The Growth of Human Scalp Hair Mediated by Visible Red Light Laser and LED Sources in Males

Raymond J. Lanzafame, M.D., M.B.A.; Raymond Blanche; Adam B. Bodian, M.D.; Richard P. Chiacchierini, Ph.D.; Adolfo Fernandez-Obregon, M.D.; and Eric R. Kazmirek, B.S.

ABSTRACT:

Background and Objective: Low level laser therapy (LLLT) has been used to promote hair growth. A double-blind RCT was undertaken to define the safety and physiologic effects of LLLT on males with androgenic alopecia.

Methods: 44 males (18-48 yo, Fitzpatrick I-IV, Hamilton-Norwood IIa-V) were recruited. A transition zone scalp site was selected; hairs trimmed to 3mm; the area was tattooed and photographed. The laser group received a "TOPHAT655" unit containing 20, 5mW lasers and 31 LEDS, in a bicycle-helmet like apparatus. The placebo group unit appeared identical, containing incandescent red lights. Patients treated at home for QOD x 16 weeks (60 treatments, 655nm, 67.3J/cm^2 irradiance/ 25 minute treatment), with follow up and photography at 16 weeks. A masked 2.85cm^2 photographic area was evaluated by another blinded investigator. The primary endpoint was the percent increase in hair counts from baseline.

Results: 41 patients completed the study. (22 laser, 19 placebo). No adverse events or side effects were reported. Baseline hair counts were 162.7 ± 95.9 (N=22) in placebo and 142.0 ±73.0 (N= 22) and laser groups respectively (P= 0.426). Post Treatment hair counts were 162.4 ± 62.5 (N= 19) and 228.7 ± 102.8 (N= 22) respectively (P=0.0161). A 39% percent hair increase was demonstrated (28.4 ± 46.2 placebo, N=19; 67.2 ± 33.4, laser, N=22) (P=0.001) Deleting one control group subject with a very high baseline count and a very large decrease, resulted in baseline hair counts of 151.1 ±81.0 (N=21) and 142.0 ±73.0 (N=22) respectively (P=0.680). Post treatment hair counts were 158.2 ± 61.5 (N= 18) and 228.7 ±102.8 (N= 22) (P=0.011), resulting in a 35% percent increase in hair growth (32.3 ±44.2, placebo, N=18; 67.2 ±33.4, laser, N=22) (P=0.003)

Conclusions: LLLT of the scalp with the TOPHAT655 device significantly improved hair counts in males with androgenetic alopecia.

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