

Effects of Trichosol™ on Increasing the Anagen Phase of the Capillary Cycle of Volunteers

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Abstract

Trichotech™ technology had its mechanism of action published in 2017. Trichosol™ is a vehicle presentation (with Trichotech™ technology) with other hair growth formulations such as Minoxidil, an important drug in the treatment of hair loss, hair and other hair disorders. Through dermoscopy, the percentage of anagen phase was quantified between groups of volunteers who used Minoxidil (3%) associated or not with the Trichosol™ vehicle, which contains Trichotech™ technology. This study aimed to investigate the potential of Trichosol™, associated with Minoxidil (3%), in the promotion of hair growth through the analysis of the increase of the capillary anagen phase (about 20%) compared to the telogen phase of the volunteers. The results also indicated that after treatment for 90 days with the combination of Minoxidil (3%) and Trichosol™, both sexes presented increase in the percentage of anagen phase. Further investigation concerning Trichosol™ could be useful in the development of new therapeutic associations for the treatment of hair loss.

Keywords: Trichosol; Minoxidil; Dermoscopic analysis

Introduction

Hair loss or alopecia is a problem in modern society, which is usually related to hair loss on the scalp [1]. The most common forms of non-cicatricial hair loss are androgenetic alopecia, alopecia areata and telogen effluvium [2]. Telogen effluvium was first described by Kligman in 1961 and is one of the most common causes of diffuse hair loss. A variety of potential triggers have been associated with the pathogenesis of telogen effluvium. Diffuse telogenetic hair loss are seen after 3-4 months of triggering event [3]. Among the possible therapeutic targets, we have the inhibitors of the catagen phase and the inducers of the anagen phase [4]. Thus, in this sense, topical minoxidil is approved, a drug for prolonging the anagen period [5,6]. The Trichotech™, is a technology for hair growth, a phytocomplex that had its mechanism of action published in 2017 by Amaral et al. [7]. Trichosol™ is a base presentation for the use of vehicles (with Trichotech™ technology) with other hair growth formulation as an example, Minoxidil, an important drug in the treatment of hair loss and other capillary disorders. This study investigated the potential of Trichosol™, associated with Minoxidil (3%), in the promotion of hair growth through the analysis of the increase of the capillary anagen phase compared to the telogen phase of the volunteers.

Materials and Methods

Volunteers grouping and treatment

Twenty volunteers were selected and then diagnosed with telogen effluvium, ranging in age (25-50 years of age) and gender. Four groups of volunteers were trained and treated as follows:

- Group I - without treatment
- Group II - with minoxidil (3%) conventional vehicle (alcohol)
- Group III - with minoxidil (3%) in vehicle Trichosol™
- Group IV - treated only with Trichosol™ vehicle

The groups were then treated for 90 days after the first diagnosis. The protocols were approved by the local Ethics Committee and written consent was obtained from each subject.

Solutions

Minoxidil and Trichosol™ were obtained from Fagron Group Brazil Ltda. Other inactive ingredients were procured locally.

Dermoscopic analysis (Trichoscan)

The FotoFinder Trichoscale softwear was used to evaluate the parameters of the capillary cycle phases, such as the anagen and telogen phases. All patients were assessed and subjected to photographic records with a 10x magnification dermatoscope and a digital camera with 20x and 40x magnification on the small area of the shaved headscalp. The dermoscopy findings were evaluated by two dermatologists at the time of the exam and later revised in photographs on the computer.

Statistical analysis

Results were given as mean \pm SEM (standard error of the mean). The results obtained were statistically analyzed using a one-way analysis of variance (ANOVA), followed by Tukey's test. Analyses were performed using GraphPad Prism version 5.0 (GraphPad Software Inc., CA, USA).

Results and Discussion

All groups of patients were treated for 90 days, in addition to the initial verification performed in the trichoscan the verification of 90 days. Equipment reports were collected, and data analyzed. Figure 1 shows the enlarged image taken by the trichoscan in the patient at the time of diagnosis, prior to the initiation of any treatment. This is an important parameter because besides being measurable it is qualitative, influencing the patient's direct perception that the treatment has been effective because there is significant visual change.

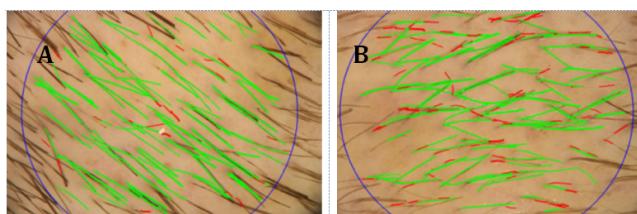


Figure 1: Trichoscan scalp image of a patient at the time of diagnosis (A), indicating in red a small number of patients with wires in the anagen phase and 90 days (B) after treatment with Trichosol™ associated with minoxidil (3%), evidencing the increase of wires in the anagen phase (red).

After data collection, the variation of the anagen phase was verified. Figure 2 shows the data analysis, comparing the variation of the percentage of anagen phase between the studied groups, with an increase of more than 20% in the group treated with Minoxidil (3%) on Trichosol™ in the anagen phase, when compared with untreated volunteers. Note that, although not statistically significant, the group treated with minoxidil (3%) and Trichosol™ was the one that most reduced the percentage of telogen phase. There are few published information on the efficacy of minoxidil, in addition to several studies reporting subjective data, rather than quantitative data [8,9]. Minoxidil is a medication not related to androgenic mechanisms, which assists in hair loss, at least in part, by causing premature termination of the telogen phase and probably prolonging the anagen phase [10]. Thus, our results suggest that the Trichosol™ vehicle acts in synergism with the minoxidil (3%) through the mechanism of action of Trichotech™ technology (present in Trichosol), activating proliferation pathways such as ERK, in addition to increasing mRNA levels of FGF-7 and FGF-10, corroborating the hypothesis cited by [7], that Trichotech™ would act in the neogen phase, a transition phase active between the anagen and telogen stages as a phase of neomorphogenesis, the neogenic phase, where it is believed that the oscillating controllers of mesenchymal and epithelial cells autonomously control stochastic switching in these two stationary states [11].

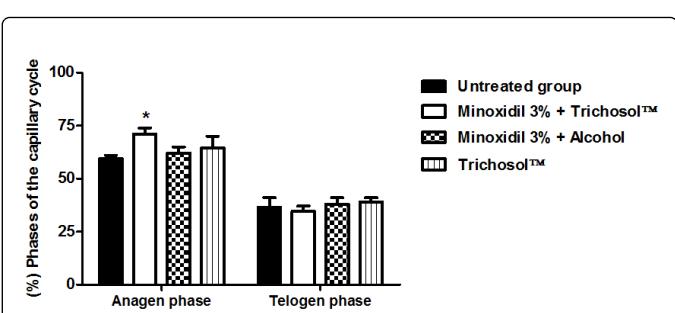


Figure 2: Data comparing treatment evolution and variations of the anagen and telogen phase in the volunteers treated with minoxidil (3%) on Trichosol™; minoxidil (3%) on Alcohol; Trichosol™ and the untreated volunteers. There was a significant increase about 20% in the anagen phase when compared with untreated volunteers. * $p<0.05$, ANOVA and Tukey's comparison.

The increase in hair in the anagen phase of the capillary cycle was verified in both sexes, in both women and men, always comparing them with the group without treatment (control). Figure 3 shows the results obtained in both men and women. The results obtained in this study are superior to the significant results in relation to placebos, especially those reported in men, with increases in hair growth of approximately 20% on average [12], against an increase of approximately 38% with the group that was treated with minoxidil (3%) associated with the Trichosol™ vehicle. The same was true for the results observed for women where mean increases in counts of approximately 23% [13] were observed, compared to approximately 36% in this study.

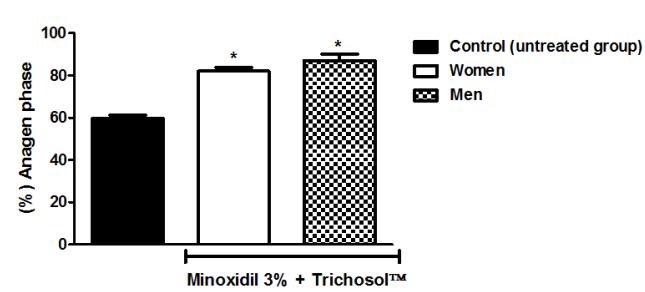


Figure 3: Control group without treatment versus group of women and men treated with Minoxidil (3%) on Trichosol™ after 90 days. * $p<0.05$. ANOVA and Tukey's comparison.

Conclusions

The analysis performed after obtaining data from the trichoscan equipment allows the conclusion that the treatment of volunteers with Minoxidil™ 3% based on Trichosol™ was able to increase the percentage of anagen phase in these volunteers. In addition, the sex of the volunteers did not interfere with the response of treatment with Minoxidil (3%) on Trichosol™ base.

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