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A REVIEW ON PREPARATION AND EVALUATION OF HERBAL COLD CREAM

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ABSTRACT

Cosmetics are widely used by both men and women to impart beauty and to improve their appearance. Demand for herbal cosmetics is now a days increasing because they are harmless. Also they have less side effects as they are prepared by taking extract of natural herbs and shrubs. Because of its good convenience and economical with good quality standards it is highly accepted by many people. Herbal cosmetics are prepared in many forms like cold cream preparations containing natural extract of crude drugs like neem, turmertic, fruit extract like Bombax Ceiba Fruit Pulp etc., by adding variety of ingredients in formulation. Cold cream is an emulsion which when applied on the skin, a cooling effect is produced due to slow evaporation of water present in emulsion. These formulations can be evaluated by using various evaluation parameters like pH, viscosity, irritancy, spreadability, microbial growth, thermal stabillity, homogeneity, acid value, saponification value, accelarated stability studies, patch test, smear test, after feel, washability, physical properties, dye test, after feel, in vitro diffusion study etc. The objective of this review is to compile the information of different herbal formulations of cold cream and its evaluation. Herbal cold cream formulations studied by many researchers and this information can be used by many researchers for novel herbal cosmetic formulations with new herbs.

KEYWORDS: Herbal cosmetics, Natural extract, Cold cream, Neem, Turmeric, Fruit extract.

INTRODUCTION

More herbal ingredients are used to provide defined cosmetic benefits only, the shell is called

"Herbal cosmetics" the demand for herbal medicines is increasing rapidly due to their lack of side effects. The herbal cosmetic is that it is purely made by herbs and shrubs. The herbs extracted from nature do not show adverse effects on human skin. Now a day's cosmetics are used to improve theirappearance. Cosmetics are preparing and using to improve their beauty.

For various types of skin ailments formulations like skin protective, sunscreen, anti-acne, anti- wrinkle, either natural or synthetic. The development process for cosmetic formulation needs maintenance of quality standards. The herbs used in cosmetic preparations have varieties of properties like antioxidant, anti-inflammatory, antiseptic and anti-bacterial, etc. herbal products having no side effects compared with synthetic formulations.

Cold cream is an emulsion which when applied on the skin, a cooling effect is produced due to slow evaporation of water present in emulsion. They are generally prepared by emulsification of oils and water. In older days cold cream was prepared from animal fats and vegetable oils.

Benefits of herbal cosmetics

- Being natural, least harmful effect on the skin or other body parts.
- Relatively more safe.
- More placebo effect to the consumers due to its use in traditions and culture.
- Flexibility in formulation.
- Population proves effects from ancient time.
- Easy availability.
- Economical.
- It helps to cleans and beautify the body without side effects.
- It normalizes the body functions.
- It has extreme nutritional value with high content of vitamins and minerals.
- It enhances the energy level of body.
- It stimulates the body's immune system without disturbing the natural balance of body.
- Variety of Phyto-constituents can be incorporated.[1,2]

Advantages of herbal cold cream

- Ease of application.
- Convenient to all the population.

- Avoidance of risk.
- In case of intra and inter-patient variations, avoid fluctuation of drug levels.
- No special risk or technician required for application of product.
- Achievement of efficacy with lower total daily dosage of drug.
- High patient compliance.

Disadvantages of herbal cold cream

- Larger particle sized drugs cannot be easily absorbed through the skin pores.
- Chances of skin irritation of contact dermatitis due to any drug interactions.
- Poor absorption may result due to the poor permeability of some drugs through the skin.
- Chances of allergic reaction.
- It can be used mainly for drug which required very small plasma concentration for action.
- Denaturation of the drugs takes place due to the presence of an enzyme in epidermis.

Equipment used in the preparation of herbal cold cream.

Equipment name-Manufactured by

UV visible spectrophotometer- Shimadzu (1700) Brookfield viscometer-Analytical technologies Digital pH meter- Analytical technologies Magnetic stirrer- Analytical technologies

Characterization of herbal cold creampercentage yield

The prepared herbal cold cream of all batches were accurately weighed. The measured weight of prepared herbal cold cream were divided by total amount of all the excipients and drug used in the preparation of the herbal cold cream gives the total percentage of herbal cold creams. It was calculated by the following equation.

Percentage yield = Actual Weight of product/ Total weight of excipients and drug x 100 [3]

Formulation of different herbal cold cream

Preparation of cream containing neem extract[4]

- Oil in water (O/W) emulsion - Based cream (semisolid formulation) was formulated.
- The emulsifier (Stearic acid) and other oil soluble components (cetyl alcohol, almond oil) were dissolved in the oil phase (part a) and heated to 75^{o}C.
- The preservatives and other water soluble components (methyl paraben, propyl paraben), triethanolamine, propylene glycol, ethanol extract of *azadirachta indica* was dissolved in

theaqueous phase (part b) and heated to 75^{o}C.

- After heating, the aqueous phase was added in portions to the oil phase with continuousstirring until cooling of the emulsifier took place.

The formula for the cream is as follows.

Composition of cream

Sr. no.	Ingredients (for 100gm)	Quantity (gm)
1	Ethanol extract of Azadirachta indica	2
2	Stearic acid	12
3	Cetyl alcohol	3
4	Almond oil	4
5	Methyl paraben	0.028
6	Propyl paraben	0.029
7	Propylene glycol	4
8	Triethanilamine	Q.S
9	Water	Q.S

Preparation of cream containing turmeric extract[5]

Preparation of turmeric extract

- Turmeric extract was made by cold maceratin technique. Take 200gm of turmeric in conicalflask to which add 500ml of water.
- Cover the mouth of flask by cotton plug.
- Keep the mixture of turmeric aside for 72hrs with occasional shaking.
- Then filter the solution and dry the filtrate to dryness.
- Bees wax, paraffin white petroleum and oil was melted together and brought to 65 ^{o}C. Thenadd turmeric extract and borax to the above ingredients with constant stirring. Add perfume to it and allow it to stand for overnight.

Composition of cream

Sr. no.	Ingredients (for 100gm)	Quantity (gm)
1	Bees wax	6
2	Paraffin	12.5
3	White Petroleum	8
4	Mineral Oil	58
5	Borax	0.2
6	Turmeric Extract (5%)	15.6

Preparation of cream containing fruit[6]

Collection of plant material

The Bombax ceiba Linn fruits collected from Kamla Nehru college of pharmacy, Butibori campus, Nagpur, Maharashtra, India. The plant was identified and authenticated by Post Graduate Teaching Department of Botany, Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur.

Solvent extraction: Crude plant extract was prepared by Maceration process. About 10gm of crude Fruit pulp of Bombax ceiba were processed to remove earthy matter and residual materials carefully from fruit, clean and shade dried. Fruit pulp of Bombax ceiba was extracted with ethanol and water by cold maceration process for 24 hour. This extract then filter and concentrated under sundried andstored at 4-8 C for further used.

Preparation of cream base: Dissolved the Borax in hot water. separately melt all the waxy materials and oil are added to it. Heat the molten mass as about 70 0 c. Pour the borax solution atthe same temperature and add herbal extract constant stirring until cold. When the temperature id dropped to about 45-50 ^{o}C

Formulation of cold cream

Sr. no.	Ingredients	Quantity (gm)
1	Fruit extract	2ml
2	White mineral oil	11.2ml
3	White bees wax	4 gm
4	Borax	2 gm
5	Glyceryl monosterate	0.9 gm
6	Propyl paraben	0.5 gm
7	Water	4.74ml
8	Perfume	qs

Evaluation of cream

1. **pH measurement:** The pH meter was calibrated using standard buffer solution. About 0.5gm of cream was weighed and dissolved in 50ml of distilled water and its pH was measured using digital pH meter.
2. **Appearance:** The appearance of the cream was judged by its color, pearscence, roughness, and graded.
3. **Viscosity:** Viscosity of the formulation was determined was brookfield or ostwald viscometer at 100 RPM, using spindle no. 7 at temp 25^{o}C. The determinations were carried out in triplicate and the average of three reading was recorded.
4. **Acid Value:** Take 10gm of substance dissolve in accurately weighed in 50ml mixture of

equal volume of alcohol and solvent ether. The flask was connected reflux condenser and slowly heated, until sample was dissolved completely. To this 1ml of phenolphthalein added and titrated with 0.1N NaOH, until faintly pink colour appeares after shaking for 30sec.

Acid Value=n x 5.61/w

n= number of ml of NaOH requiredw= weight of substance

5. **Saponification value:** Introduce about 2 gm of substance refluxed with 25 ml of 0.5N alcoholic KOH for 30min, add 1ml of phenolphthalien and titrate immediately, with 0.5N HCl.

Saponification Value= (b-a) x 28.05 / wThe volume of blank titre in ml= a

The volume of sample titre in ml=bThe weight of substance in gm=w

6. **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 upto 24hrs and reported.
7. **Accelarated stability testing:** Accelarated stability testing of prepared formulations was conducted for 2 most stable formulations at room temp, studied for 7 days. The formulation were placed at $40^{o}C \pm 1^{o}C$ for 20 days. Both formulations were kept at room temp and elevated temp and observed on o^{th}, $5^{th,}$ 10^{th}, 15^{th} and 20^{th} day for any change in color, phase separation etc.
8. **Homogeneity:** The formulation were tested for homogeneity by visual appearance and by touch.
9. **Determination of spreadability:** Spread ability may be expressed by the extent of the area to which the topical application spreads when applied to the affected parts on the skin. The therapeutic efficiency of the formulation also depends upon its spreading value. Sample (about 2gm) was applied in between two glass slides and they were pressed together to obtain a film of uniform thickness by placing 1000gm weight for 5 minutes. There after a weight 10gm was added to the pan and the top plate was subjected to pull with the help of string attached to the hook. The time in which the upper glass slide moves over the lower plate to cover a distance of 10cm is noted. The spreadability (S) can be calculated using the formula

S=m x L/T

Where, S – Spreadability

m- weight tied to upper glass slidel- length moved on a glass slide

t- time taked

The determination were carried out in triplicate and average of three readings was recorded.[7]

10. **Dye test:** The scarlet red dye is mixed with the cream. Place a drop of the cream on a microscopic slide then 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.
11. **Test for microbial growth:** Agar media was prepared then the formulated cream was inoculatedon 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 37 C for 24 hours. After the incubationperiod, the plates were taken out and the microbial growth were checked and compared with the control.
12. **Washability:** The cream was applied on the hand and observed under the running.[8]
13. **Test for thermal stability:** Thermal stability of the formulation was determined by the humidity chamber controlled at 60- 70% RH and 37 ± 1 o C
14. **Patch test -** About 1-3gm of material to be tested was placed on a piece of fabric or funnel and applied to the sensitive part of the skin e.g. skin behind ears. The cosmetic to be tested was applied to an area of 1sq.m.of the skin. Control patches were also applied. The site of patch is inspectedafter 24 hrs.
17. **Physical properties:** The Cream was observed for color, odour and appearance.[9]
18. **After feel:** Emolliency, slipperiness and amount of residue left after the application of fixed amount of cream was checked.
19. **Removal:** The ease of removal of the cream applied was examined by washing the applied part with tap water[10]
20. **In vitro diffusion study:** Cellophane membrane was used for this study in Frantz Diffusion Cell. 100mg of prepared Ashwagandha, Curcumin and Neem herbal cold cream is placed in donor compartment separately which is filled phosphate buffer 6.8. The membrane was mounted between the compartments of the Frantz Diffusion Cell. Reservoir compartment was filled with the phosphate buffer 6.8. The study was carried out at 37±1 0 and sped was adjusted to 100-200 rpm and it is carried out for 24 hours. 5ml of sample was withdrawn from each reservoir compartment by the help of hypodermic syringes at half an hour interval for 2 hours, then 1 hour interval for 10 ho urs and finally 6 hours to next 24 hours and absorbance was measured spectrophotometrically at 422.1nm for Curcumin, 208.5 nm for Ashwagandha and at 320.4nm for Neem. Each time reservoir compartment was replenished with the 5ml fresh volume of phosphate

buffer 6.8 pH solution to maintain constant volume.[3,11]

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