REVIEW ON FORMULATION AND EVALUATION OF COLD CREAM

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Abstract
Cold cream has been one of the oldest known semisolid emulsions for cosmetic and pharmaceutical applications. Traditionally, it is recognized as a cleansing and moisturizing formulation intended to calm and protect the skin from dryness and environmental factors. Cold cream is primarily a water-in-oil (W/O) emulsion, composed of natural or synthetic oils, waxes, and water with emulsifiers like borax. The term "cold" refers to the perceived cooling experience upon application due to evaporating water. Cold cream formulations have adapted from simple Galenic preparations to modern multifunctional formulations with humectants, herbal extracts, and bioactive components. This review will describe the history, formulation design, mechanism, evaluation parameters, and recent developments with cold cream technologies. In addition, the relevance of cold cream in the skin and cosmetic industries will be discussed with emphasis on its thriving economy used in both skincare and as a base for pharmaceuticals.

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. 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 the cold 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 gives extra conservation to the skin. It gets liquefy at body temperature. It gets penetrated via the epidermis of the skin via the natural pores. More recently anti-aging creams have been manufactured which can retain younger looking skin for many years. The best cleansing agents are cleansing creams, soap and water. Cream is defined as semisolid emulsions which are oil in water (o/w) or water in oil (w/o) type and these semi solid emulsions are intended for external application. Cream is classified as oil in water and water in oil emulsion. It is applied on outer part or superficial part of the skin and its main ability is to remain for a longer period of time at the site of application. The function of a skin cream is to protect the skin against different environmental condition, weather and gives soothing effect to the skin. There are different types of creams like cleansing cold, foundation, vanishing, night, massage, hand and body creams. The main aim of our work is to develop a herbal cream which can give multipurpose effect, like moisturizer, reduce acne and skin irritation, reduce skin diseases like eczema, psoriasis, dry skin, wrinkles, rashes etc. and also adding glow to the face. We have used two herbal ingredients in our preparation which are Neem, Almond. Aloe Vera gel is used as a moisturizer, to reduce pimples and acne and also used for treatment of burn wounds.

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.
- Moisturiser or moisturising cream are other names for cold cream. Cold cream needs to behave emolliently.
- 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

Fig no. 1

AIM AND OBJECTIVE

1. Aim: Formulation and Evaluation of Herbal Cold Cream.
2. Objectives:

- To evaluate safety, efficacy and quality of Herbal cold cream.
- To explore the many aspects of the rich traditional Indian herbal medicine.
- To apply knowledge gained during the course in evaluating the usefulness of herbal formulas.
- To formulate and evaluate a cosmetic herbal cold cream for glowing skin by using natural herbal ingredients.
- To synthesize a cold cream ideal for all skin types.

PHASE1:

- LITERATURE REVIEW

A. Literature survey of Coldcream:

1. Roshan Yadav (2023).
   The main objective of our research study was to prepare an herbal cold cream. In day to day life for both women and men cosmetics plays an important role to beatifying and altering the appearance of the skin.
2. Arsh Chanana, Himmat Singh Chawra (2022).
   The main objective of research study was to formulate an herbalCold cream using natural ingredients incorporated into gel. In today's life for both women and men cosmetics plays an important role to beautifying and altering the appearance of skin.

B. Literature survey of Almond oil:

1. Belhekar Archana B1, Bodake Ravina S2 (2018).
   It's also anti-inflammatory and boosts immunity. Containing omega-3 fatty acids, almond oil might help you maintain healthy cholesterol levels and improve your memory. It may help lower your risk for diseases like cancer and heart disease.

Literature survey of Neem oil:

1. JYOTI GUPTA (2022).
   Neem oil is a mixture of components. Azadirachtin is the most active component for repelling and killing pests and can be extracted from neem oil.

C. Literature survey of Borax:

1. Devin Gattey MD (2008).
   Borax (or sodium tetraborate) is a naturally occurring alkaline compound that is a precursor in the manufacture of boric acid.
2. Kumbhar Subhash T (2009). Borax, combined with wax, is used in many cosmetic products like creams, gels, and lotions.

D. Literature survey of Bee wax:

1. Vidhate Prajwal G (2021).
   Ability to Protect from Irritants-Beeswax can also act as a layer of protection when applied to the skin.

E. Literature survey of Rose Water:

1. Rishabh Parihar (2022).
   Rose water is especially hydrating when combined with other moisturizing ingredients, such as ceramides or glycerin. "These help to moisturize the skin, protect the skin barrier and prevent further water loss from the skin.
2. Uma Chauhan (2021).
   The anti-inflammatory properties can reduce skin redness and puffiness. Rose Water Maintains the Skin's Natural pH Balance.

PHASE:

.• IDENTIFICATIONOF DRUG

Ingredients of Formulations:

All the natural materials used in the present study i.e., Almond oil, Neem oil from local market, in a form of dried powder. The details of the plant material used for the formulation of cold cream are mentioned below

1. Almond oil
2. Neem oil
3. Borax
4. Bee wax
5. Rose water

@ Aim

It's also anti-inflammatory and boosts immunity. Containing omega-3 fatty acids, almond oil might help you maintain healthy cholesterol levels and improve your memory. It may help lower your risk for diseases like cancer and heart disease.

Biological Source :Almond oil is a fixed oil obtained by expression from the seeds of Prunus amygdalus (sweet almonds) P. amygdaIus(bitter almonds)

Family : Rosacea

Geographical Source ; The oil is mainly produced from almonds grown in the countries bordering the Mediterranean (Italy, France, Syria, Spain and North Africa) and Iran

- **CHARACTERISTICS:** Almond trees are about 5 m in height The sweet almond is 2— 3 cm in length, rounded at one end and pointed at the other. The bitter almond is
  1.5-2 cm in length but of similar breadth to the sweet almond Both varieties have a thin, cinnamon brown testa which is easily removed after soaking in warm water.
- CHEMICAL CONSTITUENTS: • 40—55% of fixed oil • About 20•a of proteins, mucilage and emulsion
- The bitter almonds contain in addition 2.0% of the colorless, crystalline, cyanogenic glycoside amy@alin.

° Use: Sweet almond oil contains many nutrients that are good for the skin, including vitamins, minerals, fatty acids, and antioxidants. Using almond oil may help soothe and hydrate your skin and hair. Some people also use almond oil to reduce the appearance of scars, stretch marks, and wrinkles and to treat skin conditions.

Fig 2. Almond oil

Neem oil is a naturally occurring pesticide found in seeds from the neem tree. Neem oil iC a mixture of components. The portion left over is called clarified hydrophobic neem oil.

Margosa oil

Oil obtained from fully matured seeds of Azadirachta indica

Meliaceae

India, Myanmar, Tropical countries
Colour: Yellow Odour: Characteristic odour Taste: Bitter Composed of triglycerides, triterpenoids, Steroids,
nimbin, nibidin Contains Omega6, Omega9, Palmitic acid, Stearic acid, Omega3,
Palmitoleic acid.

It is believed to delay the aging of the skin and early skin wrinkling. Apart from this, organic neem oil can be used to heal wounds, hike up the production of collagen in your skin, and even reduce stubborn scars. Using some organic neem oil reduces the risk of warts appearing on your skin.

Fig 3. Neem Oil
Formulation and Evaluation of Herbal Cold Cream

Borax, combined with wax, is used in many cosmetic products like creams, gels, and lotions. It is famously used in hand soaps to help wash off the oil or grease from the hands. Borax's alkaline nature makes it a perfect ingredient in cleansers and toners.
sodium borate

Borax occurs naturally in evaporite deposits produced by the repeated evaporation of seasonal lakes. The most commercially important deposits are found in: Turkey; Boron, california; and Searles Lake, California.

Molecular formula Na2B4O7.10H2O or Na2[B4O5(OH)4] •8H2O Molar mass 381.38 (decahydrate) 201.22 (anhydrate)

aAppearance white solid nDensity1.73 g/cm3 (solid)
Melting point (anhydrate) 743 •C; 1,369 •F; 1,016 K
Boiling point 1,575 •C; 2,867 •F; 1,848 K
eorax has many uses on its own, plus it is an ingredient in other products.
Here are some insect killer. Fungicide, herbicide, desiccant, laundry booster, household cleanerses of borax powder and pure borax in water:

Fig 4.Borax
Formulation and Evaluation of Herbal Cold Cream

D.BEEWAX: Ability to Protect from Irritants-eeeswax can also act as a layer of protection when applied to the skin. It can protect skin from environmental irritants and extreme weather.

- Synonyms: • Yellow wax, Cera alba. White wax obtained is known a cera flava.

- Biological Source: • Obtained from the honey comb of the bees Apis mellifera and other species of Apis belonging to the family Apidae, order Hymenptera.
- Geographical source:• It is produced in France, Italy, West Africa, India.
- Preparation:
  - The combs and capping of honeycomb are broken and boiled in soft water.
  - These are then enclosed in a porous bag weighed to keep under water, the boiling causes oozing of the wax, which get collected outside the bag and form a cake after cooling.

o The debris on outer surface is removed by scraping.

a The process is repeated several times and finally wax is skimmed off.

- Chemical constituents: It consists of esters of straight chain monohydric alcohols with straight chain acids. Constituent is myricin i.e. myricyl palmitate 80s6, free cerotic acid 1596, melissic acid and aromatic cerolein. Indian bees wax contains low acid value and European bees wax has acid value of17-22
- USES: In preparation of ointments, plasters and polishes.

Fig 5:Bee wax

E. Rose Water: Rose water is especially hydrating when combined with other moisturizing ingredients, such as ceramides or glycerin. "These help to moisturize the skin, protect the skin barrier and prevent further water loss from the skin," says Allah. However, it shouldn't replace your current moisturizer

- Family: Rosaceae
- species: Rosa canina, Rosa rugosa, Rosa virginiana, Rosa canina, Rosa multiflora, Rosa damascena, Rosa gallica, Rosa centifolia, R. spinosissima.
- Chemical Constituents:

  Volatile oils (e.g., citronellol, geraniol, eugenol, myrcene), tannins, phenolic compounds (e.g., quercetin, kaempferol, flavonoids), beta-sitosterol, polysaccharides, organic acids (e.g., malic acid, tartaric acid), saponins, resin (Elizabeth, n.d.; United States Department of Agriculture, n.d.).
- USE; Soothes Skin Irritation. One of the key benefits of rose water is that it is rich in antioxidant and anti-inflammatory properties o Reduces The Appearance Of Redness. ... o Fights Infections. ... o Contains Anti-Ageing Properties. o Hydrates Skin.

Fig 6.Rose water

PHASE3:

s• Method of Preparation.•

- Take required quantity of Beeswax and Liquid paraffin in porcelain dish.
- Heat this mixture in water bath for melting purpose.
- Remove dish from water bath.
- Take Borax and distilled water in beaker.
- Heat this solution in water bath for about 750C.
- This Borax solution added dropwise in porcelain dish with continuous stirring.
- Add Methyl paraben in porcelain dish dissolved it.
- Add Neem oil and Almond oil in this solution.
- Add perfume for fragrance.
- HerbalCold Cream was obtained

TABLE 1:Composition of Herbal cold cream

Sr.no	Name Of Ingredient	Scientific name	Quality(for 100gm)	Uses
1	Methyl Paraben	Methyl hydroxy benzoic acid	0.010 gm	Antibacterial properties

2	Borax	Sodium tetraborate decahydrate	0.25 gm	Stability
3	Beeswax	Apicceara na, Apis Mel, Apismellifera, ApisMellif	15 gm	emulsifying agent, stabilizer
4	Liquid Paraffin	petrolatum	50 gm	Prevents
5	Neem Oil	Azadirachtaindica	23 gm	Prevent or even kill fungus
6	Almond oil	Prunusdulcis var. dulcis	25 gm	protective layer skin

PHASE 4 :

s• THESIS WORK

EVALUATION OF HERBAL COLD CREAM:

Morphological Evaluation: -

- Physical properties: The cream was observed for the color, odor and appearance.

Physicochemical Evaluation: -

Wash ability: The cream was applied on the hand and observed under the running.

pH: The pH meter was calibrated with the help of standard buffer solution. weigh

0.5 gm of cream dissolve it in 50.0ml of distilled water and its p H was measured with the help of digital pH meter.

- Viscosity: Viscosity of the cream was determined with the help of Brookfield viscometer at 100 rpm with the spindle no.

Spread ability test: The cream sample was applied between the two glass slides and was compressed between the two-glass slide to uniform thickness by placing 100 gm. of weight for 5 minutes then weight was added to the weighing pan. The time in which the upper glass slide moved over the lower slide was taken as a measure of spread ability.

- Spread ability=m ”l/t
- Where M =weight tight to upper slide
- L =length moved on the glass slide
  T =time take
- Irritancy test: Mark an area (1 sq.cm) on the left-hand dorsal surface. The cream was applied to the specified area and time was noted. Irritancy, erythema, edema, was checked if any for regular intervals up to 24 hrs. and Test for microbial growth: Agar media was prepared then the formulated cream was inoculated on the plate's agar media by steak plate method and a controlled is prepared by omitting the cream. The plates were placed in the incubator and are incubated in 370C for 24 hours. After the incubation period, the plates were taken out and the microbial growth were checked and compared with the control.
- Dye test: The scarlet red dye is mixed with the cream. Place a drop of the cream on a microscopic slide the covers it with a cover slip, and examines it under a microscope. If the disperse globules appear red the ground colorless. The cream is o/w type. The reverse condition occurs in w/o type cream i.e. the disperse globules appear colorless.
- **Homogeneity: Homogeneity was** tested via the visual appearance and test.

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

DISCUSSION

Following evaluation parameters were performed to ensure superiority of prepared cold cream

1 Morphological Evaluation

Herbal cold cream was evaluated for morphological parameters showed in the color of formulation was yellowish. The odor of prepared formulations was pleasant and good acceptable which is desirable to cosmetic formulations. Texture and smoothness were acceptable as per requirement of cosmetic formulations.

Table 2: Morphological Evaluation

5r.no	Parameters	observations
1	Colour	Whitish green
2	odour	pleasant
3	Texture	smooth

2. Physicochemical Evaluation

- pH: Herbal cold cream was evaluated for physicochemical parameters showed in the pH of the cream was found to be in range of 5.6to 6.8 which is good for skin ph. The herbal formulation was shown on nearer to skin required i.e. pH 6.65
- Washability: Washability test was carried out by applying a small amount of cream on the hand and the washing it with tap water.
- Viscosity: Viscosity of cream was done by using Brooke field viscometer at a temperature of 25 "C using spindle No. 63 at 2.5 RPM. According to the results all the three formulations showed adequate viscosity.
- Test for microbial growth: There was no signs of microbial growth after 24 hrs. of incubation a 37°C and in was comparable with the control.
- Spread ability test: The spread ability test showed that the formulated cream has good separed able property. The separate in the description of evaluation test lesser the time taken for separation of the two slides better the spread ability
- Dye test: The scarlet red dye is mixed with the cream. Place a drop of the cream on a microscopic slide covers it with a cover slip, and examines it under a microscope. The disperse globules appears colorless in the red ground i.e. w/o type cream.
- Homogeneity: The homogeneity of the formulated cream was judged by the visual appearance and touch. The appearance and touch of the cream were good.
- This is due to the fact that cold cream absorbs more slowly into the skin than oil in water products do. The four main components of cold cream are typically water, oil, an emulsifier, and a thickening agent.
- The cream can reach the outer layer of skin without being absorbed as deeply into your skin as water-based treatments because water and oil are mixed in roughly equal amounts.

As a result, when used as a nocturnal skin treatment, it feels more like an overnight mask than a moisturizer.

CONCLUSION

Natural remedies are more acceptable in the belief that they are safer with fewer side effects than the synthetic ones. Herbal formulations have growing demand in the world market. Herbal face packs are considered as sustaining and productive way to advance the appearance of skin. Herbal face packs or masks are used to stimulate blood circulation, rejuvenates those muscles and help to maintain the elasticity of the skin and remove dirt from skin pores. Thus, in the present work, it is a very good attempt to formulate the herbal face pack containing naturally available ingredients like neem, almandlt is suggested that the prepared formulation was physio-chemically and microbiologically stable, and possessed characteristics of a standard cosmeceutical's formulation for skincare. The created cream demonstrated good consistency and spread ability, homogeneity, pH, non-

greasiness, and there was no phase separation during the research period, according to the aforementioned data. The purpose of cold cream is to moisturize 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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