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FORMULATION AND CHARACTERIZATION OF HERBAL FACECREAM

Dr. Ruchika*[1], Dr. Kulbhushan Sharma[2] and Dr. K. Shankar Rao[3]

[1,2]PG Scholar Dept. of RS & BK, National Institute of Ayurveda Jaipur.

[3]Prof. & Head of the Dept. of RS & BK, National Institute of Ayurveda Jaipur.

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***Corresponding Author**
Dr. Ruchika
PG Scholar Dept. of RS & BK, National Institute of Ayurveda Jaipur.

ABSTRACT

Herbs are being used for cosmetics and beautification since ancient times throughout the world. Indian herbs and its significance are popular worldwide. An herbal facecream was selected for the present research from a classical book of *Sharangdhar Samhita*. The formulation is prepared with the help of modern techniques. Herbal facecream was prepared from the various ingredients such as *Raktachandana* (*Pterocarpus santalinus Linn*.), *Manjishtha* (*Rubia cordifoliaLinn*), *Kushtha* (*Saussurea lappa*), *Priyangu*(*Callicarpa macrophylla Vahl*.), *Lodhra*(*Symplocos racemosa Roxb*), *Masura* (*Lens Culinaris Medic*.) and *Vatankur* (*Ficus bengalensis Linn*). The prepared facecream was evaluated for various parameters such as organoleptic parameters like pH, Total solids, Viscosity, Total acidity, Thermal stability. The formulation was found homogenous and non irritant. The pH of facecream was 5.93 which is good for skin. The present work is preliminary attempt to formulate a herbal facecream which may have no harmful effects on skin with more efficiency and reliability.

KEYWORDS: *Facecream, Thermal stability, herbal, Sharangdhar Samhita.*

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 has growing demand in the world market and is an invaluable gift of nature. Herbal formulations have always attracted considerable attention because of their good activity and comparatively lesser or nil side effects as compared to 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 herbals as an ingredients. Since ancient times women were very conscious about their beauty and started to dress them because they wanted to increase their own beauty.[1] Facial skin is the major part of the body, which indicates the health of an individual. Skin consists of materials such as amino acids, lipids and carbohydrates etc so that a balanced nutrition is required for the skin to keep it clear glossy and healthy. The poly-herbal cosmetic formulations have been recommended for the management of skin properties for a long time and their effects are also well accepted in the community of countries like India, Pakistan, China and Brazil.[2] The purpose of facecream may be beautifying, moisturizing effect and fairness of skin. Hence an herbal facecream has been taken for study from the Ayurvedic classical text *Sharangdhar Samhita.*[3] Present research article deals with the formulation and characterization of this herbal facecream.

OBJECTIVES

1. To prepare a herbal facecream as an oil in water emulsion with ingredients taken from a classical text.
2. To analyze and characterize the herbal facecream on the basis of different analytical parameters.

MATERIALS AND METHODS

All the raw drugs and base ingredients were procured from the pharmacy of National Institute of Ayurveda(NIA), Jaipur and identified by the experts of the P.G. Department of *Dravyaguna Vigyan*, NIA, Jaipur.

Table no. 1: Showing Ingredients of *Ayurvedic* Facecream.

S.No.	Name	Botanical name	Family	Part used
1.	*Raktachandana*	*Pterocarpus santalinus*	Fabaceae	Heartwood
2.	*Manjishtha*	*Rubia cordifolia*	Rubiaceae	Stem
3.	*Lodhra*	*Symplocos racemosa*	Symplocaceae	Stem bark
4.	*Kushtha*	*Saussurea. lappa*	Compositae	Root
5.	*Priyangu*	*Callicarpa macrophylla*	Verbenaceae	Fruit
6.	*Vatankur*	*Ficus bengalensis*	Moraceae	Arial root
7.	*Masura*	*Lens culinaris*	Fabaceae	Seed

Table no. 2: Showing Base Ingredients of *Ayurvedic* Facecream.

S.No.	Name	Function's	Quantity (%)
1.	Cetearyl Alcohol	Emulsifying agent	2.50
2.	Cetyl Alcohol	Thickening agent	1.00
3.	Emulsifying Wax	Emulsifying agent	2.50
4.	Bees Wax	Thickening / emollient	1.75
5.	Paraffin's wax	Thickening	2.50
6.	Stearic Acid	Emulsifier	1.25
7.	Glycerol monostearate	Pearlyzing agent	1.75
8.	Borax	Anti-bacterial	0.30
9.	Sodium Lauryl Sulfate (SLS) Needle	Surfactant	0.20
10.	Glycerine	Humectant	2.25
11.	IsoPropyl Myristate (IPM)	Emollient	1.50
12.	Light Liquid Paraffin (LLP)	Emollient	5.00
13.	Preservative (MPS 0.2% + EDTA 0.2% + PPS 0.1%)	Preservation	0.50
14.	Fragrance	Qs.	

PHARMACEUTICAL PREPARATION OF FACECREAM

Formulation of herbal facecresm involved following main steps:

1. Preparation of Kwatha
2. Preparation of Phase 1(aqueous phase) and Phase 2(oil phase)
3. Mixing of Phase 2 into Phase 1
4. Packing

Preparation of Kwatha

Water Extraction is the separation of medicinally active portion of plant using selective solvents through standard procedure.[4] In Ayurveda many types of Water extraction methods were described such as *Swaraskalpana* (Juice), *Kwathakalpana* (Decoction), *Himakalpana*, *Phantkalpana*, *Arkakalpana* etc. In the present work, *Kwatha* method was used to prepare water extraction as mentioned by *Acharya Sushruta*[5] because the process is suitable for obtaining maximum extraction of active ingredients. An amount of 962.5g(137.5g each) of coarse powdered drugs of *Raktachandana, Manjishtha, Lodhra, Kushtha, Priyangu, Vatankur* and *Masura* were taken in steel vessel and an amount of 15.4kg(16 times) water was added and kept overnight. Next morning the vessel was kept on gas stove and heated on mild heat till the water remained only 1/4th. The *kwatha* was filtered through double folded sterile cloth and obtained 3850 g kwatha.

Preparation of Phase 1

For Phase 1 '(Water Phase)' prepared *Kwatha* was taken in a steel vessel, heated and temperature was maintained at 75°C -85°C, Then Glycerine was added in Water Phase and stirred continously. After that Sodium Lauryl Sulphate needle was added and stirred continuously. After melting of SLS needle, Preservative and Borax were also added and mixed well.

Preparation of Phase 2

For Phase II (oil Phase) Bees wax and Paraffin wax were taken into beaker and heated on mantle. After complete melting Cetyl alcohol, Cetearyl Alcohol, LLP, Stearic acid, Glycerol Monostearate, Emulsifying Wax, IPM were added one by one and stirred slowly at maintained temperature of 75°C -85°C.

Mixing of phase II into phase I (Making emulsions)

After removing both vessels from heating mantle mixing of Phase II(oil phase) into Phase I(water phase) with continuously stirring was done for more than 30 min and mixed slowly maintaining a decreasing temperature(80^0C -50^0C). After cooling the formulation, fragrance was added in it.

Packing: The HDPE plastic bottles were filled with 100g of Herbal Facecream using sterilized funnel and packed airtight.

Analytical Evaluation of Herbal Facecream

According to plan of study, facecream was tested on following parameters:

Organoleptic Parameter

The prepared facecream evaluated for appearance, colour, odour, touch and consistency as shown in Table 3.

Physico-Chemical Parameters

Determination of pH[6]

The pH of 10% Herbal Facecream aqueous solution in distilled water was determined at room temperature 25°C.

Total Solids[7]

About 10g of facecream was accurately weighed and kept in a clean Petri dish. After this, Petri dish was kept in oven to dry at 105˚c for 5 hours and weighed. Continuously dried and weight was taken at one hour interval until constant weight was reached. It was cooled and the weight was noted.

Viscosity[8]

The viscosity of facecream was determined by using Brookfield Viscometer. The Values Obtained for sample was noted.

Total acidity[9]

10 g of the sample was taken in a suitable titration flask and dissolve in 75 ml of carbon dioxide free water. It was mixed thoroughly and titrated against standard sodium hydroxide solution using 4-6 drops of phenolpthalein indicator till pink colour persists for 10 seconds.

Total Fat Content[10]

Total fat content refers to the sum of triglycerides, phospholipids, wax ester, sterols and minor amount of non fatty material. It is a Gravimetric Analysis which have the all fatty material is extracted with Petroleum ether (40-60^{0}C) due to high solubility of fatty materials and separate.

Thermal stability

Physical stability test of the Herbal Facecream was carried out for two weeks at various temperature conditions like 45^{o}C and 70% Relative humidity in a closed container. The facecream was found to be physically stable by its texture, colour and consistency at temperature and humidity 45^{o}C and 70 % within two weeks.

Total microbial count[11]

Total bacterial and total fungal count was evaluated in vitro to avoid any superadded infection by application of herbal facecream.

RESULTS

Total 4.9 kg of herbal facecream was prepared with the procedure mentioned above with a homogenous semisolid consistency.

Table No 3: Organoleptic parameters of Ayurvedic Facecream.

S. No	Organoleptic parameter	*Ayurvedic* Facecream
1.	Appearance	Viscous Cream
2.	Colour	Light Pink
3.	Odour	Pleasant
4.	Touch	Greasy
5.	Consistency	Semisolid

Table No 4: Showing Analytical perameter results of Facecream.

S. No	Parameter	Result
1.	pH	5.93
2.	Total solids	28.23% w/w
3.	Viscosity	230.0 Pa.s
4.	Total Fat Content	18.08% w/w
5.	Total Acidity	0.38

Table No 5: Showing result of Thermal stability of facecream.

Thermal stability	4^{o} Temp.	Room Temp.	45^{o} Temp.
0 days	Stable	Stable	Stable
7 days	Stable	Stable	Stable
15 days	Stable	Stable	Stable

Table No 6: Showing Total Microbial Count of facecream.

S. No	Parameter	*Ayurvedic* Facecream
1.	Total bacterial count	130cfu/ml
2.	Total fungal count	<10 cfu/ ml

DISCUSSION

The developed facecream is oil in water emulsion which had some procedural loss during pharmaceutical processes. Each phase is formed by adding contents on the basis of their melting points. The two phases are mixed at decreasing temperature with continuous stirring to form a homogenous emulsion. Emulsifying agents, cetearyl alcohol and stearic acid emulsifiers were used for the formation of a perfect emulsion. Preservatives were added for increasing the stability of the formulation for a longer duration. Fragrance was added for a pleasant smell during usage.

pH of the emulsion formed is 5.93 which is suitable for the normal skin and will not alter the normal pH of skin which ranges from 4.5 to 6.

Total solids contents indicate the active part present in the formulated facecream which is more than enough for an efficient result on the skin. Total fat content is quantitative

estimation of crude fatty substances (Triglycerides, phospholipids, wax ester, sterols) present in the facecream which is also found within normal limits.

The viscosity and total acidity are within normal limit so that the formulation is an ideal one to be used on skin of face. The formulation is found to be thermally stable at various temperatures to ensure its longer storage in various climatic conditions.

Microbiological assay of the formulation have not shown any contamination with microbes and hence completely safe and have been prepared under Good Manufacturing Practices (GP). The microbial count i.e. bacterial as well as fungal in both the formulations is within range as per Ayurvedic Pharmacopoeia of India so that there will be no harmful effects on their application.

Probable Mode of Action

Raktachandan is *Twagdoshahar*, *Raktapittashamak*, *Raktashodhak* and *mukhakantikar* due to *tikta-madhura rasa*, *guru-ruksha guna* or *sheeta virya*. *Manjishtha* has *Raktashodhak* and *varnya* property for good skin and make the complexion fair due to *madhura-tikta-kshaya rasa* and *guru-ruksha guna*. Chemically, it contains glucosides known as manjisthin along with resins, lime salts and colouring agents. *Lodhra* is credited with cleansing and soothing properties and hence is used in various skin ailments and it is *Raktashodhak* due to *kshaya rasa*, *laghu guna* and *sheeta virya*. *Kushtha* has *varnya* effect, *Kushthaghna* property due to *laghu-ruksha guna* and improve complexion. *Priyangu* is *Raktashodhak*, *Twagdoshahar* and very useful in skin diseases due to *guru-ruksha guna* and *sheeta virya*. *Vatankur* and *Masura* have *varnyakar* effect on skin due to *ruksha guna* and *sheeta virya*. *Masura* is enriched with proteins, improves the complexion and gives your skin an all natural glow. Masura is rich in flavonoids, vitamins, tricetin[12] etc which provide a good nutrition to the skin and are antifungal in properties.[13] The selected drugs are non-controversial, abundantly available everywhere in India, and non toxic so experimental study is not needed. All these qualities have made this combination an ideal and superior one. These all ingredients collectively may be responsible for an efficacious and stable emulsion form of herbal facecream.

CONCLUSION

Herbal formulations have growing demand in the world market. It provides numerous essential nutrients to the required for maintaining the normal skin functioning. It also promotes the natural glow to the skin. The formulated herbal facecream contains 77% active

ingredients and 23% base ingredients. It was Light Pink in colour without adding any artificial coloring agent. The facecream with maximum active ingredients proved to be thermally stable at different temperatures. The present work is preliminary attempt to establish the herbal facecream which may have minimal harmful effects on skin with more efficiency and reliability and require further studies for its validation.

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