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Formulation and Evaluation of Multipurpose Herbal Cream

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Abstract: ***Herbal cosmetics are the preparations used to enhance the human appearance. The aim of the present research was 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), Ocimum Sanctum (Tulsi-leaves), Azadirachta Indica (Neem-leaves), Curcuma longa (Turmeric-rhizomes), Cedro Oil(Lemon Peel), Myristica fragrans(Nutmeg seeds), Olium rosae(Rose Oil), Orange Oil, Prunus dulcis (Almond oil) were taken. Accelerated stability testing of two final sample has been conducted in the environmental chamber with temperature 25 ± 1^{0}C and humidity 60 ± 10% RH. All the products were found to be stable with no sign of phase separation and no change in the color. The patch test for sensitivity testing has also been done and no evidence of skin irritation and allergic signs. This work mainly focuses on the assessment of the microbial quality of Formulated cosmetic preparations. To the surprise, both formulations was found to comply with the microbial limit tests as per the international specifications. Thus herbal cosmetics formulation is safe to use was proved and it can be used as the provision of a barrier to protect skin.***

Keywords: Herbal cream, Anti ageing, Cosmeceutical, Microbial Stability

1. Introduction

The concept of beauty and cosmetics is as ancient as mankind and civilization. Indian herbs and its significance are popular worldwide. An herbal cosmetic have growing demand in the world market and is an invaluable gift of nature. Herbal formulations always have attracted considerable attention because of their good activity and comparatively lesser or nil side effects with synthetic drugs. Herbal cosmetics are defined as the beauty products which posses desirable physiological activity such as healing, smoothing appearance, enhancing and conditioning properties because of herbal ingredient. Now-a-days the usefulness of herbs in the cosmeceutical production has been extensively increased in personal care system and there is a great demand for the herbal cosmetics.Cosmetics are the substances intended to be applied to the human body for cleansing, beautifying, promoting attractiveness, and altering the appearance without affecting the body's structure or functions. But the usage of synthetic products becomes very harmful from long time for the youth as well as our environment. Various synthetic compounds, chemicals, dye and their derivative proved to cause various skin diseases having numerous side effects. Thus we are using herbal cosmetics as much as possible.The basic idea of skin care cosmetic lies deep in the Rigveda, Yajurveda, Ayurveda, Unani and Homeopathic system of medicine. These are the products in which herbs are used in crude or extract form. These herbs should have varieties of properties like antioxidant, anti-inflammatory, antiseptic, emollient, anti - seborrhatic, antikerolytic activity and antibacterial etc. Cosmetics are developed to reduce wrinkles, fight acne and to control oil secretion. For various types of skin ailments formulations like skin protective, sunscreen, antiacne, antiwrinkle and antiaging are designed using varieties of materials, either natural or synthetic. Cream is a polyherbal formulation that consists of extracts of Aloe barbadensis, Ocimum sanctum, Azadirachta indica, Curcuma longa, Cedro oil, Myristica fragrans, Olium rosae(Rose Oil), Orange Oil, Prunus dulcis, Ocimum sanctum. These herbs have been selected on the basis of a traditional system and scientific justification with modern uses. A herbal lotion 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.

2. Experimental

Preparation of Extracts-
All the Herbals were weighed accurately & aqueous extraction had been done (10 times of the weight of the drug i.e. 5g in 50ml of water on water bath at 80-100^{o}C$^)$. As the solution concentrated up to 20 ml, filtration was done. Residue had been taken & volume was making up to 40 ml, again boiled. After remaining 20 ml was filtered and collected in the form of powder and the same procedure was followed again.(Figure 1)

Formulation Preparation-
The formulation components used were listed in Table 2. Oil in water emulsion of 20 and 60% of drugs were formulated. The emulsifier (glycerol monostearate) and other oil soluble components (petroleum jelly, Cetyl alcohol) were dissolved in the oil phase (Part A) and heated up to 80° C. Extract and water soluble components (Methyl paraban, Propyl paraban) were dissolved in (Part B) and heated up to 80° C. After heating, the aqueous phase was added in portions to the oil phase with constant stirring until cream is formed, And cream was formulated Having superb color i.e. Lemon yellow. Perfume was added when the temperature dropped to 45 ^{o}C ± 50^{o}C

Evaluation of Cream
1) **Physical Properties-** The Cream was observed for color, odour and appearance.
2) **Test for Thermal Stability** -Thermal stability of the formulation was determined by the humidity chamber controlled at 60- 70% RH and 37 ± 1^{o}C
3) **Determination of pH** – 5 ± 0.01g of the Cream was weighed accurately in a 100ml beaker. 45ml of water was

added & dispersed the Cream in it. The pH of the suspension was determined at 27° C using the pH meter.

4) **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 and formulation stability, stability studies were done according to ICH guidelines. The stability studies were carried out as per ICH guidelines. The cream filled in bottle and kept in humidity chamber maintained at 30 ± 2°C/ 65 ± 5 % RH and 40 ± 2°C / 75 ± 5 % RH for two months. At the end of studies, samples were analyzed for the physical properties and viscosity.

5) **Patch Test** - About 1-3gm of material to be tested was placed on a piece of fabric or funnel and applied to the sensitive part of the skin e.g. skin behind ears. The cosmetic to be tested was applied to an area of 1sq.m.of the skin. Control patches were also applied. The site of patch is inspected after 24 hrs.

6) **Spreadability studies** - An important criteria for semisolids is that it posses 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. A special apparatus has been designed to study the spreadability of the formulations. 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 the separation of the two, better the spreadability. 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. The spreadability was then calculated from the following formula:

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

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

7) **Test for microbial growth in formulated creams**- 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 ^{0}C for 24 hours. After the incubation period, plates were taken out and check the microbial growth by comparing it with the control.

3. Result and Discussion

A majority of the world's population in developing countries still relies on herbal medicine to meet its health needs and because of this extensive research is now being carried out in this area. The pH of the prepared cream with the extract was found to be around 6 which is suitable for topical application because the pH of the skin is between 4.5– 6. The spreadability studies showed that formulation have better spreadability when compared with the marketed cream. Which is perfectly challenged to Marketed Creams. The results of pH and spreadability are summarized in table no.8. The stability studies of the various parameters like visual appearance, nature, pH of the formulations showed that there was no significant variation after two months of the study period and the results are summarized in table no. 7. The formulation 20% and 60% shows no redness, edema, inflammation and irritation during Patch Test studies. These formulations are safe to use for skin. The formulated creams were tested for the presence of pathogenic microorganisms by culturing it with agar medium.(Figure 2) There were no signs of microbial growth after incubation period of 24 hours at 37^0 C and having more antimicrobial property as compare to standard.

4. Conclusion

The present work focuses on the potential of herbal extracts from cosmetic purposes. The uses of cosmetic have been increased in 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 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.

Table 1: Uses of Ingredients
All Ingredient are collected from Satara near region

S. No	*Ingredient*	*Uses*
1	Lemon Oil	As flavor, stimulant, carminative, stomachic, cleanser.
2	Aloe	Hydrating agent, emollient, anti-wrinkles, wound healer.
3	Turmeric	Antimicrobial agent, lightning agent, moisturizer.
4	Tulsi	Antimicrobial agent.
5	Nutmeg	Flavoring agent, carminative, antispot.
6	Rose Water	Flavoring agent, cooling agent, emollient.
7	Neem leaves	Treatment on Ecema, ring worm infection, scabies, psoriasis.
8	Orange oil	Anti skin cancer agent, black spot reducer.
9	Almond oil	Antiwrinkle, moisturizer, as flavor.

Table 2: Formulas

Sr No.	*Ingredients*	*Extract 20%*	*Extract 60%*
1	Lemon Oil	0.40	1.35
2	Aloe	0.25	0.75
3	Turmeric	0.20	0.60
4	Tulsi	0.30	0.60
5	Nutmeg	0.30	0.60
6	Rose Water	0.10	0.30
7	Nem leaves	0.35	1.05
8	Orange oil	0.10	0.30
9	Almond oil	0.10	0.30

Table 3: Composition of Cream

Sr. No.	*Ingredient*	*Composition*	
		20%	60%
1	Extract	2gm	6gm
2	Petrolium gelly	4.3gm	2.2gm
3	Hard paraffin	2gm	1.1gm
4	Cetyl alcohol	0.5ml	0.2ml
5	Glyceryl mono sterate	0.5gm	0.2gm
6	Methyl Paraben	0.4gm	0.2gm
7	Propyl paraben	0.3gm	0.1gm
8	Fragrance	q.s.	q.s.
9	Activated Charcoal	0.01gm	0.01gm

Quantitative standards of all the drug components were carried out as per The Ayurvedic pharmacopoeia of India (API) methods and compared with API standards.

Table 4: Quantitative standards

Parameter/Drugs	*Foreign matter (mg) % w/w*	*pH*	*Water Soluble Extractive % w/v*	*Alcohol Soluble Extractive % w/v*	*Reference (compliance with)*
Lemon Oil	0.2	2-3	0.1	0.7	API Part I Vol I
Aloe	1.3	6.10	7.9	2.8	API Part I Vol II
Turmeric	0.3	5.71	12.24	0.65	API Part I Vol II
Tulsi	0.7	5.59	14.36	2.24	API Part I Vol II
Nutmeg	1.3	5.7	12.7	0.9	API Part I Vol II
Rose Water	0.1	6.2	24.1	1.9	API Part I Vol II
Neem leaves	1.7	6.65	18.83	0.589	API Part I Vol II
Orange oil	0.1	3.7	5.4	5.3	API Part I Vol I
Almond oil	0.05	4.63	4.8	4.9	API Part I Vol II

Table 5: Physical Properties of herbal Cream

Sr. no.	*Properties*	*20%*	*60%*
1	Colour	Pale Yellow	Pale Yellow
2	Odour	Characteristis	Characteristis
3	Appearance	Semi -solid	Semi-solid

Table 6: Thermal stability and pH Determination

Sr.No.	*TEST*	*20%*	*60%*
1	Thermal Stability (at RH 65% and 30 ± 40oC)	Stable, no oil separation	Stable, no oil separation
2	pH (at 27oC ± 2oC)	6.03	5.58

Table 7: Accerlated Stability Studies

MONTHS/ TESTS	*Harbal cream (20%)*			*Harbal cream (60%)*		
	Initial month	*After – 1 month*	*After – 2 month*	*Initial month*	*After – 1 month*	*After – 2 month*
Physical appearance	Semi-solid	Semi-solid	Semi-solid	Semi-solid	Semi-solid	Semi-solid
Texture	Ok	Ok	Ok	Ok	Ok	Ok
colour	Lemon yellow	Lemon yellow	Lemon yellow	Lemon yellow	Lemon yellow	Lemon yellow
Odour	Characteristic	Characteristic	Characteristic	Characteristic	Characteristic	Characteristic
pH value	5.8	5.9	5.9	6.2	6.2	6.2
Thermal stability	ok	ok	ok	ok	ok	Ok
Degradation of product	nil	nil	nil	nil	nil	nil

Accelerated stability testing of prepared formulations i.e. 20%and60% were conducted at 40 ± 2oC temperature and 75± 5% relative humidity and studied for 60 days.

Table 8: Spredability Test

Formulations	*Time(sec)*	*Spreadability (g cm/sec)*
20% cream	15	14.6
60% cream	14	13.3
Marketed cream	15	13.5

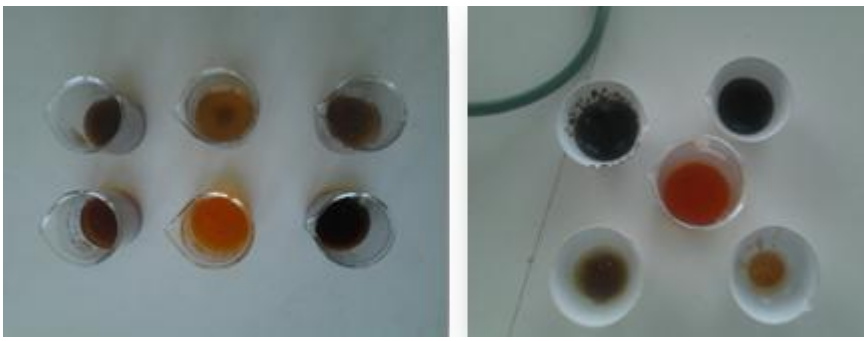

Figure 1: Extract of Herbal Ingredients

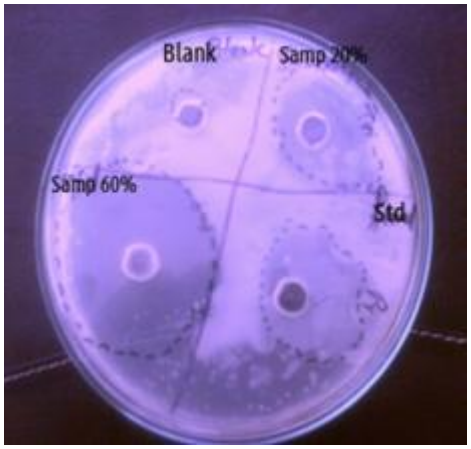

Figure 2: Photograph showing Microbial count

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