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FORMULATION AND EVALUATION OF CREAM FOR HAIR LOSS

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ABSTRACT

Manuscript describe producing keratin hair growth cream The aim of present research was to formulate and evaluate the hair growth cream of lizard ash it contains the keratin protein. Three different types of cream formulations containing lizard ash in varying concentration ranging from one percent to four percent were prepared and evaluated. The evaluation of all the formulation [F1-F3] were done on various parameters like physical appearance, pH, viscosity, spredability, among the three formulation F3 showed good spredability, consistency, homogeneity, appearance optimum viscosity, pH and stable for long periods of time.

KEYWORDS: Keratin, protein, lizard ash, hair cream.

INTRODUCTION

Hair is one of the important part of our body and it influence over all appearance of person. Hair plays an important role in making look younger or old and also plays an important role in the personality of humans. Cosmetics are the preparations used to enhance the human gene in epidermis. In alopecia loss of hair is takes place. Lizards epidermis proteins has ability to re grow the human hair. Epidermises gives the amino acids, protein to the scalp of hair these improve or fast hair growth.[1-2] Bhringraja help to promote hair growth and amla is hair tonic it is rich source of vitamin C and polyphenol.

Hair loss

Hair loss is the major issue in our life. Hair loss is thinning of hair. Alopecia is a temporary or permanent hair loss disorder. In alopecia thinning of hair on scalp is take place. Androgenic alopecia means the combination of hormones (androgen are male hormone) and

heredity (genetics). Other type of hair loss is alopecia areata (patches of baldness that usually grow back). Telogen effluvium and traction alopecia.

Causes of hair loss

Hair loss is most convenient problem of our day today life. Hair loss has number of problems. Scientist consider as hormone is the major cause of hair loss. In male testosterone hormone is closely related with heredity. The man has inherited gene for hair loss, testosterone is formed by some of the roots into derivatives called dihydrotestosterone which is responsible for hair loss dihydrogenatione is present in the surface of sebum of hereditably predisposed people. Other reason for hair loss is poor blood flow to the scalp.[3]

Stress

Stress also cause of hair loss in people. It occurs three month after stressful event is occurred it take three months to hair growth start. Most of the time, it is temporary condition if people to predisposed to alopecia.[4]

Types of hair loss

1. Androgenetic or androgenic alopecia (baldness)

Androgenic alopecia is the major cause of hair loss in men. It is hereditary baldness in androgenic alopecia. follical size is reduced and duration of anagen is diminished increase number of telogen.[5]

2. Alopecia areata

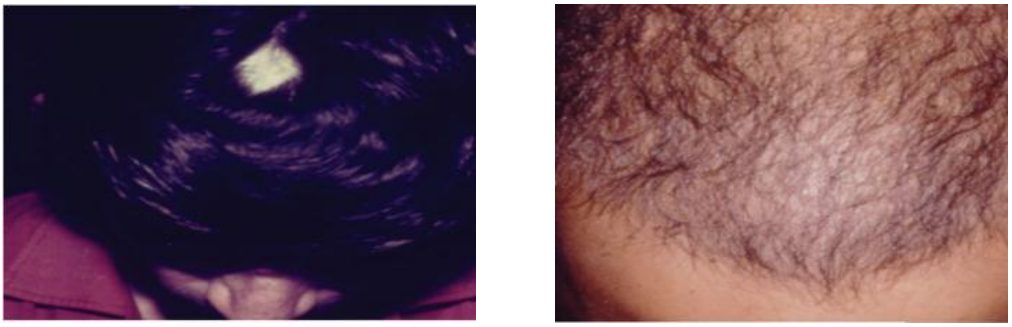
In alopecia areata the small circular coin size patches of scalp. The blandness that usually grow back within month.[6]

3. Telogen effluvium

Telogen effluvium is a form of temporary hair loss that usually happens after stress.[7]

4. Chemotherapy-induced alopecia

In Cancer hair loss is occurred due to the side-effects of cancer therapy.[8]



Alopesia **hair loss**

Fig. 01: Alopecia and hair loss.

MATERIALS AND METHODS

lizard ash were produced from the lizard epidemis cell culture technology method.[8-9] bees wax, almond oil, methyl paraben, amla and bhringaraja procured from SD fine chemical Mumbai India and all other chemicals and reagent used were of either analytical or laboratory grade.

Procedure

Melt the bees wax and mineral oil (almond oil) together and bring to a temp to 70^0c. Dissolve borax in water and bring the temp of this solution to 70^0c. Add water phase to oil phase with rapid stirring. Add lizard ash, amla and Bhringaraja in above mixture After the addition of water, agitated slowly while cooling. Add the perfume and preservative at the temp at 50^0c. Fill into the jars when cream has cooled to 42^0c.[10-11]

Table 01: Formulation of cream.

Ingredients	F1	F2	F3
Lizard epidermis ash	1%	2%	4%
Bhringaraja	1%	2%	4%
Amla	1%	2%	4%
Bees wax	17%	17%	17%
Almond oil	50%	50%	50%
Borax	0.80%	0.80%	0.80%
Water	32.5	32.5	32.5
Methyl paraben	0.5%	0.5%	0.5%
Rose oil	0.5%	0.5%	0.5%

The prepared cream formulations were stored at room temperature for further evaluation.

Evaluation of herbal hair cream formulations

Physical appearance[12]

The physical appearance was visually checked for the appearance, colour and the feel on application of prepared hair cream formulations. Results are as shown in **table 2.**

Homogeneity[13]

After the cream formulations have been set in the container, all developed gels were tested for homogeneity by visual inspection. They were tested for their appearance and presence of any lumps, flocculates or aggregates.

pH determination[14]

The pH of all hair cream formulations were determined by using the Digital pH meter. One gram of cream was dissolved in 100 ml distilled water and stored for two hours. Electrodes were completely dipped into the hair cream formulations and pH was noted. The measurement of pH of each formulation was done in triplicate and average values were calculated. The results are presented in **table 2.**

Extrudability determination[15]

The hair cream formulations were filled into collapsible metal tubes. The tubes were pressed into extrude the material and extrudability of the formulations was checked. The extrudability of the formulations was determined in terms of weight in grams required to extrude a 0.5 cm ribbon of cream in 10 seconds. The comparative extrudability of the hair cream formulations is as shown in **table 2.**

Viscosity determination

Brookfield viscometer was used to determine viscosity. Sufficient quantity of cream was filled in wide mouth jar separately. The height of the cream in the jar should be sufficient to allow to dip the spindly. The rpm of the spindle was adjusted to 2.5 rpm. The viscosities of the formulations were recorded. The results are as shown in **table 2.**

Table 2: Evaluation Study of prepared cream formulations.

Sr. No.	Formulations	F1	F2	F3
1	Colour	Light black	Light black	Light black
2	Homogenecity	No lumps, flocculates or aggregate	No lumps, flocculates or aggregates	No lumps, flocculates or aggregate.
3	Odour	Characteristic	Characteristic	Characteristic
4	Physical Appearance	smooth	smooth	smooth
5	Consistency	good	good	good
6	pH[a]	6.2±0.2	6.3±0.1	6.1±0.3
7	Viscosity (cps) [a]	33.2±0.1	31.8±0.3	30.3±0.6
8	Spreadability (g/sec) [a]	43.5±0.2	42.4±0.9	41.3±0.8
9	Extrudability (g) [a]	530.5±0.2	5390.3±0.2	543.7±0.8

Stability studies[16]

All the formulations were equally good with respect to appearance, homogeneity, pH, viscosity and extrudability. So F3 was selected for stability studies. The stability studies were carried out for all the prepared cream formulations at room temperature and humidity at 75RH. The stability study was conducted for the period of 3 months. The parameters like appearance, pH, extrudability, colour were tested every month. The results are tabulated in table 3.

Table 3: Stability Study of prepared formulations for one month (30days).

Sr. No.	Formulations	F1	F2	F3
1	Colour	Light black	Light black	Light black
2	Homogenecity	Good	Good	Good
3	Odour	Characteristic	Characteristic	Characteristic
4	Appearance	smooth	smooth	smooth
5	Consistency	excellent	excellent	excellent
6	pH[a]	6.3±0.2	6.7±0.1	6.6±0.3
7	Viscosity (cps)[a]	34.2±0.1	34.8±0.7	34.4±0.1
8	Spreadability (g/sec)[a]	41.5±0.4	41.3±0.2	41.6±0.4
9	Extrudability (g)[a]	540.5±0.5	540.3±0.2	540.7±0.8

RESULTS AND DISCUSSION

Physical appearance The colour of all the herbal cream formulations F1, F2 and F3were found to be pale black with translucent appearance which was found to be smooth on application.

Homogeneity All the developed creams were tested for homogeneity by visual inspection for appearance and presence of any lumps, flocculates or aggregates. The homogeneity was found to be good for all formulations.

pH determination The pH of all the herbal cream formulations ranged between 6.1 to 6.3, that suited the hair, indicating the compatibility of the herbal cream formulations with the hair.

Extrudability determination All formulations showed good extrudability when extruded from metallic collapsible tube. Comparatively F3 had excellent extrudability than F1, and F2.

Viscosity determination

The viscosity of all the formulations were found in the range of 33.30cp to 33.2 cps.

Stability study

The stability studies were conducted for all the formulations for a period of 3 months. No appreciable changes were found for the tested parameters like appearance, pH, extrudability, at both the temperatures (room temperature and 40 C). The results are tabulated in **table 3.**

7.3.7 In vitro- diffusion study[17]

In-vitro diffusion studies the *in-vitro* diffusion studies for all formulations (F1-F3) were carried out using the Franz-diffusion cell. The diffusion cell apparatus was fabricated as an open ended cylindrical tube. A weighed quantity of formulation equivalent to 1gm of the drug was placed onto the dialysis membrane-70 (Hi- Media) and was immersed slightly in 100ml of receptor medium (phosphate buffer pH 6.8+ ethanol in ratio 40:60) which was continuously stirred and the temperature was maintained at 37±1°C. Aliquots of 1ml were withdrawn from each of the system at time intervals of 5, 10, 15, 20, 25 and 30 minutes were analyzed for drug content using ultraviolet spectrophotometer. **Table no.4, fig. no.02.**

Table 4: *In vitro*- diffusion study of prepared cream.

Time	F1	F2	F3
0	0	0	0
5	46.53	45.3	39.18
10	67.47	66.24	51.51
15	78.09	78.08	66.29
20	87.24	84.77	83.53
25	91.51	89.29	88.01
30	93.21	91.24	96.33

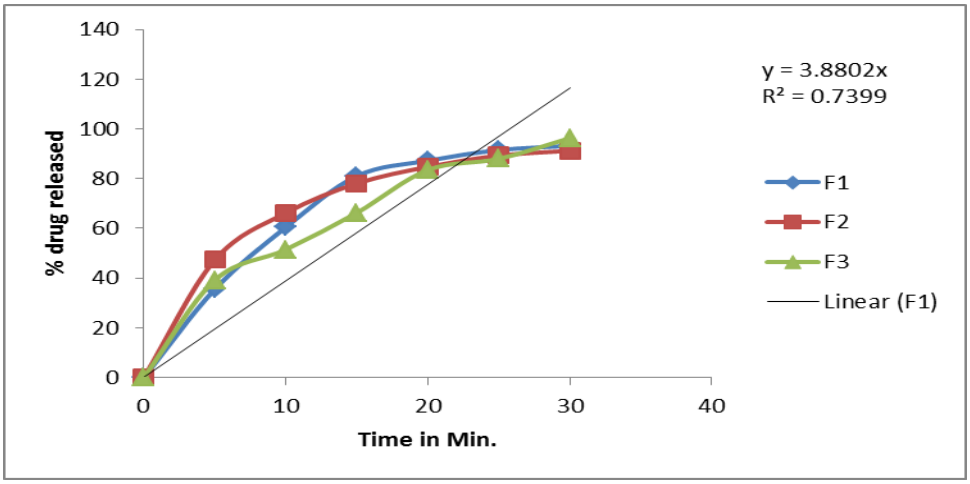


Fig. 02: % *in vitro* diffusion study of prepared formulations.

CONCLUSION

The formulations of hair cream provides a good base for treating the scalp and strengthens the hair thereby preventing the hair fall. There is a further scope for pharmacological studies in lower animals

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