

LLLT - Low level laser (light) therapy as therapeutic modality for three different types of alopecia

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In 2007, low-level laser (light) therapy (LLLT) was approved by the FDA as a possible treatment for hair loss. Evidence suggests that LLLT acts on the mitochondria and leads to an increase in adenosine tri-phosphate (ATP) production, nitric oxide (NO), modulate reactive oxygen species (ROS), and induce transcription factors. These transcription factors in return cause protein synthesis that triggers further effects down-stream, such as increased cell proliferation and migration, modulation in the levels of cytokines, growth factors and inflammatory mediators, and increased tissue oxygenation. Even though the exact mechanism of action of LLLT in hair growth is not known, several mechanisms have been proposed. Laser phototherapy is assumed to stimulate anagen re-entry into telogen hair follicles, increase rates of proliferation in active anagen hair follicles, prevent premature catagen development and prolong duration of anagen phase. Furthermore, LLLT's modulatory effects on inflammatory processes and immunological responses may also facilitate hair regrowth. Effects of LLLT on alopecia areata, androgenetic alopecia and chemotherapy induced alopecia will be explained in detail and several studies from the literature will be mentioned.

Biography

Pinar Avci received her MD degree from Semmelweis University, Budapest in 2012. Currently she conducts research in Wellman Center for Photomedicine and her research interests are dermatologic applications of low level laser therapy and photodynamic therapy.

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