CLINICAL EVALUATION OF REVIVOGEN TOPICAL FORMULA FOR TREATMENT OF MEN AND WOMEN WITH ANDROGENETIC ALOPECIA. A PILOT STUDY

Alex Khadavi, MD, et al,. Los Angeles, CA USA 2004

Abstract: This study was done to determine whether Revivogen Scalp Therapy leads to clinical improvement in men and women with male and female pattern hair loss, respectively, in the vertex, anterior mid-scalp area, frontal and bi-temporal hairline. In a 12-month trial, 50 men and women (18 to 52 years of age) with male or female pattern hair loss, respectively, received topical Revivogen Scalp Therapy 1 cc/ daily, while 34 men and women received placebo hair solution. Efficacy was evaluated by patient and investigator assessments, and review of photographs. Revivogen scalp therapy improved scalp hair by all evaluation techniques at twelve months. Patients' self-assessment demonstrated that Revivogen scalp therapy slowed hair loss, increased hair thickness, and improved the appearance of hair. These improvements were corroborated by investigator assessments and assessments of photographs. There was no significant improvement in reduction of hair loss or hair growth in placebo group. In men and women with male or female pattern hair loss, Revivogen Scalp Therapy 1 cc daily slowed the progression of hair loss and increased hair thickness of the vertex, anterior mid-scalp area, frontal and bi-temporal hairline in a clinical trial over 12 months.

Background: Androgenetic alopecia (male/female pattern hair loss) occurs in persons with an inherited sensitivity to the effects of androgens on scalp hair (1,2). It is marked by visible loss of hair in areas of the scalp caused by progressive miniaturization of hair follicles (3-5). The condition does not occur in men with a genetic deficiency of the enzyme steroid 5–alpha-reductase (5-AR) type II, which converts testosterone to dihydrotestosterone (DHT), implicating DHT in its pathogenesis. Of two 5-AR isoenzymes in humans, (5-7) type I predominates in skin, including scalp, (10,11) whereas type II is present in hair follicles, (12) as well as the prostate. (11) Androgenetic alopecia (male pattern hair loss) is caused by androgen-dependent miniaturization of scalp hair follicles, with scalp dihydrotestosterone (DHT) implicated as a contributing cause. Revivogen, an inhibitor of both types I and II 5–alpha-reductase, decreases scalp DHT by inhibiting conversion of testosterone to DHT.

Objective: Our purpose was to determine whether Revivogen scalp therapy leads to clinical improvement in men and women with male and female pattern hair loss, respectively.

Methods: In a 1-year trial, 50 men and female (18 to 52 years of age) with male and female pattern hair loss received topical Revivogen Scalp Therapy 1cc/daily, and 34 men and women received placebo 1cc/daily. Efficacy was evaluated by patient and investigator assessments, and review of photographs by an expert panel.

Results*:* Revivogen Scalp Therapy improved scalp hair by all evaluation techniques at 1 year *(P* < .02 vs placebo, all comparisons). Patients' self-assessment demonstrated that Revivogen scalp therapy slowed hair loss, increased hair growth, and improved appearance of hair. These improvements were corroborated by investigator assessments and assessments of photographs. Adverse effects were minimal.

Conclusion: In men and women with male and female pattern hair loss, Revivogen Scalp Therapy 1 cc/daily slowed the progression of hair loss and increased hair growth in clinical trials over 12 months.

METHODS

Study population: Men and women 18 to 52 years of age, with mild to moderately severe pattern hair loss according to a modified Norwood/Hamilton classification scale (II, III, IV or V) and Savin (II, III, IV or V) were enrolled. The principal exclusion included significant abnormalities on screening physical examination or laboratory evaluation, surgical correction of scalp hair loss, and the use of topical Minoxidil or Propecia, other medications whether oral or topical, medicinal or herbal within the last 12 months. Men and women were instructed not to alter their hairstyle or dye their hair during the studies. After a screening procedure, patients were randomly assigned to treatment with either Revivogen Scalp Therapy 1 cc/daily or placebo for 12 months. Patients visited the clinic every 3 months, where they completed a hair growth questionnaire and investigators completed assessments of scalp hair growth. Every 3 months, photographs of scalp were taken for assessment of hair growth by an expert panel. Reports of adverse events were collected throughout the study.

Safety measurements: Safety measurements included clinical evaluations, adverse event reports, and patient body hair assessment via a self-administered questionnaire.

Global Photographic Assessment: Standardized color global photographs (Kodak SR-100 speed 35-mm film) of the vertex scalp were taken with the head in a stereotactic positioning device. Paired baseline and posttreatment slides were independently reviewed, with the use of the standardized 7-point rating scale (see above), by a panel of three dermatologists blinded as to treatment and experienced in photographic assessments of hair growth. This technique has previously been demonstrated to have excellent test-retest reproducibility and interpreter agreement.

EVALUATION PROCEDURES

Three predefined efficacy end points will provide a comprehensive assessment of changes in scalp hair from baseline.

Patient self-assessment Patients assessed their scalp hair using a validated, self-administered hair growth questionnaire, consisting of 4 questions in the patient's language on treatment efficacy and 3 questions on satisfaction with appearance. (Figure 1)

Figure 1:

Patient self-assessment:
Patients assessed their scalp hair using a validated, self-administered hair growth questionnaire, consisting of 4 questions on treatment efficacy and 3 questions on satisfaction with appearance.

1. Since the start of the study, I could see that the balding area is getting smaller.

___Strongly agree
___Agree
___No opinion either way
___Disagree
___Strongly Disagree

2. Because of the treatment I have received since the start of the study, the appearance of my hairs is:

___A lot better
___Somewhat Better
___A little better
___Same
___A little worse
___Somewhat worse
___A lot worse

3. Since the start of the study, how would you describe the growth of your hair?

___Greatly increased
___Moderately increased
___Slightly increased
___No change
___Slightly decreased
___Moderately decreased
___Greatly decreased

4. Since the start of the study, how effective do you think the treatment has been in slowing down your hair loss?

___Very effective
___Somewhat effective
___Not very effective
___Not effective at all

5. Compared to the beginning of the study, which statement best describes your satisfaction with the appearance of:

	Very Satisfied	Satisfied	Neutral	Dissatisfied	Very Dissatisfied
a) the hairline at the front of your hair?	☐	☐	☐	☐	☐
b) the hair on top of your head?	☐	☐	☐	☐	☐
c) your hair overall?	☐	☐	☐	☐	☐

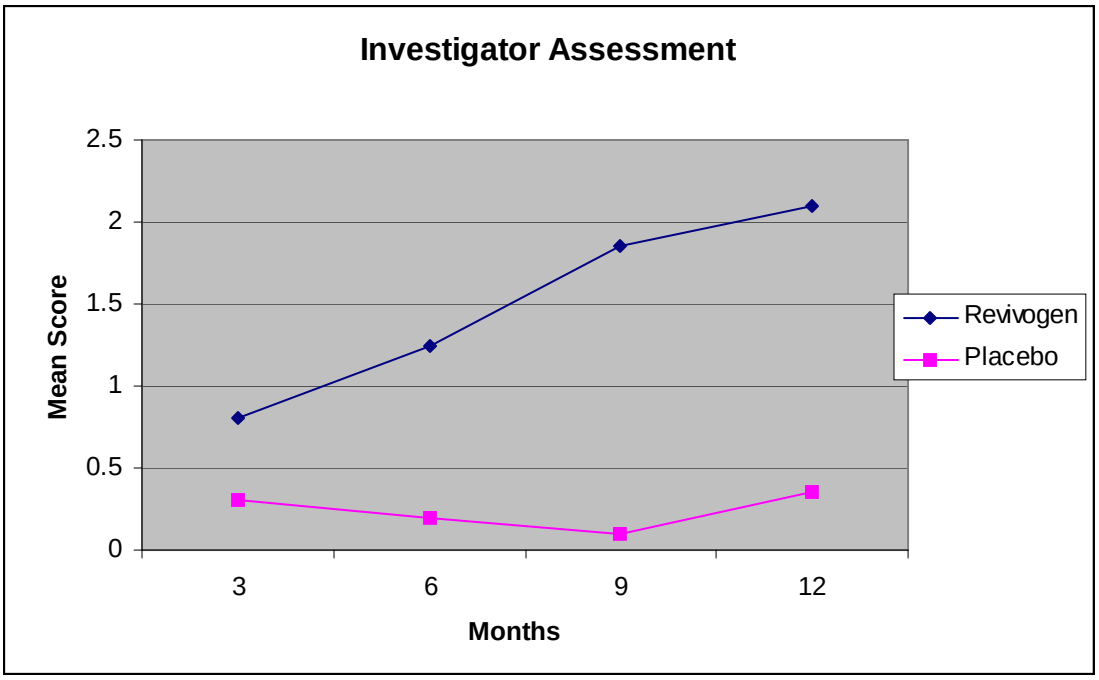
Investigator assessment Investigators assessed patients at all time points, using a standardized 7-point rating scale of hair growth compared with baseline (–3 = greatly decreased, –2 = moderately decreased, –1 = slightly decreased, 0 = no change, +1 = slightly increased, +2 = moderately increased, +3 = greatly increased).

Laboratory Evaluation Hematology, urinalysis, chemistry, and hormone measurements were performed at baseline and every 6 months. Serum chemistry, including prostate-specific antigen (PSA), and serum hormones, including testosterone and DHT were assayed.

RESULTS

Table I. Percentage of men and women with improvements in scalp hair while on Revivogen Scalp Therapy compared to Placebo after 12 months of treatment

Patient self-assessment (questionnaire)	Revivogen Group (50)	Placebo Group (34)	Difference (Percent Difference)
Q1: Size of bald spot	82	21	61
Q2: Appearance of hair	86	29	57
Q3: Growth of hair	88	12	76
Q4: Slowing hair loss	88	18	70
Q5a: Satisfaction with frontal hairline	78	18	60
Q5b: Satisfaction with hair on top	88	21	67
Q5c: Satisfaction with hair overall	86	18	68
Investigator assessment			
Increased hair growth	84	24	60
Global photographic assessment			
Increased hair growth	86	12	74



Patient self-assessment Revivogen Scalp Therapy was superior to placebo as early as month 3 *(P* < .05), the first efficacy time point, and at all subsequent time points *(P* < .005). For individual questions, Revivogen Scalp Therapy was superior to placebo for 7 of 7 questions (all *P* values < .003).

Investigator assessment Revivogen Scalp Therapy was superior to placebo at all time points *(P* < .02). By month 12, 88 % of Revivogen Scalp Therapy-treated patients were rated as improved by the investigators versus 8 % of placebo-treated patients. Assessment of hair growth by investigators also demonstrated the benefit of Revivogen Scalp Therapy treatment. The blinded comparison of paired pretreatment and post treatment global photographs by the expert panel, which also assessed change from baseline but was not subject to recall bias, demonstrated minimal, if any, placebo effect. By this assessment, Revivogen Scalp Therapy treatment produced progressive improvement in hair growth for 12 months, whereas placebo-treated patients without significant improvement. Revivogen Scalp Therapy appeared to improve the quality (i.e., thickness, pigment, length and/or growth rate) of hair.

Laboratory Assessment There was no significant change in laboratory levels in either the chemistry or hormonal evaluation in either the Revivogen or placebo group.

ADVERSE EVENTS

In the study, a slightly higher proportion of Revivogen Scalp Therapy-treated than placebo-treated patients reported adverse events related to scalp irritation (2%). Only 1 man (2%) in the Revivogen group. No adverse events were reported in the placebo group. As expected from this body of experience, no individual in the current study

experienced impairment of sexual function. No other significant adverse effects of Revivogen Scalp Therapy were observed.

DISCUSSION

In this study, Revivogen Scalp Therapy treatment produced significant improvements in scalp hair in men and women with male and female pattern hair loss, respectively. The efficacy of Revivogen Scalp Therapy was evident within 3 months of therapy. Hair density, first measured at 3 months by photographs, progressively increased over 1 year in the Revivogen Scalp Therapy group. In contrast, the placebo group progressively lost hair, consistent with the miniaturization process and the natural history of male and female pattern hair loss. Significantly more patients in the Revivogen Scalp Therapy group reported improvements in scalp hair growth and appearance, as well as satisfaction with appearance, compared with the placebo group. Satisfaction with the frontal hairline and bitemporal growth was also improved compared with placebo. Revivogen Scalp Therapy 1 cc/ daily improved scalp hair in men and women with male and female pattern hair loss within 3 months, with the benefit increasing with continued treatment. In contrast, men and women receiving placebo had no improvement. These results confirm that Revivogen Scalp Therapy is an effective treatment for male and female pattern hair loss. Since Revivogen works to decrease levels of DHT, and DHT is a key factor in those men and women genetically predisposed for development of male and female androgenetic Alopecia, Revivogen is an effective anti-DHT treatment for the treatment of androgenetic alopecia. Adverse events caused by Revivogen Scalp Therapy treatment were minimal. Revivogen Scalp Therapy 1 cc/ daily represents a new topical therapy for male and female pattern hair loss.