

## Formulation and Evaluation of Polyherbal Cold Cream

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Submitted: 05-02-2023

Accepted: 20-02-2023

**ABSTRACT:** To formulate and evaluate polyherbal cold cream. The formulated cream is formulated on the basis of multipurpose use on the skin care by using essential oils, Essential oil used in the formulation are walnut oil, jojoba oil, almond oil and turmeric oil. The cream base use in the formulation is bees wax, powdered borax and rose water. The formulated cream was w/o type emulsion. The main purpose of cold cream is to provide moisturising and nourishing effect to skin. The formulated cold cream gives better skin care because of the essential oils use in these formulation gives many therapeutic activities and some disease resistance property. The quality of the polyherbal cold cream was tested by using different evaluation method. The formulated cream has good pH, spreadability, viscosity, appearance and no phase separation. The cream does not show irritancy, erythema, edema after applying to skin. Evaluation test conclude that the formulated cream is safer to use.

**KEYWORDS:** Poly herbal, cold cream, Multipurpose, Walnut, Jojoba.

### I. INTRODUCTION

Herbal cosmetics are the medications, which represent cosmetics associated with active bioactive constituents or medicinals. Herbal Cosmetics are formulated, using colourful admissible ornamental constituents to form the base in which one or further herbal constituents are used to give defined ornamental benefits. Cosmetics are the products which are generally used to bedeck the skin and also to purify the skin. The cosmetics are the word deduced from Greek word – ‘kosmesticos’ which means to beautify. From that time the accoutrements which are used to promoting appearances or to bedeck the skin are called as cosmetics. Cold cream is the water in oil painting conflation. Cold cream is a conflation of water and certain fats, generally including beeswax and colourful scent agents, designed to smooth skin and remove makeup. Cold cream is a conflation of water

in a larger quantum of oil painting, unlike the oil painting in water conflation of evaporating cream, so-called because it seems to vanish when applied on skin. The name "cold cream" derives from the cooling feeling that the cream leaves on the skin. Variations of the product have been used for nearly 2000 times. Cold cream is substantially used for skin treatment due to its moisturizing parcels. Nearly all ultramodern cold creams have replaced the factory canvases with mineral oil painting and have added alcohol, glycerine, and lanolin. Beginning in the 1970s, jojoba oil painting came a common component, used as a cover of spermaceti from jumbos. Extensively vended brands of cold cream in the United States include Pond's and Noxzema. [1,2,10]

### II. MATERIAL AND METHOD

#### Material:

- i. Herbal oil collection: All herbal essential oils are purchased from Vagdole Ayurvedic Medical Shop Satara
- ii. Other Ingredients: Other ingredients such as Bees wax and Powdered Borax are collected from Pharmaceutics laboratory of Gourishankar Institute of Pharmaceutical Education and Research, Limb, Satara

#### Method:

- 1) Making of oil phase: All oils and Bees wax are taken into a porcelain dish and indirect heating up to a solid ingredient get melt.
- 2) Making of aqueous phase: water soluble borax is dissolved in the rose water with gently heating

- 3) Firstly, heated oil phase is collected into a mortar and addition of aqueous phase in portions with continuous stirring in one direction with pestle for 5 minutes. [3,4,5,6]

Sr. No	Ingredients	F1	F2	F3
1.	Walnut oil	18.4ml	18.4 ml	18.4ml
2.	Jajoba oil	0.6ml	0.6ml	0.6ml
3.	Almond oil	0.8ml	0.8ml	0.8ml
4.	Turmeric oil	3.6ml	3.6ml	3.6ml
5.	Bees wax	5gm	5.5gm	6gm
6.	Powdered Borax	0.2gm	0.2gm	0.2gm
7.	Rose water	11.4ml	10.9ml	10.4ml

Table: Formulations for 40gm of polyherbal cold cream

### Evaluation of Polyherbal Cold cream:

It is very important to take evaluation parameters to maintain safety and quality of cream.

#### 1) Physical properties:

- Colour
- Odour
- Consistency

#### 2) pH of the cream:

1g of cream was dissolved in 100 ml of distilled water and the pH meter was adjust to standard pH using standard buffer solution and measure the pH of the cream which is dissolved in distilled water. [3]

#### 3) Washability:

The formulated polyherbal cold cream was applied on the hand and examine under the running water.[3]

#### 4) Viscosity:

Viscosity of the cold cream was determined by using Brookfield viscometer at 100, 60 & 20 rpm with spindle no. L4 [3,7]

#### 5) Irritancy:

This test is performed on four human volunteers by applying cold cream on the specified surface of dorsal hand and time was noted. In these test Irritancy, erythema, edema was checked up to 24 hrs regular examine.

#### 6) Spreadability test:

The cold cream sample was applied between two glass slides and compressed both slides to uniform distribution of cream on slides. Then applied the weight on one side of the upper glass slide. Then note the time for moving of upper glass slide over the lower glass slide and length moved on the glass slide.

Spread ability – (w\*l)/t

w – Weight tight on upper slide

l – Length moved lower glass slide

t – Time taken for moving [3,8]

#### 7) Saponification value:

Saponification value means the number of milligrams of KOH is required to neutralize 1gm of fat or oil. It determines the average molecular weight of oil or fat. If smaller the saponification value higher the molecular weight of oil or fat.

- 1) 2gm of the substance taken into round bottom flask and by using reflux condenser reflux it with 25ml of 0.5 N alcoholic potassium hydroxide for 30 minutes.
- 2) After that cool the solution at room temperature and titrate it with 0.5N HCl by using 0.1ml of phenolphthalein as an indicator
- 3) Titrate the solution until pink colour disappears completely.
- 4) With these taking the blank reading (without using sample)
- 5) Saponification value (mg/g) = [(b-a) x 28.05] / w

b - Blank titrate reading

a- sample titrate reading

w – Weight of sample [3]

#### 8) Acid value:

Acid value is defined as the number of milligrams of KOH required to neutralize the free fatty acids present in 1gm of sample of fat or oil.

- 1) 10gm of cream was dissolved in 50ml mixture of equal volume ether and alcohol.
- 2) This mixture collected in a round bottom flask which is connected to reflux condenser.
- 3) Heat the RBF slowly until the sample was completely dissolved.
- 4) After that remove mixture in conical flask and add 1ml of phenolphthalein indicator and titrate it with 0.1 N NaOH until faint pink colour appear after continues shaking.

- 5) Take the burette reading 'n'
  - 6) Acid value –  $(n \times 5.61) / w$
- Were,  
 n- no. of ml of NaOH required  
 w – weight of the substance

**9) Dilution test:**

This test is performed to know type of emulsion of the cream.

- 1) In these tests the cream is diluted into a water. If the cream is immiscible with water means the cream is w/o type of emulsion and if it is miscible with water then it is o/w type of emulsion.
- 2) If the cream is diluted in oil and cream is w/o type emulsion then it is miscible in oil and if it is o/w type of emulsion then it is immiscible in oil. [12]

**10) Dye test:**

Dye test examines the type of cream means cream is w/o type or o/w type. Amaranth dye is a water-soluble dye. If continuous phase appears coloured and scattered phase appears colourless then it is a o/w type emulsion and if scattered phase appears coloured and continuous phase appears colourless then it is a w/o type emulsion

- 1) The amaranth dye is mixed with cream.
- 2) These sample is placed on microscopic slide then it covers with cover slip and examine under microscope. [3,12]

**11) Phase separation:**

The prepared polyherbal cold cream was transferred in a wide mouth container. The oil phase and aqueous phase separation was observed after 24hrs. [4,9]

**12) Antimicrobial study:**

Accurately weighed nutrient agar was dissolved in water and boiled it. After boiling it placed in autoclave for sterilization. 25ml of agar media was poured in each petri plate. After solidification, bacterial strains were spreaded using glass spreader. The gram -ve bacteria escherichia coli and gram +ve Bacillus bacteria were used for straining. 8mm of well was dig by sterile boar. The test sample was poured in each well. Petri-plates was incubated for 24 hrs temperature was maintained at 37<sup>0</sup>c. Zone of inhibition was measured. [11]

**III. RESULT AND DISCUSSION**

For evaluation test formulation F3 was taken because of batch F3 has good consistency as compare to other formulated batches.

**1) Physical properties:**

The Physical evaluation of formulated cream was examined by colour, odour and consistency

- a) Colour: The colour of the formulated cold cream is yellowish
- b) Odour: The odour of the formulated cold cream is pleasant
- c) Consistency: The consistency of the formulated cold cream is smooth

**2) pH of the cream:**

The pH of formulated polyherbal cold cream is 6.52. It is good for skinpH.

**3) Washability:**

The formulated cream was applied on skin and washing with tap water and the cream was easily removed.

**4) Viscosity:**

The Viscosity of the polyherbal cold cream was determined by using Brookfield viscometer at 100, 60 & 20 rpm with spindle no. L4 is showed in table.

RPM	Viscosity of formulated cream
100 rpm	5320 cp
60 rpm	6339 cp
20 rpm	12152 cp

Table: viscosity of formulated cold cream

By these reading the viscosity of cream increases with decreasing the rate of shear (rpm). So, the viscosity of cold cream is inversely proportional to rate of shear. It is concluded that the cream has good viscosity.

**5) Irritancy:**

The formulated polyherbal cold cream shows no irritancy, erythema, edema after applying to the skin. Therefore, the formulated cream is safe to use.

**6) Spreadability test:**

In this evaluation formulated cream takes 26 sec to separate by 25gm of weight tight on upper glass slide. Length moved on lower glass slide is 6.8. By calculation the spreadability of sample by formula

of spreadability is 6.53 g.cm/sec. These denotes that the formulated polyherbal cold cream has good spreadability.

**7) Saponification value:**

The saponification value of formulated polyherbal cold cream has satisfactorily values. The saponification value of formulated polyherbal cold cream was 32.25.

**8) Acid value:**

The acid value of formulated polyherbal cold cream has satisfactorily values. The acid value of formulated polyherbal cold cream was 2.13.

**9) Dilution test:**

The formulated cream which is diluted with water or oil it shows the characteristics of w/o type of emulsion. The formulated cream is miscible with oil and immiscible with water.

**10) Dye test:**

In the dye test formulated cream shows the characteristics of w/o type emulsion. It shows the coloured scatter phase and colourless continue phase.

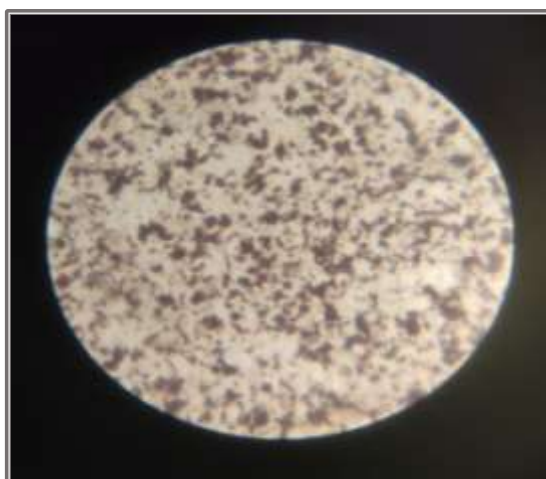


Fig: Microscopic image of dye test

**11) Phase separation:**

In the formulated polyherbal cold cream there is no phase separation after 24 hrs and in study period of cold cream.

**12) Antimicrobial study:**

The formulated polyherbal cold cream produced significant zone of inhibition against gram -ve bacteria E. coli and gram +ve bacillus bacterial strain. After 24hr of incubation zone of inhibition were measured using ruler.

Bacterial strain	Zone of inhibition
Escherichia coli	12mm
Bacillus	15mm

Table: Zone of inhibition of formulated cream



Fig: Antimicrobial activity of formulated cream

#### IV. CONCLUSION

From the formulated batches, formulation F3 was taken for further evaluation of cold cream because of the formulated batch F3 has good consistency as compare to other batches. Taking the evaluation test of formulated polyherbal cold cream the results of evaluation test conclude that the cream showed the good spreadability, consistency, viscosity, pH, washability and antimicrobial activity. Formulated cream does not show phase separation and irritancy. The formulated polyherbal cold cream shows satisfactorily values of saponification value and acid value. The formulated cream shows w/o type of emulsion by testing dilution test and dye test.

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