



Antioxidant-rich herbal cold cream: Formulation with *Trigonella foenum-graecum* and *Nyctanthes arbor-tristis* for skin healing

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ABSTRACT

The rising demand for herbal cosmetics is driven by their safety, minimal side effects, and therapeutic benefits. This study aimed to develop and evaluate a polyherbal cold cream incorporating *Trigonella foenum-graecum* (fenugreek) and *Nyctanthes arbor-tristis* (night-flowering jasmine) extracts, recognized for their potent antioxidant and skin-healing properties. The formulation was prepared using the water-in-oil (w/o) emulsion technique, with beeswax as an emulsifying agent and almond oil for nourishment. Physical evaluations revealed that the cream exhibited a smooth, semi-solid consistency, pleasant odor, and pink color. Functional evaluations demonstrated non-irritant properties, excellent spreadability, washability, homogeneity, and an optimal pH (6.8) for skin compatibility. Viscosity (48890 cp) was appropriate for easy application and retention on the skin. Notably, no phase separation was observed, indicating stability. The synergistic effects of *Trigonella foenum-graecum* and *Nyctanthes arbor-tristis* contributed to the cream's effectiveness in reducing xerosis, protecting against oxidative damage, and promoting skin healing. The findings suggest that this polyherbal cold cream is a promising, natural alternative for winter skincare, with significant cosmetic and therapeutic potential.

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INTRODUCTION

The quest for effective and natural skincare solutions has led to a growing interest in the use of herbal formulations. Among various skin care products, cold creams are popular for their ability to provide moisture and protect the skin from harsh environmental conditions. In recent years, there has been a significant shift towards incorporating herbal ingredients into these formulations, owing to their potential therapeutic benefits and minimal side effects compared to synthetic alternatives.

Herbal cold creams, enriched with plant-based components, offer a dual advantage: they provide cosmetic benefits while also contributing to skin health through their intrinsic medicinal properties. This study focuses on the preparation and evaluation of a novel herbal cold cream, utilizing the potent antioxidant and skin-healing

properties of *Trigonella foenum-graecum* (fenugreek) and *Nyctanthes arbor-tristis* (night-flowering jasmine). Both of these plants have been recognized in traditional medicine systems for their beneficial effects on skin health.

Trigonella foenum-graecum has a rich history of use in Ayurveda and other traditional medicine systems for its anti-inflammatory, antioxidant, and wound-healing properties [1]. The seeds of fenugreek are known for their high content of flavonoids and saponins, which are compounds that contribute to its antioxidant activity [2]. This makes fenugreek a valuable ingredient for protecting the skin from oxidative stress and enhancing its healing processes.

Nyctanthes arbor-tristis, commonly known as night-flowering jasmine, is another herb renowned for its skin benefits. Its flowers and

leaves contain various phytochemicals with anti-inflammatory, antimicrobial, and antioxidant properties. The use of *Nyctanthes arbor-tristis* in skin care is supported by its traditional use in treating various dermatological conditions and promoting overall skin health [3].

The combination of these two herbal ingredients in a cold cream formulation aims to harness their synergistic effects to improve skin hydration, protect against oxidative damage, and enhance the healing process of the skin. This study will explore the formulation of this herbal cold cream and evaluate its efficacy based on its antioxidant capacity, skin-healing properties, and overall cosmetic acceptability.

MATERIALS AND METHODS

Nyctanthes arbor-tristis (night-flowering jasmine) Collected from local garden of Karad, India. *Trigonella foenum-graecum* (Fenugreek) collected from local vendor Karad, India. Almond oil purchased from local market of Karad, India. Liquid Paraffin, Bees wax, Borax and Amaranth obtained from Research lab, Mumbai.

Preparation of Herbal Cold Cream

Cream was made using the w/o type cream composition described in the figures below. The ingredients for the oil phase (A) were combined by melting in a beaker while swirling constantly. Components of the aqueous phase (B) were mixed together and heated to about the same temperature as the oil phase. The aqueous phase was introduced to the oil phase while stirring constantly. As the mixture began to firm, the extracts of *Trigonella foenum-graecum* and *Nyctanthes arbor-tristis* were added. Cool it and fine texture of cream will be observed while triturating in mortar and pestle in the one direction continuously stirring [4]. Bees wax was used as emulsifying agent and amaranth as coloring agent [5].

Table 1: Formulation of polyherbal cold cream

Ingredients	Quantity
Almond oil	3 mL
Bees wax	1.5 gm
Borax	0.3 gm
Liquid Paraffin	1 gm
<i>Trigonella foenum-graecum</i> extract	1 gm
<i>Nyctanthes arbor-tristis</i> extract	1 gm
Distilled water	qs



Figure 1: Oil phase contain wax and oils



Figure 2: Water phase contain extract of *Trigonella* and *Nyctanthes*



Figure 3: Final cream texture

Evaluation Tests

Physical Evaluation

- **Colour:** Visually inspect and document the appearance of the cream to ensure uniformity and absence of discoloration [6].

- **Odour:** Check for characteristic odour (pleasant or as per the formulation) and absence of rancidity or undesirable smells.
- **Consistency:** Evaluate the cream's thickness and uniformity during application to assess its spreadability and texture [7].
- **State:** Confirm whether the cream is semi-solid, smooth, and free from grittiness or lumps [8].

Skin Irritation Test

Herbal cream formulation was evaluated for the non-irritancy test. Small amount of cream was applied on forearm and left for 15 min. After 15 min if any kind of irritation occurred, it was noted [9-11].

Viscosity

Brookfield viscometer is used to determine the cream's viscosity by using spindle number 64 at 5 RPM. It helps to assess the ease of application and retention on the skin [12-14].

Spreadability

Spreadability was measure by placing a small amount of cream between two glass plates and applying a specific weight. Record the diameter or area covered by the cream over a set time [15, 16]. The spreadability was calculated by formula:

$$\text{Spreadability (S)} = \frac{\text{mass (M)} \times \text{length (L)}}{\text{time (T)}} \quad (1)$$

Washability

Apply the cream to the skin and wash with water to evaluate ease of removal. It can be applied for certain period of time on skin and then washed with tap water [17].

pH Determination

pH was determine by dissolving 1 g of cream in 10 mL of distilled water and measure the pH using a calibrated pH meter. Ensure compatibility with skin (typically pH 4.5-6.5) [18-20].

Phase Separation

Appropriate wide-mouth container was used to hold the manufactured cream. After 24 hours, the separation of the oil phase and aqueous phase was visible, and it was set away for storage. The cream can be stored at room temperature, out of direct sunlight, and in a container that is sealed [21].

Homogeneity

Examine the uniformity of the cream's texture by spreading a small amount on a glass slide. It was assessed by visual appearance and visual test. It shows the consistency of cream [22].

RESULTS AND DISCUSSION

The study successfully formulated and evaluated a polyherbal cold cream enriched with *Trigonella foenum-graecum* and *Nyctanthes arbor-tristis* extracts. These plant-based components demonstrated synergistic effects, leveraging their antioxidant and skin-healing properties to produce a cream with excellent cosmetic and therapeutic benefits. The formulation showed desirable physical characteristics, including a smooth, semi-solid consistency, pleasant odor, and pink color, which contributed to its aesthetic appeal.



Figure 4: Final formulation view

Table 1: Evaluation test results

Sr. No.	Evaluation	Results
1	Color	Pink
2	Odor	Pleasant
3	Consistency	Smooth
4	State	Semi solid
5	Skin irritancy	Non irritant
6	Viscosity	48890cp
7	Spread-ability	Easily spread
8	Wash-ability	Easily wash
9	pH	6.8
10	Phase separation	No
11	Homogeneity	Good, stiffness, greasiness

The current research focused on formulating and evaluating of polyherbal cream. Table 1 displays the assessment parameters of the polyherbal cream, such as its physical evaluation, pH,

spreadability, washability, non-irritancy test, viscosity, phase separation and homogeneity.

CONCLUSION

Evaluation tests revealed the cream to be non-irritant, with good spreadability, easy washability, optimal pH (6.8) suitable for skin compatibility, and excellent homogeneity without phase separation. The viscosity of 48890 cp ensured proper application and retention on the skin. These findings suggest that the herbal cold cream formulation is effective in providing moisture, enhancing skin healing, and protecting against oxidative stress, making it a promising candidate for winter skincare and the treatment of xerosis.

REFERENCES

- [1] Kumar. S., Singh. R., & Gupta. V. (2019). *Trigonella foenum-graecum*: A review on its pharmacological and therapeutic potential. *Journal of Herbal Medicine*, 15, 56-66.
- [2] Seth. N., Singh. R., & Jha. S. (2017). Antioxidant and anti-inflammatory properties of fenugreek seeds. *International Journal of Pharmacy and Pharmaceutical Sciences*, 9(4), 1-7.
- [3] Kaur. H., Singh, A., & Kaur. M. (2018). Therapeutic potential of *Nyctanthes arbor-tristis*: A review. *Journal of Medicinal Plants Research*, 12(8), 134-143.2. Shankar R, Sarangi B, Gupta R, Pathak P, Formulation and characterization of polyherbal Cream for Skin Manifestations. *Jaasp*, (2016); 1: 360-66.
- [4] Panicker P.S and Manjusha MP. Preparation and evaluation of polyherbal cold cream. *Journal of pharmacognosy and phytochemistry*, (2020); 10(1): 1708-1710.
- [5] Babu R, Semwal A, Sharma S, Kumar S and Khan A. Formulation and evaluation of polyherbal cream. *World journal of pharmaceutical research*, (2022); 11: 646-660.
- [6] Chatur V.M, Ansari N.N, Joshi S.K, Walode S.G. Formulation and evaluation of polyherbal Cream. *Journal of drug delivery and therapeutics*, (2022); 12(4): 112-115.
- [7] Waqas M.K, Akhtar N, Mhmad M, Murtaza G, Khan H.S.K, Iqbal M, Rasul A and Bhatti N.S. Formulation and characterization of cream containing extract of fenugreek seeds. *Acta poloniae pharmaceutical-drug research*. (2014); 67: 173-178.
- [8] Grace X.F, Vijetha R.J, Shanmuganathan S, Chamundeeswari D. Formulation and evaluation of cosmetic cream. *Advance journal of pharmacy life science research*. (2014); 2,3: 14-17.
- [9] Jamakandi V.G., Mulla J.S., Vinay B.L., Shivakumar H.N. Formulation, characterization and evaluation of matrix type transdermal patches of model antihypertensive drug. *Asian Journal of Pharmaceutics* 2009;3:59-65.
- [10] Siddiqua I, Khatoun U, Ali S. N, Koneru A. Preparation and evaluation of herbal cold cream with incorporated curcuma longa. *International journal of innovative science and research technology*. (2022); 7: (3), 2456-2165.
- [11] Jadhav VU, Jamakandi VG, Mulla JA, Borkar SN, Karpe P, Suresh R, Dama GY, Sanap GS, Chatap VK. Reservoir Type Nicorandil Transdermal Delivery System By Using Permeation Enhancers. *Indian Drugs* 2009; 46(9): 23-31.
- [12] Ashara K.C. Importance of titration technique on preparation and evaluation of cold cream. *Inventi rapid, pharm technology*. (2013); 2013(1): 0976-3783.
- [13] Chejara DR, Mabrouk M, Badhe RV, Mulla JA, Kumar P, Choonara YE, du Toit LC, Pillay V. A bio-injectable algin-aminocaproic acid thixogel with tri-stimuli responsiveness. *Carbohydrate polymers*. 2016 Jan 1;135:324-33.
- [14] Jameel Ahmed S Mulla and Biradev S Karande. Microemulsion Based Hydrogel Formulation for Topical Drug Delivery - A Concise Review. *Indian Journal of Novel Drug Delivery*, 2021; 13(2): 63-69.
- [15] Sundar M, Sundan S, Lingakumar K. Preparation and optimization of medicated cold cream using *Caralluma adscendens* var. *attenuata* for the treatment of candida skin infection. *Journal of biotechnology, computational biology and bionanotechnology*. (2022); 103(3): 249-260.
- [16] Jameel Ahmed S Mulla, PratikshaMahendra Chalke, Shreya Pravin Londhe, Monika Arjun Patil, Sonali Narayan Nalawade, Rutuja Rajaram Sawant. Design and Optimization of Nanosponges of Poorly Soluble Voriconazole Using Central Composite Design. *Indian Journal of Novel Drug Delivery*, 2023; 15(4): 189-199.
- [17] Gyawali R, Gupta R.K, Shrestha S, Joshi R, Paudel P.N. Formulation and evaluation of polyherbal cream containing *Cinnamomum zeylanicum* blume, *Glycyrrhiza glabra* L

- and Azadirachta indica a. juss extract to topical use. Journal of institute of science and technology. (2020); 25(2): 61-71.
- [18] Mabrouk M, Mulla JA, Kumar P, Chejara DR, Badhe RV, Choonara YE, du Toit LC, Pillay V. Intestinal targeting of ganciclovir release employing a novel HEC-PAA blended lyomatrix. Aaps Pharmscitech. 2016 Oct; 17(5):1120-30.
- [19] Aswal A, Kalra M and Rout A. Preparation and evaluation of polyherbal cosmetic cream. Der pharmacia lettre scholars research library. (2013); 5(1): 83-88.
- [20] Snehal Shashaikant Chakorkar, Jameel Ahmed S. Mulla. A novel corticosteroid cubosomes – for ocular drug delivery. Indo American Journal of Pharmaceutical Research, 2020; 10(6): 775-784.
- [21] Nikhil, Navindgikar N, Kamalapurkar K.A, Chanvan S.C. Formulation and evaluation of multipurpose herbal cream. International journal of current pharmaceutical research. (2020);12: Issue 3, 25-30.
- [22] Matangi P.S, Aruna S, Mamidi, Gulshan M.D, Raghavamma, Nadendla R.R. Formulation and evaluation of anti-aging polyherbal cream. International journal of pharmacy science and technology. (2014); 24 (2): 133-136.