

Formulation and Evaluation of Aloe vera and Dacus Carota herbal cream

SHARMILA DUSI, J.SAMINATHAN*

Delhi Pharmaceutical Sciences and Research University, M.B Road, Sec – 3, PushpVihar, New Delhi

*Corresponding Author

Email ID: swamilingam@gmail.com

Received: 25.05.19, Revised: 06.06.19, Accepted: 12.08.19

ABSTRACT

Herbal cosmetics are becoming common in the field of beauty, fashion. The present study is to formulate and evaluate the herbal cream containing extracts of natural products such as Aloe Vera, Cucumis Sativus and Dacus Carota. Different types of oil in water (O/W) herbal creams are preparing by changing concentrations of ingredients. The evaluations of all formulations were done on different parameters like pH; viscosity, spreadibility, and stability were examined. Formulations should not show any adverse effects. The formulation shows no redness, edema, inflammation, and irritation during irritancy studies. These formulations are safe to use for skin. These studies suggest that the composition of extracts and base of cream are more stable and safe, it may produce synergistic action.

Keywords: Herbal Cream, O/W emulsion, pH, Synergistic action, Cucumis Sativus, Dacus Carota.

INTRODUCTION

Beauty, the quality that gives pleasure to the senses, is perhaps the desire of every human being on earth. Some are born beautiful and some are made beautifully [1]. Aesthetic appearance as always been a matter of prime importance. The word "Beauty" is not only related to human, as is often thought, but men also use cosmetic products [2]. Cosmetics are using in different forms to increase their beauty [5].

The word "cosmetics" arises from the Greek word "cosmetics" which means to adorn [6]. Materials used to enhance their beauty are known as cosmetics. The methods are implementing to improve beauty from past olden days.

Cosmetics are the products, maintains contacts with the outer parts of the body without causing any harmful effect. Also, maintain good texture and appearance to the skin and also protects from UV rays [8]. Cosmetics are used for removing dirt and maintaining good appearance without disturbing our body functions. All skin creams, lotions, shampoos come under cosmetic products only [10].

HERBAL COSMETICS

More herbal ingredients are used to provide defined cosmetic benefits only, the shell is called "Herbal cosmetics" the demand for herbal medicines is increasing rapidly due to their lack of side effects. The herbal cosmetic is that it is purely made by herbs and shrubs [18]. The herbs extracted from nature do not show adverse effects on human skin. Now a day's cosmetics are used to

improve their appearance. Cosmetics are preparing and using to improve their beauty [11]. For various types of skin ailments formulations like skin protective, sunscreen, anti-acne, anti-wrinkle, either natural or synthetic.

The development process for cosmetic formulation needs maintenance of quality standards [9]. The herbs used in cosmetic preparations have varieties of properties like antioxidant, anti-inflammatory, antiseptic and anti-bacterial, etc. herbal products having no side effects compared with synthetic formulations [15].

Benefits of Herbal Cosmetics

- Being natural, least harmful effect on the skin or other body parts.
- Relatively more safe.
- More placebo effect to the consumers due to its use in traditions and culture.
- Flexibility in formulation.
- Population proves effects from ancient time.
- Easy availability.
- Economical.
- It helps to cleans and beautify the body without side effects.
- It normalizes the body functions.
- It has extreme nutritional value with high content of vitamins and minerals.
- It enhances the energy level of body [16].
- It stimulates the body's immune system without disturbing the natural balance of the body.
- Variety of Phyto-constituents can be incorporated.

MATERIALS AND METHODS

Table 1: List of materials and their suppliers used in the present work

NO	MATERIALS USED	SUPPLIER
1.	Aloevera	Nuzen Labs Pvt. Ltd, Hyderabad
2.	Carrot	Sri Uma Export & Import, Alur, A.P
3.	Ethanol	Fisher Scientifics, Mumbai
4.	Stearic Acid	Qualigen Fine Chemicals, Mumbai
5.	Cetyl alcohol	Lobal Chemi Pvt.Ltd,Mumbai
6.	Almond Oil	Dabur Pvt. Ltd, New Delhi
7.	Glycerin	Specialisties Pvt. Ltd, Mumbai
8.	Methylparaben	S. D. Fine - Chem, Ltd, Mumbai
9.	Triethanolamine	Qualigen Fine Chemicals, Mumbai

METHODOLOGY

Preparation of Extract

- Air-dried and coarsely powdered (500 gm) of Aloe Vera and Daucus Carota were placed in a Soxlet extractor separately, using petroleum ether and then successively with ethanol.
- The extracts were then concentrated to dryness under reduced pressure and controlled Temperature, respectively and they were preserved in a refrigerator.

Cream Formulation:

- Oil in water (O/W) emulsion, (semisolid formulation) is formulated.
- The stearic acid cetyl alcohol and almond oil are dissolved in the oil phase and these are heated To 75°C. this is part A.
- The water-soluble components like methylparaben, triethanolamine, propylparaben, Aloe Vera extract and Dacus Carota are dissolved in an aqueous phase and it is heated up to 75°C. This is Part B.
- After heating, the aqueous phase was added in portions to the oil phase with Continuous stirring until the cooling of the emulsifier took place.
- The formula for the cream is given in table

Table 2: Formula for the cream

NO	INGREDIENTS	FORMULATIONS		
		F1	F2	F3
1.	Ethanol extract of Aloevera	0.35	0.45	0.25
2.	Ethanol extract of Dacus Carota	0.35	0.45	0.25
3.	Stearic acid	4.0	4.0	5.0
4.	Cetyl alcohol	0.6	2.0	1.5
5.	Almond oil	2.0	2.0	2.0
6.	Glycerol	1.0	1.5	1.5
7.	Methyl paraben	0.02	0.02	0.02
8.	Triethanolamine	q.s.	q.s.	q.s.
9.	Water	q.s.	q.s.	q.s.

EVALUATION

Evaluation of pH of the Cream:

By using a buffer solution, the pH meter was calibrated. The 0.5 g of the cream was weighed and dissolved in 50.0 ml of distilled water after that pH is measured.

Dye test:

The red dye is mixed with the prepared cream. Place a drop of the cream on a microscopic slide covers it with a cover slip, and examines it under a microscope. If the globules appear in red color, then the background is Colorless. The cream is known as o/w type. If the condition is reversed, then it is known as w/o type cream i.e. the disperse globules appear Colorless but the background is in red color.

Homogeneity:

The Homogeneity of a prepared formulation is tested by touch and by appearance.

Appearance:

The appearance of the cream was judged by its color, pearlescence, and roughness and graded.

After feel:

The emollient nature and smoothness are checked after application.

Type of smear:

The formation of smears after applying to skin is checked.

Removal:

The applied cream was observed for removal by using tap water.

Acid value:

Take 10 gm of cream and dissolved in 50 ml mixture of equal volume of alcohol and solvent ether, then the flask was connected to reflux condenser and heated, until the content was dissolved completely, then add 1 ml of

phenolphthalein and it is titrated with 0.1N NaOH, until light pink color appears after shaking the flask for 30 seconds[21].

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

n = amount of NaOH required.

w = the weight of the substance.

Saponification value:

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

$$\text{Saponification value} = (b-a) \times 28.05/w$$

The volume in ml of titrant = *a*

The volume in ml of titrating = *b*

The weight of the substance in gm = *w*

Irritancy test:

Apply prepared cream on the backside of the left hand. Then the area of cream applied and time is taken into consideration. Irritation on applied area, eczema, other rashes are observed within 24 hrs after the application of a cream [20].

Accelerated stability testing:

Accelerated stability testing is performed for more stable two prepared formulations. Stability testing is performed at least for one week. The formulations were kept at 40oC ± 1oC for 20 days. The formulations were kept both at room and elevated temperature and observed on 0th, 5th, 10th, 15th and 20th day for the following parameters [3, 4, 12,13].

RESULTS AND DISCUSSION

RESULTS:

pH of the Cream:

The pH of the cream was found to be in the range of 5.6 to 6.8 which is good for skin pH. All the prepared formulations of cream are nearer to skin pH i.e. pH of F1-6.8 and F2-6.7.

Table 3: pH of the Cream

Parameter	Formulations			Acid value
	F1	F2	F3	
p ^H	6.8	6.7	6.9	

and Saponification value:

The results of acid and saponification value of all formulation of cream are presented in the table, and showed satisfactorily values.

Table 4: Test for Acid & Saponification value

NO	Parameters	Formulation		
		F1	F2	F3
1.	Acid value	5.2	5.8	6.4
2.	Saponification value	22.3	26.2	28.2

Irritancy test:

The formulation shows no redness, edema,

inflammation, and irritation during irritancy studies. These formulations are safe to use for skin.

Table 5: Irritancy effect of formulations

Parameter	Formulations		
	F1	F2	F3
Irritancy	NILL	NILL	NILL

Dye test:

This dye confirms that all formulation was o/w type emulsion cream. But formulation F1 shows more stable in o/w type emulsion.

Homogeneity:

All prepared formulations produce uniformity of cream. Homogeneity was confirmed by appearance and by touch.

Table 6: Homogeneity of formulations

Parameter	Formulations		
	F1	F2	F3
Homogeneity	Good	Good	Good

Appearance:

When formulation was kept for a long time, it found that no change in the color of cream.

Table 7: Appearance of formulations

Parameter	Formulations		
	F1	F2	F3
Appearance	No change	No change	No change

After feel:

Emolliency, slipperiness and amount of residue left after the application of a fixed amount of cream were found.

Table 8: after feeling of formulations

Parameter	Formulations		
	F1	F2	F3
After feel	Emollient	Emollient	Emollient

Type of smear:

After application of the cream, the type of smear formed on the skin was non-greasy.

Table 9: Type of smear of formulations

Parameter	Formulations		
	F1	F2	F3
Type of smear	Non greasy	Non greasy	Non greasy

Table 10: Removal of formulations

Parameter	Formulations		
	F1	F2	F3
Removal	Good	Good	Good

Removal:

The cream of F6 and F7 applied on the skin was easily removed by washing with tap water.

Accelerated stability studies:

Table 11: Stability studies

NO	Days	Temperature	Formulations	P ^H	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆
1.	0	RT	F1	6.6	**	NCC	**	E	NG	ES
			F2	6.7	**	NCC	**	E	NG	ES
		40°C+1°C	F1	6.5	**	NCC	**	E	NG	ES
			F2	6.5	**	NCC	**	E	NG	ES
2.	5	RT	F1	6.4	**	NCC	**	E	NG	ES
			F2	6.5	**	NCC	**	E	NG	ES
		40°C+1°C	F1	6.3	*	NCC	**	E	NG	ES
			F2	6.4	**	NCC	**	E	NG	ES
3.	10	RT	F1	6.4	**	NCC	**	E	NG	ES
			F2	6.6	**	NCC	**	E	NG	ES
		40°C+1°C	F1	6.5	**	NCC	**	E	NG	ES
			F2	6.6	**	NCC	**	E	NG	ES
4.	15	RT	F1	6.5	*	NCC	**	E	NG	ES
			F2	6.4	**	NCC	**	E	NG	ES
		40°C+1°C	F1	6.3	**	NCC	**	E	NG	ES
			F2	6.7	**	NCC	**	E	NG	ES
5.	20	RT	F1	6.6	**	NCC	**	E	NG	ES
			F2	6.5	**	NCC	**	E	NG	ES
		40°C+1°C	F1	6.3	**	NCC	**	E	NG	ES
			F2	6.4	**	NCC	**	E	NG	ES

X₁-Homogeneity, X₂-Appearance, X₃-Spreadability, X₄-After feel, X₅-Type of smear, X₆-Removal,

** : Good, * : Satisfactory, E : Emollient, NG : Non-greasy, ES : Easy, NCC : No change in color.

Discussion

- Aloe Vera and Daucus Carota are well known for its medicinal and Cosmeceuticals value in The Indian traditional system of medicine. The present project work is to extract and prepare herbal cream.
- The tyrosinase inhibitory substances are used in cosmetic products as a skin whitening agent to reduce skin pigmentation by decreasing the melanin production.
- The Aloesin, a C-glycosylated chromone reported to exhibit antityrosinase activity, and also inhibited melanin production in cell culture [22]. The aloesin present in the aloe vera is an active compound.
- Aloe vera has been regarded as the most powerful and protective effect against damage to skin against the ultraviolet radiation. due to the presence of its antioxidant activity.
- Aloe vera contains mucopolysaccharides are bits of help in maintaining moisture into the skin. Aloe stimulates fibroblast which helps in produces the collagen .that makes the skin more elastic and less wrinkled.
- Aloe's benefits can be attributed at least partly to its nutrients since it contains proteins, carbohydrates (including mucopolysaccharides), vitamins (including B1, B2, B3, B6, C, and folic acid) and minerals[23].
- The beneficial nutrients present in the aloe Vera makes the skin smooth, moisturize, heal fastly and regenerates. [7, 14-17].
- From above it concluded that these plant extracts produce excellent whitening, anti-wrinkle and sunscreen effect on the skin[24]. production of free radicals causes oxidative stress and oxidative photodamage to membranes and molecules in the skin. The maturation of skin becomes wrinkled and rough.
- β -carotene is the most abundant and most efficient precursor of vitamin A.
- β -carotene is called as a radical scavenger[25]. Because it protects the skin from harmful UV radiations.
- β -carotene is capable to increase cell turn-over and regeneration in the outer layers of the skin, making it effective for diseases and skin conditions related to epithelium damage[26].
- β -carotene also enhances the appearance of dry or damaged skin by reducing flaking and restoring suppleness[27]. In skincare products, beta-carotene is used to protect

the skin from sun rays and also to protects the skin tone due to its anti oxidant and anti-aging properties [18, 19]. It is reported that Daucus Carota contains more amounts of vitamin C and an abundant amount of β -carotene.

- From the above discussion, it is assumed that β -carotene containing plant as well as antioxidant activity producing plants can be used in face care cream, to produce sunscreen, anti-aging, and anti-wrinkle effects. Hence these two extracts are the best choice to use in face creams.
- *The almond oil has emollient properties and also gives smoothes, glow to the skin*[28].
- The prepared formulation is a polyherbal face cream of O/W type emulsion, so the cream is hence can be easily washable with portable water.
- Therefore, we tried to make a polyherbal face cream containing the extract of Aloe Vera, and Daucus Carota.
- Our study indicated that the formulation F1 found to be more stable while remaining formulations were not stable and resulted in a breakdown of the emulsion when stored for a long time.
- This formulation had almost suitable and constant pH, homogeneous, emollient, non-greasy and easily removed after the application. The stable formulation F1 was safe with respect to skin irritation and allergic sensitization.

Conclusion

It is concluded that on combining the extracts of aloe Vera and Dacus Carota in different compositions to get multipurpose effect on skin such as whitening, anti-wrinkle, anti-aging, and sunscreen effect in skin. We know that it is not possible to get efficiency effect with single herb but by taking combinations of different extracts can be possible to increase the efficiency of extracts. In this regard, we mixed the extracts of aloe Vera and Dacus Carota to improve as well synergizes the cosmetic properties of prepared products compare to individual extracts. These studies suggest that the composition of the extracts and base of F1 is more stable and safe.

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