

Formulation and evaluation of herbal cream of Alcoholic Extract of Azadirachta Indica A. Juss

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ABSTRACT

Herbal cosmetics are the preparation used to enhance the human appearance. The aim of the present research was to formulate and evaluate the herbal Neem cream for the purpose of moistening and nourishing the skin. Azadirachta indica (Neem) is one of the most popular auspicious and well known tree which is more extensively studied for its pharmaceutical and clinical properties. The herbal formulations showed good consistency, good spreadability, homogeneity, pH, non-greasy and no evidence of phase separation. The herbal extract containing creams substantially increased skin elasticity, hydration and decreased the skin melanin. **KEYWORDS:** Herbal Neem cream, Azadirachta indica, homogeneity, pH, spreadability.

I. INTRODUCTION

The Azadirachta indica is a fast growing evergreen popular tree found commonly in India, Africa and America. It has been used in Ayurvedic medicine for more than 4000 years due to its medicinal properties. Neemi is called 'arista' in Sanskrit word that means 'perfect, complete and imperishable'. Arita is a Sanskrit name of the neem tree meaning 'relieve of sicknesses and hence considered as a 'sarbarogaribari'^[1]. The word herbal is a symbol of safety in contrast to the synthetic one

which has adverse effects on human health. The objective of present research work is to prepare skin care product that not only moisturizes and softens the skin but also helps in healing of skin lesions and skin cracks. An herbal cream 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]. It has also been used for centuries as anti-inflammatory, antifungal, antibacterial and tumour activities. Herbal formulations are receiving more concentration in public because of their high quality properties and less side effects. Nowadays herbal extracts are used in the cosmetic preparations for augmenting beauty and attractiveness.

Materials used to enhance the beauty are known as cosmetics. The methods are implementing to improve beauty from past olden days. Cosmetics are the products, maintain contacts with the outer parts of the body without causing any harmful effects. Also, maintain good texture and appearance to the skin and also protect from UV rays. Cosmetics are used for removing dirt and maintaining good appearance without disturbing our body functions. All skin cream, lotion, shampoos under cosmetic products^[3].

II. MATERIALS AND METHOD

Tab No: 1 - LIST OF CHEMICALS

S.NO	Chemical name	Company name
1	Stearic acid	Nice
2	Cetyl alcohol	Charco
3	Borax	Nice
4	Propylene glycol	Nice

5	Liquidparaffin	Merck
6	Sodiumbenzoate	Nice

Collection of Azadirachta indica A. Juss leaves

The Azadirachta indica A. Juss leaves were collected from the Dhanalakshmi Srinivasan College of pharmacy, Perambalur. Collected leaves are authenticated by botanist, department of botany, national college, Trichy. Then the leaves are cleaned properly and shaded dried at room temperature.

Cold maceration of Azadirachta indica A. Juss

The collected, cleaned and shaded dried leaves are subjected to size reduction and sieved. Then the neem extract is prepared by cold maceration process. About

40 gm of dry powdered neem is taken with 250 ml of 70% (w/v) ethanol for maceration for a week in a round bottom flask with occasional shaking.

The flask was kept in the dark to avoid the effect of light on the active constituents of neem. Then the extract is filtered through a muslin cloth after a week of maceration. The extract is concentrated till dryness. The use of water bath maintains the room temperature. The extract is heated for evaporation till the dryness [4].



Fig No:1-Cold Maceration Process



Fig No:2-Crude Extract

Tab No:2- FORMULATION OF SKIN CREAM

S.No	Ingredients	Formulation code	
		F1	F2
1	Neem extract (gm)	1	1
2	Stearic acid (gm)	1.8	2
3	Cetyl alcohol (gm)	0.6	0.5
4	Propylene glycol (ml)	1	1
5	Liquid paraffin (soft) (ml)	1	1
6	Sodium benzoate (gm)	0.01	0.02
7	Borax (gm)	0.02	0.03
8	Distilled water	Q.S	Q.S

Formulation of

cream: The stearic acid, Cetyl alcohol is melted in a water bath and heated up to 70°C. Then add the mineral oil and propylene glycol and other oil soluble component then phase is known as an oil phase. The ingredients of oil phase should be mixed up on the melting point. The higher melting points are added first then the lower melting point substance. The temperature should be maintained at a 70°C.

Take another china dish add water soluble component like borax, sodium benzoate are dissolved in water and mixed thoroughly. This solution is heated to 70°C. This phase is known as aqueous phase. The temperature should be maintained properly at 70°C for the both phase. The accurately weighed herbal extract are added in the aqueous phase, then the solution of aqueous phase

is poured into the melted oil phase with stirring at same temperature for 10 mins until the saponification is completed. The china dish removed from the flame and stirred continuously until it is cooled to get a smooth cream. The perfume is dissolved and it is added to the cream and mixed thoroughly^[5].

EVALUATION OF SKIN CREAM

Physical properties of skin cream

The formulated cream are evaluated for its physical properties like color, state, and odor. The appearance of cream was analysed by its color and roughness are examined by visually and touching [6].

Determination of pH

The pH of the prepared neem cream are examined by use of digital pH meter. Before the measurement of pH, the pH meter is calibrated by using the standard buffer solution. About accurately 0.5gm of cream weighed and dissolved in 50ml of distilled water. The pH of the suspension was set at 27°C using digital meter^[7].

Determination of spreadability

The spreadability of the prepared neem cream are determined by the sample was applied between the two slides and was compressed to uniform thickness by placing 100gm of weight for 5 mins. Weight was added to the pan. The time required to separate the two slides, the time in which the upper glass slide moved over the lower slide was taken as

measure of spreadability [9].

Spreadability = $m \times l / t$

m = weight of upper slide = length moved on glass slide
t = time taken to separate

Dilution test

The dilution test are used to determine the type of emulsion. In this method was applied from the work of phase and team in the year 2014. In this test the cream is diluted either with oil or water. If this cream is o/w type and diluted with water, it will remain stable as water is the dispersion medium, but if it is diluted with oil, the cream will break as oil and water are not miscible with each other. Oil in water emulsion can be easily diluted with an aqueous solvent, whereas water in oil emulsion can be diluted with an oily liquid. Following the procedure, it was found to be o/w type of cream^[8].

Homogeneity

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

Acid value

Take 10gm of cream and dissolved in 50ml 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 1ml of phenolphthalein and it is titrated with 0.1N NaOH, until light pink color appears after shaking the flask for 30 seconds.

Acid value = $n \times 5.61 / w$

n = amount of NaOH required, w = the weight of the substance

III. RESULT AND DISCUSSION

Physical properties of skin cream

The formulated cream are evaluated for its physical properties like color, odour and state. The formulated cream are semi-solid in nature, characteristic odour are occur and light green in color. The texture of cream are smooth and homogeneity. By visual appearance and touch it confirms that all formulation produce uniform distribution of extract in cream.

Tab No:3 PHYSICAL PROPERTIES OF SKIN CREAM

S.NO	Specification	Limit
1.	State	Semi-solid
2.	Color	Light green
3.	Odor	Characteristic
4.	Texture	Smooth

Determination of pH

The pH of the cream was found to be in range of 6 to 6.8 which is good for skin pH. All the herbal formulation of cream were shown pH nearer to the skin required. i.e. F1-6.8 and F2- 6.5. The observed pH are near to the skin pH.

Tab No: 4-DETERMINATION OF pH

S.NO	Formulation code	pH
1.	F1	6.8
2.	F2	6.5

Determination of spreadability

The spreadability plays a considerable role in patient compliance and ensures uniform application of cream to a larger area of the skin. The low value of spreadability coefficient of the cream was sufficient suggesting easy spreading. The lower

value of spreadability indicates the lesser work required to spread the cream over the skin. Which means formulation was easily spreadable by applying small amount of shear. The spreadability tests showed that formulation has good spreadable property.

Tab No: 4- DETERMINATION OF SPREADABILITY

S.NO	Formulation	Time in seconds	Spreadability
1.	F1	16	18.75
2.	F2	18	17.7

Dilution test
 The type of emulsion is determined by the dilution test.

The type of cream is identified as an O/W type, it's determined by dilution test. The prepared cream are diluted either with water or oil. The prepared cream is diluted with water it will remain stable as water as a disperse medium, the cream is an O/W type of cream, but it is break as cream and oil while diluted with oil. So the prepared cream is determined as an O/W type of emulsion.

Homogeneity:

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

Acid value

The result of acid value of formulations of cream are presented in the table, and showed satisfactory values.

Tab No: 5- ACID VALUE

S.No	Parameter	Formulations	
		F1	F2
1.	Acidvalue	5.3	5.7

Evaluationparametersof herbalneemcream

Tab No:6- EVALUATION PARAMETERS OF HERBAL NEEM CREAM

S.No	Formulation(O/W)	Color	Homogeneity	pH	Spreadability	Texture
1.	F1	Light green	Uniform	6.8	(18.75)	Smooth
2.	F2	Light green	Uniform	6.5	(17.7)	Smooth

IV. CONCLUSION

The prepared herbal cream has best properties and having nutritional values using less chemicals which protects the skin from the various skin problems. Since the cream was prepared by using simple ingredients and simple methods so the cream is also economical. The herbal cosmetic formulation is safe to use and it can be used as the provision of a barrier to protect skin. The result of different tests of cream showing that the formation could be used topically in order to protect skin against damage. The Comparison of F1 and F2 the F2 produce better activity than F1.

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