

Scialized Method (Eka) of Acne Scar Repair using Low Level Laser Therapy

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Abstract

Is meant to amplify light by induction emission, and it can be briefly stated that some materials can absorb the radiation energy and then radiate it into the light when this occurs naturally in the atom.

Keywords: radiation; wound healing; inflammation

Introduction

Laser

Is meant to amplify light by induction emission, and it can be briefly stated that some materials can absorb the radiation energy and then radiate it into the light when this occurs naturally in the atom. Speech is called spontaneous emission, and what you know in nature as light is the result of spontaneous emission [1].

Lasers (Light amplification by stimulated emission of radiation) are devices that typically generate electromagnetic radiation which are relatively uniform in wavelength, phase, and polarization, originally described by Theodore Maiman in 1960 in the form of a ruby laser. Laser is described as a source of light or radiation energy [2]. Low Level Laser (LLL) is a special type of laser that effects on biologic systems through non-thermal means [3]. Low Level Laser therapy (LLLT) is the application of light to a biologic system to promote tissue regeneration, reduce inflammation and relieve pain. Unlike other medical laser procedures, LLLT does not have an ablative or thermal mechanism, but rather a photochemical effect which means the light is absorbed and cause a chemical change [4]. The reason why the technique is termed low level is that the optimum levels of energy density delivered are low and it is not comparable to other forms of laser therapy as practiced for ablation, cutting, and thermal tissue coagulation [5]. Soon after the discovery of lasers in the 1960s it was realized that laser therapy had the potential to improve wound healing and reduce pain, inflammation and swelling. In recent years the field sometimes known as photobiomodulation has broadened to include light-emitting diodes and other light sources, and the range of wavelengths used now includes many in the red and near infrared. The term "low level laser therapy" or LLLT has become widely recognized and implies the existence of the biphasic dose response or the Arndt-Schulz curve. This review will cover the mechanisms of action of LLLT at a cellular and at a tissular level and will summarize the various

light sources and principles of dosimetry that are employed in clinical practice. The range of diseases, injuries, and conditions that can be benefited by LLLT will be summarized with an emphasis on those that have reported randomized controlled clinical trial [6]. Low level laser therapy (LLLT) or more simply known as soft laser therapy, is a dramatic therapy that has become progressively more popular in the management of a wide variety of medical conditions, such as soft tissue injuries (including sports injuries), low back pain, arthritis, and skin traumas. Unlike the higher powered lasers employed in medicine, these low-level lasers do not deliver enough power to damage tissue, but they do deliver enough energy to stimulate a response from the body tissues to initiate healing. Laser radiation has a wavelength-dependent capability to alter cellular behavior in the absence of significant heating. Light radiation must be absorbed to provide a biological response. The visible red and infrared portions of the spectrum have been shown to have highly absorbent and unique therapeutic effects in living tissues [7]. Effects Low-Level-Laser-Therapy of the Blood One under laser blood irradiation, anti-inflammatory effects were observed that improved the immunologic activity of the blood 1.2. A fundamental finding was the positive influence on rheological properties of the blood which is of greatest interest to surgery, angiology and cardiology in particular 2. A diminishing tendency of aggregation of thrombocytes and an improved deformability of erythrocytes result in an improved oxygen supply and with that to a decrease of partial carbon dioxide pressure, which is particularly relevant to wound healing 3. Furthermore, the activation of phagocytic activity of macrophages was proved in conjunction with structural modifications. A positive effect on the proliferation of lymphocytes and B and T-cell sub populations could be verified too [8].

low level laser therapy for wound healing lllt, when used appropriately, can stimulate the healing of injured tissues such as those of the dermis.

Investigations into the mechanisms involved have shown that many of the types of cells whose interaction results in dermal repair can be affected in a therapeutically advantageous manner by treatment with LLLT both in vitro and in vivo. Mast cells and macrophages can be stimulated to release growth factors and other substances, whereas the proliferation of fibroblasts, endothelial cells, and keratinocytes maintained in adverse conditions can also be stimulated. The development of granulation tissue is mainly controlled by growth factors released from macrophages. Wound healing involves the following phases:

- Hemostasis: platelets, endothelial cells, fibrin, and fibronectin act through growth factors and cytokines.
- Inflammation: blood clots form, bacteria are attacked, and there is an orderly recruitment of key cells into the wound site.
- Proliferation: cells necessary for wound closure multiply at the wound site to make new tissue and blood vessels.
- Remodeling: the wound is healed and the initial scar tissue is restructured.

Any device that can accelerate any of these processes (transition from hematoma to fibroplasia, development of new blood vessels, production of collagen, or even the remodelling process) could accelerate the healing process of wounds. Early laser studies were confined to in vitro studies because little was known about the side effects of laser irradiation. Wound healing studies have focused on several types of cells including fibroblasts, lymphocytes, monocytes, macrophages, epithelial cells, and endothelial cells. The wide diversity of experimental protocols and parameters such as cell line, dose, waveform, treatment time, penetration distance, treatment area, and treatment frequency make comparison of these studies difficult. Literature indicates that laser photobioactivation accelerates inflammation, modulates the level of prostaglandin, enhances the action of macrophages, promotes fibroblast proliferation, facilitates collagen synthesis, fosters immunity, and even accelerates the healing process [9].

What is acne?

Acne is a disorder of the hair follicles and oil glands (sebaceous glands). The sebaceous glands secrete oils (sebum) to keep the skin moist. When the glands get clogged, it can lead to pimples and cysts. Acne is very common. People of all races and ages have acne. In fact, most people in the U.S. between 11 and 30 years old will be affected by it. Even people in their 40s and 50s can have acne. However, acne most often begins in puberty. During puberty, the male sex hormones (androgens) increase in both boys and girls. This causes the sebaceous glands to make more oil. Acne of any severity can lead to acne scarring, yet historically acne scars have only been considered as a consequence of severe or very severe acne [10]. Indeed, among people with acne scars, nearly a third have almost clear/mild acne and 40% have moderate acne. Acne scarring can reduce quality of life, and places a significant psychological and psychosocial burden on patients, including a lack of self-confidence and concerns over body image [10,11].

Method:

Low-power lasers have been used in medicine for many years. These types of lasers restore tissue without destroying it, through energy transfer, they regenerate and stimulate collagen production. Low-power lasers have played their role in the treatment of wounds for a long time. Now, for the first time, we were able to repair acne scars with this system without the slightest thermal and destructive effect using lasers ranging from 600 to 905 nm and a power of 100 Up to 500 milliwatts were repaired in a period of one to two months. Advantages of this method: No pain and no care Without thermal and destructive tissue effects No complications such as spots and burns Shorter treatment period





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