

Hair growth modulating effect of a novel herbal formulation.

A rediscovery of traditional knowledge

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Received: July, 2010.

Key words: Hair growth; Siddha; Minoxidil; Medicinal plants;

Summary

The hair growth enhancing property of a poly herbal formulation and was studied in comparison with 2% Minoxidil formulation in an experimental animal model.

The study formulation in gel containing extracts of medicinal plants mentioned in traditional Siddha system of Medicine was found to have statistically significant effect on promoting hair growth and the effect is in relative comparison with Minoxidil based formulation.

Riassunto

In questo studio è stata verificata, mediante il lavoro sperimentale condotto su un modello animale, l'attività stimolante la ricrescita dei capelli di una formulazione naturale paragonata ad una soluzione di Minoxidil al 2%.

La formulazione in gel fondata sull'uso di estratti di piante medicinali descritte secondo il sistema della Medicina Siddha, ha dimostrato di avere un'efficacia statisticamente evidente nel promuovere la ricrescita dei capelli paragonabile al Minoxidil.

INTRODUCTION

Hair growth is regulated by complex factors of intrinsic and extrinsic origin (1-5).

Scalp hair is considered to be the most important component of beauty by man from pre-historic times. Hence, the hair growth regulation and promotion has become a very important need of people especially of younger and middle age group all over the world. Male type baldness and alopecia are the most distressing hair problem people face in their life.

Telogen effluvium is another major hair problem that begs immediate treatment intervention.

Wig was made as a substitute and was used by the people to camouflage the baldness and open scalp. However, obviousness of the wig usage in most cases limits its wide acceptance.

Hair weaving or hair transplantation although exist as other modes of management are usually expensive and therefore unaffordable to common man. Minoxidil and other hair enhancing preparations although offer limited remedy, the side effects and drug dependency make these products less acceptable. The above circumstances warrant the search for newer hair growth promoting agents.

To date, there are several external preparations available in the market with tall claims to promote hair growth and reduce hair fall. However, the desired level of satisfaction to the sufferer from these preparations is far from near.

Among the known hair growth promoting agents, Minoxidil based preparations have better clinical acceptance as the claims are based on reliable scientific evidences and clinical trials. However, side effects and continuous Minoxidil dependency to minimize the hair fall limits the satisfaction of the sufferer (6)

The Siddha system of medicine, one of the ancient medical practices in India, acclaims several medicinal plants to possess unique hair

growth promoting properties (3-4).

We, in the present study, discuss about the hair growth promoting effect of a poly herbal combination in an experimental animal model to validate the Siddha system of medicine and its relevance for hair loss problems in a scientific way.

MATERIALS AND METHODS

The extracts of the plants were prepared individually in coconut oil using the traditional knowledge and unique methods mentioned in Siddha.

The oil extracts were mixed to get the poly herbal oil which was added as a constituent active ingredient of a hair gel preparation.

The plants used for the study formulation in gel¹ were *Phyllanthus emblica*, *Bergamia koenigii*, *Lawsonia alba*, *Indigofera tinctoria* and *Eclipta prostrate*. The effect of poly herbal extract of the above plants in the study gel was studied for its hair growth promoting activity.

Animal Experiment

Wister strain of rats of either sex weighing 120-160 g was used for the study. All animals were provided with food and water ad libitum. The animal house was set at 24-25°C with equal proportion of day and night cycle. Approval was obtained from Institutional Ethical Committee of the Dr. MGR-Janaki College of Arts and Science, Chennai, India the site of the experiment.

The study was non-invasive and non sacrificial. The experimental animals were divided into four groups of 6 animals each.

The hair on the dorsal portion of each animal was removed with a standard depilatory cream. The first group of animals were treated with placebo gel, the next group was treated with the study formulation in gel, the third with

¹ called Keshraksha gel (Kesh means hair, raksha means protection in Sanskrit).

Minodixil 2% preparation and the fourth group served as control (untreated).

The test materials (either placebo, the study formulation in gel or Minoxidil 2% preparation) was applied in the respective groups of animals once daily on the depilated region for the period of 30 days.

Pattern of hair growth was observed in all animals in each group and Hair Growth Initiation Time (HGIT) and Hair Growth Completion Time (HGCT) were recorded on daily basis. HGIT is referred as the presence of the growth of new hair and the HGCT is referred as the complete coverage of hair in the depilated area which is identical to rest of the part of the body.

The study findings show that the study formulation in gel has reduced the hair growth completion time by 30% as against 53% by 2 % Minoxidil.

The placebo did not have any effect on hair growth completion time in comparison to the control.

DISCUSSION

The present study clearly establishes the fact that the study formulation in gel has significant effect on promoting hair growth. Hair growth initiation time and completion time got reduced by 30% with treatment.

Although the effect of the formulation appears to be relatively lower than 2% Minoxidil, in reality, the activity may be similar, as murine model will give only qualitative indication and direction on the efficacy.

Further, the side effects associated with Minoxidil needs to be considered when the efficacy of the formulation is taken for comparison. Reports on side effects during use of Minoxidil based formulations include allergic reactions on sensitive skin. The placebo did not have any effect in reducing either hair growth initiation time or completion time suggests that the hair growth observed on application of the study formulation in gel may be due to the herbal extracts.

The texture of the hair formed after treatment with the use of study formulation in gel was very soft, silky and shiny. On the contrary, hair formed in the Minoxidil treated animal group was very rapid, long, thin and highly irregular.

We presume that the hair root enhancement due to the study formulation in gel may be the reason for the above phenomena. We have already established in our previous study about the use of a cream and an oil based on the same active compounds in study increases the protein synthesis responsible for hair growth through mRNA expression (7).

TABLE I
Effect of the study formulation in gel on hair growth

Treatment Groups	In days		% Reduction in HGCT*	t-Test (two tailed)
	HGIT	HGCT		
The Study formulation in gel	15.00	20.66	29.54	Significant (p<0.05)
Minoxidil 2%	11.33	14.00	52.27	Significant(p<0.05)
Placebo	14.83	27.5	6.25	Non Significant(p>0.05)
Untreated Control	15.66	29.33	-	-

HGIT – Hair Growth Initiation Time, HGCT – Hair Growth Completion Time
* (Mean of control-mean of Keshraksha gel, Minoxidil 2%, Placebo)/Mean of Control x 100

It was well documented in the literature of Siddha system of medicine that the plants *Phyllanthus emblica*, *Bergamiia koenigii*, *Lawsonia alba*, *Indigofera tinctoria* and *Eclipta prostrate* are known to promote hair growth and further provide other benefits such as conditioning of hair, reduction of hair fall and prevention of premature graying of the hair (8,9).

The findings of the study clearly reveal that the study formulation in gel has hair growth promo-

ting effect and it relatively comparable to Minoxidil 2% preparation.

Considering legacy of usage of these herbs for various health care practices, the above findings suggests that the study formulation in gel will be safe, effective and economical preparation for managing hair fall problem.

A clinical trial is currently in progress to substantiate the benefits in human volunteers.



Fig. 1 After depilation- Day 0.



Fig. 2 Day 15 - Untreated Control.



Fig. 3 Day 15 Formulation treated animal.



Fig. 4 Day 15 Minoxidil treated animal.

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