



REVIEW ARTICLE

Formulation and Evaluation of Polyherbal Cold Cream

V. S. Rabade^{1*}, M. S. Pawar², G. K. Titarmare³

¹Dadasaheb Balpande College of Pharmacy, Besa, Nagpur, 440037, Maharashtra, India

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ABSTRACT

Herbal cosmetics are the preparations are used to beautify and enhance the human appearances. The aim of the present research was to formulate and evaluate the herbal cold containing plant extracts prepared by using water in oil method for the purpose of nourishing and moistening the skin. The cold cream is prepared by using the neem oil and extract of turmeric. Quality evaluation of the formulated product was assessed by using different evaluation methods. No change of the physical properties was observed in formulated cream. The formulated cream showed good consistency and spread ability, homogeneity, pH, non-greasy, no evidence of phase separation during study period of research. Stability parameters like visual appearance, nature, viscosity and fragrance of the formulated cream showed that there was no significant variation during the study period of research. The herbal extract containing cold cream gives the cooling and soothing effect due to slow evaporation of water present in the emulsion. The cold creams are more moisturizing as they provide an oily barrier which reduces the water loss from the stratum corneum, the outermost layer of the skin. They are water-in-oil emulsion and intended for application on skin or accessible mucous membrane to provide localized and sometimes systemic effect at the site of application.

KEYWORDS

Water in oil emulsion, turmeric extract, neem oil, cold cream

INTRODUCTION

Cosmetics are the products which are generally used to beautify the skin and also to purify the skin ^[1]. The cosmetics are the word derived from Greek word – ‘kosmesticos’ which means to adorn.

***Address for Correspondence:**

Vijaya Sadashiv Rabade,
Pharmacognosy Department,
Dadasaheb Balpande College of Pharmacy,
Besa, Nagpur, 440037,
Maharashtra,
India

From that time the materials which are used to promoting appearances or to beautify the skin are called as cosmetics ^[2]. From the ancient time

till now people are still using poly herbal or herbal cosmetics for the beautification of skin^[1].

Cold cream is the water in oil emulsion ^[3]. Cold cream gives the prolong contact time in the site of application as compared to the other semisolid dosage form or formulation. They give elegancy to skin and it is not that much greasy. Due to the oil phase, it gives an emolliences to 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 ^[1]. It is easily

water washable and easy to wash away. They are non-irritating when applied on the skin. 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 [2].

Material and Method

Khadi herbal pure neem (*Azadirachta indica*) oil procured from the local market and turmeric (*Curcuma longa*) powder also procured from the local market.

Chemicals used are of Analytical reagent (AR) grade (LOBA Chemicals Ltd.).

Extraction of Curcumin [4]

Accurately weighed quantity of turmeric was taken. Then extract it with n-hexane for 2 hrs. discard the n-hexane extract with the extract marc with acetone for 2 hrs. Distil off the acetone and dry the crystals. Then recrystallize the curcumin with the help of ethanol

Preparation of Polyherbal Cold Cream [5][3]

Formulation can be prepared by adding two different phases which are as follows.

Phase 1: Melt the solid ingredients by indirect heat then add all the oils in it and stir well.

Phase 2: Dissolve the borax in water with the help of heat.

While still hot add the phase 1 into the phase 2 gradually with constant stirring to the wax and oil mixture. Continue this process for 5 minutes, stir all the time then remove from the heat and stir until it gets cold. As compare to other creams this cream may be made heavier by adding more wax.

Sr. No.	Ingredients	Quantity
1.	Beeswax	15gm
2.	Jajoba oil	1.5ml
3.	Turmeric extract	9gm
4.	Neem oil	46gm
5.	Coconut oil	1.5ml
6.	Powdered borax	0.5gm
7.	Rose water	26ml

Table no.1: Formulation table for herbal cold cream (for 100 gm)

Evaluation of Cream:

- 1) Physical properties:** The cream was observed for the color, odor and appearance. [6][7]
- 2) Washability:** The cream was applied on the hand and observed under the running water. [6][7]
- 3) pH:** The pH meter was calibrated with the help of standard buffer solution. Weigh 0.5 gm of cream dissolved it in 50.0ml of distilled water and its p H was measured with the help of digital pH meter. [6][7][12]
- 4) Viscosity:** Viscosity of the cream was determined with the help of Brookfield viscometer at 100 rpm with the spindle no. 7. [6][7][12]
- 5) Spread ability test [8]:** 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. [8][9]

Spread ability= $m \cdot l/t$

m =weight tight to upper slide

l =length moved on the glass slide

t =time take

6) **Irritancy test:** Mark an area (1sq.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 reported. ^{[9][10]}

7) **Test for microbial growth:** Agar media was prepared then the formulated cream was inoculated on the plate's agar media by streak 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 incubation period, the plates were taken out and the microbial growth were checked and compared with the control. ^{[9][10][12]}

8) **Saponification value:** Take 2 gm of the substance and reflux it with the 25 ml of 0.5 N alcoholic KOH for 30 minutes. Then add 0.1 ml of phenolphthalein as a indicator and titrate it with the 0.5 N HCL. ^{[9][10][12]}

Saponification value= $(b-a) \cdot 28.05/W$

a =volume of titrate

b =volume of titrate

w =weight of substances in gram

9) **Acid value:** Take 10 gm of the cream dissolved in accurately weighed in 50 ml mixture of the equal volume of alcohol and solvent ether. Then attached the flask with

the condenser and reflux it with the slow heating until the sample gets completely dissolve then add 1 ml of phenolphthalein and titrate it with 0.1 N NaOH until it gets faint pink color appears after shaking in 20 seconds. ^{[9][10][11]}

Acid value= $n \cdot 5.61/w$

w =weight of the substances

n =the number of ml in NaOH required.

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. ^{[9][10][12]}

11) **Homogeneity:** Homogeneity was tested via the visual appearance and test. ^{[9][10]}

Result and Discussion

The results of evaluation are shown in table no. 2. Prepared formulation was pale green in color. It has pleasant odor and smooth texture.

1. **Physical properties:** The physical properties of formulated cream were judged by color, odor and texture.

2. **Washability:** The cream applied on skin was easily removed by washing with tap water.

Sr. No.	Parameter	Evaluation
1.	Colour	Green
2.	Odour	Pleasant
3.	Texture	Smooth

Table no. 2: Physical properties

- pH of the cream:** The pH of the cream was found to be in range of 5.6 to 6.8 which is good for skin pH. The herbal formulation was shown pH nearer to skin required i.e pH 6.8.
- Viscosity:** Viscosity of formulated cream was determined by brook field viscometer at 20 rpm using spindle no. LV-4(64). The viscosity of cream was in the range of 499990 to 30000cp which indicates that the cream is easily spreadable by small amount of shear. The formulated cream shows the viscosity within range i.e. 48890cp.
- Spread ability test:** The spread ability test showed that the formulated cream has good spreadable property.
- Irritancy test:** The formulated cream shows no redness, edema, irritation and inflammation during studies. The formulated cream is safe to use.
- Test for microbial growth:** There was no signs of microbial growth after 24 hrs. of incubation at 37°C and it was comparable with the control.
- Saponification value:** The saponification value results of formulated cream was shown in table no. 3 and showed satisfactorily values.

Sr.No.	Parameter	Evaluation
1.	Saponification value	22.3
2.	Acid value	5.7

Table No.3: Saponification value and Acid value

9. Acid value: The acid value results of formulated cream was shown in table no. 3 and showed satisfactorily values.

10. 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.

11. Homogeneity: The homogeneity of the formulated cream was judged by the visual appearance and touch. The appearance and touch of the cream was good.

Conclusion

From the above results it is concluded that the formulated cream showed good consistency and spread ability, homogeneity, pH, non-greasy and there is no phase separation during study period of research. From the above study it can be concluded that the polyherbal cold cream is safe to use as it is developed from herbal extract. Natural remedies are more acceptable in the belief that they are safer with fewer side effects than the synthetic ones. So, the values of herbs in the cosmeceutical has been extensively improved in personal care system and there is a great demand for the herbal cosmetics nowadays. An herbal cream which is non-toxic, safe, effective and improves patient compliance by the utilization of herbal extracts would be highly acceptable than synthetic ones.

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