

FORMULATION AND EVALUATION OF ALL PURPOSE POLYHERBAL CREAM

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Article Received on
15 April 2019,

Revised on 05 May 2019,
Accepted on 26 May 2019,

DOI: 10.20959/wjpr20197-15050

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ABSTRACT

Herbal cosmetics are referred as natural herbs based preparations used to enhance the human appearance. The present research was performed with aim to formulate the herbal Cream for the purpose of Moistening, Nourishing, lightening & Treatment of various diseases of the skin. Different crude drugs; Aloe barbadensis (Aloe Vera leaves), Azadirachta Indica (Neem-leaves), Olumrosae (Rose Oil), Liquorice (Glycyrrhiza Globra) were taken. Accelerated stability testing of two final sample has been conducted in the environmental chamber with temperature 40 ± 2 C and humidity 75 ± 5 % RH. The preparation was found to be stable with no sign of phase separation and no change in

the color. The formulations was found to comply with the microbial limit tests as per the international specifications. Thus herbal cosmetics formulation is

KEYWORD: Herbal Cream, Anti-ageing, Cosmeceutical, Accelerated Study.

INTRODUCTION

The concept of beauty and cosmetics dates us back to ancient mankind and civilizations because ancient science of cosmetology is believed to have originated in Egypt and India, but the earliest records of cosmetic substances and their application dates back to Circa 2500 and 1550 B.C, to the Indus valley civilization. The term Cosmeceuticals was first used by Raymond Reed founding member of U. S Society of Cosmetics Chemist in 1961. He actually used the word to brief the active and science based cosmetics. The above term was further used by Dr Albert Kligman in the year 1984 to refer the substances that have both cosmetic and therapeutic benefits. Cosmeceuticals are cosmetic-pharmaceutical hybrids intended to enhance health and beauty through ingredients that influence the skin's biological texture and function. There is common belief that 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. Now days herbal cosmetics have growing demand in world market due to considerable attention because of their good activity and lesser or no side effects. Generally herbal cosmetics are also referred to as natural cosmetics in which herbs are used in crude or extract form. Plants are widely used for development of new drug products for cosmeceuticals and pharmaceutical applications.^[1]

The natural content in the herbs does not have any side effects on the human body; instead provide the body with nutrients and other useful minerals; supports the strength to the skin, integrity of skin and texture; moisturizing; maintaining elasticity of skin by reduction of collagen and photo protection etc. The cosmetics, according to the Drugs and Cosmetics Act is defined as articles intended to be rubbed, poured, sprinkled or sprayed on, introduced into or otherwise applied to the human body or any part thereof for cleansing, beautifying, promoting attractiveness or altering the appearance. The cosmetic does not come under the preview of drug license. 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 objective of present research work is to prepare Skin care Product using herbs such as liquorice that produces anti-inflammatory activity, whitening of skin and reduces skin irritation; Neem that as anti-acne activity; aloe that has anti-ageing and rose oil that has moisturizing effect. An herbal cream that can give effective protection to skin and free from any toxicity or toxic residue or any irritation when regularly used and should also be cosmetically acceptable.

MATERIALS AND METHODS

Preparation of Extracts

The shade Dried and coarsely powdered liquorice (7gm) extracted using 300ml ethanol and water (3:7) and aloe extract was prepared by removing gel and grinding it. Neem oil and Rose oil were collected from local market.

Cream Formulation

For the present project work an oil in water (O/ W) emulsion - based cream (semisolid formulation) was formulated. For this purpose oil phase and water phase was prepared with different formulas such as F1, F2 and F3 and we founded F2 as optimum formula after study

thus consider it as main in table no.2.

Table no. 1.

S. No.	Ingridents	Quantity		
		F1	F2	F3
1.	Stearic acid	2.0	2.5	3
2.	Cetyl alcohol	0.15	0.1	0.05
3.	Triethanolamine	0.3	0.2	0.1
4.	Glycerine	1	1.2	1.5
5.	sodium hydroxide	0.05	0.05	0.05
6.	methyl paraben	0.18	0.18	0.18
7.	propyl paraben	0.02	0.02	0.02
8.	Water	5.194	5.194	5.194

Oil phase: The emulsifier (stearic acid) and other oil soluble components such as cetyl alcohol, triethanolamine, neem oil (0.9 gm), rose oil (0.3 gm) were dissolved in the oil phase (Part A) and heated to 80°C.

Aqueous phase: liquorice alcoholic extract (0.8gm), aloe gel (1gm), Glycerine, sodium hydroxide, methyl paraben, propyl paraben were dissolved in water phase (part B) and heated upto 800C.

When both phase reached to temperature 800C, remove them from heating source and slowly poured the melted oil phase into aqueous phase with continuous constant stirring. If you pour too fast or if you do not stir, your emulsion will be lumpy. Continue stirring until smooth, uniform cream is formed, and the cream was formulated having superb color i.e. cream color. Perfume was added when temperature dropped to 450C.^[14]

Table no. 2

Oil phase		Aqueous phase	
Ingredients	Quantity (per 10gm)	Ingredients % w/ w	Quantity (per 10gm)
Stearic acid	2.5	Glycerine	1.2
Cetyl alcohol	0.1	sodium hydroxide	0.05
triethanolamine	0.2	methyl paraben	0.18
neem oil	0.9	propyl paraben	0.02
		Liquorice extract	0.8
Rose oil	0.3	Aloe vera gel	1
		Water	5.194

EVALUATION OF CREAM

Physical properties: The formulation properties of the cream were studied by visual appearance, odour and appearance.^[15]

Determination of pH: Accurately weighed about 5 g of the sample in 100 ml beaker and was dispersed in 45 ml of distilled water. The pH of the suspension was determined at 27°C using digital pH meter.^[16]

Determination of Grittiness: A small amount of cream was taken and spread on a glass slide free from grease and was observed against diffused light to check for presence of foreign particles.

Determination of Homogeneity: The formulations were tested for the homogeneity by visual appearance and by touch.

Determination of Type of Smear: It was determined by applying the cream on the skin surface of human volunteer. After application of cream, the type of film or smear form on the skin were checked.^[15]

Determination of emolliency: Cream was applied on skin and Emolliency, slipperiness and amount of residue left after the application of fixed amounts of cream was checked.^[15]

Determination of viscosity: The viscosity determinations were carried out using a Brookfield Viscometer (RV series) using spindle number 7 at a 100 rpm at a temperature of 25°C. The determinations were carried out in triplicate and the average of three readings was recorded.

Spreadability Studies: An important criteria for semisolids is that it possesses good spreadability. Spreadability is a term expressed to denote the extent of area to which the cream readily spreads on application to the skin. The therapeutic efficacy of a formulation also depends on its spreading value. Two glass slides of standard dimensions were selected. The formulation whose spreadability had to be determined was placed over one of the slides. The other slide was placed on top of the formulations was sandwiched between the two slides across the length of 5 cm along the slide. 100 g weight was placed up on the upper slide so that the formulation between the two slides was pressed uniformly to form a thin layer. The weight was removed and the excess of formulation adhering to the slides was scrapped off.

One of the slides was fixed on which the formulation was placed. The second movable slide was placed over it, with one end tied to a string to which load could be applied by the help of a simple pulley and a pan. A 30g weight was put on the pan and the time taken for the upper slide to travel the distance of 5.0cm and separate away from the lower slide under the direction of the weight was noted.^[16] The determinations were carried out in triplicate and the average of three readings was recorded.

The spreadability was then calculated from the following formula:

$$\text{Spreadability} = m \times l / t$$

m = weight tied to the upper slide (30g); l =length of glass slide (5cm); t =time taken in seconds.

Irritancy Test: Skin irritation is one of the most common adverse effects in humans depend on many factors, including the concentration, duration and frequency of exposure, exposed skin site, rate of penetration and intrinsic toxic potential of the substance. In order to determine skin irritation mark an area (1sq.cm) on the left hand dorsal surface and the cream was applied to the specified area and time was noted. Irritancy, erythema, edema, was checked if any for regular intervals up to 72hrs and reported.

Microbial Test: The formulated creams were inoculated on the plates of agar media by streak plate method and a control was prepared by omitting the cream. The plates were placed in to the incubator and are incubated at 37°C for 24 hours. After the incubation period, plates were taken out and check the microbial growth by comparing it with the control.

Dye solubility test: In this test an emulsion is mixed with a water soluble dye (amaranth) and observed under the microscope. If the continuous phase appears red, it means that the emulsion is o/w type as the water is in the external phase and the dye will dissolve in it to give color. If the scattered globules appear red and continuous phase colorless, then it is w/o type. Similarly, if an oil soluble dye (Scarlet red C or Sudan III) is added to an emulsion and the continuous phase appears red, then it is w/o emulsion.

Stability Studies: The product is filled in bottle and kept in humidity chamber maintained at temperature 40±20°C and relative humidity 75±5% for six months (must be observed at regular interval). At end of accelerating stability studies the sample is analyzed for of the homogeneity, average weight and leakage test, drug content in the emulsion (identification

and assay of the active constituents), pH, viscosity and microbiological analysis of the emulsion.^[20] Similarly the sample was also tested at room temperature for stability purpose.

RESULT AND DISCUSSION

Formulation development was done with optimized base formula and was optimized by evaluating various parameters such as color, homogeneity, pH, viscosity, grittiness, type of smear, spreadability, irritancy, microbial growth test and stability studies. The formulated cream was creamy in color, good in appearance and has rose like odour. No Grittiness was found in formulation and on topical application on hand, no oily smear left on skin which shows that cream is completely absorbed. The pH was calculated by pH meter and was found to be around 4.7 which is suitable for topical application because the pH of the skin is between 4.5– 6. Viscosity of cream was determined by RV Brookfield viscometer at 100 rpm using spindle number 7 and was found to be 20590 cps which was within range. The spreadability studies showed that formulation have better spreadability when compared with the marketed cream which is perfectly challenged to Marketed Creams. Spreadability was found to be 11.07g cm/sec. When subjected to irritation test, the formulation shows no redness, edema, inflammation and irritation. Thus, These formulations are safe to use for skin. The formulated cream was tested for the presence of pathogenic microorganisms by culturing it with agar media by streak plate method. There were no signs of microbial growth after incubation period of 24 hours at 37°C and having more antimicrobial property as compare to standard creams. When subjected to emulsion determination by dilution test and dye test, then it was found that the cream was oil in water type emulsion. When cream was subjected to stability studies according to the recent approved Issues of ICH Guidelines Q1A (R2) at $30 \pm 2^\circ\text{C}$ / $65 \pm 5\%$ RH for 1 month then no significant change in parameters like visual appearance, nature, pH, odour, viscosity observed.

S. No.	Parameter	Observation
1.	Color	Cream color
2.	Odour	Rosy
3.	Appearance	Good
4.	Ph	4.7
5.	Grittiness	No grittiness
6.	Homogeneity	Homogenous
7.	Smear type	No oil smear left
8.	Emolliency	Good
9.	Viscosity	20590
10.	Spreadability Studies	11.07 g cm/sec
11.	irritancy	No

12	Microbial test	No growth seen
13	Dye solubility test	O/W
14	Stability test	pass
15	Smear type	No oil smear left
16	Emolliency	Good

CONCLUSION

The present work focuses on the use of herbal extracts for cosmetic purposes as the uses of cosmetic have been increased many folds in personal care system. The use of bioactive ingredients in cosmetic influence biological functions of skins and provide nutrients necessary for the healthy skin. The prepared formulations showed good appearance, odour, rangeable pH, no irritation, good spreadability, no evidence of phase separation and good consistency during the study period. Stability parameters like visual appearance, nature and fragrance of the formulations showed that there was no significant variation during the study period.

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