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Formulation and Evaluation of Cold Cream

Prof. Mr. Shaikh S. I., Pandav Prem Madhukar, Hulgunde Rohit Ashok,
Jadhav Saurabh Vishnu, Jaybhay Prajwal Balaji
Aditya Diploma Institute of Pharmacy Collage, Beed, Maharashtra India

Abstract: *Cold cream, also termed Fatty Cream in the European Pharmacopoeia, is a water in oil (W/O) emulsion. This article covers its uses, formulation, preparation, tests, history, and ideal properties. Originally, druggists in pre-1st century times compounded rosewater cream, chilling it on ice for a refreshing skin treatment. The term "cold cream" derives from the Latin word "refrigeran," signifying "making cold," as its application induces water evaporation, resulting in a cooling sensation. A cosmetic product encompasses any substance intended for contact with various external parts of the human body, including the epidermis, hair system, nails, lips, external genital organs, teeth, and oral cavity mucous membranes. These products serve purposes such as cleansing, perfuming, altering appearance, correcting body odour, and preserving.*

Keywords: skincare cream, Water in oil emulsion, Alovera gel, Turmeric

I. INTRODUCTION

Cold cream is a cosmetic product andthe term "cosmetics" originates from the Greek word "Kosmtikos," signifying proficiency, arrangement, and expertise in enhancing beauty. According to the Indian Drug and Cosmetic Act, cosmetics are described as any item intended to be rubbed, poured, sprinkled, spread on, or otherwise applied to the human body or any part thereof, for the purpose of cleaning, beautifying, promoting attractiveness, or altering appearance, including those intended for use as a component of cosmetics.

Cold creams are primarily utilized in skincare regimens, such as facial masks or lip balms, owing to their hydrating qualities. Additionally, they serve as effective makeup removers. During colder, windy conditions, cold weather creams, typically enriched with vitamin E, jojoba, and natural oils like olive oil, rose petals, and various fruit extracts, particularly grape seeds, shield facial skin from dryness, imparting radiance, softness, and fairness. Hence, it's essential for consumers to include a face cream in their winter skincare arsenal. These winter care creams cater to all skin typesnormal, oily, and dryby alleviating signs of peeling caused by winter dryness and nurturing delicate facial skin. The potent moisturizing formula within these creams also addresses therapeutic needs during the winter months.Cold cream consists of a blend of water and specific fats, typically incorporating beeswax and assorted fragrances, formulated to soften the skin and eliminate makeup. Unlike the oil-in-water emulsion of vanishing cream, cold cream is a water-in-oil emulsion, earning its name because it appears to vanish upon application to the skin.

1.1 Benefit Turmeric in Health

i. Natural anti-inflammatory agent
ii. Antioxidant
iii. Brain health
iv. Mood booster
v. Heart health
vi. Arthritis relief

II. LITERATURE REVIEW

1. Studies on aloe vera's moisturizing properties
2. Research on extracts' antioxidant and anti-inflammatory effects
3. Reviews of natural ingredients' benefits for skin health

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Potential Drawbacks:

1. May not be suitable for extremely oily skin
2. Some users may experience allergic reactions to certain ingredients

Future Directions:

1. Further research on specific ingredients' benefits
2. Development of customized formulations for specific skin concerns
3. Increased focus on sustainability and eco-friendliness

Overall, cold cream is a popular and effective solution for dry skin, offering long-lasting hydration and protection. Its natural ingredients and non-greasy texture make it suitable for daily use.

cold creams are a popular choice for skin care, especially during dry winter months. Here's a review of some popular cold creams:

Top-Rated Cold Creams

- Eeshha Hydrating Cold Cream: This cream has a pleasant, subtle scent and a thick yet easily spreadable consistency. It's lightweight, non-greasy, and hydrates the skin well, making it suitable for all skin types. It contains aloe vera and jojoba oil, and is priced at ₹135. Users have given it a 4.5-star rating [1].
- Ayur Cold Cream with Aloe Vera: This cream is based on aloe vera, a time-tested product for skin health. It's effective in fighting rough and dry skin, and is considered a good and economical option. Users have appreciated its benefits in soothing skin dryness.
- Vaadi Cold Cream with Almonds & Saffron: This cream is moisturizing, non-greasy, and has a good fragrance. It's suitable for dry skin and is priced reasonably. Users have given it a 4-star rating, praising its moisturizing properties [2].

III. HISTORY

Centuries ago, civilizations like the Greeks and Egyptians pioneered cold cream, combining beeswax, olive oil, and rosewater for moisturizing benefits. The term "cold cream" gained prominence in the 19th century, evolving through various recipes. Notably, the Greek physician Galen crafted a soothing emulsion of water, beeswax, and olive oil. Over time, modern formulations have expanded to cater to diverse skincare needs, while still preserving the hydrating and nourishing essence of cold cream.

Certainly! Cold cream has been around for a long time, with its roots going back to ancient civilizations like the Greeks and Egyptians. They used natural ingredients like beeswax, olive oil, and rosewater to make skincare products that moisturized and soothed the skin.

In the 19th century, the term “cold cream” became popular because it gave a cooling feeling when applied. One famous version was made by a Greek doctor named Galen, who mixed water, beeswax, and olive oil to create a luxurious cream that made skin softer and protected it.

Today, cold creams have gotten even better thanks to advancements in science. They still keep the skin hydrated and healthy, but now they might have extra stuff like vitamins and plant extracts .

Origins

The concept of cold cream was first developed by Galen, a renowned Greek physician and pharmacist, in the Roman Empire. Galen's original formulation consisted of rose petals, beeswax, and water, which became known as "Galen's cream". This cream was designed to moisturize and protect the skin [1] [2].

Evolution

Over time, the recipe for cold cream has undergone significant changes, refinements, and optimizations. The original formulation has been modified to include various natural ingredients, such as olive oil, and other extracts, to enhance its moisturizing and skin-protecting.

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Cold Cream:-

Cold cream is a mixture of water and specific fats, often beeswax and scented ingredients, crafted to soften skin and remove makeup. Unlike vanishing cream, which is an oil-in-water emulsion, cold cream is a water-in-oil emulsion, known for its cooling sensation upon application. Its name stems from this refreshing effect it leaves on the skin. Variations of cold cream have been utilized for nearly two millennia.Cold creams are either water-in-oil or oil-in-water emulsions containing certain fats, typically beeswax, and perfumed ingredients. They're applied to the skin to enhance smoothness and facilitate makeup removal. The term "cold cream" originates from its ability to impart a cooling sensation upon application. Although cold cream primarily consists of fatty and oily substances, its slow water evaporation upon skin contact creates a cooling effect, classifying it as a water-in-oil (W/O) emulsion.

In cold cream formulations, the oil phase predominates, making it an oil-based semisolid preparation. It's also known as Unguentum or Ceratum Refrigerans, typically comprising mineral oil, beeswax, borax, and water. Cold cream serves as a soothing and cleansing cosmetic, usually exhibiting a thick and oily consistency.

cold cream is a natural alternative to traditional cold creams, typically made with ingredients like extracts, essential oils, and natural waxes. It’s often used for moisturizing and soothing dry or irritated skin, especially during cold weather or harsh environmental conditions.

Benefits of Cold Cream:-

- Moisturizes and nourishes dry skin effectively.
- Soothes irritation and reduces redness.
- Helps to repair and protect the skin's natural barrier.
- Provides long-lasting hydration without feeling greasy.
- Suitable for sensitive skin types.
- Helps to improve skin texture and tone over time.
- Offers a refreshing and comforting sensation when applied.
- Free from harsh chemicals and artificial fragrances, making it gentle on the skin.
- Enhances the effectiveness of other skincare products by creating a smooth base for makeup application.
- Can be used as a soothing after-sun treatment to help alleviate sunburn discomfort.

Ideal Characteristics of Cold Cream

- Natural Ingredients: Formulated with extracts and natural oils to nourish and soothe the skin.
- Hydration: Provides deep and long-lasting hydration without feeling heavy or greasy.
- Non-comedogenic: Does not clog pores, suitable for all skin types including sensitive and acne-prone skin.
- Gentle Formulation: Free from harsh chemicals, artificial fragrances, and irritants, making it gentle on the skin.
- Skin Repair: Helps repair and protect the skin's natural barrier, aiding in the healing process for dry or damaged skin.
- Multipurpose: Can be used for various purposes such as moisturizing, soothing irritation, and as an after-sun treatment.
- Quick Absorption: Absorbs quickly into the skin without leaving a sticky residue.
- Enhances Skin Texture: Improves skin texture and tone over time, leaving it smooth and radiant.
- Refreshing Sensation: Provides a refreshing and comforting sensation upon application, leaving the skin feeling rejuvenated.
- Sustainable Packaging: Packaged in eco-friendly and recyclable materials to reduce environmental impact.

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Uses of Cold cream

1. Moisturizes:- Hydrates dry skin.
2. Protects:-Shields skin from harsh weather.
3. Soothes:- Calms irritated skin.
4. Nourishes:- Provides essential nutrients.
5. Heals:- Aids in minor wound recovery.
6. Anti-aging:- Helps reduce fine lines.
7. Makeup removal:-Gentle cleansing.
8. Massage:- Promotes relaxation.
9. Night use:- Overnight hydration.
10. Versatile:-Can be used on various body parts.

Advantages of Cold Cream

1) Natural Ingredients: Harnesses the power of botanical extracts.
2) Gentle Formulation: Suitable for sensitive skin types.
3) Moisturizing: Provides deep hydration to combat dryness.
4) Soothing: Calms irritation and inflammation.
5) Healing Properties: Helps in the recovery of minor skin issues.
6) Antioxidants: Fights free radicals, promoting skin health.
7) Non-toxic: Free from harmful chemicals often found in conventional creams.
8) Environmentally Friendly: Often packaged in eco-conscious materials.
9) Versatile: Can be used for various skincare needs.

IV. AIM AND OBJECTIVES

1. Moisturization:
To deeply hydrate and nourish dry or rough skin, especially during cold weather, using natural ingredients.

2. Protection:
To protect the skin from harsh environmental conditions such as wind, cold, and pollution by forming a protective barrier.

3. Soothing Effect:
To calm and relieve irritated or sensitive skin through extracts known for their anti-inflammatory and soothing properties (e.g., aloe vera, chamomile).

4. Natural Healing:
To promote skin healing and regeneration using herbs with medicinal properties like neem, tulsi, or turmeric.

5. Non-toxic and Chemical-free Care:
To provide a skincare alternative that is free from synthetic chemicals, artificial fragrances, and harmful preservatives.

V. INGREDIENTS AND APPARATUS

Apparatus Required

1. Beaker
2. Measuring Cylinder
3. Glass rod
4. Thermometer
5. Water Bath

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6. Weighing balance.

Ingredients and excipient required:-

1. Borax
2. Bees wax
3. Liquid Paraffin
4. Methyl Paraben
5. Water
6. Perfume

Fig. 1:- Preparation of Cold Cream

1. Borax:-

Borax, also known as sodium borate, is a mineral and a salt of boric acid. It's commonly used in household cleaning products, as a buffering agent in chemical laboratories, and even as an ingredient in some cosmetics. It has various applications due to its cleaning and antiseptic properties. Borax is used in lotions and creams. Borax is combined with wax to improve the consistency of lotions and creams. It also work as an emulsifier when used with wax and it is mostly used in hand soaps. It is excellent ingredient used for cleaning as it's alkaline in nature.

Borax, recognized primarily as a cleaner, is also a common ingredient in various household items, including specialty toothpastes, cosmetics like lotions and sunscreens, and paint. Additionally, it serves as a precursor to significant boron compounds such as boric acid, extensively used in insecticides

Borax is sometimes included in cold creams for its potential benefits in skincare. In these formulations, borax may act as a preservative, emulsifier, or mild antiseptic. Additionally, it can contribute to the cream's texture and help stabilize the ingredients. However, it's essential to note that borax may not be suitable for everyone, so individuals with sensitive skin should be cautious when using products containing borax. Always check the ingredient list and consult with a healthcare professional if you have any concerns.

Fig. 2:- Borax

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2. Bees wax:-

Synonyms:Cera alba, white wax. Family: Apidae

Biological Source: Beeswax is produced by honeybees, primarily Apis mellifera, through the secretion of wax glands located on the abdomen of worker bees.

Chemical Constituents: Beeswax primarily consists of esters of fatty acids and long-chain alcohols. The major constituents include:

a) Ester:- Myricyl palmitate,Palmitate esters.

b) Fatty acid:- Palmitic acid, Oleicacid ,Linoleic acid

c) Alcohol:- Myricyl alcohol

d) Hydrocarbon:-Nonacosane,Hentriacontane.

Beeswax is a key ingredient in homemade cosmetics, but I haven't talked about it yet.Beeswax plays a crucial role in cold cream formulations as it acts as a natural emulsifier, helping to bind together the water and oil components of the cream. Additionally, beeswax provides a protective barrier on the skin, helping to retain moisture and prevent moisture loss, making it especially beneficial for dry or sensitive skin types. It also contributes to the creamy texture and helps the cream to spread smoothly on the skin.

Fig. 3 :- Bees wax

3. Methyl Paraben

1. General Description:

Methyl paraben is a type of paraben, which is a class of chemicals widely used as preservatives in cosmetics, personal care products, and some pharmaceuticals and foods. It is the methyl ester of p-hydroxybenzoic acid.

2. Physical and Chemical Properties:

Property Value

Appearance White or colorless crystalline powder

Melting Point 125–128°C

Boiling Point 270°C

Solubility in Water Slightly soluble (~0.25 g/100 mL at 25°C)

Solubility in Alcohol Soluble

pKa ~8.4

Odor Faint aromatic odor

3. Uses and Applications:

Cosmetics & Personal Care:

Found in creams, lotions, shampoos, deodorants, etc.

Prevents microbial growth to extend shelf life.

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Pharmaceuticals:
Used as a preservative in ointments, injectable drugs, and tablets.

Food Industry:
Used in low concentrations as a food preservative (E218).

Industrial Applications:
Used in glues, oils, and emulsions where preservation is necessary.

4. Safety and Toxicology:
Toxicity: Generally considered safe in low concentrations.
Allergic Reactions: Can cause skin irritation or allergic reactions in sensitive individuals.
Estrogenic Activity: Some studies have shown weak estrogen-like activity in vitro, leading to concern about hormone disruption. However, most regulatory bodies consider it safe at approved levels.

Regulations:
FDA: Approved for use in foods and cosmetics.
EU: Maximum allowed concentration in cosmetics is 0.4% for methylparaben alone or 0.8% when mixed with other parabens.

5. Environmental Impact:
Biodegradability: Readily biodegradable.
Aquatic Toxicity: Can be toxic to aquatic life in high concentrations.

4. Liquid Paraffin:-
Liquid paraffin, also known as mineral oil, is a clear, odorless oil derived from petroleum. It's often used in skincare products like lotions, creams, and ointments due to its ability to lock in moisture and prevent water loss from the skin.Liquid paraffin, also known as mineral oil, is a colorless and odorless oil derived from petroleum. It's a highly refined and purified form of petroleum, consisting of a mixture of alkanes. Liquid paraffin is also utilized in the pharmaceutical industry in laxatives and as a lubricant for medical devices. In addition, it's found in various household products such as baby oils, makeup removers, and bath oils.
Liquid paraffin is sometimes used in the formulation of cold creams, including cold creams. It serves as an emollient, helping to moisturize and soften the skin. In cold creams, liquid paraffin works alongside other ingredients such as extracts, oils, waxes, and water to create a rich and hydrating cream that can soothe and protect the skin, especially in dry or cold weather conditions.In cold creams, the addition of extracts can provide additional benefits such as antioxidant properties, soothing effects, and potential aromatherapeutic benefits. These extracts can vary widely depending on the formulation and intended use of the cold cream. Overall, liquid paraffin plays a role in ensuring that the cold cream provides adequate hydration and forms a protective barrier on the skin.

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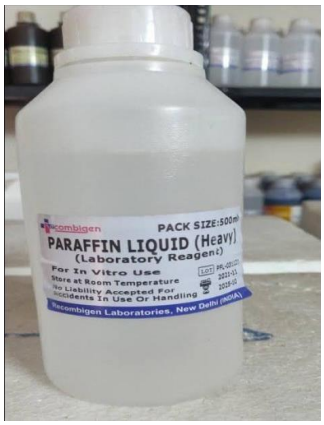

Fig 5 :-Liquid Paraffin

5. Perfume:-

Fragrance Options

1. Lavender: Calming and soothing
2. Rose: Romantic and elegant
3. Jasmine: Exotic and sensual
4. Vanilla: Sweet and comforting
5. Citrus (e.g., lemon, orange): Fresh and uplifting

Essential Oils

1. Lavender oil: Promotes relaxation and calmness
2. Geranium oil: Balances and uplifts
3. Frankincense oil: Anti-inflammatory and grounding
4. Ylang-ylang oil: Soothing and romantic

Perfume Concentration

1. Light: Subtle scent (1-2% essential oil concentration)
2. Medium: Balanced scent (2-5% essential oil concentration)
3. Strong: Intense scent (5-10% essential oil concentration)

Considerations

1. Skin type: Choose fragrances suitable for your skin type.
2. Personal preference: Select scents that you enjoy.
3. Blending: Combine essential oils for unique fragrances.

7. Formulation of Cold Cream:-

The Cold Cream can be prepared by following steps:

i. Firstly, melt the beeswax andliquid paraffintogether until well combined.
ii. In a sseparate beake, heat the rose water until warm but not boiling.
iii. Dissolve the borax in the warm rose water.
iv. Slowly pour the borax and rose water mixture into the melted beeswax and oil, stirring constantly.
v. Add the prepared aloe vera gel and turmeric powder to the mixture and stir well until everything is evenly combined.
vi. Remove the mixture from heat and let it cool slightly.
vii. Pour the cream into clean, sterilized jars and let it cool completely before sealing

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Fig.10:- Cold Cream

Formulation and Evaluation of Cold Cream

Formulation Table:- (for 10 gm)

Sr.no.	Ingredients	Role of Ingredients	Formulation 1	Formulation 2	Formulation 3
1	Bees wax	Thickening emollient	2.5gm	5gm	10gm
2	Liquid paraffin	Moisturizing	2ml	5 ml	15ml
3	Borax	Emulsifier,	0.2gm	1.15gm	2.25gm
4	Methyl Paraben	Preservative	2ml	3.5 ml	5.5ml
5	Perfume	Fragrance	0.5ml	1.2ml	2.25ml
6	water	Distilled water	2.5ml	2.5ml	5 ml

Table no.1:-Formulations Table

VII. Evaluation of Cold Cream

1) Organoleptic evaluation

The physical appearance of cold cream was inspected visuallyagainst dark background. The average of three reading isrecorded. The result is given in the table no.02

2) Washability test:-

Apply a small amount of the cream to the skin, massage it in, then wash with lukewarm water and a gentle cleanser. Evaluate how easily it rinses off without leaving a greasy residue, and observe the condition of the skin post-wash for cleanliness and hydration. The result is given in the table tablegno.03

3) pH

Test the cold cream's pH usingmeter, aiming for a pH of 4.5 to 5.5 for skin compatibility. Adjust the formulation if necessary. The result is given in the table no.04

4) Irritancy Test:-

Conduct an irritancy test by applying a small amount of the cold cream to a discreet area of skin for 24 hours. Monitor for any signs of irritation. If none occur, the cream is safe for use. The result is given in the table no.05

5) Spread ability:-

The spread ability was expressed in terms of time in seconds taken by two slides to slipoff from the cream, placed in between the slides, under certain load. Lesser the time taken for separation of the two slides better the spread ability. Two sets of glass slides of standard dimension were taken. Then one slide of suitable dimension was taken and the

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cream formulation formulation was placed on that slide. Then other slide was placed on thetop of the. 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 excessof formulation adhering to the slides was scrapped off. The upper slide was allowed to slip off freely by the force of weight tied toit. The time taken by the upper slide to slip offwas noted. The result is given in the table no.06

Spread ability=mxl/t

Where,

m Standard weight which is tied to or placed over the upper slide (30g)

1= length of a glass slide (5 cm)

t= time taken in seconds.

6) Homogeneity:-

Take small samples from different parts of the container. Check for consistency and texture. Look for any signs of separation. Mix the samples and assess overall uniformity. If consistent throughout, the cream passes the test; otherwise, adjustments may be needed.

VIII. RESULT

1) Organoleptic evaluation

Sr.no.	Parameter	Formulation 1	Formulation 2
1.	Color	Creamy off white	Faint Yellowish
2.	Odour	Mild sweet	Strong Sweet, Mild earthy
3.	Texture	Smooth, Creamy	Thicker
4.	State	Semi-solid	Semi-solid

2) Washability test:-

Sr.no.	Formulation	Result
1	F1	Easily Washable
2	F2	Slightly more residue

3) pH:-

Sr.no.	Formulation	Result
1.	F1	5.3
2.	F2	5.3

4) Irritancy test:-

Sr. No.	Formulation	Result
1.	F1	No Irritancy
2.	F2	Modirate Irritancy

5) Spread ability:-

Sr. No.	Formulation	Result
1.	F1	Easy
2.	F2	Slightly Thicker

IX. CONCLUSION

The formulation and evaluation of cold cream using turmeric and aloe vera offer a promising natural skincare product with potential therapeutic benefits. By incorporating turmeric, known for its anti-inflammatory and antioxidant

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properties, and aloe vera, valued for its soothing and moisturizing effects, the cold cream formulation provides a holistic approach to skincare.

Through careful formulation, the synergistic effects of turmeric and aloe vera can enhance the cream's efficacy in addressing various skincare concerns, including inflammation, dryness, and irritation. The anti-inflammatory properties of turmeric help calm and soothe the skin, while aloe vera provides hydration and promotes healing.Evaluation of the cold cream formulation involves assessing its physical characteristics, stability, safety, and efficacy. This includes tests for texture, color, odor, pH, viscosity, microbial contamination, and skin compatibility. Additionally, clinical studies and user feedback can provide valuable insights into the cream's performance and user satisfaction.

Overall, the formulation and evaluation process ensure the development of a high-quality cold cream that harnesses the natural benefits of turmeric and aloe vera, offering consumers a safe, effective, and eco-friendly skincare solution.

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