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FORMULATION AND EVALUATION OF POLYHERBAL SKIN CARE CREAM CONTAINING *PUNICA GRANATUM, CARICA PAPAYA* AND *WITHANIA SOMNIFERA*

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ABSTRACT

Herbal cosmetics are the preparations are used to beautify and enhance the human appearances. The aim of the present research was to formulate and evaluate the Polyherbal skin care cream containing plant extracts prepared by using decoction method for the purpose of anti acne, anti ageing and antibacterial effect for the skin. The skin care cream is prepared by using the pomegranate peel, papaya seeds and Ashwagandha root extracts. Quality evaluation of the formulated product was assessed by using different evaluation methods. No change of the physical properties was observed in formulated cream. The formulated cream showed good consistency and spread ability, homogeneity, pH, non-greasy, no evidence of phase separation during study period of research. Stability parameters like visual appearance, nature, viscosity and fragrance of the formulated cream showed that there was no significant variation during the study period of research. The herbal extract containing skin care cream gives the anti ageing, anti acne and antibacterial effect.

KEYWORDS: Anti ageing, Anti Wrinkles and moisturizer, Formulation, Polyherbal Cream, *Punica granatum, Carica papaya and Withania Somnifera.*

1. INTRODUCTION

Human skin is the major organ of the body that is acts as a defense mechanism against most of the disorders. The basic three layers of skin include epidermis, dermis and the hypodermis. These layers of skin have specific properties and role that make them to act as a barrier against foreign material to enter the body, through skin. The other functions of skin include

regulation of temperature, insulation, sensation, synthesis and storage of Vitamin D, water resistance etc.[1]

The demand of cosmeceuticals is rapidly expanding. These expansions due to the availability of new ingredients, the financial rewards for developing successful products, consumer formulation needs maintenance of quality standard. The quality of a formulation should satisfy the consumer's need in terms of its performance. The plant parts used in cosmetic preparation should demand, and a better understanding of skin physiology.[2]

2. MATERIALS AND METHODS

I. Collection of plant material

Fresh Pomegranate, papaya fruit and are collected from farm (location Ule) and dried Ashwagandha root is collected from local market Solapur.

The pomegranate peel and papaya seeds were washed and dried under shade for period of 7 days.

After completion of drying process the pomegranate peel and papaya seeds and dried form of Ashwagandha root were powdered coarsely. It is used for further research formulation study.

II. Chemicals and reagents

Pure coconut oil (without any chemicals) was collected from oil shop, Distilled water, Ruthenium red dye, 0.5 N Alc. KOH, Phenolphthalein as a indicator, 0.5N HCl, Solvent ether, Alcohol, 0.1 N NaOH

III. Instruments and equipments

Digital PH meter Systronic, Brookfield viscometer Servewell Pvt. Ltd. Model-PBU-6. Servewell instruments Pvt. Ltd. Homogenizer, Heating mantle, Evaporating pan, weighing balance, all Glasswares etc.

IV. Preparation of Extract[3]

Preparation of Aqueous Extract

About 30 g of powder was taken in a round conical flask (1000 ml) and decoction process with 100 ml of distilled water and boil for 1 hour in a closed vessel on heating mantle. Then the marc was removed by filtering the extract, and then it was concentrated on a water bath at

50^0C to get a semi solid mass. The extracts were stored in an airtight container in a refrigerator below 10^0C.

Fig1: Aqueous extracts of PPE, PSE, ARE.

3. FORMULATION OF HERBAL CREAM

Table 1: Ingredients and its role.

Ingredients	Role
Bees Wax	Base
Coconut Oil	Emollient
Agar	Stabilizer
Lavender oil	Perfuming activity
Turmeric Powder	Coloring agent
Papaya Seed Extract	Cleansing, Enzyme action
Pomegranate Peel Extract	Anti Aging
Ashwagandha Root Extract	Anti Bacterial

4. Formulation Table[4]

Table 2: Formulation table.

Sr. No.	Ingredients	F1	F2
1	Bees wax	10gm	10gm
2	Coconut oil	23ml	23ml
3	Agar	1gm	3gm
4	Lavender oil	5ml	5ml
5	Turmeric Powder	1gm	1gm
6	Papaya seed extract	3ml	3ml
7	Pomegranate peel extract	4ml	4ml
8	Ashwagandha root extract	3ml	3ml

Fig. 2: F1

Fig.3: F2

Procedure

a) Aqueous Phase: Mix required amount of extract of PPE, PSE and ARE. Add weighed quantity of agar.

b) Oil Phase: Take required amount of Bees wax, coconut oil in porcelain dish and heat to melt bees wax.

Mix Aqueous and Oil Phase slowly. Homogenize the mixture by using homogenizer. Add turmeric powder and lavender oil. Transfer to a suitable container.[19]

5. EVALUATION OF HERBAL CREAM[5-7]

I. Organoleptic evaluation

The cream thus obtained was evaluated for its Organoleptic properties like color, odor &state. The appearance of the cream was judged by its color & roughness & graded.

II. pH of the cream

The pH meter was calibrated using standard buffer solution. About 0.5 g of the cream was weighted & dissolved in 50.0 ml of distilled water & its pH was measured.

III. Dye test

The ruthenium red dye is mixed with the cream. Place a drop of the cream on a microscopic slide covers it with a cover slip & examines it under a microscope. If the disperse globule appear red & ground colorless. The cream is o/ w type. The reverse condition occurs in w/o type of cream.

IV. Acid value

Take 10 gm of cream dissolved in accurately weighed, in 50ml mixture of equal volume of alcohol & solvent ether, the flask was connected to reflux condenser & slowly heated, until sample was dissolved completely, to this 1 ml of phenolphthalein added & titrated with 0.1 n NaOH, until faintly pink color appears after shaking for 30 Seconds.

$$\text{Acid value} = n*5.61/w$$

n= the number of ml of NaOH

w= the weight of substance

V. Saponification value

Introduce about 2 gm cream of cream refluxed with 25 ml of 0.5 N alcoholic KOH for 30 minutes, to this 1ml of phenolphthalein added & titrated with immediately with 0.5 N HCL.

Saponification value = (b- a)*28.05 / w

The volume in ml of titrant = a

The volume in ml of titrant = b

The weight of cream in gm = w

VI. Spread ability test

The spread ability of the Formulation was determined using apparatus suggested by a Multimeretal(1956). The apparatus consists of two glass slides, one of which was fixed onto the wooden board and the other was movable, tied to a thread which passed over a pulley, carrying a weight. One gram of Formulation was placed between the two glass slides. 100 gm weight was allowed to rest on the upper slide for 1 to 2 minutes to expel the entrapped air between the slides & to provide a uniform film of the Formulation. The weight was removed & the top slide was subjected to a pull obtained by attaching 30 gm weight over the pulley. The time required for moving slide to travel premarket 6.5 cm distance was noted. The readings obtained were indications of relative spread ability of different Formulations.

$$S= M.L/T$$

Where, M= wt. Tied to upper slide (30)

L= length of glass slides

T = Time taken to separate the slides.

VII. Viscosity

Viscosity of the Formulation was determined by Brookfield Viscometer at 20 rpm using spindle no.64.

VIII. After feel

Emollients, slipperiness& amount of residue left after the application of fixed amount of cream was checked.

IX. Removal

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

X. Irritancy test

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

6. RESULTS AND DISCUSSION[8]

I. Organoleptic evaluation

Organoleptic evaluation revealed that formulations of Herbal multipurpose cream have semisolid in nature, yellow & smooth in appearance & texture.

Sr. No.	Evaluation parameter	Results
1	State	Semisolid
2	Odour	Characteristics
3	Colour	Yellowish
4	Texture	Smooth
5	Type of emulsion	W/O

II. pH of the cream

The pH of the cream was found to be 6.14 which are good for skin pH.

III. Dye test

The Dye test confirms that formulation is w/o type of emulsion.

IV. Acid value

Sr. No.	Parameter	Result
1	Acid Value	0.8

V. Saponification value

Sr. No.	Parameter	Result
1	Saponification Value	2.8

VI. Spreadability test

Sr. No.	Parameter	Result
1	Saponification Value	2.8

VII. Viscosity

The viscosity of the cream was 29550 cps which indicates that cream is easily spreadable by small amounts of shear.

VIII. After feel

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

IX. Removal

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

X. Irritancy test

The skin shows no redness, edema, inflammation and irritation after application of cream. It indicates the formulation is safe for us.

8. CONCLUSION[9]

Nowadays herbal cosmetics are getting popularity among costumers. There is growing demand for herbal cosmetics in the world market. The prepared Polyherbal cream was W/O type. Formulation F1 and F2 have same ingredients but differ in concentration of stabilizer. Both the cream formulations were observed to have similar consistency but the formulation with low concentration of stabilizer (F1) it shows rancidity within 8 days. But there was no phase separation after centrifugation and also no apparent change in physical appearance of formulation F2. The formulation F1 was found to be slightly unstable so the formulation F1 was discontinued from the study. Our study indicates that formulation F2 was found to be more stable as it remains unchanged with its physicochemical properties even after stored at a room temperature for 3 months. It had constant pH, Homogeneity, Emolliency and Non-greasiness.

From above results it is concluded that, we can combine extracts of *Punica granatum, Carica papaya and Withania somnifera* in different ratio to get multipurpose effect such as anti ageing, anti wrinkle and moisturizing effect to the skin. As we know that it is not possible to increase the efficiency of cosmetic property of single plant extract ,but by combining the different plant extract it can be possible to increase the efficacy of extract and as well as product of cosmeceuticals.

In this regard we mixed the extracts of Punica granatum, Carica papaya and Withania somnifera to improve as well as synergies the cosmetic properties of prepared skin care

cream compare to individual extracts. Therefore these studies suggest that the prepared polyhedral formulation was suitable for skin application.

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