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Cold Creams Uncovered: A Critical Analysis of Ingredients and Benefits

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Abstract

From the European Pharmacopoeia, cold cream is classified as water in oil (W/O) emulsion; it is also called fatty cream. Results of the paper: Uses, composition, preparation, testing, history, and ideal characteristics of cold cream are all covered. Before the first century, druggists frequently blended cream and stored it in the refrigerator to use as a cold cream for the skin. Due to the fact that cold cream causes the water to evaporate and have a cooling effect, the term "refrigeran" from Latin originally meant "making cold, because the water in the emulsion evaporation is slow, the herbal extract including the cold cream has a calming and cooling effect.

Keywords: Emollient, Oil-in-water type emulsion, Moisturizer, Skin care, Dry skin, Nourishing, Herbal Cold Cream

INTRODUCTION

Cosmetics are the preparations which are generally use to make the skin more beautiful and pure. The Greek term "kosmesticos," which means "to adorn," is where the word "cosmetics" originates. Ever since, materials meant to improve one's appearance or skin beauty have been called cosmetics. People have been utilizing polyherbal using natural cosmetics to enhance their skin's look since ancient times.Applied topically, cold cream provides a longer skin contact time than other semisolid preparations or dose forms. Their skin is not overly oily and they add an elegant touch. It provides emollience to the skin because of the oil phase. The objective of cold cream is to provide hydration to dry skin & chill the body. It also facilitates the removal of waste from pores. It may be effortlessly cleaned and wiped with water. They are non-irritating when applied to the skin. The skin is further protected by the water phase. It becomes liquefiable at body temperature. Through the epidermis's pores, it enters the skin. The recipe for cold cream was created in the second century and is credited to the Greek physician Galen. It was common to refer to this lotion as Galen's cream. Besides providing skin with moisture, cold creams may be used to temporarily cover up tattoos, which can then be removed with a cotton ball. Additionally, cold creams are utilized in the creation of kid-friendly face paint and in the excision of tattoos from young skin[1, 35]. A range of drugs are included in skin creams, along with components to bolster the body, enhance the melting point, improve texture, add emulsifying amounts of water

and oil, and spreadability, improve odor, and soften skin[14]. Creams come in a wide variety of varieties, including as cleansing, cold, foundation, night, hand, and massage creams. Creams come in a wide variety of varieties[40]. Since ancient times, several medicinal plants have been utilized as cosmetics. These plants have demonstrated promising results on a range of skin conditions, including rashes, allergies, wrinkles, blackheads, age spots, acne, and skin whitenings. A fungal infection is the most prevalent type of superficial infectious illness that affects the skin, nails, hair, and subcutaneous tissues. The primary infectious agent that damages human skin is Candida albicans, which manifests as a commensal blemish on the skin's surface[24, 25]. In addition to being a great face cleanser, cold cream shields the skin from environmental stressors [26, 27]. Wet skin and moist, wrinkled areas like the subarms and intergluteal areas are the primary areas affected[31]. "Thick liquid or semisolid mixes of either the oil painting-in-water or water-in-oil painting type"[36] are how creams are defined; they are lozenge forms whose thicknesses vary due to oil painting and water. These goods are intended to be used topically to improve medication administration at specified points. The water phase gives the skin more defense. Melting occurs at body temperature. It penetrates the skin through the natural pores of the epidermis. Anti-aging treatments that help keep skin looking younger for years have been produced more recently. Soap, water, and cleansing creams are the greatest cleaners. Our main objective is to produce a herbal cream that looks better and acts as a moisturizer while also reducing acne and skin irritation and decreasing the appearance of skin diseases such as psoriasis, eczema, dry skin, wrinkles, rashes, etc[15–16].

TOPICAL DRUG DELIVERY

Pharmaceuticals have been used to treat the human body in a number of ways during the last few decades, including oral, sublingual, rectal, parental, topical, inhalation, and more. Tackling a cutaneous condition or the skin-related symptoms of a general illness (like psoriasis) involves applying a drug-containing formulation topically, a process called "topical delivery." The goal is to restrict the drug's pharmacological effects to the skin's surface or inside. Semisolid formulations in all its forms constitute the mainstay of the topical distribution system, while foams, sprays, medicated lotions, and other topical delivery methods are also employed[1, 2]. Applying cold cream to the skin doesn't cause irritation[39], using antifungal cream topically.

The benefits of topical drugs delivery-

- Easy to use and convenient;
- Avoid first pass metabolism.
- Reducing exposure to danger.
- Avoid variations in medicine levels between and within patents.
- Dermatitis or skin irritation may result from the medication or its excipients.
- Very low absorption.
- Applicable only to drugs whose efficacy is reliant on extremely low plasma concentrations.
- The possibility of allergic reactions to the epidermis.
- It is more difficult to absorb medications with larger particles[3].

PHYSIOLOGYOF HUMAN SKIN

Epidermis: Depending on the area of the body, the thickness of the stratified, keratinized squamous epithelium that makes up the epidermis—the skin's outermost layer—varies. The thickest layer is found on the soles of the feet and the palms of the hands. There is no blood here. The dermal interstitial fluid covers the deeper layers of the epidermis, but it does not penetrate to the veins or nerve terminals. Prior to dissipating as lymph, it provides oxygen and sustenance to the skin.

Dermis: The dermis is flexible and resilient. Collagen and elastic fibers are woven throughout the matrix of connective tissue, which makes up the structure. When the skin is overextended during pregnancy or obesity, the elastic fibers in the skin burst, resulting in stretch marks, sometimes referred to as permanent striae. Collagen strands provide the skin its tensile strength and help hold water in place. Ageing collagen fibers give

rise to wrinkles. Mast cells, macrophages, and fibroblasts are the main cell types found in the dermis. Beneath the outermost layer of skin exist areolar tissue and several grades of adipose (fat) tissue.

HYPODERMIS: Skin's innermost layer is called the hypodermis. The dermis is where it is found. Connective tissue and adipose tissue make up its composition. It acts as insulator, storing energy. Hypodermis also known as subcutaneous tissue.

Functions of skin:

There are of following function.

• Langerhans cells, a component of the adaptive immune system, maintain the body's anatomical barrier between the internal and exterior environments, protecting the body from infections and damage. Multiple nerve endings respond to pressure, vibration, contact, and tissue injury to produce sensation. Further information is provided by the haptics and somatosensory system..

• Heat regulation: Skin regulates heat in the body.

• Regulating evaporation: To prevent fluid loss, the skin functions as a semipermeable, relatively dry barrier. The cause of the notable fluid loss in burns is

Diseases of Skin

- Ichthyosis
- Pachyonychia Congenita.
- Scabies.
- Pemphigus.
- Psoriasis.
- Melanoma.
- Raynaud's phenomenon.
- Scleroderma.
- Rosacea.
- Vitiligo.
- Eczema.

Cold Creams:

• Cold cream is used to remove makeup and soften skin. It is an emulsion of water and certain lipids, typically incorporating beeswax and fragrances.

• Fatty Cream is how the European Pharmacopoeia describes it.

• All varieties of cold cream contain a combination of water and oil. As you apply the cream to your skin, the water in it evaporates, leaving your skin feeling cold. The name most likely originated from this chilly impact. Other names for cold cream include moisturizer and moisturizing cream. Emollient behavior is required from cold cream. It should be cool to the touch and leave the skin free of any occlusive oil film when used.

• A cosmetic preparation that calms and purifies the skin is cold cream. It fulfils the requirements for a cleansing cream[6].

The background of preparation of cold cream.

Cold cream refers to the feeling of numbness that the cream imparted on the skin. It was customary to make cold creams with water in oil (w/o) emulsions. Upon application to the skin, a significant portion of the creams' water content evaporates, allowing the remaining oil to act as a solvent to remove makeup and other impurities from the skin. Moreover, there may be surfactant action.Another idea is that, in the days when mineral oil or petroleum was used, the creams needed to be kept in a cold place to avoid going rancid. The coldness of them to the touch gave rise to their nickname. Melted beeswax, olive oil, and water were combined to create the first

cold cream, according to the Roman physician Galen, who lived approximately 150 CE.Making it required a lot of mixing, and it had a tendency to split as it stood. Despite this, the recipe persisted and was added to the first edition of the "pharmacopoeia Londinensis" in 1618. Traditionally, the recipe calls for rosewater or oil of roses as a scent. The usual procedure for cleaning was applying thick layers of cold creams containing a high mineral oil (liquid paraffin) or petroleum jelly concentrations, which were subsequently removed using tissues or a cloth. Even though their applications varied based on the formulation, they were often promoted as night creams or beauty creams[6, 4].

All-purpose ingredients for cold cream

Ingredients	Quantity taken (200gm)
Bees wax	32gm
Borax	1.6gm
Methyl paraben	0.2gm
Liquid paraffin	100ml
Water	60ml
Perfume	6.2ml

Apparatus Used:

- Petrydics or china dics
- Glass rod
- Thermometer
- Measuring cylinder
- Spatula
- Pipette
- Heating mentle or Water bath

Raw Materials Used:

• Water; oil; thickening agent; emulsifier and preservative.

Procedure of Making Cold Cream:

•We began by weighing each component.

• The petry disk or china disk, which acts as the foundation in this instance, is then filled with 3.2 grams of weighed beeswax.

• Next, fill the china disc with 10ml of liquid paraffin.

• Using a glass rod to combine the two components, we melted the beeswax made it mixed with the liquid paraffin and then heated with in a water bath at 70°C.

• After being removed from the water bath, the china disc was placed aside.

• It is important to remember that before adding the other ingredients to the mixed solution, it must be at least 70°C and liquid.

• Next, we mixed the water and borax together with a glass rod.

• The mixture is brought to a boil in a water bath until the borax is completely dissolved. We added a boric acid

solution to the original solution after the borax had completely dissolved. The 0.02 g of methyl paraffin was then added, and the liquid was stirred with a string rod until all of the paraffin's particles had dissolved.

• After that, we used a glass rod to continuously agitate the entire liquid until it took on the consistency of semi-solid.

• At last, the finished product—cold cream—was obtained.

USES OF COLD CREAM

Although cold creams are designed to be facial moisturizers, there are actually a lot of other applications for them that you may use them for. First off, it's often used as a makeup remover. With little damage caused by rubbing or scraping, makeup and debris can be removed thanks to the rich oils' ability to gently melt them away. Likewise, some people believe that it works well as a primer for makeup foundations since it evens out skin tone and makes makeup application easier on the face i.e. Kelly claims that because it eliminates makeup without the need for water, it's an excellent product to bring along on road trips or camping excursions when you might not have access to a bathroom sink or shower! Furthermore useful as a body lotion, lip balm, or even shaving cream are cold creams. Applying a cooling lip balm at the beginning of the day helps soothe and hydrate the delicate skin on your lips. Similarly, slathering your arms, legs, back, and hands with a rich, hydrating cold cream leaves your body with the same deep moisture as the cream does for your face.

• Provide a chemical barrier in addition, just like sunscreen ingredients.

• As a delivery system for medication ingredients such ointments containing diflucortolone valerate.

• To get rid of impurities on the skin that dissolve in oil effects of antioxidants anti-inflammatory properties.

• Active against microbes[11, 12, 19].

COLD CREAM BENEFITS[12, 13]

The advantages of cold cream are rather straightforward. Cold cream is intended to be applied topically to the skin, thus anyone who wants to increase their skin's moisture levels can use it. To enhance the texture and appearance of their complexion, people with extremely sensitive skin or dry, itchy skin will gain the most from using it on a daily basis. The capacity of the cold cream to assist in restoring the skin's natural barrier to the environment—something that is lost when your skin is too dry—is probably what causes these benefits.

Beeswax: Beeswax is the term for the organic wax produced by Apis honey bees. In terms of chemistry, beeswax is mostly composed of various fatty acid esters and longchain alcohols[23]. The use of beeswax in skincare and cosmetics is growing in popularity[32].

Liquid Paraffin: Mineral oil called liquid paraffin is essential for skin care because it keeps skin hydrated and works as a barrier to prevent moisture loss. Another business that uses liquid paraffin is the cosmetics industry. Pharmaceuticals and cosmetics employ paraffin, a highly refined mineral oil also known as paraffinum liquidum, Russian mineral oil, paraffin oil, or liquid paraffin oil. Liquid paraffin used for cosmetics or medicine ought not to be confused with kerosene, or paraffin, used as fuel. There are regional variations in the meanings of paraffin and paraffin oil due to the general understanding of paraffin being an alkane[22].

Borax:

Boric acid salt is the primary constituent of borax. Through a reaction with the free acids in the beeswax, this acts as an emulsifier.

* Water and other substances become miscible when emulsifying agents are added.

In addition to preventing bacterial growth, borax maintains the preparation's pH stability. With the chemical formula $Na_2H_{20}B_4O_{17}$, borax, also known as sodium borate tincar, is an ionic substance that is a salt. It can be either hydrated or anhydrous. It dissolves in water to form a basic solution. It is a colorless crystalline solid[21].

Methyl Paraben:

•Here, methyl paraben serves as a preservative to prevent the growth of potentially harmful microbes.

• They are added to food or cosmetics to prevent the formation of mold and other harmful microorganisms.

• One or two additional parabens are present in the ingredients of many products that contain methyl paraben.

• Parabens are found in many foods, pharmaceuticals, and cosmetic goods.
• A range of cosmetics, such as makeup, moisturizer, hair care, and shaving products, may include parabens[8].
To prevent the growth of mold and other harmful microbes, methyl parabens are added to food and cosmetic items[33].

COLD CREAM FOR COLD WEATHER

Cold cream has become popular again in the current day, and for good reason—its moisturizing properties. The cold temperature causes dry skin, which is excellent for using cold creams. Emulsified oil and water combine to make cold cream. The cold cream recipe's formulation relies heavily on the distinction between water and oil because the former makes the skin feel chilly when applied—thus the name. This is because oil-in-water products soak into the skin faster than cold cream. Usually, cold cream consists of four major ingredients: water, oil, emulsifier, and thickening agent.
It feel as like a moisturizer and more like an overnight mask when used as a nocturnal skin treatment[9].

Ideal Characteristics of Cold Cream

- Ointments tend to be more oily.
- Should be easily available.
- Less costly.
- Easily applied on the skin;
- Contains no dusty ingredients. Spreads easily over the skin and is less oily than ointment[17, 18].

Analyzation of cool cream:

• **Morphological Evaluation**: This is the process of manually assessing the color, flavor, and texture of a cream to determine its physical attributes.
• **pH**: The pH meter is calibrated using a conventional buffer solution. Weigh out 0.5 g of cream and use a digital pH meter to dissolve it in 50.0 ml of filtered water[34].
• **Spreadability Test**: Place the sample of cream in to two glass slides and crushed using weight for five minutes, after which additional weight was added to the weighing pan to achieve a consistent thickness. The length of time it took for the upper glass slide to move over the lower slide served as a gauge for spreadability.

• **StabilityTest**: The produced formulation was subjected to a month-long stability test using temperature storage. The filled glass vials of formulation were kept at different temperatures, such as room temperature and 40°c, and their physical characteristics, such as color, scent, pH, consistency, and feel, were assessed
• **Homogeneity**: A visual inspection and testing were done to ensure homogeneity[10].

CONCLUSION

Based on the aforementioned data, the generated cream showed good homogeneity, pH, non oily or non-greasy, consistency and spreadability, and there is sepration of phase over the research period. Cold cream's functions include cooling the body, moist the dry skin, and clearing debris from pores. It's easy to moisten, clean, and store. They don't irritate skin when applied. The water phase provides extra protection to the skin.

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