

# 3<sup>rd</sup> International Conference and Exhibition on **Cosmetology & Trichology**

July 21-23, 2014 Hampton Inn Tropicana, Las Vegas, USA

## **Effect of low level laser therapy or led therapy in hair growth in combination with infiltrations: A case control study**

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**Introduction:** Low Level Laser Therapy (LLLT) and LED therapy has been advocated as a treatment for hair growth together with infiltration with minoxidil, estrogens, finasteride and other substances.

**Objectives:** To determine whether LLLT or LED therapy by itself or in combination with other treatments can enhance, inhibit or has no effect on hair growth.

**Patients and Methods:** 162 male patients diagnosed with Androgenetic Alopecia (AGA) were included in this study. Patients were enrolled for a 4 month treatment protocol with one of the following therapeutic plans: A) LED therapy alone, 8 sessions, 150 mW, 15 min, 635 nm. B) Finasteride orally 1 mg, Minoxidil 5% and Ketoconazole 2% topically daily. C) Regimen B plus 8 sessions of infiltrations with Minoxidil 2%. D) Regimens C plus A. E) Regimens B plus A. Patients were evaluated before and 4 months after having started their treatment with 5 thricoscopic images 2.5x2 mm in which hairs were counted and hair shaft diameter was measured.

**Results:** The mean change in hair number after 4 months treatment was: group A:+6.7%, B: +8.2%, C:17.5%, D:24.3%, E:13.9%. The mean change in hair shaft diameter was: A:+12.1%, B:+7.8%, C:-4.5%, D:+1.5%, E:+3.2%.

**Conclusions:** It seems that LED therapy or LLLT alone can induce an increase in both the number and diameter of hair in the scalp of men with AGA. It also seems that if combined with other treatments modalities the effect is superior. This study suggests that LED therapy for AGA in men should be used in combination. It also seems that the effect of LED is additive with other treatment modalities, suggesting that they act at different key points of the hair growth cycle.

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