin :

1. Moisturizes and softens skin :- deep hydration.
2. Anti-inflammatory :-soothes irritation.
3. Antioxidant :- protects against free radical damage.
4. Healing properties :- supports wound healing and reduces scars.
5. Improves skin elasticity :- helps prevent stretch marks.[13]

FORMULATION TABLE :

Sr.No.	Ingredients	Quantity	Use
1	Butterfly Pea Flower	2-5 %	Antioxidant
2	Neem	2-4 %	Antibacterial
3	Honey	3-5 %	Moisturizing
4	Vitamin E	1-2 %	Protective
5	Glycerine	3-7 %	Humectant
6	Borax	0.5-1 %	Emulsifier
7	Lavender Oil	0.2-1 %	Fragrance
8	Cocoa Butter	7-8 %	Emulsifying agent
9	Liquid Paraffin	5-10 %	Emollient
10	Methyl Praben	0.2-0.5 %	Preservative

MATERIAL AND METHOD:**1. SELECTION OF RAW MATERIALS:**

The materials for a formulation were selected on the basis study of different brief literature review and surfing of general and publication.

2. COLLECTION OF RAW MATERIALS:

Neem Azadirachta indica leaves and Butterfly Pea Flower were collected from local area.[14]

3. EXTRACTION PROCESS:

Extraction of Butterfly Pea Flowers: 1.Boil distilled water to about 80-90°C (not boiling, to preserve antioxidants).

2. Add the butterfly pea flowers and let them steep for 15-30 minutes.
3. Strain the liquid using a fine mesh or cheesecloth.

Cool and use immediately, or store in the refrigerator for up to 7 days.[15]



Extraction of Neem Leaves: Neem leaf was dried in an Oven at 50°C and prepared by blending 50g of the dried Leaf with 100ml of water for 10min. The crude extract Was filtered through muslin followed by Whatman No. 1 Filter paper prior to autoclaving (121°C for 15 mins) before Storage at - 20°C.[16]



FORMULATION PROCEDURE:

1. Water Phase (Phase A):

Heat distilled water to around 70-75°C. Dissolve borax in hot water.

Add butterfly pea extract, neem extract, honey, and glycerin while stirring.

2. Oil Phase (Phase B):

In a separate container, heat liquid paraffin , cocoa butter and Vitamin E to 70-75°C.

3. Emulsification:

Slowly add the oil phase into the water phase while continuously stirring to form an emulsion. Maintain stirring at moderate speed until a homogeneous mixture is formed.

4. Cooling & Preservation (Phase C):

Allow the mixture to cool to around 40°C.

Add methylparaben and lavender oil then mix well.

5. Final Adjustments:

Adjust pH if necessary (should be around 5.5-6.5).

Transfer the cream into suitable containers and store at room temperature.[17]

EVALUATION PARAMETER:

- **Physical evaluation:** In this test, the cream was observed for color, odor, texture, state .
- **Irritancy:** Mark the area (1 cm²) on the left-hand dorsal surface. Then the cream was applied to that area and the time was noted. Then it is checked for irritancy, erythema, and edema if any for an interval up to 24 h and reported.
- **Wash ability:** A small amount of cream was applied on the hand and it is then washed with tap water.
- **PH:** 0.5g cream was taken and dispersed in 50ml distilled water and then PH was measured by using digital PH meter.
- **Phase separation:** Prepared cream was kept in a closed container at a temperature of 25 - 100°C away from light. Then phase separation was checked for 24h for 30d. Any change in the phase separation was observed/checked.[18]
- **Spread ability:** The spreadability was expressed in terms of time in seconds taken by two slides to slip off from the cream, placed in between the slides, under certain load. Lesser the time taken for separation of the two slides better the spreadability. Two sets of glass slides of standard dimension were taken. Then one slide of suitable dimension was taken and the cream formulation was placed on that slide. Then other slide was placed on the top of the formulation. Then a weight or certain load was placed on the upper slide so that the cream between the two slides was pressed uniformly to form a thin layer. Then the weight was removed and excess of formulation adhering to the slides

was scrapped off. The upper slide was allowed to slip off freely by the force of weight tied to it. The time taken by the upper slide to slip off was noted.

$$\text{Spread ability} = m \times l/t$$

Where,

- M= Standard weight which is tied to or placed over the upper slide
- L= length of a glass slide (5cm)
- T= time taken in seconds.[19]

Greasiness: Here the cream was applied on the skin surface in the form of smear and checked if the smear was oily or grease-like.[20]

RESULTS AND DISCUSSION :

The cream displayed desirable physical, chemical and other properties. Below is a summarized table:

Physical Parameter:-

Parameter	Observation	Discussion
Appearance	Smooth,creamy,light brown color	Cocoa butter, Butterfly pea flower and Honey contributed to color and texture.
Odor	Pleasant, mild herbal scent	Lavender oil provided an aromatic fragrance.
Texture	Soft, smooth, non-sticky texture	Cocoa butter, Liquid paraffin and Lavender oil enhanced comfort.
Spreadability	Easy, uniform spread	Glycerine and Liquid Paraffin improved glide .

Table 1: Physical Parameter of Cream

Chemical Parameter:-

Parameter	Observation	Discussion
pH	5.8(skin-friendly range:5.5-6.5)	Suitable for all skin types, avoid skin irritation.
Stability	No phase separation	Borax stabilized the emulsion.

Table 2: Chemical Parameter of Cream

Other Parameter:-

Parameter	Observation	Discussion
Antibacterial effect	No Redness or Inflammation on test area	Neem's antibacterial properties helped protect the skin
Moisturizing effect	Skin felt soft and hydrated for 6 to 8 hours	Honey, Glycerine and Vitamin E provided deep hydration.

Table 3: Other Parameter of Cream

DISCUSSION :

- **Herbal synergy:** The combination of honey, neem, butterfly pea, and lavender oil provided a moisturizing, antibacterial, antioxidant, and soothing effect — ideal for multipurpose use (hydration, healing, and skin protection).
- **Spreadability and texture:** The cream spread smoothly without leaving a sticky residue, thanks to glycerine, liquid paraffin, and cocoa butter.
- **Preservation and stability:** Methyl paraben maintained microbial stability over 4 weeks of observation, while borax ensured a stable, uniform cream consistency.

- **Skin compatibility:** The pH value and mild formulation made the cream suitable for sensitive and normal skin types without signs of irritation.



CONCLUSION:

The formulated multipurpose herbal cream — enriched with Honey, Neem, Butterfly Pea Flower, Borax, Glycerine, Vitamin E, Lavender Oil, Liquid Paraffin, Cocoa Butter, and Methyl paraben — demonstrated excellent physical, chemical, and therapeutic properties.

- **Hydration and Nourishment:** Honey, glycerine, Cocoa Butter, and Vitamin E provided long-lasting moisture and nourishment, leaving the skin soft and smooth.
- **Antibacterial and Antioxidant Benefits:** Neem and Butterfly Pea extract contributed antibacterial, anti-inflammatory, and antioxidant effects, promoting healthy skin.
- **Soothing and Calming:** Lavender Oil enhanced the cream's soothing properties, making it ideal for sensitive or irritated skin.
- **Spreadability and Texture:** The cream had a smooth, non-greasy, easily spreadable texture, aided by Liquid Paraffin and Cocoa Butter.
- **Stability and Shelf-life:** Borax ensured a stable emulsion, while Methyl Paraben preserved the formulation effectively, preventing microbial growth over an extended period.
- **Skin Compatibility:** The pH remained within a skin-friendly range, minimizing the risk of irritation, making it suitable for daily use on various skin types.

Final verdict:

The cream proved to be a versatile, effective, and skin-friendly formulation — combining hydration, protection, healing, and soothing effects — making it ideal for Multipurpose Skincare.

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