

Formulation And Evaluation Of Herbal Hair Emulgel

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ABSTRACT

Herbal formulations always have attracted considerable attention because of their good activity and comparatively less or no side effects compared to synthetic drug. The object of present study involves the preparation of multipurpose herbal hair emulgel for hair growth, dandruff, controlling hairfall, scalping and greying of hair. Aloevera gel is used as emulgel base; Tea extract is used for preventing hair loss and promote hair growth. Polyphenolcatechins in tea is known to block DHT which is key factor for hair loss. Coconut oil strengthens the hair follicles, fight dandruff and keep scalp and hair well moisturised and healthy. Castor oil prevents hair loss and grow long hairs. The herbal hair emulgel was evaluated for following parameters like colour, odour, viscosity, spreadability, pH, stability. The product passed evaluation tests and was found stable.

Keywords: Polyherbal formulation, Emulgel, Aloe vera, Hair care, Anti frizz.

INTRODUCTION

Herbal formulations always have attracted considerable attention because of their good activity and comparatively lesser or no side effects with synthetic drugs. As far back as ancient time, people use natural extracts and resources for health care and cosmetic purposes. Nowadays, consumers demand for natural ingredients, especially in cosmetic products, as a replacement of synthetic compounds, since they have lesser effects on health and the environment. Furthermore, the number of people suffering from hair loss, greying of hair, dandruff is increasing worldwide. Hair loss is a dermatological disorder. Many factors such as metabolism, hormonal imbalance, heredity, side effects of the drugs have been negatively affecting the healthy growth of hairs^[1,2]. A number of herbal products are known for their hair growth promoting activity. The traditional system of medicine in India acclaims a number of herbal drugs for treating hair related problems.

Emulgel is the water in oil or oil in water emulsion with active ingredient incorporated in gelling agent providing more stability with desirable release of the drug. Emulgels are known for their various properties such as being thixotropic, greaseless, easily spreadable, easily removable, emollient, and transparent with long shelf life.

The current study on the herbal hair emulgel deals with the formulation and evaluation using aloe vera gel, tea extract, curry leaves extract enriched with coconut oil, castor oil and natural preservative rose merry extract. This hair emulgel is oil in water type of emulsion. This emulgel provides nourishment and a smooth texture to the hair and avoid skin irritation.

Aloe vera gel is used as an aqueous emulgel base. Tea extract is used for preventing hair loss and promote hair growth. Polyphenol catechins in tea block dihydrotestosterone which is a key factor for hair loss. Curry leaves helps in preventing premature greying and repairs damaged roots. As far as Ayurveda is concerned, curry leaves are good for curbing dandruff. They are antibacterial in nature, therefore can aid in fighting scalp-related infections as well. Coconut oil strengthens the hair follicles, fights dandruff and keep scalp and hair well moisturised and healthy. Castor oil when applied to the scalp it enhances the health of hair follicles and in turn promotes hair growth as well as protects against hair loss.

The present study involves developing a stable formulation containing above mentioned extracts and oils in the form of herbal hair emulgel.

METHODOLOGY

PREPARATION OF EXTRACTS

(A) Aloe vera gel

Thick succulent leaves of Aloe vera plant were used. The leaves of Aloe vera were collected from medicinal garden of AISSMS COLLEGE OF PHARMACY and was authenticated from Botanical Survey of India. The leaves were washed with water and were cut transversely into pieces. The inner pulp in the centre of the leaf was separated and homogenized. The extract was then filtered with the help of a muslin cloth. 2 % Carbopol 934 (gelling agent) was added to it and kept aside in refrigerator for 24 hours wherein the carbopol had swollen completely. Triethanolamine was added to obtain the required consistency of gel.

(B)- Tea Extract

Tea extract was prepared by decoction technique.

2% of tea powder was added to water boiled and filtrate. The filtrate was concentrated to a syrupy solution.

(C)- Curry leaves enriched coconut oil

The white kernel of the coconut was cut into several pieces and blended in a mixer. To this water was added. The extract was filtered through a muslin cloth. The filtrate was kept overnight in the refrigerator. A thick cake was found floating at the top. To this cake, weighed quantity of curry leaves were added. It was heated till the oil separated completely and then filtered.

FORMULATION OF EMULGEL

The formulation can be prepared by adding two phases:

1. Aqueous Phase

This phase contains Aloevera gel extract (A) and Tea extract (B) . Each ingredient was weighed and mixed together.

2. Oil Phase

It contains Curry leaves enriched coconut extract (C)and Castor oil.

The oil in water (o/w) emulsion based emulgel was formulated by adding small portion of oil phase to the aqueous phase with continuous stirring. A smooth & homogenous emulgel was prepared. To this Tween 80 was added as an emulsifying agent. One formulation was made using Rosemerry extract which served the purpose of fragrance and natural preservative. Another formulation was made by addition of synthetic paraben i. e methyl and propyl paraben as preservative.

The formula is given in the following table

Sr No	Ingredients	Quantity
1	Aloevera gel extract	83%
2	Tea Extract	2%
3	Castor Oil	5%
4	Coconut Oil	10%
5	Rose merry Extract	0.04%
6	Preservatives	0.01%

Evaluation Parameters of Emulgel

1) COLOUR AND ODOUR:

Physical parameters like colour and odour were examined by visual examination.^[3]

2) HOMOGENITY:

Homogeneity was determined by checking visual appearance and touch of the formulation.

3) pH OF THE EMULGEL

5g of emulgel was taken; dispersed in 100ml of water to form a dispersion and then by using pH meter the pH was taken. The pH of the emulgel was found to be suitable to the skin pH. The pH meter was calibrated with standard buffer solutions (pH 4, 7, and 10) before each use.^[4]

4) VISCOSITY

Viscosity of formulated emulgel was determined by Brook field viscometer. The viscosity of the emulgel showed easy spreadability by small amount of shear. It has greater resistance and good torque.^[5]

5) SPREADABILITY

The important criteria of semisolid formulation is that it possess good spreadability. Spreadability is a term used to denote the extent of area to which emulgel was spread on application to skin; therapeutic efficacy also depends on spreading value. Two glass slides having standard dimensions were selected. The emulgel was placed on one of the slide and other slide was placed on it and pressed by placing 100 g weight to press uniformly to form thin layer; excess adhering to slide is removed. One of the slide was fixed on which the formulation was placed and movable slide is placed over it with one end tied to string to which load applied with the help of simple pulley and a pan. A 30 g weight was put on the pan and the time taken for upper slide to travel the distance of 5 cm and separate from lower slide under the direction of the weight was noted then spreadability was calculated by formula

$$\text{Spreadability} = m \times L \div t$$

m=weight tide to upper side. L=length of glass slide; t= time taken in second.^[6]

6) TEST FOR THERMAL STABILITY

Humidity chamber controlled at 60-70% RH and $37 \pm 1^\circ\text{C}$ was used to determine the thermal stability of the formulation. The formulation was found to be stable and no phase separation was observed.^[7]

7) DYE SOLUBILITY TEST

The scarlet red dye (Amaranth water soluble dye) is mixed with the emulgel and examined under a microscope. If the disperse globules appear red and the continuous phase colourless then the emulgel is w/o type. The reverse condition occurs in o/w type emulgel i.e. the disperse globules appear colourless in the red background.^[8]

8) TYPE OF SMEAR

After application of emulgel, the type of film or smear formed on skin was checked.

9) REMOVAL

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

10) TEST FOR MICROBIAL GROWTH IN FORMULATED EMULGELS

The formulated emulgel were inoculated on the plates of Muller Hinton agar media by streak plate method and a control was prepared by omitting the emulgel. The plates were kept in the incubator and were incubated at 37°C for 24 hours. After the incubation period, plates were taken out and check the microbial growth by comparing it with the control.^[9]

11) IRRITANCY TEST:

An area (1sq.cm) was marked on the left hand dorsal surface. A small amount of cream was applied to that specified area and time was noted. Irritancy, erythema, edema, was checked if any for regular intervals up to 24 hrs and reported.^[10]

RESULT AND DISCUSSION

A Majority of world's population still relies on Herbal products to meet its health needs .

The results of the following parameters are:

1) ORGANOLEPTIC PROPERTIES

The properties of the emulgel were judged by its color, odour and texture.

Specifications	Limits
Color	Brown
Odour	Characteristic
Texture	Smooth

2) pH OF THE EMULGEL

The pH of the emulgel was found to be 5.54 which is found to be suitable as the skin pH is between 4.5-6.

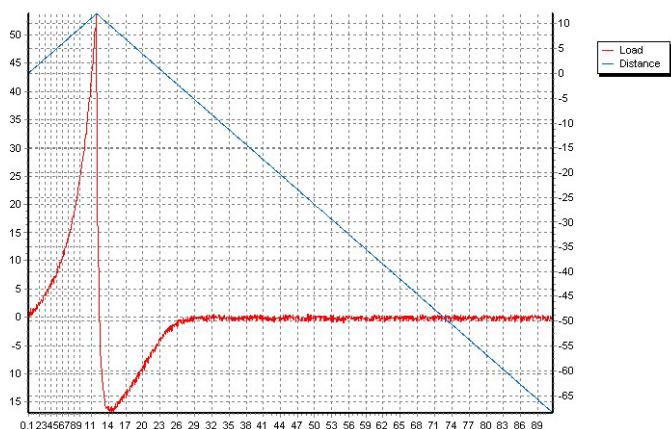
3) VISCOSITY

Viscosity of formulated emulgel was determined by brook field viscometer at 20 rpm. The viscosity of the emulgel was found to be in the range 79400-80200cp which indicates that emulgel was easily spreadable by small amount of shear. It also has greater resistance and good resistance.

4) SPREADABILITY

Results indicated that our emulgel had comparable spreadability to that of commercial product which was used as comparator in the study. The results are noted in the following table.

Specifications	Values
Hardness cycle	53.70g
Adhesive Force	16.80g
Adhesiveness	1.32Mj



5) TEST FOR THERMAL STABILITY

Humidity chamber controlled at 60-70% RH and $37 \pm 10^\circ\text{C}$ was used to determine the thermal stability of the formulation. The formulation was found to be stable and no phase separation was observed.

6) DYE SOLUBILITY TEST

The emulgel was found to be oil in water type of emulsion.

7) TYPE OF SMEAR

After application of the emulgel on the skin, the type of smear was found to be non-greasy.

8) REMOVAL

The emulgel when applied on skin, was easily removed by washing with tap water.

9) IRRITANCY: The formulations show no redness, edema, inflammation and irritation during irritancy studies.

CONCLUSION

The cosmetic products are the best option to reduce skin problems such as hyper pigmentation, skin aging and rough texture etc. The present study involves Formulation, Development and Evaluation of Multipurpose Skin Emulgel. The prepared formulation was found to be stable as no phase separation was seen. It showed good spreadability and consistency. Parameters like organoleptic properties, nature and fragrance of the formulation showed no significant variation during the study period. The stable formulations were safe and skin irritations and allergic sensitizations were scarce.

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