

A pharmaceutical and clinical study of effect of *Ayurvedic Keshya gel in hair fall*

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Abstract:

Hair loss is one of the most common problems worldwide, affecting one-third of the population including both men and women. In India, hair is a very sensitive issue among both men and women. Various factors like pollution, stress, rising work pressure, improper eating habits, excess use of chemical cosmetics, hormonal disorders have lead to increase cases of hair fall and baldness. Hair loss can be embarrassing and hamper one's self esteem and confidence. Ayurveda offers some effective external therapies for controlling hair fall. Ayurvedic herbs that are beneficial for controlling hair fall can be converted in to gel form which is more convenient to use considering today's lifestyle. Aloe barbadensis (Kumari), Hibiscus rosasinesis (Japa), Eclipta alba (Bhringaraj), essential oils of Rosmarinus officinalis (Rosemary), Lavendula officinalis (Lavender), Murraya Koenig (Curry leaves), Gel base were used to prepare gel. Product was given 30 volunteers and product evaluation was done by doing Hair pull test and 60-second hair count. Data

analysis was done with Paired t-test showed significance $p < 0.05$. Ayurvedic *Keshya gel* was considerably effective in controlling hair fall in both women and men. Moreover it also contributed to improve the quality of hairs. It was comfortable and safe to use

- **Keywords:** Ayurvedic Keshya gel, Japa, Aloe vera, Bhringaraaj. Hair fall.

INTRODUCTION

Hair loss is one of the most common problems worldwide, affecting one-third of the population including both men and women. In India, hair is a very sensitive issue among both men and women. Various factors like pollution, stress, rising work pressure, improper eating habits, excess use of chemical cosmetics, hormonal disorders have lead to increase cases of hair fall and baldness. Hair loss can be embarrassing and hamper one's self esteem and confidence.

In Ayurveda, increased hair fall is termed as Khalitya and is classified

under Shiro rogas. Romakupagata vitiated Pitta along with vitiated Vata leads to dislodgement of the hair. Moreover, vitiated Kapha along with rakta will cover and cause obstruction to the hair root, which results in no further hair growth from that area. Thus, according to Ayurveda, hair fall is a Pitta pradhana Tridoshaj vyadhi.

The Indian hair care market is in part being fuelled by an increasing expenditure on the appearance of people. The high urbanization rate has led to a number of people working with an increase focus on looking presentable and professional. This trend is not restricted to women, as one of the highest growth sectors in personal care as well as hair care are the product categories for men. This was introduced by some brands and newer brands are rapidly filling out the men's hair care space such as shampoos, conditioners, and serums. Hair styling products for men such as gels, sprays, etc. were already present in Indian hair care market.

A gel is a solid jelly like material that can have properties ranging from soft and weak to hard and tough. Gels are defined as a substantially dilute cross-linked system, which exhibits no flow when in the steady-state. By weight, gels are mostly liquid, yet they behave like solids due to a three-dimensional cross-linked network within the liquid. It is the cross linking within the fluid that gives a gel its structure (hardness) and contributes to

the adhesive stick. In this way gels are a dispersion of molecules of a liquid within a solid in which liquid particles are dispersed in the solid medium. The word gel was coined by 19th-century Scottish chemist Thomas Graham by clipping from gelatin.

Ayurveda offers some effective external therapies for controlling hair fall. Ayurvedic herbs that are beneficial for controlling hair fall can be converted in to gel form which is more convenient to use considering today's lifestyle.

AIM AND OBJECTIVE

To develop and evaluate efficacy of Ayurvedic Keshya gel in controlling hair fall.

HYPOTHESIS

Ayurvedic Keshya gel when used is effective in controlling hair fall, in both women and men.

MATERIALS AND METHOD-

The study was conducted in following stages:

- 1) Conceptual study
- 2) Product development
- 3) Product evaluation

A) Conceptual study

Review of literature of Keshya drugs was done from different Ayurvedic Samhitas, previous researches done and internet sources. Ingredients chosen for formulation of hair gel and their properties are given as follows,

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Table no.1 Ayurvedic drugs used for the preparation of Keshya gel and their properties:

| Sr. No. | Drug | Latin name | Family | Rasa | Guna | Veer ya | Vipa ka | Doshagh nata | Rogagh nata | Karma |
|---------|---------------------------|-----------------------|-------------|-------------------------|--------------------------|---------|--------------|-------------------|---|--|
| 1. | Kumari (Aloe vera) | Aloe barbadad onsis | Liliacea | Tikta , Madhur | Guru, Snigdha, Picchilla | Sheeta | Katu | Kafa Pitta shamak | Shiro roga, Rakta vikara, Charma roga | Raktashodhak, Tvakdosh ahara |
| 2. | Japa (Hibiscus) | Hibiscus rosa sinesis | Malvac eae | Kash ay, Tikta , Madhur | Laghu, Snigdha aghu | Sheeta | Katu, Madhur | Kafa Pitta shamak | Khalitya , Palitya, Indralup ta, Shiro roga | Keshya |
| 3. | Bhringaraaj (Maka) | Eclipta alba | Asterac eae | Katu, Tikta | Ruksha, Laghu | Ushna | Katu | Kafa Vata shamak | Shiro roga, Palitya, Kesha roga, Kushta | Keshavardhan, Kesha ranjan, Vrana shodhana |

 Table no 2. Essential oils used for the preparation of *Keshya* gel and their properties:

| Sr.No. | Essential oil | Latin name | Family | Properties |
|--------|-----------------------|------------------------|----------|---|
| 1. | Rosemary | Rosmarinus officinalis | Labiatae | Anti-bacterial, anti-oxidant, increases blood flow of hair follicles. |
| 2. | Lavender | Lavendula officinalis | Labiatae | Anti-microbial, anti-septic, Stimulates circulation to the scalp, stimulates new hair growth, helps to balance the natural oil production of the scalp. |
| 3. | Curry leaf oil | Murraya koenig | Rutaceae | Prevents hair loss and premature graying and maintains the natural color of hairs. |

**KUMARI****Pharmacological activities:**

- Anti-bacterial,
- Anti-inflammatory the anagen phase.

Mode of action:

- Dissolves dead skin cells and excess sebum that can clog hair follicles
- Excellent moisturizer

**JAPA****Pharmacological activities:**

- Anti-bacterial
- anti-viral,
- anti-fungal

Mode of action:

- Contains vitamins and anti-oxidants that improve health scalp and hair
- Leaves and flower promote hair growth; they mainly act by enlarging follicular size and a prolongation of

**BHRINGARAJ****Pharmacological activities:**

- Anti-bacterial
- Anti-viral
- Anti-oxidant
- Promoter for blackening and growth of hair

Mode of action:

- Promotes hair growth
- Promotes follicular enlargement and prolongation of anaphase.

LAVENDER ESSENTIAL OIL**ROSEMARY ESSENTIAL OIL**

MATERIALS

Aloe barbadensis (Kumari), Hibiscus rosasinesis (Japa), Eclipta alba (Bhringaraj), essential oils of Rosmarinus officinalis (Rosemary), Lavendula officinalis (Lavender), Murraya Koenig (Curry leaves), for gel base Carbopol, Glycerine, Distilled water, sodium methyl paraben, sodium propyl paraben were used to prepare gel.

B) Product Development

Raw materials in the form of fresh drugs were procured from reliable market sources and their authentication was done by experts in the Dravya guna field.

SOP:

- 1) Carbopol (10gms) and Glycerin (10ml) was added to distilled water (1000ml) and mixed using blender for few minutes.
- 2) Sodium methyl paraben (2gms) and Sodium propyl paraben (1gm) was added to above mixture and was blended for another 10 minutes.
- 3) Aloe Vera pulp (50gms), Japa pushpa kalka (50gms), Japa patra swaras (25ml), Bhringaraj swaras (25ml) was added and thoroughly blended to form a uniform mixture.
- 4) At last, essential oils of Rosmary (20 drops), Lavender (20 drops), and Curry leaf (20 drops) were added and gel, thus prepared was stored in a container.

METHODOLOGY

A thorough review of literature regarding Ayurvedic Keshya drugs effective in controlling hair fall was done and drugs were selected for the formulation of gel. Institutional Ethics Committee (IEC) permission was taken for the trial. Product designing and development of Ayurvedic Keshya gel was done in the lab. After product development, evaluation of the efficacy of the hair gel was done. Product was given to the 30 volunteers. Assessment of the hair fall, pre and post trial was done by 60 second hair fall test and Hair pull test.

60 second hair fall test

The technique comprises of the following four steps:

1. Before shampooing, comb your hair for 60 s over a pillow or sheet of contrasting color to your hair, starting with the comb at the back top of the scalp and moving the comb forward to the front of the scalp.
2. Repeat the procedure before three consecutive shampooing (e.g., if you shampoo every other day, then repeat the procedure every other day) and always use the same comb or brush.
3. Count the number of hairs in the comb or brush and on the pillow after each hair count and record.
4. Repeat the above procedure monthly and bring the results to your dermatologist

Hair pull test

1. This is also known as the 'traction test' or 'Sabouraud's sign' or the 'pull-out sign.' Approximately 20-60 hairs are grasped between the thumb, index and middle fingers from the base of the hairs near the scalp and firmly, but not forcefully, tugged away from the scalp.
2. If more than 10% hairs are pulled away from the scalp, this constitutes a positive pull test and implies active hair shedding. The patient must not shampoo for at least a day prior to the pull test.

Google form was created for the feedback of the volunteers. Results were derived from the feedback of the volunteers given in the questionnaire in the Google form.

1) **Product Evaluation:-**

Product was given 30 volunteers and product evaluation was done by doing Hair pull test and 60-second hair count. Application of hair gel was advised thrice a week.

Inclusion criteria-

1. Age between 15-35yrs.
2. Irrespective of gender.
3. Volunteers having complaints of hair fall.

Exclusion Criteria-

1. Age above 35yrs and below 15 yrs.
2. Volunteers having major diseases of scalp.

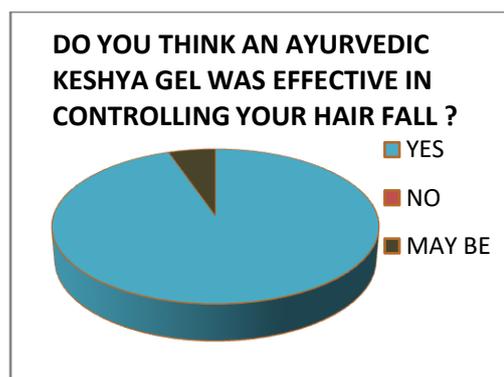
APPLICATION OF GEL



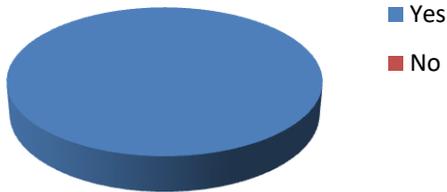
RESULTS-

- Out of 30 volunteers, all the volunteers found Ayurvedic Keshya gel comfortable to use.
- 89.3% of the volunteers found the concept of Ayurvedic Keshya gel very useful.
- 96.6% of the volunteers found it useful in controlling the hair fall and would like to use regularly.
- 86.2% of the volunteers liked the smell of the gel. None of them suffered from adverse effects after using gel.
- Data analysis was done with Paired t-test showed significance $p < 0.05$.

Graphical presentation of results:



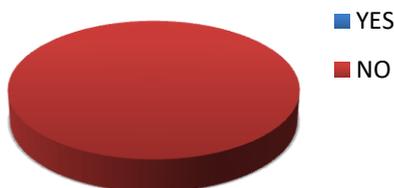
WAS IT COMOFORTABLE TO APPLY THE AYURVEDIC KESHYA GEL?



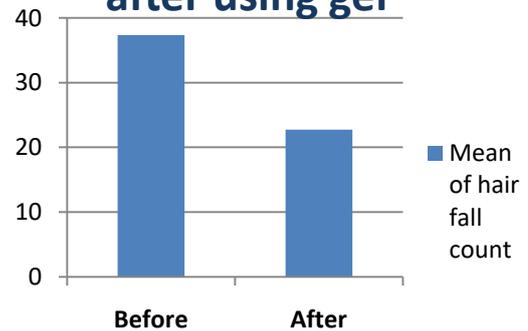
WOULD YOU LIKE TO USE AYURVEDIC KESHYA GEL ON REGULAR BASIS?



DO YOU HAD ANY SYMPTOMS ON THE SCALP AFTER USING GIVEN HAIR GEL?



Hair fall before and after using gel



DISCUSSION-

Use of Ayurvedic cosmetics is increasing day by day due to therapeutic efficacy of Ayurvedic drugs and their negligible side effects. Bhringaraj, Japa and Aloevera are well known for their efficacy in controlling hair fall since ages. Bhringaraaj has a synonym called Kesharaaj which signifies the role in hair disorders and justifies its use in many poly herbal formulations. The leaves and flowers promote hair growth and their role in controlling hair fall has been justified through researches done. Use of essential oils of Rosemary, Lavender and Curry leaf gives an add-on effect to the gel as well pleasant aroma to the product. They are known to act through Olfactory nerves. Thus, Ayurvedic Keshya gel thus designed proved an effective remedy to treat hair fall.

CONCLUSION-

Ayurvedic Keshya gel was considerably effective in controlling hair fall in both women and men. Moreover it also contributed to improve the quality of hairs. It was comfortable and safe to use.

Use of synthetic medicinal remedies is questionable due to their potential side effects. Hence, an attempt was made to explore the beauty of Ayurvedic herbs in form of modern drug dosage form.

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