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Pharmaceutical Preparation and Evaluation of Cold Cream

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Abstract: *Herbal cosmetics are products intended to enhance and beautify human appearances. In order to nourish and moisturize the skin, the current study set out to formulate and evaluate herbal cold creams that contained plant extracts, liquid paraffin as a lubricating agent, bees wax as stabilizer, methyl paraben as a antibacterial agent by using the water in oil method.*
The cold cream is prepared by using the neem oil and almond oil. After preparation of cream, cream were evaluated for different parameters like appearance, PH, viscosity, stability test, dye test, spread ability & Test for microbial growth. From evaluation study it was concluded that it is a very good attempt to formulate the herbal face pack containing naturally available ingredients like neem and almond.
It was also concluded that the prepared formulation was physico-chemically and microbiologically stable, and possessed characteristics of a standard cosmeceutical's formulation for skincare.

Keywords: cold cream, almond oil, rheological studies

I. INTRODUCTION

Cosmetics are the products which are generally used to beautify the skin and also to purify the skin. The cosmetics are the word derived from Greek word – 'kosmesticos' which means to adorn. From that time the materials which are used to promoting appearances or to beautify the skin are called as cosmetic. From ancient time till now people are still using polyherbal or herbal cosmetics for the beautification of skin. 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 form or formulation.

They give elegancy to the skin and it is not that much greasy. Due to the oil phase, it gives an emollience to the skin. The function of thecold cream is for restoring moisture to dry skin, it allows to eliminate 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 provides the skin with additional protection. At body temperature, it becomes liquefiable. It enters the skin through the pores of the skin's epidermis.Galen, a Greek physician who created the cold cream formulation in the second century, is credited with developing it.

He made a mixture of water, beeswax, and rose petals. These were the main moisturiser components he used to create the cold cream. Galen's cream was the common name for this skin lotion. Cold creams can be used to remove temporary tattoo marks and then removed with a cotton ball in addition to moisturising the skin. Uses of cold creams are also related to the creation of children's face paint

II. TOPICAL DRUG DELIVERY

The administration of medications to the human body through a variety of routes, including oral, sublingual, rectal, parental, topical, inhalation, etc., has been used to treat illnesses during the past few decades. Topical delivery is the application of a drug-containing formulation to the skin to treat a cutaneous disorder or the cutaneous manifestations of a general disease (such as psoriasis) directly with the goal of containing the pharmacological or the effect of the drug to the surface of the skin or within the skin. Semisolid formulations in all their variety dominate the system for topical delivery, but foams, spray, medicated lotions, and other forms of topical administration are also used.

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III. ADVANTAGE OF TOPICAL DRUG DELIVERY

1. Preventing of first pass metabolism.
2. Convenient and simple to use.
3. Prevention of risk.
4. The drawbacks of intravenous therapy and the various conditions of absorption, such as PH changes, the presence of enzymes, the rate at which the stomach empties, etc
5. Continuous drug input can achieve efficacy with a lower total daily dose of medication
6. Prevent intra- and inter-patent fluctuations in medication levels
7. The medicine or its excipients may cause skin irritation or dermatitis
8. Because they are poorly fat soluble and have a large molecular weight, most medications are not absorbed through the skin or mucous membranes.
9. Very low absorption.
10. It can only be used for medications whose plasma concentrations must be extremely low to work.
11. May only be used for medications whose action depends on very low plasma concentrations.
12. The potential for allergic responses.
13. Larger-particle drugs are more difficult to absorb via the skin.

IV. PHYSIOLOGY OF HUMAN SKIN

Epidermis: The thickness of the stratified, keratinized squamous epithelium that makes up the epidermis, the skin's outermost layer, varies depending on where on the body it is located. The palms of the hands and the bottoms of the feet have the thickest layer. There is no blood present.

Dermis: The dermis is elastic and resilient. It is made of connective tissue, and the matrix contains elastic and collagen fibres woven together.

Subcutaneous Gland: Another crucial location for the processing and regulation of androgen is the sebaceous gland. The skin contains all the required enzymes for converting cholesterol to steroid precursors or adrenal hormones, such as dehydroepiandrosterone.

Cold Creams:

Cold cream is an emulsion of water and certain fats that is used to smooth skin and remove makeup. It typically contains beeswax and other fragrances.

The European Pharmacopoeia refers to it as Fatty Cream.

Water and oil are combined in every type of cold cream.

The water in the cream evaporates as you apply it to your skin, giving you a cooling sensation. Most likely, the name came from this chilling effect.

Moisturizer or moisturizing cream are other names for cold cream.

Cold cream needs to behave emollient. When used, it should feel cool to the touch and leave no occlusive oil film on the skin.

Although it is an emulsion with a high proportion of fatty and oily content, it has a cooling effect when applied to the skin because the water in the emulsion slowly evaporates.

An illustration of a water-in-oil (W/O) emulsion is cold cream In cold cream, the major portion is the oil phase. Simply, the cold cream is an oil-based semisolid preparation.

Cold cream is also known as Unguentum or Ceratum Refrigerans. Generally, it contains mineral oil, beeswax, borax, and water .

It is a cosmetic that calms and cleanses the skin; it often has an oily and heavy consistency. It fits the description of a cleansing cream

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V. HISTORY OF COLD CREAM PREPARATION

Prior to the first century, numerous druggists would prepare rosewater cream and keep it chilled on ice so that it would be suitable for use as a skin cream. Since the water in cold cream evaporates when applied, it produces a cooling sensation, thus the Latin word “refrigeran” (meaning “making cold”).

The term "cold cream” refers to the numbing sensation the cream left behind on the skin. Water in oil (w/o) emulsions were typically used to create cold creams. Much of the water in the creams evaporates after they are applied to the skin, leaving the residual oil to function as a solvent, clearing the skin of makeup and other impurities. Additionally, surfactant activity might exist.

According to some chemists, the cooling effect of the water evaporation on the skin is the reason why these creams are referred to as “cold creams.”An other argument Is that the creams required to be stored in a cool environment to prevent them from growing rancid in the days before mineral oil or Petrolatum were utilised. They acquired their moniker because of how frigid they felt to the touch.

Galen, a Roman physician who lived around 150 CE, is credited with creating the first cold cream by blending water with molten beeswax and olive oil. It took a lot of mixing to make it, and when it stood, it tended to split. The recipe, which typically uses rosewater and/or oil of roses as a perfume, continued nonetheless, and was included in the first edition of the “pharmacopoeia Londinensis” in 1618.

VI. GENERAL INGREDIENTS USED IN COLD CREAM

1 Ingredients Used In Cold Cream

Table 1 Ingredients Used In Cold Cream

Ingredients	Quantity taken(20gm)	Use of ingredients
Bees wax	3.2gm	Emulsifying agent
Borax	0.16gm	Emollient
Methyl paraben	0.02gm	Preservative
Liquid paraffin	10ml	Laxative
Water	6ml	Diluent
Perfume	0.62ml	Fragrance

Apparatus Used:

- Measuring cylinder
- Spatula
- Pipette
- Water bath
- China disc
- Glass rod
- Thermometer

Raw Materials Used:

Mineral and vegetable oils, together with fatty alcohols, fatty acids, and fatty esters, emulsifying agents, preservatives, and filtered water, can all be used to create cold creams. There should be the following four main components:

- Oil
- Water
- Emulsifier
- Thickening Agent

Procedure of Making Cold Cream:

- To start, we weighed each ingredient.
- Next, we add the 3.2 grammes of weighed beeswax to
- the china disc, which serves as the basis in this case.
- The 10ml of liquid paraffin is then added to the china disc.

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- After melting the beeswax and making it miscible with the liquid paraffin, we combined the two materials using a glass rod and heated the mixture in a water bath at 70°C.

The china disc was taken out of the water bath and set aside. We should keep in mind that the temperature of the combined solution should be up to 70°C and that it should be in a liquid state before adding the remaining ingredients to it.

Next, using a glass rod to stir, we combined the borax and water. To get borax to dissolve in water, we boil the mixture in a water bath until it does. We dropped the boric acid solution into the first solution after the borax had completely dissolved. Dropwise add the boric acid solution while stirring the mixture continually with a glass rod.

The following stage was adding the previously weighed 0.02 gm of methyl paraffin and mixing the solution with a glass rod until all of the paraffin's particles were fully dissolved.

As a final touch, we added a drop or two of rose oil, which we utilised to smell the recipe. After that, we continually stirred the entire mixture using a glass rod until it took on a semi-solid form.

Lastly we got our Final Product (cold cream).

USES OF COLD CREAM

The contents of a cream determine the uses of cold cream, i.e., functional ingredients determine the uses of cold cream. These are the primary applications for cold cream: In order to maintain the skin's moisture balance and prevent dry skin diseases, medicated cold cream is primarily utilised as a topical pharmaceutical dosage form for the treatment of skin. It is one of the basic applications for non-medicated cold cream.

- As a makeup removal and cleansing preparation.
- In order to provide an emollient effect
- To give the skin an oiled barrier of protection.
- As with sunscreen components, additionally offer a chemical barrier.
- As a vehicle for pharmaceutical ingredients such diflucortolone valerate in ointments.
- To eliminate skin contaminants that are soluble in oil.

Evaluation of Cream

The following several test may perform to evaluate the¬ quality of cold cream.

Morphological Evaluation: This refers to the manual evaluation of an ice cream's physical characteristics based on its colour, flavour, and texture.

- **pH:** In order to calibrate the pH metre, standard buffer solution was used. With the aid of a digital pH metre, weigh 0.5 g of cream and dissolve it in 50.0 ml of purified water.
- **Test for Spreadability:** The cream sample was placed in between the two glass slides and compacted to a uniform thickness by applying weight for five minutes before adding more weight to the weighing pan. The spreadability was measured by the amount of time the upper glass slide travelled across the lower slide.
- **Stability Test:** A month-long stability test was conducted on the developed formulation by storing it at various temperatures. While being maintained at various temperatures, including room temperature and 40°c, the packed glass vials of formulation were examined for physical traits such as colour, aroma, pH, consistency, and feel.

To Test for Irritability, mark a 1-square-centimeter region on the left dorsal surface. The cream was applied to the designated region, and the duration was recorded. The presence of irritation was monitored for up to 24 hours at regular intervals.

Homogeneity: The homogeneity was examined visually and tested.

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VII. RESULT

Morphological Evaluation:

A morphological evaluation of cold cream is shown in the Table. Formulation was a white. The produced formulations' pleasant and well-acceptable flavour makes them ideal for cosmetic formulations. Smoothness and texture was suitable for cosmetic formulation requirements.

Table 2 Data of Morphological Evaluation

Morphological parameter	Results
Color	White
Odour	Pleasant
Texture	Fine

pH : The pH is found to be neutral and shown in table as:

Table 3 pH Test

pH	7.3

Stability: The stability results were displayed in Table. No change in colour, smell, texture, or smoothness was noticed under the stability parameters stated. The stability research indicated that at normal temperature.

Table 4 Stability Testing

Stability parameter	Result
Color	No change
Odour	No change
Texture	No change
pH	No change

Irritancy Test: The table below displays the results of the irritancy test. During irritancy trials, the formulation displayed absence of irritation, redness, and edema. This formulation is skin safe for usage.

Table 5 Result of Irritancy Test

Irritancy test	Result
Irritation	No
Edema	No
Redness	No
Swelling	No

Spreadability : The Spreadability of cold cream was shown in table and found to be.

Table 6 Result of Spreadability Test

Formula	Average spreadbility
FI	6.5

Homogenicity: The homogenicity of cold cream was quite good enough.

VIII. CONCLUSION

The created cream demonstrated good consistency and spreadability, homogeneity, pH, non-greasyness, and there was no phase separation during the research period, according to the aforementioned data.

The purpose of cold cream is to moisturise dry skin and cool the body while also removing waste from pores and pores. It is simple to wet, wash, and put away. When used on the skin, they do not irritate. The skin receives additional conservation from the water phase.

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