

Low level laser therapy in oral diseases

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Low level laser therapy (LLLT) is becoming increasingly popular. Principles of biostimulation via therapeutic lasers were introduced more than 20 years ago when they were used in dermatology for wound healing. LLLT actions results in the analgesic and anti-inflammatory effects as well as in improvement in healing. It seems that LLLT act analgesically since they improve endorphin release and therefore inhibit nociceptive signals and control pain mediators. They can also act analgesically by inhibiting pain signals which partially leads to the transient varicosities along the neurons which decrease impulse transmission. These lasers act on cellular reduction-oxidative potential. Furthermore, it is well known that LLLT stimulate lymphocytes, activate mast cells, and increase production of adenosine-triphosphate in the mitochondria and proliferation of various cell types therefore acting as anti-inflammatory. LLLT stimulate microcirculation which results in the change of capillary hydrostatic pressure which in turn results in oedema absorption and elimination of intermediary metabolites. Studies show that laser therapy leads to the increase in ascorbic acid in the fibroblasts, which increases hydroxyproline production and consequently, collagen production. Furthermore, these lasers lead to the increase in mitotic activity of epithelial cells and fibroblasts. On the vascular level, lasers improve proliferation of the epithelial cells, which results in the increased number of blood vessels as well as increased production of granulation tissue. LLLT lead to the relaxation of the smooth muscles which decreases pain. So far, they have been employed for several conditions within dentistry such as xerostomia, burning mouth syndrome, mucositis, lichen planus, orofacial neuropathic conditions, implants, pain due to the orthodontic treatment, periodontology, dentine hypersensitivity and temporomandibular disorders.

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