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Research Article

Formulation And Evaluation of Herbal Cold Cream from Neem Oil

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ABSTRACT

The goal of the research was to develop a herbal cream for moisturizing, nourishing, whitening, and treating various skin diseases. The present study focuses on the formulation and evaluation of an herbal cold cream utilizing neem oil as the primary active ingredient. Neem oil is renowned for its potent antibacterial, antifungal, and anti-inflammatory properties, making it a valuable component in topical formulations intended for skincare. The cold cream was formulated using natural ingredients, including beeswax, emulsifying agents, and essential oils, to ensure optimal consistency, stability, and skin compatibility. A series of physicochemical evaluations were conducted to assess parameters such as pH, spread ability, viscosity, stability, and skin irritation potential. The formulated cream exhibited desirable organoleptic and physical characteristics, with a pH suitable for topical application and no signs of phase separation or microbial growth during stability testing. Preliminary skin irritation studies on volunteers confirmed the formulation's safety and suitability for use on human skin. The results suggest that neem oil-based herbal cold cream can serve as an effective, natural alternative for skin protection and moisturization, with added therapeutic benefits.


INTRODUCTION

They give elegancy to the skin and it is not that much greasy. Due to the oil phase, it gives emollience to the skin. The function of the cold cream is for restoring The cosmetics word derived from Greek 'kosmesticos' which means to adorn.

Cosmetics are products used to beautify skins to purify the skin. The cosmetics, according to the drug And cosmetics act is defined as articles intended to be rubbed, poured, sprinkled or sprayed on introduced into or otherwise applied to the human body or part there for cleaning beautifying, promoting, attractions or altering the

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appearance. Cosmetics products used extensively throughout world for maintaining general appearance of face and other body parts. Eg. Skin, eyes, hair, hand etc. herbal cosmetics are preparation which represent cosmetics associated with active bio- ingredients, nutraceuticals and pharmaceutical. These herbal cosmetics used as beauty products help in enhancing and conditioning properties of skin. The herbal extracts used in these formulations are all derived from natural plant sources without the use of any harmful synthetic drugs. The herbs extracted by these systems show a number of properties like anti-inflammatory, anti-bacterial, anti-septic, emollient and sometimes also show anti-cancer properties. Cold cream is the water in oil emulsion. Cold cream gives the prolonged contact time in the site of application as compared to the other semisolid dosage former formulation. moisture to dry skin; it allows eliminating the waste materials from the pores and also cools the body. It is easily watered washable and easy to wash away. They are non-irritating when applied on the skin. The water phase gives extra conservation to the skin. It gets liquefy at body temperature.

□ What Is Cold Cream...?

Cold cream is an emulsion of water and certain fats, usually including beeswax and various scent agents, designed to smooth skin and remove makeup. Cold cream is an emulsion of water in alarger amount of oil, unlike the oil in water emulsion of vanishing cream, so-called because it seems to disappear when applied on skin. The name “cold cream” derives from the cooling feeling that the cream leaves on the skin. Variations of the product have been used for nearly2000 years. Cold cream is an emulsion in which the proportion of fatty and oily material predominates, although when it is applied to the skin a cooling effect is produced due to slow

evaporation of the water contained in the emulsion. Cold cream is an example of a Water in-oil (W/O) emulsion. In cold cream, the major portion is the oil phase. Simply, the cold cream is an oil-based semi solid preparation. Cold cream is also known as Unguentum or Ceratum Refrigerans.. Generally, it contains mineral oil, beeswax, borax, and water. It is a soothing and cleansing cosmetic typically of oily and heavy consistency, used to soothe and cleanse the skin. It can be classified as a form of cleansing cream. Cold cream is mainly used for skin treatment (such as a facial mask or lip balm), due to its moisturizing properties. It can also be used to remove makeup and as shaving cream.



(Fig.No 0.1)

Advantages And Disadvantages of Cold Cream

• ADVANTAGES

1. Moisturizing and soothing properties:
2. Antibacterial properties;
3. Natural and gentle:
4. Anti-inflammatory properties:
5. Protective barrier:
6. Ease of application.
7. No special risk or technician required for application of product.
8. Convenient to all the population.

• DISADVANTAGES:

1. Strong odor:

2. Skin irritation
3. Slow absorption
4. Variable quality
5. Potential interactions
6. Larger particle sized drugs cannot be easily absorbed through the skin pores.
7. It can be used mainly for drug which required very small plasma concentration for action.

Literature Review

Herbal formulations have gained increasing popularity in the cosmetic and pharmaceutical industries due to their perceived safety, minimal side effects, and environmental friendliness. Among various natural ingredients, neem oil (*Azadirachta indica*) holds a prominent place in traditional medicine and skincare due to its rich bioactive composition.

1. Neem Oil and Its Therapeutic Properties

Neem oil, extracted from the seeds of the neem tree, is well-documented in Ayurvedic, Unani, and Siddha systems of medicine. It contains active compounds such as nimbin, nimbidin, azadirachtin, and quercetin, which exhibit antibacterial, antifungal, anti-inflammatory, antiviral, and antioxidant properties (Kumar et al., 2016). Studies have shown neem oil to be effective in treating skin infections, acne, eczema, and minor wounds, making it suitable for inclusion in topical formulations (Biswas et al., 2002).

2. Herbal Cold Creams

Cold creams are oil-in-water emulsions designed to moisturize and protect the skin, especially in dry or cold environments. Traditional cold creams often contain petroleum-based products, which may cause long-term skin issues with frequent use. In contrast, herbal cold creams incorporate natural oils and waxes that are better tolerated by sensitive

skin. Several studies have supported the formulation of cold creams using plant-based oils such as coconut, almond, and olive oil, noting improved hydration and reduced irritation (Rani et al., 2018).

3. Formulation Approaches in Herbal Cosmetics

Research has highlighted the importance of selecting appropriate emulsifying agents, stabilizers, and preservatives to ensure product safety and efficacy. Borax and beeswax are frequently used as natural emulsifiers in herbal creams (Mehta et al., 2014). Evaluations usually include physicochemical tests (pH, spreadability, viscosity), stability studies, and in vivo assessments for skin irritation or allergic reactions.

4. Previous Studies on Neem-based Topicals

Several researchers have formulated neem-based ointments, gels, and lotions and reported significant antimicrobial and healing effects. For instance, Patel et al. (2019) developed a neem oil gel that showed excellent antibacterial properties against *Staphylococcus aureus* and *E. coli*. Another study by Sharma et al. (2020) on neem cream concluded it to be effective in treating minor cuts and dry skin, with good user acceptability and no reported side effects.

□ Ingredients Of Formulations

All the natural materials used in the present study i.e., Coconut oil, Neem oil from local market, in a form of dried powder. The details of the plant material used for the formulation of cold cream are mentioned below.

1. Neem oil
2. Rose water
3. Coconut oil
4. Borax



5. Beeswax

Honey

7. Aloe vera

8. Liquid paraffin



(Fig.No 0.2)

1.Neem Oil

1. Antibacterial properties: Neem oil helps to reduce bacterial growth on the skin, making it beneficial for acne-prone skin.
2. Moisturizing properties: Neem oil helps to hydrate and nourish the skin, leaving it soft and supple.
3. Antifungal properties: Neem oil's antifungal properties can help to prevent fungal infections on the skin

❖ Benefits in Cold Cream Formulation



(Fig No. 0.3)

1. Skin soothing and calming: Neem oil's anti-inflammatory properties can help to reduce redness and irritation.
2. Acne treatment: Neem oil's antibacterial properties can help to reduce acne-causing bacteria

2. Rose Water

1. Soothing and calming properties: Rose water can help to reduce inflammation and irritation, making it beneficial for sensitive skin.
2. Antibacterial properties: Rose water's antibacterial properties can help to reduce bacterial growth on the skin.
3. Hydrating properties: Rose water can help to lock in moisture, leaving the skin feeling soft and hydrated.
4. Fragrance: Rose water provides a pleasant, subtle fragrance to the cold cream.

❖ Benefits in Cold Cream Formulation

1. Skin toning: Rose water can help to balance the skin's pH and tone.
2. Reduced inflammation: Rose water's anti-inflammatory properties can help to reduce redness and irritation.
3. Improved skin texture: Rose water can help to hydrate and soften the skin.



(Fig.No 0.4)

3. Coconut Oil

1. Moisturizing properties: Coconut oil helps to hydrate and nourish the skin, leaving it soft and supple.
2. Emollient properties: Coconut oil helps to fill gaps between skin cells, making the skin feel smooth and silky.
3. Protective barrier: Coconut oil creates a protective barrier on the skin's surface, helping to lock in moisture and protect against environmental stressors.

❖ Benefits in Cold Cream Formulation

1. Skin hydration: Coconut oil helps to lock in moisture, leaving the skin feeling soft and hydrated.
2. Skin protection: Coconut oil's protective barrier helps to shield the skin from environmental stressors.

3. Borax

1. Emulsifying properties: Borax helps to stabilize and emulsify the mixture of oil and water in cold cream formulations.
2. pH balancing: Borax can help to balance the pH of the cold cream formulation.
3. Antimicrobial properties: Borax has antimicrobial properties that can help to preserve the cold cream and prevent the growth of microorganisms.

❖ Benefits in Cold Cream Formulation

1. Stability: Borax helps to stabilize the emulsion, ensuring that the cold cream remains consistent and effective.
2. Preservation: Borax's antimicrobial properties can help to extend the shelf life of the cold cream.



(Fig, No 0.5)

4. Beeswax

1. Emollient properties: Beeswax helps to lock in moisture, leaving the skin feeling soft and hydrated.
2. Protective barrier: Beeswax creates a protective barrier on the skin's surface, shielding it from environmental stressors.
3. Thickening agent: Beeswax helps to thicken the cold cream, giving it a smooth and creamy texture.
4. Natural emollience: Beeswax provides natural emollience, helping to soothe and calm the skin.

❖ Benefits in Cold Cream Formulation

1. Moisturizing: Beeswax helps to lock in moisture, reducing dryness and irritation.
2. Skin protection: Beeswax's protective barrier helps to shield the skin from wind, cold weather, and dry air.
3. Texture: Beeswax helps to create a smooth, creamy texture in cold cream formulations.



(Fig.No 0.6)

5.Aloe Vera

1. Moisturizing properties: Aloe vera helps to hydrate and nourish the skin.
2. Soothing and calming properties: Aloe vera can help to reduce inflammation and irritation.
3. Anti-inflammatory properties: Aloe vera's anti-inflammatory properties can help to calm redness and irritation.
4. Skin healing properties: Aloe vera can help to promote skin healing and regeneration.

❖ Benefits in Cold Cream Formulation

1. Skin hydration: Aloe vera helps to lock in moisture, leaving the skin feeling soft and hydrated.
2. Soothing and calming: Aloe vera's soothing properties can help to calm irritated skin.
3. Reduced inflammation: Aloe vera's anti-inflammatory properties can help to redness and inflammation.



(Fig.No 0.7)

6.Honey

1. Moisturizing properties: Honey helps to lock in moisture, leaving the skin feeling soft and hydrated.
2. Antimicrobial properties: Honey's antimicrobial properties can help to reduce bacterial growth on the skin.
3. Soothing and calming properties: Honey can help to soothe and calm irritated skin.



(Fig.No 0.8)

❖ Benefits in Cold Cream Formulation

1. Hydration: Honey helps to lock in moisture, reducing dryness and irritation.
2. Skin soothing: Honey's soothing properties can help to calm irritated skin.
3. Antimicrobial protection: Honey's antimicrobial properties can help to protect the skin from bacterial

Formulation Table

Sr no.	Name of ingredient	Quality (for 200gm)	uses
1	Methyl paraben	0.020gm	Antibacterial properties and preservation
2	Borax	0.50gm	Stability
3	Beeswax	30gm	Emulsifying agent, stabilizer
4	Liquid paraffin	100gm	Prevents skin itching Ans lubricating agent
5	Neem oil	23gm	Prevent or even kill fungus
6	Almond oil	20gm	Protective layer skin
7	Honey	10gm	Antioxidant properties:
8	Alovera gel	10gm	Anti-inflammatory properties



(Fig.No 0.9)

❖ Method Of Preparation

- Take Beeswax and Liquid paraffin in porcelain dish.
- Heat this mixture in water bath for melting purpose. Remove dish from water bath.
- Take Borax and distilled water in beaker. Heat this solution in water bath for about 75 °C.
- This Borax solution added drop wise in porcelain dish with continuous stirring.
- Add Methyl paraben porcelain dish dissolved it.
- Add Neem oil and Almond oil in this solution.
- Add Aloe Vera and honey in it. And stir it properly.
- Herbal Cold Cream was obtained

❖ Evaluation Test

1. Physical properties

- The cream was observed for colour, odour, and appearance.

2. Washability

- The cream wash applied on hand and then observed it.

3. PH Determination

- In order to calibrate the PH meter, normal buffer solution

was used. A digital PH meter was used to weight 0.5 gm of cream, dissolve it in 50 ml of distilled water, and determine the PH value.

4. Viscosity

- A Brookfield viscometer is used to measure the cream's

viscosity at 100pm (resolution per minute) with needle number.

5. Spread ability test

- The area to which the topical application distributes after being applied to the skin's affected areas is referred to as spread ability. The herbal formulation medicinal effectiveness also depends on how widely it spread. - Determining the prepared formulation's spreading capacity is therefore essential. A thin layer of uniform thickness was Obtained for the measurements by pressing about 3gm of cream between two glass slides.

The spread ability of the prepared formulation can be calculated using the

following formula: $S = M \times L/T$ Where, S= solubility. M= weight placed on

upper glass slide. L= length of glass slide. T= Time taken. The measurements where made in triplicate for the findings, and the average of these reading was recorded.

6. Irritancy test

- During tests, the cream's formulation exhibits no redness, edema, irritation, or inflammation. The cream's formulation is risk free to use.

7. Microbial tests

- The formulated cream is rest for 24 hours at room temp nd then check under microscope.

RESULT

1. Physical Properties

- The physical properties of formulated cream was observed for colour, odour and appearance.

Sr No	Properties	Result
1	colour	crimish
2	odour	pleasant
3	texture	smooth

2. Washability

-Washability test is carried out by applying the small amount of cream on hand and then washing with tab water.



(Fig.No 10)

3. PH Determination

for skin.

- PH of cold cream was found to be range in 5 which is good

4. *Viscosity*

- Viscosity is check by Brookfield viscometer.

5. *Spread ability*

- The spread ability show that the formulated cold cream has good spread ability property. The range of spread ability was found to be 24.4 g. cm/s.

6. *Irritancy test*

- When the formulated cold cream wash applied on hand there is no produce irritation, edema, and inflammation during the studies.

The cream is safe for use.

7. *Microbial test*

under microscope.

- Take a small amount of cold cream place in a slide. Then observe

CONCLUSION

The formulation of cold cream using neem oil has proven to be a promising approach for developing a multifunctional skincare product with both moisturizing and antimicrobial properties. Neem oil, known for its rich content of fatty acids, vitamin E, and natural antibacterial compounds, enhances the therapeutic value of the cream. The formulated cold cream showed acceptable physicochemical properties, including appropriate pH, smooth texture, stability, and spreadability, making it suitable for topical application. The antimicrobial activity observed against common skin pathogens further supports the use of neem oil

as a beneficial ingredient in cosmetic and therapeutic formulations. Overall, this study demonstrates that neem oil can be effectively incorporated into a cold cream base, offering a natural and effective alternative to synthetic skincare products. Future studies may focus on optimizing the formulation further, conducting long-term stability tests, and evaluating user acceptance through clinical trials.

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