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Preparation and evaluation of polyherbal coldcream

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Abstract

Herbal cosmetics are the preparations, which represent cosmetics associated with active bioactive ingredients or pharmaceuticals. Chemical based cosmetics are harmful to the skin and an increased awareness among consumers for herbal products triggered the demand for natural products and natural extracts in cosmetics preparations. The increased demand for the natural product has created new avenues in cosmeceutical market. The natural content in the botanicals does not cause any side effects on the human body; instead enrich the body with nutrients and other useful minerals. The herbal cosmetics are the preparations containing phytochemical from a variety of botanical sources, which influences the functions of skin and provide nutrients necessary for the healthy skin or hair. The natural herbs and their products when used for their aromatic value in cosmetic preparation are termed as herbal cosmetics.

Keywords: herbal cosmetics, cold cream, cosmetics

Introduction

Herbal cosmetics are the preparations, which represent cosmetics associated with active bioactive ingredients or pharmaceuticals ^[1, 2]. The use of phytochemicals from a variety of botanicals have dual function, (i) they serve as cosmetics for the care of body and its parts and (ii) the botanical ingredients present influence biological functions of skin and provide nutrients necessary for the healthy skin or hair ^[3]. Herbal Cosmetics, here in after referred as Products, are formulated, using various permissible cosmetic ingredients to form the base in which one or more herbal ingredients are used to provide defined cosmetic benefits only, shall be called as "Herbal Cosmetics" ^[1].

Materials and Methods

Water in Oil (W/O) emulsion-based cream (semisolid formulation) was formulated. The emulsifier and other oil soluble components (Emulsifying wax, Olive oil) were dissolved in the oil phase (Part A) and heated to 75 °C. The preservatives and other water soluble components (Citric acid, Borax, Green tea) were dissolved in the aqueous phase (Part B) and heated to 75 °C. After heating, the aloe vera juice was added to the aqueous phase and the aqueous phase was added in portions to the oil phase with continuous stirring until cooling of emulsifier took place. The formula for the cream is given in table 1.

Table 1: Cream formulation

Sl. No	Ingredients	Quantity for 190gm	Quantity for 500gm
1.	Almond oil or Olive oil	60ml	157.89ml
2.	Emulsifying wax	30gm	78.94gm
3.	Green tea	60ml	157.89ml
4.	Aloe vera juice	30ml	78.94ml
5.	Vitamin E capsule	1 Cap.	4 Cap.
6.	Citric acid	5ml	13.15ml
7.	Essential oil (optional)	1ml	2.63ml

Evaluation of Cream ^[4, 5]

pH of the Cream

The pH meter was calibrated using standard buffer solution. About 1 g of the cream was weighed and dissolved in 100 ml of distilled water and check the pH of the cream.

Viscosity

Viscosity of the formulation was measured by using Brookfield DVE Viscometer at 5 rpm. As the rpm increases viscosity decrease. Only in case of cream spindle code S64 was used

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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. If the disperse globules appear red the ground colourless. The cream is o/w type. The reverse condition occurs in w/o type cream i.e. the disperse globules appear colourless in the red ground.

Homogeneity

The formulations were tested for the homogeneity by visual appearance and by touch.

Appearance

The appearance of the cream was judged by its color, pearlscence and roughness and graded.

After feel

Emolliency, slipperiness and amount of residue left after the application of fixed amount of cream was checked.

Type of smear

After application of cream, the type of film or smear formed on the skin were checked.

Removal

The ease of removal of the cream applied was examined by washing the applied part with tap water.

Tube Extrudability ^[4, 6]

It is a useful empirical test to the measure the amount of force required to extrude hydrogel or any semisolid preparation from a tube. Delivery of desired quantity of cream from jars and tubes directly depends on packing of formulation thus measurement or extrudability becomes an important aspect. Pfizer hardness tester was used for this test. First an aluminium tube was taken then 10gm cream was weighed and filled into it. Then pressure of 1kg/cm² was applied for 30 secs and then the amount of extruded cream was weighed. The percentage of cream extruded was calculated and

accordingly grades were allotted (+ + + excellent, + + good, + fair). Whole procedure was done at three equidistance places for all three tubes. Test was carried out in triplicates

Determination of Antimicrobial activity ^[6]

The antimicrobial activity of the hydrogels was tested against two microorganisms-Escherichia coli and staphylococcus epidermidis by well diffusion technique. This method depends on the diffusion of antimicrobial agent from holes perforated in the microbe-seeded agar. The agar plates were prepared following manufacturer's specifications and seeded with each bacterial isolate. The agar plates were allowed to set and a sterile corkborer (10mm diameter) was used bore holes in the seeded agar medium. Using a sterile instruments, a definite volume of hydrogels were used to fill the holes. The plates were allow to stand at room temperature 15 min to enable pre-diffusion before incubating at 25±1 °C for 24hrs. Growth was examined after incubation and the diameter of each inhibition zone was measured.

Stability test

Physical stability test of the polyhedral cream was carried out for four weeks at various temperature conditions like 2 °C, 25 °C, 37 °C was shown in Table no. 2

Consistency

The consistency was checked by application on the skin.

Solubility

Solubility of cold cream was evaluated by using different solvents

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 result was shown in table no. 3.

Viscosity**Table 2:** Viscosity

Sl. No.	RPM	Spindle Number	Viscosity (cp)
1	0.5	64	204800
2	0.5	64	214800
3	0.5	64	226800

The viscosity of cream was in the range of 21546.6667 cps which indicates that the cream is easily spreadable by small amounts of shear were shown in Table no. 2.

Dye Test

This dye confirm that the formulation were w/o type emulsion cream.

Homogeneity

The formulation produce uniform distribution of medicaments in cream. This was confirmed by visual appearance and by touch. The results were given in Table no. 3.

Appearance

When formulation was kept for long time, it found that no change in colour of cream.

After Feel

Emolliency, slipperiness and amount of residue left after the application of fixed amount of cream was found.

Type of Smear

After application of cream, the type of smear formed on the skin were non greasy.

Removal

The cream on skin was easily removed by washing with tap water.

Solubility

It is soluble in boiling water.

Table 3: Physicochemical evaluation of formulated cold cream

Sl. No.	Physicochemical parameters	Observation
1	Colour	Yellowish white
2	Odour	Characteristic
3	Consistency	Smooth
4	pH	5.6
5	Extrudability	Excellent
6	Solubility	Soluble in boiling water, ether, alcohol, chloroform
7	Stability study (2 °C, 25 °C, 37 °C)	Stable

Determination of Antimicrobial Activity

Table 4: Zone of inhibition

Formulation	Zone of inhibition of <i>S. epidermidis</i>	Zone of inhibition of <i>E. coli</i>
Poly herbal cold cream	10mm	15mm
Standard drug (ofloxacin)	18mm in 2micro gm/ml	16mm

The inhibitory zone diameter (Table4) indicates that poly herbal cold cream produced very significant zones of inhibition against gram positive organism (*S. epidermidis*) and gram negative organism (*E. coli*) used in study compared with standard drug (ofloxacin)

**Fig 3:** Zone of inhibition of standard**Fig 4:** Zone of inhibition of *S. epidermidis* (s₂) & *E. coli* (s₁)

Conclusion

From the Asian time aloe Vera is used for their various medicinal properties like emollient, antimicrobial, anti-inflammatory, antioxidant, aphrodisiac, anthelmintic, antiseptic and cosmetic value for health care etc. Thus this could become a media to use these medicinal properties effectively and easily as a simple dosage form. The poly herbal formulation and its ingredients were studied to be consistent in quality and purity and can be easily used as face cream. So it is concluded that formulation is safe and usable for the skin

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