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Formulation and Evaluation Od Anti Aging Herbal Cream

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ABSTRACT: In this study creams were formulated based on antioxidant potential of herbal extract Centella Asiatica leaves were dried and extracted by using soxhlet method with different solvents. The creams were formulated with eucalyptus oil, neem oil, jamun powder, carrot powder with different concentrations namely F1, F2, F3 and F4. The creams were to be stable during stability studies according to ICH guidelines 30±2 ^{o}C / 50±5% RH and 40±2 ^{o}C / 75±5% RH for two months. Real time for stability was 12 months, if it can conclude that herbal creams without side effects having antioxidant properties then used as a barrier to protect the skin and avoid aging of skin.

KEYWORDS: Anti-aging, herbal cream, antioxidant, poly herbal, Centella Asiatica

I. INTRODUCTION

Skin aging is result of continual detoriation process because of damage of cellular DNA and protein. Skin aging is universal and predictable process characterized by physiological alteration in skin functions. In the aging process keratinocytes are unable to form a functional stratum corneum and rate of formation from neutral lipid slows down, resulting in dry pale skin with wrinkle. Herbs and plants have crude useful as a tool in complementary medicine. Use of cosmetics not only developing an attractive external appearance, but towards achieving longevity of good health by reducing skin disorders. The synthetic or natural ingredients present in skin care formulations that support the health, texture and integrity of skin, moisturizing, maintaining elasticity of skin by reduction of type I collagen and photo protection. Cosmetics help to reduce the production of free radicals in skin and manage skin properties for long time.

II. MATERIAL AND METHODS

A) Preparation of Centella Asiatica Leaf Extract

Centella asiatica leaves were collected locally from surrounding area of Aurangabad. Air dried leaves were grinded to a fine powder in a suitable grinder mixer. Shade dried powder was extracted using soxhlet extractor with distilled water and alcohol to get semisolid extract. The organic solvent was recovered by steam distillation. The extract was then concentrated to dryness under reduced pressure and controlled temperature.

B) Determination of Total Antioxidant Capacity

The total antioxidant capacity of the aqueous and ethanolic extract were determined by the phosphomolybdenum assay, based on the reduction of Mo (VI) to Mo (V) by the extract and subsequent formation of a green phosphate- Mo (V) complex in acidic condition. 0.1ml of each extract was combined with 1ml of reagent solution (0.6 molar sulphuric acid, 28mM sodium pohosphate and 4mM ammonium molybdate). The reaction mixture was incubated at 95^{o}C FOR 90 min. after cooling to room temperature, the absorbance of the solution was measured at 695 nm using a UV visible spectrophotometer, 0.1ml methanol was used as the blank. The total antioxidant capacity was expressed as the number of gram equivalent of ascorbic acid per ml of extract.

C) Cream Formulation

The formula for cream is given in Table 1. Binder or polymer material is added to the glycerine water to form liquid dispersion and show slightly swelling property. This liquid dispersion is added to the centella asiatica leaf extract. To the mixture base and oils are added. Finally other ingredients like skin whitener and preservatives were added with continuous mixing.

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Table1. Formula for Cream

Ingredient	category	F1	F2	F3	F4
Centella asiatica extract	API	1ml	1ml	1ml	1ml
Neem oil	API	0.5ml	0.5ml	0.5ml	1ml
Eucalyptus oil	API	0.5ml	0.5ml	-	-
Jamul powder	API	1gm	1gm	1gm	1gm
Glycerine	Moisturizer	0.5ml	0.5ml	1ml	1ml
Propylene glycol	Moisturizer + binder	0.5ml	0.5ml	1ml	0.5ml
Zinc oxide	Skin whitener	0.5gm	0.5gm	0.5gm	0.5gm
Methyl cellulose	Polymer	1gm	-	-	-
Sodium alginate	Polymer	-	1gm	-	-
Microcrystalline cellulose	Polymer	-	-	1gm	1gm
Bees wax	Base	0.45gm	0.45gm	-	-
Grape seed oil	Base	-	-	0.45gm	-
Almond oil	Base	-	-	-	0.5gm
Sodium benzoate/ paraben	Preservative	0.1gm	0.1gm	0.1gm	0.1gm
Lemon grass oil	Flavoring agent	0.5ml	0.5ml	-	-
Rose oil	Flavoring agent	-	-	0.5ml	0.5ml
Purified water	Vehicle	qs	qs	qs	qs

III. EVALUATION OF CREAM

a) Organoleptic evaluation

The cream thus obtained was evaluated for its organoleptic properties like color, odor and state. The appearance of the cream was judged by its color, roughness and graded. Results are listed in Table 2.

Table2. Organoleptic Properties

Sr.no	specification	limits
1	state	Semisolid
2	Color	Pinkish white
3	Odor	characteristic
4	texture	smooth

b) Test for microbial growth in cream

The formulated creams were incubated on the plates of Muller Minton agar media by streak plate method and a control was prepared by omitting the cream. The plates were prepared into the incubator and are incubated at 37^{o}C for 24 hours. After the incubation period, plates were taken out and check the microbial growth by comparing it with the control. Results are listed in Table 3.

Table3. Microbial Growth in Cream

Microbial load	Limits	Result
TMC	NMT 100	65
Limit test: E. coli, S.aureus, Salmonella	No characteristic colonies	Complies

NMT- Not more then, TMC- Total microbial count

c) Stability studies

Stability testing of drug products begins as a part of drug discovery and ends with the demise of the compound or commercial product. To assess the drug ad formulation stability, stability studies were done according to ICH guidelines. The cream filled in the bottle and kept in humidity chamber maintained at 30±2 ^{o}C / 65±5%RH and 40±2^{O}C / 75±5%RH for 2 months. At the end of studies samples were analyzed or the physical properties and viscosity. The results were listed in Table 4.

Table4. Stability Studies for Cream

Formulation	pH	Color	Viscosity at 20rpm (cps)
F1	5.3	Off white	590
F2	5.5	Yellowish white	610
F3	6.2	Pinkish white	650

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F4	6.4	Pinkish white	695

d) pH of cream

The pH meter was calibrated using standard buffer solution. About 0.5gm of the cream was weighed and dissolved in 50.0ml of distilled water and pH was measured.

e) Spreadability studies

An important criterion for semisolids is that is posses good spreadability. Spreadability is a term expressed to denote the extent of area to which the cream readily spread on application to the skin, the therapeutic efficacy of a formulation also depends on its spreading value. Spreadability is expressed in terms of time in seconds taken by two slides to slip off from the formulation, placed between under the application of a certain load. Lesser the time taken for separation of the two, better the spreadability. Two glass slides of standard dimensions were selected. The formulation whose spreadability has to be determined was placed over one of the slides. The other slides was placed on the top of the formulation was sandwich between the two slides across the length of 5cm along the slide. 100gm weight was placed upon upper slides so that the formulation between the two slides was pressed uniformly two forms a thin layer. The weight was removed and the access of formulation adhering to the slides was scrapped off. One of the slides was fixed on which the formulations was placed. The second movable slides 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 30 gm was put on the pan and time taken for the upper slide to travel the distance of 5cm and separate away from the lower slides under the direction of weight was noted. The spreadability was then calculated form the following formula,

Spreadability = m× l/t

m- Weight tied to the upper slide (30gm)

l- Length of glass slide (5cm)

t- Time taken in seconds

Results are listed in Table 5.

f) viscosity

The viscosity measurements were done by using Brook field DV- II + viscometer using LV-4 spindle. The developed formulation was poured into the adaptor of the viscometer and the angular velocity increased gradually from 0.5 to 20rpm.

g) homogeneity

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

h) After feel

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

i) Removal

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

J) Irritancy test

Mark an area (1sq.cm) on the left hand's dorsal surface. The cream was applied to the specified area and time was noted. Irritancy, erythematic edema was checked if any for regular interval up to 24 hours and reported.

IV. RESULT

a) Antioxidant capacity

In the p-resent study, the total antioxidant potential of the ethanolic and aqueous leaf extract was found as 2.26 and 1.06 mg ascorbic acid equivalent per ml of the extract respectively.

b) pH of cream

The pH of the cream was found to be in range of 5.6-6.8 which is good for skin pH. All the formulations of cream were shown pH nearer to skin required that is pH of F1- 5.8, F2-6.0, F3-6.5 and F4-6.7.

c) viscosity

Viscosity of cream was in the range of 500-1000 cps which indicates that the cream is readily spreadable by small amount of shear. F3 and F4 show good spreadable property than other formulations.

d) Homogeneity

All formulations produced uniform distribution of extract in cream. This was confirmed by visual appearance and by touch.

e) After feel

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

f) Removal

The cream of F3 and F4 on skin was easily removed by washing with tap water.

g) Irritancy test

The formulation F3 and F4 shows no redness, edema, inflammation and irritation during

irritancy studies. These formulations are safe to use for skin.

h) Appearance

When formulations were kept for long time, it found that no change in color of cream.

V. CONCLUSION

From the above result, it is concluded that the extract of centella asiatica leaves extract having multipurpose effect such as whitening, antiwrinkle, antiaging and sunscreen effect on skin. As we know that it is not possible to increase the extent of efficiency of medicinal and cosmetic property of single plant extract, but combining the different natural components can be possible to increase the efficacy of extract. In this regard, we mixed the extract of centella asiatica , Neem oil, Jamul powder to improve as well synergize the cosmetic property of prepared product compared to individual extract.

REFERENCES

[1]. Kaur I.P, Kapila M, Agrawal R, Role of Novel Delivery System in Developing Topical Antioxidants As a Therapeutic to Combat Photo-aging, 6, 2007, 271-288.

[2]. Watson, Ogden S, Cotterell L.F, Bowden J.J, Bastrilles J.Y, Long S.P, Griffiths C.E, A Cosmetic 'Anti-aging' Product Improves Photo-aged Skin, a Double Blind Randomized Controlled Trial, British J. Dermatol, 161, 2009, 419-426.

[3]. Geesin J.C, Darr D, Kaufmann R, Murad S and Pinnel S.R, Ascorbic Acid Especially Increases Type I and Type III Procollagen Messenger RNA Levels in Human Skin Fibroblast, J. Invest. Dermatol, 90(4), 1998, 420-444.

[4]. Hema Sharma Datta and Rangesh Paeamesh, Trends in Aging and Skin Care: Ayurvedic Concepts, Journal of Ayurveda and Integrative Medicine, 1(2), 2010, 110-113.

[5]. Saraf S, Kaur C.D, Phytoconstituents As Photoprotective Novel Cosmetic Formulations, Pharmacogn. Rev, 4(7), 2010, 1-11.

[6]. Note of Guidance on Stability Testing, Stability Testing of New Drug Substances and Products, CPMP/ICH/2736/99.

[7]. Marielode N, Buraczewska I, and Halvarsson K, Facial Anti-wrinkle Cream: Influence of Product Presentation on Effectiveness: A Randomized and Controlled Study, Skin Res. Technol, 13, 2007, 189-194.

[8]. Prieto P, Pineda M and Aguilar M, Spectrophotometric Quantitation of Antioxidant Capacity through The Formulation of A Phosphomolybdenum Complex: Specific Application To The Determination of Vitamin E, Anal. Biochem, 269, 1999, 337-341.

[9]. Wrona M, Korytowski W, Roanowska M, Sarna T, Truscott T.G, Cooperation of Antioxidants in Protection against Photosensitized Oxidation, Free Radic. Biol. Med, 25(10),2003, 1319-1329.

[10]. Eichler O, Sies H, Stahl W, Divergent Optimum Levels of Lycopene, Beta-carotene and Lutin Protecting Against UVB Irradiation in Human Fibroblasts, Photochem. Photobiol, 75, 2002, 503-506.

[11]. Mishra A.K, Mishra A, Chattopadhay P, Herbal Cosmeceuticals for Photoprotection From Ultraviolet B Radiation, A Review, T.J.P.R, 10(3), 2011, 351-360.