

Central California Low Level Laser Light Therapy in the Treatment of Hair Loss

Low level laser light Therapy (LLLT) is an internationally accepted name for biostimulation with low energy lasers in order to achieve therapeutic desired effects. Traditionally, LLLT falls under the realm of Physical Medicine, which uses stimulation therapy to activate the body's natural defense mechanisms. When LLLT is the stimulus, the treatment modality is known as Photobiostimulation.

LLLT has been indicated in sports medicine, physical/manual medicine, dermatology and neuroendocrine disorders in human and animal patients. The anti-inflammatory and analgesic properties of LLLT, as well as its effect on collagen formation, are good indications for LLLT in traumatology, surgery and dentistry, especially after major operations.

LASER

The word Laser is actually an acronym which stands for Light Amplification by Stimulated Emission of Radiation. Laser generates extremely pure light, i.e. light of one wavelength, not of an entire spectrum like a light bulb. The light emitted is highly organized in flow (It may help to think of laser as a single malt scotch and not a "blend" of different wavelengths of light). Laser can be any wavelength of light, visible or invisible, high energy or low energy.

Although Albert Einstein introduced his basic theory in 1917, it was in the 60's that a European scientist, Dr. Mester, first published a series of articles on the effect of LLLT's biostimulation effect on cell cultures, including results experimentation with injured animals, which demonstrated. Interestingly, his 1963 study concluded only low level radiation helped in the healing. Higher doses actually inhibited wound healing.

MEDICAL LASERS

There are many different types of medical lasers available, but they can be classified into two main groups:

- **HIGH POWER LASERS** cut coagulate and evaporate tissue. These are also known as Surgical Lasers because they replace the scalpel of the surgeon. These lasers produce photons (light) of high energy.
- **LOW LEVEL LASERS** stimulate cell function. These non-surgical therapeutic lasers are certified Class 3A by the FDA. The energy produced by the photons of these lasers is low and does not have a thermal component that can cause injuries to users and/or operators. This low level energy does not alter molecular structures, but **STIMULATES** the body's mechanisms to **REPAIR AND HEAL** itself. Low level (energy) laser light photons are absorbed by the chromophores within the cells. This induces increased production of cellular energy in the form of ATP, which leads to normalization of cell function, pain relief and healing. These effects are especially striking in areas of the body where cells are under stress. Thus no induction of cancer growth has been linked to these lasers. The risk of eye injury is almost non-existent.

LLLT FOT HAIR LOSS (ANDROGENETIC ALOPECIA) What type of laser device would benefit patients with androgenetic alopecia? The devices being promoted must be safe for use. They must be effective to meet the manufacturer's claims. The consumer must know what he/she is buying, and the device must not expose the consumer to undue risks. The therapeutic factors in choosing a laser are as follows:

- (a) The wavelength of the light is important as it determines penetration depth in the target tissue. Typical laser therapy devices operate at between 630-670 nanometers, which the eye perceives as red or red/orange light.
- (b) For hair applications, the first and most significant condition in choosing laser wavelength is depth penetration, which should be sufficient to target hair bulbs typically resting at 5-6 mm depth.
- (c) Visible red light of between 630 – 670 nanometers penetrates tissue to a depth of 6-10 mm so that the entire hair organ will be covered to a depth just beyond the hair bulb. Visible red light could theoretically be effective in the entire scalp and might include wounds, cuts, scars, folliculitis, etc.

The **GOAL** of LLLT is to increase the circulation of the blood to the follicle area and to stimulate the hair organs (nerves, muscles and growth centers of the follicle). The effects of LLLT to stimulate enhance or speed up the normal life cycle and production cycle of the exposed hair follicles is presently being studied and will fast become the science by which this technology will be judged. This has been described by investigating physicians as more of a "minoxidil-like" effect.

EFFECTS OF LLLT: The physics of laser light, along with its known properties, led the way to a practical application for low energy lasers in medicine. Various studies have confirmed these properties on the living organism. Taken together, the data points to the following effects of low level laser light on the scalp:

- Increased scalp blood flow and microcirculation by 20-30%
- Increases nutrient supply to enhance hair growth

- Stimulates and accelerates hair growth
- Stops the progression of hair loss
- Repairs and improves hair shaft quality
- Reduces excess levels of skin 5 alpha reductase and DHT which contribute to genetic thinning
- Relieves scalp conditions such as psoriasis, seborrheic dermatitis, itchy/scaling scalp (anti-inflammatory)
- Normalizes sebum production (can help normalize sebaceous activity—excessive dryness or oiliness)
- Reduces tight, tender scalp.

These effects also make LLLT excellent adjunct therapy for pre-operative and post-operative Hair Restoration procedures!

TREATMENT PROGRAMS

In developing treatment programs with LLLT one must first consider whether the treatment will be administered with a Class 3A Laser machine, with a hand held laser, or with both.

The larger Class 3A Laser Machine is a patented cool laser which creates a soft halo of light around the scalp. This generally requires twice weekly visits to the clinic. The laser comb is a hand held wand-like instrument with laser light ports arranged across its surface similar to the teeth of a large comb. It is used at home three to four times weekly for 15-20 minutes per use. It is easy to use and convenient for the patient so compliance is high.

CANDIDATES FOR LLLT

- Based upon the information thus far and the various clinical trials in progress, a potential list of candidates for LLLT for hair loss is as follows:
- Men and women between the ages of 18 and 65
- Thinning to moderate hair loss
- Patients ineligible for hair Restoration Surgery do to early stages of hair loss
- Women experiencing diffuse or general thinning including the sides and the back
- Pre and Post operative hair restoration.

PROGRAM OPTIONS

12-month Clinical Program (Typical)

Consists of 104 sessions of Low Level Laser Light Therapy. Patient receives two 30 minute treatments per week for 52 weeks with evaluations every 6 months. Evaluations include Video Scope Diagnostic Test and comparison photos.

6-month Clinical Program w/ Option to extend

Consists of 52 sessions of Low Level Laser Light Therapy. Patient receives two 30 minute treatments per week for 26 weeks with evaluation at 6 months. Evaluation includes Video Scope Diagnostic Test and comparison photos. If patient is satisfied with results they may choose to extend to a 12 month program.

Post Operative Program

Consists of 39 + sessions of Low Level Laser Light Therapy. Patient receives two 30 minute treatments per week for the 1st 13 weeks, one 30 minutes treatment per week for the next 13 weeks in conjunction with the Nutreva 1700 hand held device. Thereafter patients can purchase custom designed treatment packages that meet their specific needs. Evaluations are included at 3 months and 6 months. Evaluation includes Video Scope Diagnostic Test and Comparison Photos.

At Home Program

Two home treatments are available. A smaller, more affordable 'In-home' hood that can be used 3 X week and hand held devices that can be used as often as every day (although generally used 2-3 times per week for maintenance of healthy hair.

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