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Efficacy of low-level laser therapy for body contouring and spot fat reduction

Mary K Caruso-Davis [1], Thomas S Guillot, Vinod K Podichetty, Nazar Mashtalir, Nikhil V Dhurandhar, Olga Dubuisson, Ying Yu, Frank L Greenway

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Abstract

Background: Low-level laser therapy (LLLT) is commonly used in medical applications, but scientific studies of its efficacy and the mechanism by which it causes loss of fat from fat cells for body contouring are lacking. This study examined the effectiveness and mechanism by which 635–680 nm LLLT acts as a non-invasive body contouring intervention method.

Methods: Forty healthy men and women ages 18–65 years with a BMI <30 kg/m2 were randomized 1:1 to laser or control treatment. Subject's waistlines were treated 30 min twice a week for 4 weeks. Standardized waist circumference measurements and photographs were taken before and after treatments 1, 3, and 8. Subjects were asked not to change their diet or exercise habits. In vitro assays were conducted to determine cell lysis, glycerol, and triglyceride release.

Results: Data were analyzed for those with body weight fluctuations within 1.5 kg during 4 weeks of the study. Each treatment gave a 0.4–0.5 cm loss in waist girth.Cumulative girth loss after 4 weeks was −2.15 cm (−0.78 ± 2.82 vs. 1.35 ± 2.64 cm for the control group,$p < 0.05$). A blinded evaluation of standardized pictures showed statistically significant cosmetic improvement after 4 weeks of laser treatment. In vitro studies suggested that laser treatment increases fat loss from adipocytes by release of triglycerides, without inducing lipolysis or cell lysis.

Conclusions: LLLT achieved safe and significant girth loss sustained over repeated treatments and cumulative over 4 weeks of eight treatments. The girth loss from the waist gave clinically and statistically significant cosmetic improvement.

Figures

Fig. 1 The difference in girth loss...

Fig. 2 Blinded appearance ratings on a...

Fig. 3 Woman before and after 4...

Fig. 4 Man before and after 4...

Fig. 5 Woman before and after 4...

Fig. 6 Woman who lost 2.2 kg...

All figures (9)

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