

A NEW LASER IN TOWN: ERCHONIA MEDICAL LASER INTRODUCES THE FIRST DUAL-DIODE LASER FOR THE TREATMENT OF ACNE VULGARIS

By Ryan Maloney

Acne is a chronic disease of the pilosebaceous follicle, affecting up to 80% of individuals within their life.¹ Most modern acne treatments are focused towards "opening" pores and as well as killing the *P. Acnes* bacteria.⁷ Unfortunately, many patients fail to respond adequately or suffer undesirable side effects while placed on the common assorted oral and topical treatments. In addition, long-term medications that focus on the elimination of the *P. Acnes* bacteria have been shown to have no effect on bacterial population levels.⁸ Only recently have medical professionals turned to light-based devices for an effective and safe means of treating the common skin disorder. Two major contributors towards the chronic disease is the colonization of the pilosebaceous duct by *Propionibacterium acnes* along with an immune response. These two key aspects of acne can be targeted by light-based devices. *P. Acnes* is a Gram-positive anaerobic skin bacterium that produces and accumulates porphyrins.⁹ *P. acnes* has been shown to produce endogenous porphyrins, mainly coproporphyrin-photossensitizers, which can absorb light energy at a blue light spectrum.¹⁰ In the case of coproporphyrin III, which is produced by *P. Acnes*, it has a peak absorption around 400nm (blue light) which leads to photoexcitation of endogenous bacterial porphyrins and ultimately bacterial destruction. Research using a blue light-device demonstrated approximately a 52% improvement in comedone and inflammatory acne lesions over an 8 week study.⁶ However, when compared to red light (approx. 660nm), blue light is less effective at penetrating the skin. The draw back with treating *P. Acnes* with red light is that it is less effective at photactivating the porphyrins, thus having a lesser effect in the destruction of the *P. Acnes* bacteria. Red light however, may retain anti-inflammatory capabilities by influencing cytokinase release from macrophages.⁷ A study testing the effect of photodynamic therapy (PDT) on patients following surgery noted that pro-inflammatory cytokines TNF-alpha and IL-12 showed no elevation, but IL-1beta, IL-6, IL-8 and IL-10 levels were elevated after surgery and PDT at 652nm.¹⁴ Erchonia Medical Laser, a company based in Mesa, Arizona, plans to revolutionize the laser community with the development of their hand-held low-level laser. Erchonia's low-level laser is a 635nm and 405nm dual-diode laser. Already making history with the first U.S. Food and Drug Administration approval of low-level laser for management of musculoskeletal pain two years ago, Erchonia Medical Laser plans on receiving a third FDA approval for the treatment of acne. Erchonia understands that the successful reduction of non-inflammatory and inflammatory acne lesions cannot rely on the sole destruction of *P. Acnes*, but also by the activation of anti-inflammatory pathways. Researchers Monica Elman and Joseph Lebzelter report that *P. Acnes* photoactivation efficiency is dependent on the concentration of photons and the wavelength of the photons emission. Erchonia's low-level laser emits a cold concentrated beam in one consistent direction from its source, only allowing a variance of +/- 5.0nm. In addition to a high photon density, the end result is that Erchonia's low-level laser allows for a much greater penetration within the skin than the current modes of acne light-devices. The DermaHeal device developed by Erchonia Medical Laser provides patients with an effective and time efficient form of treatment for their moderate to severe acne