International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

Formulation and Evaluation of Herbal Cold Cream

Dinesh D. Ghube

Head of the Department, Department of Pharmacology, Samarth College of Pharmacy, Deulgaon Raja Dist. Buldhana, MH, India 443204

Abstract:
Aloe Vera Gel Herbal Cold Cream is a natural skincare formulation that combines the beneficial properties of Aloe Vera gel with other herbal ingredients to create a soothing and moisturizing cream for dry, sensitive skin. Known for its healing, anti-inflammatory, and hydrating properties, Aloe Vera serves as the primary active ingredient, promoting skin regeneration and reducing irritation. This herbal cold cream aims to provide nourishment, improve skin texture, and protect the skin from environmental stressors while offering a safe and chemical-free alternative to conventional skincare products. The synergistic effect of Aloe Vera and complementary herbs makes this cold cream suitable for all skin types, providing a natural solution for maintaining healthy and radiant skin throughout the year. This study explores the formulation, benefits, and potential applications of Aloe Vera Gel Herbal Cold Cream as an effective and sustainable skincare product.

Keywords: Aloe vera, Cold Cream, Herbal Cold Cream, Aloe vera gel.

INTRODUCTION:

Herbal products have been widely used in cosmetics for centuries, a practice that continues to thrive in modern times. These products are preferred for their minimal or negligible side effects compared to synthetic alternatives, often delivering enhanced benefits upon application. [1,2] Herbal cosmetics play a significant role in improving and conditioning the skin's appearance, with formulations primarily based on natural plant extracts, avoiding harmful synthetic chemicals. This preference for herbal ingredients is driven by the desire to prevent various skin issues that may arise from chemical-based products.[3-5] The use of plant-based extracts in cosmetic formulations dates back to ancient medicinal practices, including Ayurveda, Unani, Homeopathy, and texts like the Rigveda and Yajurveda. These herbs offer a wide range of beneficial properties, such as anti-inflammatory, antibacterial, antiseptic, emollient, and even anti-cancer effects. Consequently, herbal cosmetics have become a cornerstone of skincare, with growing market demand. Among the most common herbal cosmetic products are creams, including vanishing creams, cold creams, and multipurpose creams, which are formulated as water-in-oil emulsions, providing a soothing, cooling sensation upon application. [6-8]

Cosmetics are products primarily used to enhance or purify the skin. The term "cosmetics" originates from the Greek word *kosmestikos*, meaning "to adorn." Since ancient times, herbal cosmetics have been used for skin beautification. Cold cream, a type of water-in-oil emulsion, is one such cosmetic product. It offers a prolonged effect at the application site compared to other semisolid formulations, providing elegance without excessive greasiness.[9] The oil phase in cold cream acts as an emollient, restoring

moisture to dry skin, aiding in the removal of waste from pores, and offering a cooling sensation. Cold cream is easily washable and non-irritating to the skin. The water phase helps further protect the skin, while the cream liquefies at body temperature, penetrating the epidermis through natural pores. Cold cream is often used to smooth rough skin and lock in moisture, particularly in winter when dry air can cause skin irritation and mild damage. The cream's emulsifying action is enhanced by the reaction between borax and free fatty acids in beeswax, forming a soft soap that stabilizes the oil phase. Additionally, its high mineral oil content helps cleanse the skin while the cream provides moisture. When applied, cold cream undergoes a phase inversion, transitioning to a water-in-oil emulsion, offering effective hydration and skin protection. [10-11]

Ideal Properties of Cold Cream:

1. Cold creams should have an appealing appearance.
2. They should be easy to apply and spread on the skin.
3. They must effectively remove sebum, dirt, oil, and dead skin cells.
4. In addition to cleansing, they should soften, lubricate, and protect the skin.
5. They should be non-greasy, non-staining, and should not alter the skin's natural function or structure.
6. The formulation should be gentle, causing no irritation to the skin.
7. Cold creams should have a low sensitization index to minimize allergic reactions.
8. They should have an elegant and pleasing look.
9. The product should not cause dehydration of the skin.
10. They should result in a smooth and refined texture upon application.

Advantages:

- Cold creams are ideal for winter, as they help restore hydration to the skin.
- Regular use of cold cream can make the skin soft and supple.
- Many cold creams are formulated with ingredients that are gentle and safe for the skin.
- The hydrating properties make cold creams an excellent choice for individuals with dry or itchy skin.
- Due to their balanced water and oil content, cold creams protect the skin from harsh environmental conditions.
- They help keep the skin moisturized and safeguard it against damage.

Disadvantages:

- While cold creams help protect the skin from environmental factors by maintaining moisture, they may contain petroleum-based ingredients.
- These ingredients can potentially block water evaporation, leading to clogged pores and an increased risk of pimples.

Benefits:

- Cold creams are perfect for winter as they help replenish the skin's moisture.
- With regular use, the skin becomes softer and more elastic. Many cold creams are formulated with ingredients that are gentle on the skin.
- These creams are especially beneficial for individuals with dry, itchy skin due to their ability to restore hydration.

REVIEW OF LITERATURE

- **Manisha Yogesh Sonalkar et al.** formulated a polyherbal cold cream using water-in-oil emulsion, incorporating rose oil and aloe vera extract for nourishing and moisturizing the skin. The product was evaluated for various qualities such as consistency, spreadability, and stability, with no significant changes observed over the research period. The cream offered a soothing and cooling effect and provided an oily barrier that reduced water loss from the skin, making it ideal for dry skin.
- **N. Shaha et al.** developed a cold cream using herbal extracts with antioxidant properties. The cream, prepared with a 70% alcohol extract of selected plant parts, was tested for antioxidant activity and showed promising results. The formulation demonstrated good consistency, spreadability, and stability, with no microbial growth after incubation. The cream's viscosity was inversely proportional to the shear rate, and it remained stable during the study.
- **Mishra B et al.** formulated a cold cream enriched with vitamin E and almond oil. Using the fusion method, five different formulations were prepared and evaluated for pharmacopoeial parameters. The formulation F4 exhibited the best results, meeting all standards. Stability studies showed no significant changes in the cream, confirming its suitability for moisturizing the skin.
- **Anuradha Keshwar et al.** focused on formulating a cold cream using Bombax ceiba fruit pulp, a plant known for its therapeutic benefits. The plant's bioactive compounds, including flavonoids and phenolics, were believed to provide various pharmacological effects such as antioxidant, antimicrobial, and anti-inflammatory properties. The formulated cream was evaluated for its efficacy and safety.
- **Storm JE** discussed the history, advantages, and disadvantages of creams, noting their evolution from simple mixtures to more sophisticated formulations. Creams are essential cosmetic products with a wide range of applications. The article highlights the increasing demand for herbal-based creams, which are gaining popularity due to their natural ingredients and beneficial effects on the skin.
- **A. Clewell et al.** investigated the synergistic antimicrobial effects of zinc sulfate and copper sulfate in topical formulations. The study confirmed that both ingredients, when combined in a cream, exhibited effective antibacterial activity, providing a potential treatment for skin infections, especially with the growing concerns over drug-resistant microorganisms.
- **Martin BA et al.** studied the effects of traditional cold creams in treating atopic dermatitis (AD). The study evaluated the physicochemical and rheological properties of cold creams made from beeswax, with the inclusion of green propolis extract. The results indicated improved skin hydration and reduced inflammation, enhancing the quality of life for AD patients.
- **A. Azarang et al.** explored the potential of postbiotics in promoting wound healing. Cold cream formulations containing postbiotics derived from probiotic strains like *Lactobacillus fermentum* and *Bacillus subtilis* showed promising wound-healing effects in vivo, suggesting that these formulations could be valuable in therapeutic applications.
- **Cardili RN** formulated a cold cream using neem oil and turmeric extract, employing the water-in-oil method for moisturizing and nourishing the skin. The cream was evaluated for quality and showed effective hydration by creating a barrier that reduced water loss from the skin's outer layer, making it suitable for various skin care applications.

OBJECTIVES:

- To collect the required drug (Aloe Vera).
- To authenticate the drug and ensure its quality and authenticity.
- To prepare fresh Aloe Vera gel.
- To formulate the prepared gel into the desired product.
- To evaluate the prepared formulation for its effectiveness and quality.

DRUG PROFILE:

Aloe Vera, a plant recognized for centuries, is widely used for its medicinal, skincare, beauty, and health benefits. The name "Aloe Vera" is derived from the Arabic word "Alloeh," meaning "shining bitter substance," while "vera" comes from the Latin word for "true." Over 2000 years ago, Greek scientists regarded Aloe Vera as a universal remedy. Today, Aloe Vera remains a popular medicinal plant, valued for its antioxidant and antibacterial properties, making it a key ingredient in various health and skincare products.

- **Synonym**: Aloe barbadensis Mill., Aloe barbadensis var. chinensis Haw
- **Biological Source**: Aloe is derived from the dried juice of the leaves of *Aloe barbadensis Miller*.
- **Family**: Liliaceae
- **Chemical Constituents**: Barbaliin, Aloin, Isobarbaloin, Aloe-emodin, Aloesone, Aloinoside A & B, Resins.

Uses:

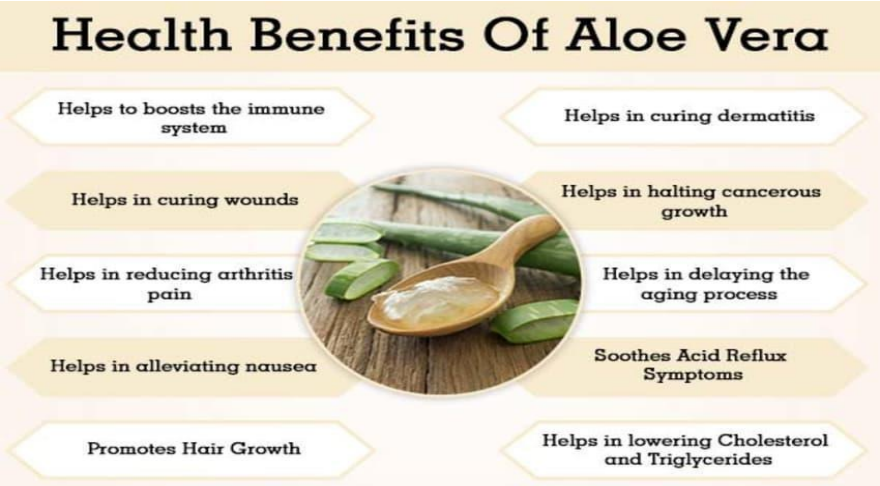
- **Anti-inflammatory**: Aloe Vera has properties that help reduce inflammation and soothe irritated skin.
- **Heals wounds**: It accelerates the healing of wounds, cuts, and abrasions by promoting tissue regeneration.
- **Anti-aging**: Aloe Vera helps reduce the appearance of fine lines and wrinkles, making it effective in anti-aging treatments.
- **Treats dry skin**: It is highly moisturizing and effective in treating dry and dehydrated skin by restoring hydration.
- **Treats stretch marks**: Aloe Vera can help reduce the appearance of stretch marks by improving skin elasticity and promoting healing.
- **Soothes sunburn**: The cooling and soothing properties of Aloe Vera make it ideal for alleviating the pain and discomfort of sunburns.
- **Treats acne**: Aloe Vera's antibacterial properties help treat acne by reducing inflammation and preventing the growth of acne-causing bacteria.
- **Moisturizing**: Aloe Vera is an excellent natural moisturizer, keeping the skin hydrated and soft.

ALOE-VERA

Kingdom	Plantae
Sub-kingdom	Tracheobionta
Super-division	Spermatophyta
Division	Magnoliophyta
Class	Liliopsida
Subclass	Lilidae

Order	Liliales
Family	Liliaceae
Genus	AloeL.
Species	Aloevera(L)Burm. F.

Table No. 1 Aloe vera



MATERIALS AND CHEMICALS

Apparatus	Beaker, Stirrer, Measuring Cylinder, Mortar and pestle,Ph paper
Instruments	Weighing Balance, Brook field viscometer, OintmentSlab
Chemicals	White bees wax, liquid paraffin,white soft paraffin, hard paraffin, borax, rose water, glycerine, perfume, sodium benzoate.
Ingredient	Aloevera extract.

Table 2: Methods and chemicals.

Procedure for Preparing Aloe Vera Extract:

The aloe vera plant used for this formulation was sourced from a herbal garden. Follow the steps outlined below for extraction:

1. Harvest fresh aloe vera leaves from the plant and rinse them thoroughly with clean water.
2. Carefully remove the outer rind of the leaves.
3. Utilize a stainless steel knife to extract the inner gel.
4. Gather the freshly obtained aloe vera pulp.
5. Grind and homogenize the pulp to achieve a uniform consistency.
6. Strain the mixture using muslin cloth to separate the liquid from any residual solids.
7. Allow the liquid extract to rest for 24 hours.
8. Store the final product in a clean jar with a tightly sealed lid, ensuring it is kept at a temperature below 7°C.

Formulation Table:

Sr. no.	Ingredients	F1	F2	F3
1	whitebeeswax	2.5 gm	2.5 gm	2.5 gm
2	LiquidParaffin	22.5 ml	22.5 ml	22.5 ml
3	White soft paraffin	5 gm	5 gm	5 gm
4	Hard Paraffin	3.5 gm	3.5gm	3.5 gm
5	Borax	0.1 gm	0.1 gm	0.1gm
6	Aloevera	6.4ml	6.4ml	9.6ml
7	Rosewater	6.4ml	3.2 ml	0 ml
8	Glycerine	3.2 ml	6.4 ml	6.4 ml
9	Perfume & preservative	Q.s	Q.S	Q.S

Table 3 Formulations

Preparation of Cold Cream:

1. Melt the white beeswax and hard paraffin along with the soft paraffin in a water bath.
2. Add liquid paraffin and heat the mixture to 70°C.
3. Dissolve borax in water at 75°C, then add it to the melted fats while stirring continuously. Allow the mixture to cool to 40°C.
4. Add the required amount of preservative and fragrance.
5. Transfer the cream into containers while it is still hot.

Evaluation of Herbal Cold Cream Preparation:

Organoleptic Properties:

1. Color
2. Odor
3. Texture
4. Consistency

Evaluation of Herbal Cold Cream Preparation:

2. **Physical Properties:**

- **pH:**
  The pH of the cream was determined using pH paper.
- **Sensitivity Test:**
  A small amount of the cream was applied to a 1 cm patch of skin on the hand and exposed to sunlight for 4-5 minutes.
  Observations were made to compare the before and after effects of the test.
- **Homogeneity:**
  The homogeneity of the formulated cream was assessed visually and through touch. The after-feel properties such as emollience, slipperiness, and residue left after applying a fixed amount were evaluated. The type of smear formed on the skin and its ease of removal using tap water were also examined.
- **Spreadability:**
  Spreadability was measured by the time (in seconds) required for two glass slides to separate when the cream was placed between them under a specific load. A lesser time indicates better spreadability.

Method:

- A suitable amount of cream was placed on one glass slide.
- Another slide was positioned on top of the formulation.
- A specific weight was applied to ensure even spreading into a thin layer.

After removing the weight and scraping off excess cream, the upper slide was allowed to slip off freely under a standard weight tied to it. The time taken for the slide to slip off was recorded.

Formula:

Spreadability = Spreadability=m×l/t

- Where:
  m = weight applied (100 g),
  l = length of the glass slide (20 cm),
  t = time taken (in seconds).

- **Viscosity:**
  The cream's viscosity was measured using a Brookfield viscometer at 31°C with spindle No. 4, showing results around 25,000 cp. All formulations displayed suitable viscosity.
- **Wash ability:**
  The cream was tested for wash ability and found to be easily washable with water.

RESULT

Sr.No.	Parameter	F1	F2	F3
1	Colour	white	white	white
2	Odour	Pleasant	Pleasant	Pleasant
3	Texture	Smooth	Smooth	Smooth
4	State	Semisolid	Semisolid	Semisolid
5	Wash ability	Washable	Washable	Washable
6	Sensitivity Irritanteffect Erythema Edema	 No No No	 No No No	 No No No
7	pH	5.5	5.5	5.5
8	Spreadability	500	500	500

pH:

Days	**0to7**	**7to14**	**14to 21**	**21to28**
pH	5.5	5.5	5.5	5.5

DISCUSSION

The formulated herbal cold cream demonstrated a non-irritant effect on the skin, providing nourishment and a smooth texture. The cream appeared white and had a smooth consistency. Three formulations (F1, F2, and F3) were prepared, and F1 was observed to perform better compared to the other two.

The organoleptic properties of the herbal cold cream were evaluated, alongside physical parameters such as pH, homogeneity, smear type, emolliency, viscosity, and emulsion type. The pH of the formulations

was found to be compatible with skin secretions, maintaining an ideal range of approximately 5.5. The cream exhibited excellent spreadability and emolliency.

Thermal stability tests conducted over a month showed no signs of phase separation between the aqueous and oily components. Additionally, microbial contamination tests revealed no growth after the specified incubation period of 24 hours. A patch test confirmed the safety of the cream, as no signs of irritation or redness were observed.

Overall, the cream provided nourishment and smoothness to the skin. Among the three formulations, F1 proved superior in terms of performance, consistency, and texture.

CONCLUSION

The incorporation of Aloe Vera gel in the cream formulation provided multipurpose benefits, as the natural ingredients exhibited significant activity. The results demonstrated that formulations F1, F2, and F3 were stable at room temperature and safe for use on the skin, with F1 showing the best performance across all parameters.

The formulated cream displayed good consistency, spreadability, homogeneity, and a non-greasy texture, with no phase separation observed during the study period. The herbal cold cream was deemed safe for use and effective, developed from natural herbal extracts.

Natural remedies are increasingly preferred for their safety and minimal side effects compared to synthetic products. The use of herbal ingredients in cosmeceuticals has gained significant popularity in personal care. The herbal cold cream, being non-toxic, safe, and effective, aligns well with consumer demand for natural cosmetics and is a promising alternative to synthetic products.

REFERENCES

1. Sonalkar, M. Y., & Nitave, S. A. (2016). Formulation and evaluation of polyherbal cosmetic cream. *World Journal of Pharmacy and Pharmaceutical Sciences, 5*, 772-779.
2. Shah, N., & Methal, B. M. (2006). *A Handbook of Cosmetics*. Vallabh Prakashan.
3. Mishra, B., Pandit, J. K., & Bhattacharya, S. K. (1990). Recent trends in drug delivery systems - transdermal drug delivery. *Indian Journal of Experimental Biology, 28*, 1001-1007.
4. Keshwar, A., Keshwar, U., Deogirkar, A., Dhurde, S. S., Deo, V., & Shrikhande, B. K. (2016). Formulation development and evaluation of cream containing natural essential oils with mosquito repellent properties. *World Journal of Pharmacy and Pharmaceutical Sciences, 5*(8), 1586-1593.
5. Storm, J. E., Collier, S. W., & Stewart, S. (1990). Metabolism of xenobiotics during percutaneous penetration: Role of absorption rate and cutaneous enzyme activity. *Fundamental and Applied Toxicology, 4*, 132-141.
6. Clewell, A., Barnes, M., Endres, J. R., Ahmed, M., & Ghambeer, D. K. S. (2012). Efficacy and tolerability assessment of a topical formulation containing copper sulfate and Hypericum perforatum on patients with herpes skin lesions: A comparative, randomized controlled trial. *Journal of Drugs in Dermatology, 11*(2), 209-215.
7. Martin, B. A., Lemos, C. N., Dalmolin, L. F., Arruda, C., Brait, Í. S. C., Cazarim, MdS., et al. (2021). A new approach to atopic dermatitis control with low-concentration propolis-loaded cold cream. *Pharmaceutics, 13*(9), 1346.

8. Azarang, A., Farshad, O., Ommati, M. M., et al. (2020). Protective role of probiotic supplements in hepatic steatosis: A rat model study. *BioMed Research International*, *2020*, Article ID 5487659, 13 pages.
9. Saraf, S., & Kaur, C. D. (2010). Phytoconstituents as photoprotective novel cosmetic formulations. *Pharmacognosy Reviews*, *4*(7), 1.
10. B.S., Kalpesh K. Mehta, & Gupta, A. (2016). Dispensing pharmacy: A practical manual (pp. 389-399). Pharma Med Press.
11. Myers, D. (1992). *Surfactant Science and Technology*. VCH Publishers, pp. 209-247.
12. Nair, S. S., Mathew, M., & K, S. (2012). Formulation and evaluation of herbal cream containing *Curcuma longa*. *International Journal of Pharmaceutical and Chemical Sciences*, *1*(4), Oct-Dec.
13. Heng, M. C. Y. (2017). Topical curcumin: A review of mechanisms and uses in dermatology. *International Journal of Dermatology and Clinical Research*.
14. Dhase, A. S., Khadbadi, S. S., & Saboo, S. S. (2014). Formulation and evaluation of vanishing herbal cream of crude drugs. *American Journal of Ethnomedicine*, *1*(5), 313-318.
15. Mali, A. S., Karekar, P., & Yadav, A. V. (2015). Formulation and evaluation of multipurpose herbal cream. *International Journal of Science and Research (IJSR)*, *4*(11), November.
16. Akhtar, N., Khan, B. A., Khan, M. S., Mahmood, T., Khan, H. M. S., Iqbal, M., & Bashir, S. (2011). Formulation development and moisturizing effects of a topical cream of Aloe vera extract. *World Academy of Science, Engineering, and Technology*, *75*.
17. Jyothirmai Kala, S. L., & Palaparthi, S. (2017). Formulation and in-vitro evaluation of polyherbal anti-aging face cream. *World Journal of Pharmaceutical Research*, *6*(13), 717-733.