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# Formulation and Evaluation of Herbal Cold Cream Using Hibiscus Rosa Sinensis and Aloe Vera

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**ABSTRACT:**

phase separation, The rising awareness and preference for natural and herbal products in skincare have led to a significant shift toward the development of cosmetics derived from plant-based ingredients. The present study aims to formulate and evaluate an herbal cold cream using *Hibiscus rosa-sinensis* (commonly known as hibiscus) and *Aloe vera*, two botanicals recognized for their rich phytochemical profile and skin-beneficial properties. The primary objective was to create a cold cream that provides effective moisturization, nourishment, and protection to the skin, while minimizing the use of synthetic chemicals that often cause irritation and other side effects.

*Hibiscus rosa-sinensis* is widely known for its antioxidant, anti-aging, and natural exfoliating properties, due to the presence of flavonoids, anthocyanins, and alpha hydroxy acids (AHAs). These components help in improving skin texture, promoting cell turnover, and reducing pigmentation. On the other hand, *Aloe vera* is revered in both traditional and modern skincare for its excellent moisturizing, soothing, anti-inflammatory, and healing abilities. It contains polysaccharides, vitamins, and enzymes that aid in skin hydration, repair, and rejuvenation.

In this study, herbal extracts were prepared using standardized procedures, and a cold cream formulation was developed using the emulsification technique. The cream base included common excipients such as emulsifying wax, stearic acid, cetyl alcohol, and natural oils, blended in suitable proportions with the aqueous extracts of hibiscus and *Aloe vera*. The formulation was subjected to a series of evaluations to determine its physicochemical properties including pH, spreadability, viscosity, appearance, and homogeneity.

The final formulation showed an acceptable pH range suitable for topical application (close to skin's natural pH), smooth texture, pleasant fragrance, and high spreadability, indicating user comfort. The cream also remained stable over a testing period of 30 days, showing no signs of colour change, or microbial growth. A skin irritation test on human volunteers revealed no adverse reactions, confirming the formulation's safety for regular use.

**(KEYWORDS:** Herbal, Cold Cream, Hibiscus, Skin, Antioxidant, Phyto ingredients)

## INTRODUCTION:

In recent years, there has been a significant increase in the demand for herbal and natural products in the cosmetic and pharmaceutical industries. Consumers are increasingly aware of the potential side effects of synthetic chemicals and are turning towards safer, plant-based alternatives that offer therapeutic benefits along with cosmetic appeal. Herbal formulations are known for their biocompatibility, minimal side effects, and the presence of bioactive compounds that provide various skin benefits such as moisturization, healing, protection, and rejuvenation.

Cold creams are one of the most commonly used cosmetic preparations, especially in dry and cold climatic conditions. They are typically oil-in-water (O/W) emulsions that provide hydration, prevent dryness, and create a protective barrier on the skin. However, many commercially available cold creams contain synthetic ingredients, preservatives, and fragrances that can cause irritation, especially for sensitive skin types. Hence, there is a growing need to formulate cold creams using natural ingredients that not only provide the desired cosmetic benefits but also promote overall skin health.

This project focuses on the formulation and evaluation of a herbal cold cream using two widely recognized medicinal plants—*Hibiscus rosa-sinensis* and *Aloe vera*. *Hibiscus rosa-sinensis*, commonly known as hibiscus, is rich in antioxidants such as anthocyanins and flavonoids, which help fight skin aging and improve skin elasticity. It also contains natural alpha hydroxy acids (AHAs) that promote exfoliation and cell renewal. *Aloe vera* is known for its excellent moisturizing, soothing, and healing properties. It contains a wide range of bioactive compounds including vitamins, enzymes, amino acids, and polysaccharides that contribute to skin hydration and repair.

By incorporating the extracts of *Hibiscus rosa-sinensis* and *Aloe vera* into a cold cream base, the aim of this study is to develop a natural, skin-friendly formulation that provides effective moisturization and nourishment. The formulation is evaluated for key parameters such as pH, viscosity, spreadability,

stability, and skin compatibility to ensure its efficacy and safety. The study also highlights the potential of herbal formulations as sustainable alternatives to synthetic skincare products in the cosmetics industry.

## LITERATURE REVIEW:

Herbal cosmetics have been used since ancient times in various cultures for their therapeutic and beautifying properties. In the modern era, the revival of interest in herbal-based formulations is driven by increasing consumer awareness about the harmful effects of synthetic chemicals and the growing preference for eco-friendly, non-toxic, and sustainable skincare solutions.

Numerous studies have explored the use of plant extracts in cosmetic formulations for their efficacy, safety, and multi-functional benefits.

### 1. Herbal Cold Creams

Cold creams are semi-solid emulsions, typically composed of water and oil phases, designed to protect and moisturize the skin. They are particularly useful in treating dryness and maintaining skin hydration, especially in cold weather. Traditional cold creams often contain mineral oils and synthetic emulsifiers, which may cause comedogenic effects or allergic reactions. Researchers have thus focused on replacing these synthetic agents with natural oils, waxes, and herbal extracts to enhance biocompatibility and skin tolerance.

Studies such as those by Prashant et al. (2016) and Bhatia et al. (2019) demonstrated that cold creams formulated with herbal ingredients exhibit improved moisturizing effects and better skin compatibility.

Herbal extracts provide additional therapeutic effects such as anti-aging, anti-inflammatory, and antimicrobial properties.

### 2. Hibiscus rosa-sinensis

*Hibiscus rosa-sinensis*, commonly known as hibiscus, has been widely studied for its medicinal and cosmetic benefits. It contains natural antioxidants like anthocyanins, flavonoids, and polyphenols, which help in neutralizing free radicals and delaying the signs of skin aging (Vijayakumar et al., 2014).

The plant also contains natural alpha hydroxy acids (AHAs), which have exfoliating properties and assist in skin renewal by promoting cell turnover.

Kumar and Shukla (2017) noted the effectiveness of hibiscus extract in improving skin texture, tone, and elasticity when used in topical formulations. The extract also exhibits antimicrobial and anti-inflammatory activities, which make it suitable for sensitive and acne-prone skin.

### 3. Aloe Vera

*Aloe Vera* is one of the most widely used botanicals in the cosmetic and pharmaceutical industries. It is rich in vitamins (A, C, E, B12), enzymes, amino acids, and polysaccharides that provide hydration, promote healing, and reduce skin inflammation.

According to research by Surjushe et al. (2008), *Aloe vera* exhibits significant moisturizing, wound-healing, and anti-inflammatory properties, making it a key ingredient in skin-care formulations.

Numerous studies, including those by Hamman (2008) and Chithra et al. (1998), have supported the role of *Aloe Vera* in enhancing collagen production and improving skin elasticity. Its soothing effects also make it ideal for treating skin irritations and sunburns.

### 4. Combined Use in Formulations

The synergistic use of *Hibiscus rosa-sinensis* and *Aloe Vera* in skincare formulations combines the exfoliating, firming, and antioxidant effects of hibiscus with the moisturizing, soothing, and regenerative properties of *Aloe Vera*.

Together, these ingredients form an effective natural base for cold creams, offering comprehensive skincare benefits such as hydration, rejuvenation, and protection from environmental stressors.

A recent study by Rathi et al. (2020) on polyherbal cosmetic formulations emphasized the benefits of combining multiple plant extracts to achieve enhanced results compared to single-ingredient products.

***AIM:-***

Formulation and Evaluation of Herbal cold cream by Hibiscus Rosa sinensis and Aloe Vera gel

## OBJECTIVE:

The primary objective of this study is to formulate and evaluate a herbal cold cream using *Hibiscus rosa-sinensis* and *Aloe Vera* extracts, with the aim of developing a safe, effective, and natural skincare product. The specific objectives of the study are as follows:

1. **To explore the cosmetic and therapeutic potential of *Hibiscus rosa-sinensis* and *Aloe Vera***

- Analyse the phytochemical properties of the selected herbs relevant to skincare, such as antioxidant, anti-inflammatory, moisturizing, and exfoliating effects.

2. **To prepare aqueous or hydro alcoholic extracts of *Hibiscus rosa-sinensis* flowers and *Aloe vera* gel**
   - Utilize standard extraction techniques to obtain bioactive-rich extracts suitable for topical use.
3. **To formulate a stable herbal cold cream using the prepared extracts**
   - Develop an oil-in-water (O/W) emulsion-based cold cream using natural and compatible excipients.
4. **To evaluate the physicochemical properties of the formulated cream**
   - Assess pH, spread ability, viscosity, texture, homogeneity, appearance, and stability under various storage conditions.
5. **To perform skin irritation and compatibility tests on human volunteers**
   - Ensure the formulated cream is safe, non-irritating, and suitable for regular application on human skin.
6. **To compare the performance of the herbal cold cream with standard or commercially available products**
   - Evaluate the moisturizing and soothing efficacy of the herbal formulation in comparison with conventional cold creams.
7. **To promote the use of herbal ingredients in skincare formulations as an eco-friendly and sustainable alternative to synthetic cosmetics**
   - Highlight the benefits of natural ingredients in line with current trends in green cosmetics and holistic skincare.

***HUMAN SKIN:***

The **human skin** is the largest organ of the body and plays a vital role in protection, regulation, and sensation. It acts as a barrier between the internal organs and the external environment, defending against pathogens, harmful chemicals, and physical damage. It also helps regulate body temperature, prevents water loss, and enables the sensation of touch, heat, and pain.

**FUNCTIONS OF THE SKIN:**

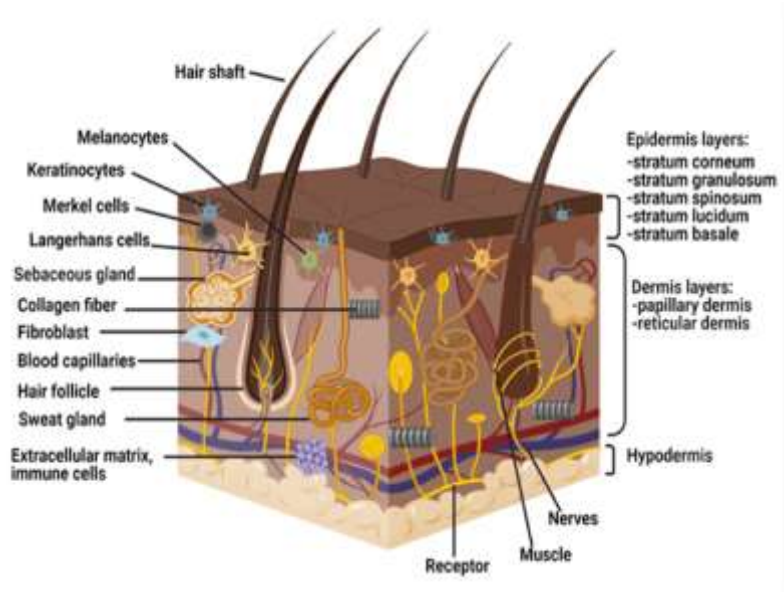
1. **Protection** – First line of defense against mechanical injury, UV radiation, pathogens, and harmful substances.
2. **Thermoregulation** – Regulates body temperature through sweating and vasodilation/constriction.
3. **Sensation** – Contains sensory receptors for pain, pressure, touch, and temperature.
4. **Excretion** – Eliminates waste through sweat.
5. **Vitamin D Synthesis** – Produces Vitamin D when exposed to sunlight.
6. **Absorption** – Absorbs certain substances (like topical medications and cosmetics).

**SKIN TYPES (RELEVANT IN COSMETICS):**

1. **Normal Skin** – Balanced moisture and oil production.
2. **Dry Skin** – Lacks moisture; may appear flaky or rough.
3. **Oily Skin** – Excess sebum production; prone to acne.
4. **Combination Skin** – Mix of oily and dry areas.
5. **Sensitive Skin** – Easily irritated by chemicals, fragrances, or weather conditions.

**SKIN AND HERBAL COSMETICS:**

- Skin is **highly receptive** to natural ingredients like plant extracts, essential oils, and herbal infusions.
- Herbs such as **Aloe vera** and **Hibiscus rosa-sinensis** enhance skin hydration, repair damage, and improve texture without causing irritation.
- Herbal cold creams are designed to **mimic the skin's natural barrier**, locking in moisture and protecting it from environmental stressors.




Human skin is the **largest organ** of the body and serves as a protective barrier between the internal organs and the external environment. It plays key roles in **protection, sensation, temperature regulation, and hydration**.

The skin is made up of **three main layers**:

1. **Epidermis** – The outermost layer that provides protection and contains melanin, which gives skin its colour.
2. **Dermis** – The middle layer that contains blood vessels, nerve endings, hair follicles, and oil/sweat glands. It provides strength and flexibility.
3. **Hypodermis (Subcutaneous layer)** – The deepest layer made of fat and connective tissue. It helps insulate the body and absorb shock.

The skin helps:

- Prevent **water loss**
- Protect against **germs and UV radiation**
- Sense **touch, pain, and temperature**
- Aid in **Vitamin D production** when exposed to sunlight

In cosmetics, it's important to use skin-friendly ingredients, especially for sensitive skin. Natural ingredients like **Aloe Vera** and **Hibiscus rosa-sinensis** are known to be gentle and beneficial for maintaining healthy, moisturized skin.

***COLD CREAM:***

**Cold cream** is a traditional cosmetic formulation used for **moisturizing, cleansing, and protecting** the skin. It is especially beneficial during cold or dry weather conditions, hence the name "cold cream." This product is generally formulated as a **water-in-oil (W/O) or oil-in-water (O/W) emulsion**, where the oily phase forms a protective barrier on the skin to prevent water loss.

Cold cream has been used since ancient times, with its origins dating back to **Galen**, a Greek physician from the 2nd century A.D., who is believed to have created the first version. The original cold cream was a simple mixture of **beeswax, rose water, and olive oil**, used for softening and soothing the skin.

Over time, formulations have evolved, but the core function remains the same: **hydration, protection, and skin nourishment**.

**FUNCTIONS OF COLD CREAM:**

1. **Moisturization**: Helps prevent dryness by sealing in moisture.
2. **Cleansing**: Removes dirt, oil, and makeup from the skin.
3. **Protection**: Shields the skin from harsh environmental factors like wind and cold.
4. **Soothing**: Calms irritated or sensitive skin.
5. **Softening**: Regular use improves skin texture and smoothness.

**ADVANTAGES OF HERBAL COLD CREAM:**

- Made with **natural, skin-friendly ingredients**.
- Less likely to cause **irritation or allergies**.
- Provide **additional therapeutic benefits** like anti-aging, anti-inflammatory, and healing effects.
- Ideal for all skin types, including **sensitive and acne-prone** skin.
- Environmentally friendly and in line with **green cosmetic trends**.

**APPLICATIONS OF COLD CREAM:**

- Daily **facial moisturizer**, especially in winter.
- **Night cream** for intense skin repair.
- **Makeup remover**.
- Skin barrier for **people exposed to harsh environments** (wind, cold, pollution).

**PREPARATION METHOD:**

The herbal cold cream was prepared using the **emulsification technique**, which involves the combination of aqueous and oil phases to form a stable cream. The key herbal ingredients used in the formulation were *Hibiscus rosa-sinensis* flower extract and *Aloe vera* gel, selected for their proven skin-soothing, moisturizing, and antioxidant properties.

***EXTRACTION OF HERBAL INGREDIENTS:***

**a) Preparation of Hibiscus Extract:**

- Fresh *Hibiscus rosa-sinensis* flowers were collected, washed, and shade-dried.
- The dried flowers were powdered and extracted using **aqueous or hydro alcoholic extraction**.
- The extract was filtered and concentrated using a water bath at 50–60°C until a semi-solid mass was obtained.

**b) Preparation of Aloe Vera Gel:**

- Fresh *Aloe vera* leaves were washed, and the outer green rind was removed.
- The inner clear gel was scooped out and blended to obtain a smooth consistency.
- The gel was filtered to remove fibers and stored in a clean container under refrigeration.

**INGREDIENTS:**

- **Hibiscus:** Improve Skin tone, Hyper pigmentation, discolouration, dark spots
- **Aloe Vera gel:** Anti-ageing, Anti Inflammatory, moisturizer, reduce acne and pimples
- **Rose oil:** Fragrance
- **Borax:** With emulsifying agent to form soap
- **Beeswax:** It gives thickness to the cream
- **Methyl p-hydroxy benzoate:** Preservative
- **Liquid paraffin:** Lubricating agent, alkaline agent

## HERBAL DRUG AND EXCIPIENT PROFILE:

1. **BESS WAX:**

**Beeswax** is a natural wax produced by honey bees of the genus *Apis*, most commonly the Western honey bee (*Apis mellifera*). Worker bees, usually between 12 to 18 days old, secrete wax from special glands located on the underside of their abdomen. These secretions appear as small, translucent flakes that the bees then chew and mix with saliva and other secretions to soften and mold into the familiar hexagonal cells of the honeycomb. The combs built from beeswax serve as storage units for honey and pollen, as well as nurseries for developing bee larvae.

Chemically, beeswax is composed primarily of esters of fatty acids and long-chain alcohols, along with hydrocarbons, free acids, and other trace compounds. It has a relatively high melting point, typically between 62 and 64 degrees Celsius (143 to 147 degrees Fahrenheit). The color of beeswax can vary, ranging from almost white to deep yellow or brown, depending on factors such as age, purity, and the pollen and propolis content.


Beeswax has a wide variety of uses, both in traditional practices and modern applications. In the household, it is commonly used to make candles that burn cleanly and slowly, as well as for wood and leather polish, and in eco-friendly food wraps. In the cosmetic and skincare industries, beeswax is a key ingredient in lip balms, lotions, creams, and soaps because of its emollient, protective, and anti-inflammatory properties. It helps to lock in moisture and provides a breathable barrier on the skin.

**2. BORAX:**

**Borax**, also known as sodium borate, sodium tetraborate, or disodium tetraborate, is a naturally occurring mineral composed of sodium, boron, oxygen, and water. It typically appears as a white, powdery substance that easily dissolves in water. Borax is often found in arid regions where seasonal lakes repeatedly evaporate, leaving behind deposits of minerals. Some of the largest commercial sources are located in the United States, Turkey, and South America.


Borax is widely recognized for its cleaning and disinfecting properties, making it a common ingredient in household cleaning products. It serves as a gentle abrasive and has the ability to soften water, enhancing the effectiveness of soaps and detergents. In addition to its cleaning uses, borax is also employed in pest control, particularly for ants and cockroaches, as it disrupts their digestive systems when ingested.

Beyond cleaning, borax is used in various industrial applications. It's a component in glass and ceramic production, where it improves durability and thermal resistance. It also plays a role in metallurgy, cosmetics, enamel glazes, and even in some fire retardants. In DIY and crafts, borax is popularly used to create slime, a gooey substance made with glue and borax solution.

Though borax is natural, it should still be handled with care. Ingesting large amounts or prolonged skin exposure can be harmful, and it's especially important to keep it away from children and pets. While it's often confused with boric acid, they are not the same compound and should not be used interchangeably without understanding their distinct properties and safety considerations.

### 3. LIQUID PARAFFIN:

**Liquid paraffin**, also known as mineral oil, is a highly refined, clear, odourless oil derived from petroleum. It is composed mainly of saturated hydrocarbons and is known for its stability, non-reactivity, and lubricating properties. Liquid paraffin comes in two main grades: medicinal (or pharmaceutical) grade and industrial grade. The medicinal variety is purified for use in health and cosmetic applications, whereas the industrial grade is used in machinery and manufacturing.

In the medical field, liquid paraffin is commonly used as a **laxative** to treat constipation. It works by softening the stool and easing its passage through the intestines. However, it is generally recommended for short-term use, as long-term usage can interfere with the absorption of nutrients and fat-soluble vitamins. It is also applied externally as a moisturizer for dry, scaly, or irritated skin, forming a protective barrier that locks in moisture.


Cosmetically, liquid paraffin is a key ingredient in many skin and hair care products such as creams, lotions, and ointments. Its emollient properties help smooth and soften the skin without clogging pores, making it suitable for sensitive or dry skin types. It is often used in baby oils, makeup removers, and other personal care items.

### 4. HIBISCUS POWDER:

**Hibiscus powder** is a finely ground form of dried hibiscus petals, derived primarily from the *Hibiscus sabdariffa* plant. Deep reddish-purple in colour and slightly tangy in flavour, it is rich in antioxidants, vitamins (especially vitamin C), and minerals. Known for its wide range of health and beauty benefits, hibiscus powder has been used for centuries in traditional medicine, skincare, and hair care across various cultures, particularly in Asia and Africa.

One of the most popular uses of hibiscus powder is in **herbal teas and drinks**. When steeped in hot water, it produces a vibrant red infusion with a tart, cranberry-like flavour. This tea, often called *sorrel* or *agua de Jamaica*, is known to help lower blood pressure, support liver function, and boost the immune system thanks to its antioxidant content. Some studies suggest that hibiscus may also help manage cholesterol levels and improve metabolism.


In **skincare**, hibiscus powder is praised for its natural acids that gently exfoliate the skin, promoting a smoother and more radiant complexion. It is often referred to as a "natural Botox" plant because it is thought to improve skin elasticity and reduce the appearance of fine lines. Hibiscus also contains mucilage, which helps retain moisture in the skin, making it a popular ingredient in face masks and scrubs.

For **hair care**, hibiscus powder is commonly used in masks and oils to strengthen hair roots, promote growth, and reduce dandruff. It helps maintain scalp health and is often mixed with other Ayurvedic herbs like amla, fenugreek, or bhringraj for enhanced results. The powder can even enhance natural hair colour, especially in dark or red-toned hair, giving it a subtle reddish tint over time.

**5. ALOE VERA GEL:**

**Aloe Vera gel** is a clear, thick substance extracted from the fleshy leaves of the *Aloe Vera* plant, a succulent known for its soothing and healing properties. It has been used for thousands of years in traditional medicine and skincare due to its remarkable ability to calm inflammation, promote healing, and hydrate the skin. The gel is composed mostly of water, along with a mix of vitamins (like A, C, and E), enzymes, amino acids, and antioxidants that contribute to its therapeutic benefits.

In **skincare**, Aloe Vera gel is widely appreciated for its cooling and moisturizing effects. It is often used to treat **sunburns, minor cuts, insect bites, and skin irritations**, thanks to its anti-inflammatory and antimicrobial properties. The gel penetrates the skin quickly, providing instant relief while promoting faster healing. It's also a popular ingredient in creams, lotions, and after-sun products, and is suitable for sensitive or acne-prone skin due to its non-greasy, non-comedogenic nature.


**Haircare** also benefits from aloe vera gel, as it helps to soothe itchy scalps, reduce dandruff, and condition hair. It can be applied directly to the scalp or mixed with oils and conditioners to nourish the hair and support healthy growth. The gel’s enzymes can help remove dead skin cells and clear blocked pores on the scalp, fostering a healthier environment for hair follicles.

When consumed in small, food-grade quantities, **aloe vera gel** may support **digestive health**, aid in detoxification, and help reduce inflammation in the gut. However, not all aloe products are safe for ingestion, and it's essential to use only those labeled as food-safe and consult a professional before internal use.

**ROSE OIL:**

**Rose oil** is an essential oil extracted from the petals of various types of roses, most notably *Rosa damascena* and *Rosa centifolia*. It is highly valued for its rich, floral fragrance and its numerous therapeutic properties, making it a prized ingredient in perfumery, aromatherapy, and skincare. The extraction process is delicate and labor-intensive—often involving steam distillation or solvent extraction—and it takes thousands of rose petals to produce just a small amount of oil, which is why rose oil is one of the most expensive essential oils in the world.

In **aromatherapy**, rose oil is celebrated for its calming and uplifting effects on the mind. It is believed to help alleviate stress, anxiety, and symptoms of depression by promoting a sense of emotional well-being. The scent of rose oil can be deeply comforting, making it a popular choice for use in diffusers, massage oils, or calming baths.

In **skincare**, rose oil is known for its anti-inflammatory, antiseptic, and moisturizing qualities. It is often found in facial serums, creams, and oils aimed at hydrating the skin, reducing redness, and improving overall skin tone. Its antioxidant content helps combat the effects of aging by encouraging skin regeneration and improving elasticity. Because of its gentle nature, rose oil is suitable for sensitive and mature skin types.

Additionally, rose oil is used in **natural remedies** for hormonal balance and menstrual discomfort, and in some cultures, it's believed to enhance libido and emotional connection, making it a common element in romantic blends or massages.

**FORMULATION:**

| Sr no. | Ingredients | Formulae |
|---|---|---|
| 1 | Hibiscus flowers Extract powder | 0.15 gm |
| 2 | Aloe Vera gel | 0.50 gm |
| 3 | Rose oil | Q.S |
| 4 | Borax | 0.20 gm |
| 5 | Beeswax | 4 gm |
| 6 | Methyl p-hydroxy benzoate | 0.02 gm |
| 7 | Liquid paraffin | 8 gm |
| 8 | Water | 7 ml |

**PROCEDURE FOR FORMULATION:**

1. **Oil Phase Preparation:**
   - Beeswax, stearic acid, and coconut oil (or almond oil) were weighed and melted together in a beaker using a **water bath** at about 70–75°C.
2. **Aqueous Phase Preparation:**
   - In a separate beaker, borax was dissolved in distilled water and heated to the same temperature (70–75°C).
   - *Aloe Vera* gel and *Hibiscus rosa-sinensis* extract were added to the aqueous phase and mixed thoroughly.
3. **Emulsification:**
   - The aqueous phase was slowly added to the oil phase with **continuous stirring** using a mechanical stirrer or hand blender to form a **uniform emulsion**.
4. **Cooling and Addition of Perfume:**
   - The cream was allowed to cool down gradually to room temperature while stirring to avoid phase separation.
   - Once cooled, perfume or essential oil (if desired) was added and mixed uniformly.
5. **Storage:**
   - The prepared herbal cold cream was transferred into clean, airtight containers and labelled.
   - Stored in a cool, dry place for further evaluation and testing.

## EVALUATION OF HERBAL COLD CREAM AND RESULT:

After successful formulation of the herbal cold cream using *Hibiscus rosa-sinensis* flower extract and *Aloe Vera* gel, the following evaluation parameters were carried out to assess its physicochemical properties, stability, and performance:

1. **Organoleptic Properties**

The formulated cream was evaluated for colour, odour, and texture.

| Properties | Formulation |
|---|---|
| Colour | Light pink (due to hibiscus) |
| Odour | Pleasant |
| Texture | Smooth |
| State | Semi solid |

**2. pH Determination**

The pH of the cream was determined using a digital pH meter. The ideal skin-compatible pH lies between 4.5 and 6.5.

| Formulation | PH |
|---|---|
| F1 | 6.1 |

**3. Viscosity**

Viscosity was measured using a Brookfield viscometer at 25°C.

- **Result**: 28,500 ± 500 cps *(Indicates semi-solid, stable emulsion)*

| Formulation | Viscosity |
|---|---|
| F1 | 49090 |

**4. Spread ability**

Spread ability was determined by the slip and drag characteristics using a glass slide method.

- **Formula**:

$S=M\times L/T$

Where,

$S$ = Spread ability

$M$ = Weight tied to upper slide (g)

$L$ = Length moved (cm)

$T$ = Time taken (sec)

| Formulation | Time (sec) | Spread ability |
|---|---|---|
| F1 | 15 | 8.2 |

**5. Stability Studies**

The cream was subjected to stability testing at various temperatures (4°C, room temperature, and 40°C) over 30 days.

| Test | F1 |
|---|---|
| Thermal Stability | Stable, no phase separation |

**6. Wash ability of cream**

| Formulation | Wash Ability |
|---|---|
| F1 | Easily washable |

**7. Irritancy Test**

A patch test was conducted on volunteers (n=10) to assess any skin irritation or allergic reaction.

- **Result**: No signs of redness, itching, or inflammation were observed after 24 hours.

## CONCLUSION:

The present study successfully demonstrated the formulation and evaluation of an herbal cold cream incorporating *Hibiscus rosa-sinensis* flower extract and *Aloe Vera* gel. These natural ingredients were selected due to their well-documented skin-beneficial properties such as moisturizing, soothing, anti-inflammatory, and antioxidant effects.

The formulated cream showed excellent organoleptic properties with an appealing appearance, pleasant fragrance, smooth texture, and ease of application. The pH of the cream was found to be within the acceptable range for skin compatibility, ensuring minimal risk of irritation. Spread ability and viscosity results confirmed that the cream has desirable consistency and can be easily applied to the skin.

Stability studies conducted under different environmental conditions over a period of time showed that the cream remained stable without any signs of phase separation, discoloration, or degradation, indicating good shelf-life potential. Furthermore, the absence of skin irritation during patch testing confirmed its safety for topical use.

Overall, the herbal cold cream formulated using *Hibiscus rosa-sinensis* and *Aloe Vera* proved to be an effective, safe, and skin-friendly product. It presents a promising alternative to synthetic cosmetic formulations, meeting the increasing demand for natural, herbal-based skincare products in today's market.

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