International Journal of Pharmacy and Biological Sciences-IJPBS™ (2020) 10 (2): 62-68
Online ISSN: 2230-7605, Print ISSN: 2321-3272
Research Article | Pharmaceutical Sciences | Open Access | MCI Approved

Formulation, Development and Evaluation of Herbal Skin Cream

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Received: 20 Jan 2020 / Accepted: 18 March 2020 / Published online: 01 April 2020
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Abstract

The origin word of 'Cosmetic' is 'kosmesticos' which is a Greek word that means to adorn. Now a day's different types of natural materials are used for skin protection the beautification and promoting appearance. Natural materials were used in cosmetics for the purpose of increase the beauty of women and then onwards they have started to dress themselves. The Aim of the Present Study is to Formulate, Develop and Evaluate of Multi-Purpose Skin Cream Prepared by using oil in water method. Hollow cream is prepared by oil in water method to create the caring of body. The ingredients are extracted by using aqueous method and alcoholic method. The prepared body cream was o/w type emulsion, hence can be easily washed with plane water which gives better customer compliance. Our study indicated that the formulations (C3 and C6) were more stable. The prepared formulations showed good spread ability, no evidence of phase separation. These formulations (C3 and C6) had almost a constant PH, emollient properties; they were not greasy and easily removable after the application. The stable formulations were safe and skin irritations and allergic sensitizations were scarce. All the formulations passed the microbial limit test which included some parameters like total bacterial count and fungal count; pathogens like E.Coli and Bacillus were also absent.

Keywords

Cosmetics, Natural materials, Oil in water method, Formulations.

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1. INTRODUCTION

1.1. Background and history of Creams:

The origin word of 'Cosmetic' is 'kosmesticos' which is a Greek word that means to adorn. Now a day's different types of natural materials are used for skin protection the beautification and promoting appearance. Natural materials were used in cosmetics for the purpose of [1] increase the beauty of women's and then onwards they have started to dress themselves. daily life peoples are given more importance to traditional cosmetics of natural products. Different natural mareials used in the cosmetic preparation to purify and beautify (protect from skin damage) the skin. the herbal products contain active ingredients at the same time herbal cosmetics have active ingredient which one is very beneficial. Still lot of people are using herbal cometics for the purpose of their beauty (skin) care. The reason behind using the particular herbal products is they are collected from plant extracts which are exist as a pure form. there is no side effect while using herbal cosmetics herbal products give a rich nutrients and minerals to our body. Herbal plants have an active ingredient which have an ability to increase smooth texture to our body. the crud and extraction forms are used for the preparation of

creams. the products (herbal) have properties like antioxidant antiseptic anti-inflammatory emollient antibacterial. these are mainly prepared with natural products are to protect our skin from sunrays pollution. different types synthetic and natural materials like herbal soaps and face washes like skin protectives are to control oil sunscreen lotions antiacne creams antiaging and also to reduce the wrinkles on face. in the multipurpose formulations we can use diffent types of plants extracts of azadiractaindica tulasi neemgross leaves turmeric nika leaves honey. in this traditional system herbal products have been selected depends on health conscious and to improve our aurvedic system. Fairness creams and natural products has more prominent from olden years to increase interpretation and healthy skin. Melanin is one of main reasons for dark complexion. Melanin is primary determinant of “melanocytes” that are located in the epidermis. Melanin is the pigment that gives color to the human skin it produced by the cell called melanocytes it provides some protection against skin damage from sun. The increased production of melanin is human skin is called “melanogenesis”. Melanogenisis occurs when melanin production is more in human body. The major couse of dark color of skin fairness creams protects damage from sun rays and also reduce some extent secretion of melanin. the idea of skin care cosmetics has been taken from the ayurvedia rigveda and homeopathic system of medicine. In this early modern period, the capacity and happening of usage of herbals are existence to mingle to advanced cosmetic technology to improve a safe and graceful beauty (natural) products, which has most of the people their suitability. particularly charming is developed by nature and consuming of beauty products. it has some advantages based on a Consumer assent. Indians are mostly using natural products in home by the traditional method only. The conception of choosing the people with "fair- skin" has been appreciated socially and herbal products has been psychologically influence on women to be fair. But during the past years, men also started to give more importance to their skin and improve their personal grooming.

Within a few years the herbal cosmetic markets have a share of almost Rs 300 crores of total cosmetic industry in the country. But in the country total cosmetic industry estimate maximum 2000 crores. the rate of total cosmetic market is growing their estimation of 20-30 percentage per annum, out of 60 present in this growth of herbal cosmetic segment.

2. MATERIALS AND METHODOLOGY

2.1) MATERIALS: -

Leaves, Fruit, peel and bark of Neem, Tulsi, Papaya, Lemon peel, Turmeric and Cinnamon were collected from different localities of The College, Sujathanagar, Bhadradri Kothagudem and its nearby areas and washed thoroughly with distilled water. Cetyl alcohol, Methyl paraben and Propyl paraben were purchased from Qualikems fine chem pvt ltd, Nandesari, Vadodara, Stearic acid were purchased from Finar chemicals ltd, Ahmedabad and Triethanol amine were purchased from Merck specialties pvt ltd, Mumbai.

2.2) PREPARATON OF EXTRACT

Two methods are used for Preparation of extract

2.2.1) Aqueous extract (Turmeric, lemon peel, Neem & Tulsi) –

5gm of Each ingredient weighed accurately & dissolve each in 50 ml of water. This solution is placed on water bath at 80-100˚c. The heating solution was concentrated up to 20 ml. Then follow Filtration process of each ingredient and collect each filter product. [8,9]

2.2.2) Alcoholic extract (papaya, Cinnamon) –

5gm of Each ingredient weighed accurately & dissolve each in 50 ml of alcohol. This solution is placed on water bath at 80-100˚c. The heating solution was concentrated up to 20 ml. Then follow Filtration process of each ingredient and collect each filter product.

2.3) FORMULATON PREPARATION

The formulation can be prepared by adding two phases which are mentioned as following

Phase 1: The emulsifying agent stearic acid was dissolved in cetyl alcohol and heated to 75̊c.It can be named as oil phase i.e., Part A

Phase 2: In this phase mix the both above collected extracts of aqueous and alcoholic followed by adding preservatives & other water soluble components like methyl paraben, propyl paraben, triethanol amine, propylene glycol, Honey and heated to 75̊˚c. It can be named as aqueous phase i.e., Part B

After heating aqueous phase was added into oil phase at same temperature with continuous stirring the smooth & homogenous cream was prepared. The formula for given. (Table 1) [10]

2.4) EVALUATION OF CREAM

2.4.1) Physical Properties-

The Cream was observed for color, odour and appearance [2].

2.4.2) Test for Thermal Stability –

The formulated cream was inserting into glass bottle with the help of spatula, and taped to settle to the bottom. Filled up to two-third capacity of bottle and insert plug and tighten the cap. Filled bottle was kept

erect inside the incubator at 45˚ ± 1° for48 hrs. The sample passed the test, if on removal from the incubator shows no oil separation or any other phase separation [3].

2.4.3) 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 0C for 24 hours. After the incubation period, plates were taken out and check the microbial growth by comparing it with the control [4].

2.4.4) Spreadability:

The Spreadability was expressed in terms of time in seconds taken by two slides to slip off from the cream, placed in between the slides, under certain load. Lesser the time taken for separation of the two slides, better the Spreadability. Two sets of glass slides of standard dimensions were taken. The herbal cream formulation was placed over one of the slides. The other slide was placed on the top of the formulation, such that the cream was sandwiched between the two slides weight was placed upon the upper slides so that the cream 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. The upper slide allowed slipping off freely by the force of weight tied to it. The time taken for the upper slide was noted.

Spreadability = m×l/t

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

2.4.5) Irritancy test:

Mark an area (1sq.cm) on the left hand dorsal surface. The cream was applied to the specified area and time was noted. Irritancy, erythema, edema, was checked if any for regular intervals up to 24 hrs and reported [6].

2.4.6) Wash ability: –

A small amount of cream applied on hand & washed under running tap water [6].

2.4.7) Viscosity: -

Viscosity of formulated cream was determined by book field viscometer at 100 rpm using spindle No 7[6].

2.4.8) pH of the cream

The pH of various formulations was determined by using digital pH meter. About 1 g of the cream was weighed and dissolved in 100 ml of distilled water and stored for two hours. The measurement of pH of each formulation was done in triplicate and average values were calculated [7].

2.4.9) Phase separation:

The formulated cream was kept intact in a closed container at 25 – 300 C not exposed to light. Phase separation was observed carefully every 24 hrs for 30 days. Any change in phase separation was checked [7].

2.4.10) Moisture absorption studies:

About 50 mg of cream was taken on a watch glass. A beaker was taken with full of water and was kept in a desiccator without adsorbents and allowed to get saturated. Watch glass with cream was introduced into the desiccator. It was left for 24 hrs [7].

3. RESULTS AND DISCUSSION

In our work we are prepared six (C1-C6) different cream formulations. Among these formulations to choose final selection, the all formulations are tested for further final selection purpose.

3.1) PHYSICAL PROPERTIES: -

The physical properties & all formulated cream were observed by its color, Odour & texture. The results were noted on the table 2.

3.2) TEST FOR THERMAL STABILITY: -

This test was determined by the humidity chamber controlled at 60- 70% RH and 37 ± 1^0C. Finally, all the formulations stable and no oil separation was observed. The results were noted on the table 3.

3.3) 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 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 of gram positive (Bacillus) and gram negative (E.coli) by comparing it with the control. The results were noted on the table 4.

3.4) SPREADABILITY:

The spreading values, that is, diameters observed for the formulations, after one minute. Results indicated that our cream had comparable spreadability to that of commercial product which was used as comparator in the study. The results were noted on the table no 5.

3.5) IRRITANCY: -

All formulation shows no irritation, Erythrema & edema during Irritancy test study. The results of Irritancy test formulations were safe to use for skin. The results were
shown in below table No. 6.

3.6) WASHABILITY: -

The washability of all formulations shown as table 7.

3.7) pH: -

The result of pH of prepared creams (C1 – C6) was found to be around 6 which were suitable for topical

application. Because skin has pH in between 4.5-6. The result of pH summarized in table No. 8.

3.8) MOISTURE ABSORPTION STUDIES: -

After 24hrs the moisture absorption was noted and results shown in table.9.

3.9) PHASE SEPARATION: -

In this cream formulations no phase separation was observed and results were shown in table.10.

3.10) VISCOSITY: -

This test was determined by brook field viscometer at 10 rpm using spindle No LV-4 (64), and the range of 20000 to 16000cp which indicates that cream was easily spreadable by small amount of shear. The results were noted on the table 11.

Figure- 1: *Ocimum tenuiflorum* Plant

Figure 2: - Turmeric rhizome and power

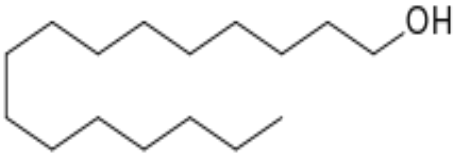

Figure- 3: Cetyl alcohol structure

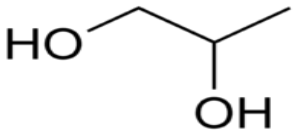

Figure- 4: Propylene glycol structure

4.2) FORMULATION TABLE OF THE CREAM

SNo	Ingredient	Formulation1(C1)	F2(C2)	F3(C3)	F4(C4)	F5(C5)	F6(C6)
1.	Ocimum tenuiflorum(Tulasi)	0.25 ml	0.25 ml	0.75 ml	0.75 ml	0.50 ml	0.50 ml
2.	Citrus limon(Lemon peel oil)	1.25 ml	1.25 ml	1.25 ml	1.25 ml	1.25 ml	1.25 ml
3.	Curcuma longa(Turmeric)	0.5 ml	0.5 ml	0.5 ml	0.5 ml	0.5 ml	0.5 ml
4.	Carica papaya	0.5 ml	0.5 ml	1 ml	1 ml	0.5 ml	1 ml
5.	Cinnamomum verum(Cinnamon)	1 ml	1 ml	1 ml	----	----	-----
6.	western honey bee	1.25 ml	1.25 ml	1 ml	1 ml	1.5 ml	1.5 ml
7.	Azadirachta indica(Neem leaves)	0.25 ml	-----	------	1.25 ml	1.25 ml	1.25 ml
8.	Stearic acid	2 g	2g	4 g	4 g	3 g	3 g
9.	Cetyl alcohol	1.5 g	1.5 g	2 g	2 g	2.5g	2.5g
10.	Methyl paraben	0.1 g	0.2 g	0.2 g	0.2 g	0.2 g	0.2 g
11.	Propyl paraben	0.1 g	0.2 g	0.2 g	0.2 g	0.2 g	0.2 g
12.	Trienthanolamine	1 g	1 g	1 g	1 g	1 g	1 g
13.	Propylene glycol	4 ml	4 ml	4 ml	4 ml	4 ml	4 ml
14	Distilled Water	Q.S.	Q.S.	Q.S.	Q.S.	Q.S.	Q.S.

Table-1: Formulation of Cream

5.1) PHYSICAL PROPERTIES OF CREAM

Parameters	Formulations					
	C1	C2	C3	C4	C5	C6
Color	Cinnamamic red	Cream	cream	cream	Light yellow	white
Odour	Characteristic	Characteristic	characteristic	characteristic	characteristic	Characteristic
Texture	Smooth	Smooth	Smooth	Smooth	Smooth	Smooth

Table-2: - Physical Properties of cream

5.2) TEST FOR THERMAL STABILITY: -

TEST/FORMULATIONS	C1	C2	C3	C4	C5	C6
Thermal Stability (at RH 65% and 30 ± 40oC)	Stable, no oil separation	Stable, no oil separation	Stable, no oil separation	Stable, no oil separation	Stable, no oil separation	Stable, no oil separation

Table-3: - Thermal Stability of cream

5.3) MICROBIAL TEST-

Sl.NO	Formulation	Growth	
		Bacillus	E-coli
1	C1	Absent	Absent
2	C2	Absent	Absent
3	C3	Absent	Absent
4	C4	Absent	Absent
5	C5	Absent	Absent
6	C6	Absent	Absent
7	Control	Absent	Absent

Table-4: - Microbial Growth of cream

5.4) SPREADABILITY:

Formulations	TIME (sec)	*Spreadability (g×cm/sec)*
C1	15	8.3
C2	14	8.9
C3	16	7.8
C4	15	8.3
C5	15	8.3
C6	16	7.8

Table-5: - Spreadability of cream

5.5) IRRITANCY: -

Formulation	Irritant	Erythema	Edema
C1	NIL	NIL	NIL
C2	NIL	NIL	NIL
C3	NIL	NIL	NIL
C4	NIL	NIL	NIL
C5	NIL	NIL	NIL
C6	NIL	NIL	NIL

Table-6: - Irritancy of cream

5.6) WASHABILITY: -

Formulation	Wash Ability
C1	Easily Washable
C2	Easily Washable
C3	Easily Washable
C4	Easily Washable
C5	Easily Washable
C6	Easily Washable

Table-7: - Washability of cream

5.7) pH: -

FORMULATION	PH
C1	7.80
C2	7.30
C3	5.72
C4	5.80
C5	5.95
C6	5.75

Table-8: - pH of cream

5.8) MOISTURE ABSORPTION STUDIES: -

FORMULATION	MOISTURE ABSORPTION
C1	Moisture Not Absorption
C2	Moisture Not Absorption
C3	Moisture Not Absorption
C4	Moisture Not Absorption
C5	Moisture Not Absorption
C6	Moisture Not Absorption

Table-9: - Moisture Absorption Studies of cream

5.9) PHASE SEPARATION: -

FORMULATION	PHASE SEPARATION
C1	No Phase Separation
C2	No Phase Separation
C3	No Phase Separation
C4	No Phase Separation
C5	No Phase Separation
C6	No Phase Separation

Table-10: - Phase Separation of cream

5.10) VISCOSITY: -

	Formulations					
	C1	**C2**	**C3**	**C4**	**C5**	**C6**
Viscosity	19520	19550	197200	196280	19580	196820

Table-11: - Viscosity test

4. CONCLUSION

The present study involves Formulation, Development and Evaluation of Multipurpose Skin Cream. The present work mainly focuses on the potential of extracts from cosmetic purposes. The uses of cosmetic have been increased in many folds in personal care system. The prepared body cream was o/w type emulsion, hence can be easily washed with plane water which gives better customer compliance. Our study indicated that the formulations (C3 and C6) were more stable. The prepared formulations showed good spreadability, no evidence of phase separation. These formulations (C3 and C6) had almost a constant PH, emollient properties; they were not greasy and easily removable after the application. The stable formulations were safe and skin irritations and allergic sensitizations were scarce. All the formulations passed the microbial limit test which included some parameters like total bacterial count and fungal count; pathogens like E.Coli and Bacillus were also absent.

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