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Efficacy and Tolerability of Hairgain® in Individuals with Hair Loss: a Placebo-controlled, Double-blind Study

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This randomized, placebo-controlled, double-blind study was designed to investigate the efficacy and tolerability of a new agent for the treatment of hair loss, based on a marine protein, minerals and vitamins. Sixty subjects with hair loss of different aetiologies participated in the 6-month blinded phase of the study. Objective assessments indicated that the treatment was effective and subjective assessments showed a statistically significant positive effect of treatment. Exposure to the active preparation for a further 6 months in an open phase indicated a further improvement in hair growth. Exposure of the patients previously treated with placebo to the active preparation for 12 months gave similar results. Tolerability was good and no side-effects were reported. The product investigated may provide an alternative to pharmacotherapy for the treatment of hair-loss problems in individuals with androgenic alopecia.

KEY WORDS: NATURAL SUBSTANCE; HAIR LOSS; ALOPECIA; ANDROGENIC ALOPECIA

Introduction

Hair loss can be a considerable psychological and social problem for those affected.[1,2] Much effort and investment has been put into attempts to develop efficient pharmaceutical and other treatments for hair loss. In most cases, however, the results have been disappointing.

Hair loss may result from drug treatment (cytostatics), pregnancy (telogen effluvium), alopecia areata or different types of dermatological diseases.[3]

The most common form of hair loss is androgenic alopecia or hereditary hair loss, also called male hair loss. Most men will have this form of hair loss, but the stage at which the process starts varies considerably. In 5% of the male population it starts before the age of 20, normally bitemporally and later over the vertex. Androgenic alopecia is due to a genetically determined sensitivity to androgens. The androgenic effect is mediated through an increase in 5-α-reductase activity and formation of increased amounts of dihydrotestosterone from testosterone locally in the hair follicles. This process causes hair loss.[4]

Three main treatment schedules are available today: treatment with the drugs minoxidil (topical) or finasteride (oral), or hair transplantation. The two drugs have been undergoing a number of controlled clinical trials.[5 – 7] Minoxidil is registered in

Norway, while finasteride is registered in the USA and a number of other countries for the treatment of androgenic alopecia. Finasteride is not yet on the market in Norway.

A number of questionable remedies have 'over the years' been available for the treatment of hair loss.

Hairgain® is a new dietary supplement developed in Norway containing a marine protein extract and several different vitamins and minerals. Based on favourable effects on hair loss seen in open studies, it was decided to carry out a placebo-controlled double-blind trial in subjects with hair-loss problems. To our knowledge this is the first controlled study carried out with Hairgain®.

Subjects and methods

SUBJECTS

Sixty volunteers of both sexes, aged 18 years or more, were recruited to the study through an advertisement in a local newspaper. All had had hair-loss problems for a period of at least 1 year before entering the study, and the majority of the participants had tried different treatment approaches for their hair loss. The majority of the volunteers had androgenic alopecia (56), while four had alopecia totalis. All participants gave written informed consent before entering the study. A regional ethics committee approved the study, which was conducted according to the principles of the Declaration of Helsinki, good clinical practice and local regulations.

STUDY DESIGN

The study was designed as a randomized, placebo-controlled, double-blind study with two arms. The subjects were randomized to treatment either with Hairgain® or placebo by a simple block-randomization procedure (blocks of six). The duration of the blinded phase was 6 months. The subjects receiving active treatment in the blinded phase were, thereafter, followed for another 6 months in an open study on active treatment. Participants receiving placebo in the blinded phase were followed for an additional 12 months on active treatment. All subjects were thus exposed to the active treatment for 12 months.

TREATMENT

Hairgain® and placebo capsules had the same appearance and were packed in similar plastic bottles in order to keep the study blind. The dosage was two capsules per day for subjects below 80 kg in body weight and three capsules per day for those above this weight, with one capsule to be taken in the morning (together with food) and one or two capsules to be taken in the evening. The capsules were to be swallowed with 200 ml of water on each occasion.

The Hairgain® treatment concept has been developed by a Norwegian company and contains minerals and vitamins in addition to a marine protein extract from a deep sea fish living along the Norwegian coast line. Both the active and placebo capsules were supplied by Med-Eq Ltd, Tønsberg, Norway.

ASSESSMENTS

To ensure that hair-loss problems were comparable in the two groups, a global inspection of hair loss was performed at baseline (day 0) and each volunteer's hair loss was graded according to internationally accepted rating scales. The duration of hair loss and previous treatment was recorded. Participants came for a study visit every second month during the blinded phase, and every 6 months during the open part of the study.

Overview photographs were taken, in a standardized format, at the beginning and

end of treatment. The overview photographs were assessed (blind) by a suitably qualified person not involved in the study. A special method for taking standardized close-up photographs was used initially and at each study visit (Capilli Care; UPB Ltd, Nice, France). On each occasion the same four pre-defined areas of the scalp were photographed and the pictures were enlarged (× 80), allowing us to follow the development of hair growth in given areas by hair counting.

The subjects were also asked at each visit to score their satisfaction with the treatment on a 10-cm Visual Analogue Scale (VAS) ranging from 0, not at all satisfied, to 10, very satisfied. Participants also reported any positive reports from close family members or their hairdresser on hair growth.

Tolerability was checked on each visit by asking the question: 'Have you felt any adverse effects that could be linked to the treatment you have received?' Compliance was checked at each visit by counting returned capsules. A requirement that at least 80% of the recommended dose should have been taken was used.

STATISTICAL ANALYSIS

SAS (version 6.0) software was used for all statistical analyses. The two-tailed Wilcoxon signed rank test was used to assess changes compared with baseline. For significance testing the 5% level was used.

Results

At baseline, the two groups were comparable with respect to gender, age, duration of hair loss, body weight, previous treatment and number of subjects with alopecia totalis (Table 1). The degree of hair loss was also comparable in the two groups.

The assessment of the overview photographs (blind) involved sorting the photographs into probable treatment groups; this procedure resulted in a highly significant positive correlation with the actual treatment groups, with more than 85% of the subjects in the active group correctly classified ($P < 0.01$). Hair counting based on the close-up pictures showed a significant average increase in hair growth of 32.4% in the blinded phase in the active group, while the increase was negligible and insignificant in the placebo group (Table 2). A further improvement in hair growth took place in the period between 6 and 12 months, resulting in an average improvement in hair growth of 63.9% at the end of the study. A similar effect was seen in the group exposed to placebo for 6 months initially, whose hair growth improved by 60.8% after 12 months of active treatment, a highly significant improvement ($P < 0.001$) similar to that in the group who started on active treatment.

The VAS scores for satisfaction in the two groups during the blinded phase differed considerably in the two treatment groups

TABLE 1:
Baseline characteristics of volunteers with hair loss randomized to active treatment or placebo

	Hairgain®	Placebo
Sex (male/female)	28/2	27/3
Age (years)	37.8 (3.9)[a]	38.6 (3.4)[a]
Duration of hair loss (months)	18.6 (6.4)[a]	20.4 (5.7)[a]
Body weight (kg)	74.2 (11.1)[a]	75.6 (10.6)[a]
Previous treatment	15 (2.0)[a]	13 (2.2)[a]
No. of alopecia totalis cases	2	2

[a]Means (± SD).

TABLE 2:
Average hair growth increase (%) based on hair counting in the two treatment groups during the blinded phase

Treatment duration	Hairgain®	Placebo
After 2 months	3.4 (3.1)	1.2 (3.6)
After 4 months	15.6 (3.2)	0.7 (3.1)
After 6 months*	32.4 (4.1)	0.9 (3.0)

*$P < 0.001$.
Values are means (± SD).

(Table 3). After 6 months the mean score of the treated group was significantly higher than that of the placebo group ($P < 0.001$). There was a significant positive correlation between the increase in hair growth as measured by hair counting and the self-evaluation by VAS score at the end of the blinded phase ($P < 0.001$). The mean score of the treated group after 12 months (open phase) shows a further increase in satisfaction. The results indicate that long-term treatment (6 months or more) is preferable in obtaining satisfactory results with Hairgain®.

When the placebo group was switched to active treatment, their VAS scores increased from a mean (SD) of 0.9 (1.0) cm after 6 months of placebo to 6.2 (2.1) cm after 6 months of active treatment and 8.5 (2.4) cm after 12 months of active treatment, progress similar to that of the group who started with the active treatment. The development in the VAS score is highly significant ($P < 0.001$) after 6 months with a further improvement after 12 months' exposure to the active treatment.

There was no response to either treatment in the four patients with alopecia totalis. No significant correlation was detected between treatment result, age, gender or duration of hair loss.

Several participants reported positive responses from family and hairdressers on their hair growth after having started with Hairgain®. Several also reported a pronounced improvement in nail and skin quality after taking Hairgain®.

All the participants concluded the study according to the protocol and none dropped out due to side-effects of the study medications. Tolerability was equally good in the placebo and the active groups in the double-blind phase. No serious side-effects were reported in the open part of the study.

Discussion

The results show that subjects reported favourable effects of active treatment on hair gain compared with placebo, and this effect was also seen in the open longer term study.

TABLE 3:
Participants' evaluations of their satisfaction with treatment on a Visual Analogue Scale (VAS)

Duration of treatment (months)	VAS score (cm)	
	Hairgain®	Placebo
2	2.1 (1.9)	0.7 (1.3)
4	2.9 (2.1)	1.0 (1.5)
6	5.7 (2.6)	0.9 (1.0)
12	7.9 (2.5)	–

Values are means (± SD).

The present results indicate that long-term treatment is needed to obtain significant results. There was a positive correlation between the subjects' self-evaluations of treatment effect and the objective counting of hairs in the photos. The results obtained in the present study compare favourably with the results obtained in studies with drugs. In a study with finasteride in 1533 men, the increase in the number of hairs was reported to be 11% compared with a 2.5% decrease in the placebo group.[7,8]

All of the participants used the active preparation for 12 months, and we do not know what will happen when the treatment is stopped. It may be necessary to continue with maintenance treatment at a lower dose.

The mechanism of action of Hairgain® is not known, and future studies should concentrate on this aspect. The positive effect seen in this study together with the excellent tolerability suggest that Hairgain® may provide a valuable alternative treatment for those with androgenic alopecia.

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