



FULL TEXT LINKS



[Randomized Controlled Trial](#) [Lasers Surg Med.](#) 2013 Oct;45(8):487-95. doi: 10.1002/lsm.22173.

The growth of human scalp hair mediated by visible red light laser and LED sources in males

[Raymond J Lanzafame](#) ¹, [Raymond R Blanche](#), [Adam B Bodian](#), [Richard P Chiacchierini](#),
[Adolfo Fernandez-Obregon](#), [Eric R Kazmirek](#)

Affiliations

PMID: 24078483 DOI: [10.1002/lsm.22173](#)

Erratum in

[Lasers Surg Med.](#) 2014 Apr;46(4):373

Abstract

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

Methods: Forty-four males (18-48 yo, Fitzpatrick I-IV, Hamilton-Norwood IIa-V) were recruited. A transition zone scalp site was selected; hairs were trimmed to 3 mm height; the area was tattooed and photographed. The active group received a "TOPHAT655" unit containing 21, 5 mW lasers (655 ± 5 nm), and 30 LEDS (655 ± 20 nm), in a bicycle-helmet like apparatus. The placebo group unit appeared identical, containing incandescent red lights. Patients treated at home every other day \times 16 weeks (60 treatments, 67.3 J/cm^2 irradiance/25 minute treatment), with follow up and photography at 16 weeks. A masked 2.85 cm^2 photographic area was evaluated by another blinded investigator. The primary endpoint was the percent increase in hair counts from baseline.

Results: Forty-one patients completed the study (22 active, 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 active 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 , active, $N = 22$) ($P = 0.001$) Deleting one placebo 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 , active, $N = 22$) ($P = 0.003$).

Conclusions: LLLT of the scalp at 655 nm significantly improved hair counts in males with androgenetic alopecia.

Trial registration: ClinicalTrials.gov [NCT01437163](https://clinicaltrials.gov/ct2/show/study/NCT01437163).

Keywords: Alopecia; LED; RCT; clinical research; hair; human, laser; low level laser therapy (LLLT); photobiomodulation.

© 2013 Wiley Periodicals, Inc.

[PubMed Disclaimer](#)

LinkOut – more resources

Full Text Sources

[Ovid Technologies, Inc.](#)

[Wiley](#)

Other Literature Sources

[scite Smart Citations](#)