

Let there be light

DR GLEN CALDERHEAD EXPLAINS HOW LIGHT THERAPY WHEN DELIVERED IN SEQUENCE CAN IMPROVE WOUND AND SOFT TISSUE HEALING AND REDUCE INFLAMMATION. LIZZY WOOD REPORTS.

With its origins traced back to Ancient Greece, phototherapy – or light therapy – today has a wide range of medical applications. Using lasers, light-emitting diodes and fluorescent lamps, specific wavelengths of light can be targeted to treat a variety of conditions, from auto-immune disorders such as psoriasis and eczema to wound healing, depression and seasonal affective disorder.

Low-level light therapy (LLLT) uses low levels of incident light energy, delivered with photo-sequencing technology, to alter cellular function through photoactivation.

The HeaLite II from Lutronic uses light-emitting diodes (LEDs) to deliver a sequence of low-level yellow light, in combination with near infra-red light to injuries, lesions and otherwise compromised tissue, in order to improve wound and soft tissue healing and reduce inflammation.

‘LEDs have two major advantages over laser diodes,’ says Dr Glenn Calderhead from the UK who has authored and co-authored more than 138 scientific papers on phototherapy. ‘Not only are they much less expensive, they can also be mounted in large planar arrays, meaning that large treatment areas can be exposed to the LEDs at one time, without the need for the doctor or clinician to hold a device for long periods of time.’

According to Dr Calderhead, HeaLite II is unique in that it adopts a sequential approach to phototherapy – referred to as ‘photo-sequencing’. This involves the delivery of low-level doses of 590 nm energy to the superficial skin, in combination with more powerful, deeper-penetrating near-infrared light at 830 nm.

‘The concept of starting treatment with the delivery of 590 nm LED energy at LLLT preconditioning energy levels, followed by the continuous wave of 830 nm LED energy is referred to as photo-sequencing,’ says Dr Calderhead.

According to Dr Calderhead, the delivery of the preconditioning low-level light therapy at 590 nm allows the epidermal cells, and the keratinocytes, to start to manufacture cytokines. ‘This induces the formation of neuropeptides and neurotransmitters from the epidermal Merkel cells. These photoproducts then “precondition” the dermal target cells for the main treatment.’

Another important aspect of photo-sequencing is the

enhanced safety profile of the device. Because light energy delivered at 830 nm is invisible to the naked human eye, it’s possible to over-expose areas of the body without knowing. Although the level of energy emitted by the HeaLite II is beneficial to most parts of the body, overexposure can cause damage to an unprotected eye. When accompanied by the highly visible yellow light, the eye’s blink reflex is triggered, protecting the eye from overexposure and potential damage.

The HeaLite II is designed to help with a number of common conditions. It was specifically designed to hasten or accelerate the healing process of wounds following any medical or cosmetic operation, but can also help prevent the formation of scars, improve the appearance of existing ones, and reduce the extent of fine lines and wrinkles as well as improving skin conditions such as dermatitis, eczema and psoriasis.

‘One of the key advantages of the HeaLite II is that it has such a wide range of clinical indications,’ says Dr Calderhead. ‘It has been shown to speed up the healing of wounds caused by earlier laser treatment or surgery, and can even reduce the pain, bruising and swelling experienced post-laser treatment.’

According to Dr Calderhead, treatment with the HeaLite II can also improve the appearance of fine lines and wrinkles, enhance skin tone and texture and improve photo-aged skin.

During the procedure, the HeaLite treatment head is positioned over the target area. When the device is activated, it delivers one minute of 590 nm energy at extremely low incident levels of photon intensity, working from left to right. ‘The yellow light then continues as the 830 nm LEDs are activated,’ says Dr Calderhead. ‘This continues until the required dose of 830 nm has been delivered.’

The length and number of treatments will vary depending on the individual circumstances of each patient and the condition being targeted.

‘The HeaLite II represents a paradigm shift in LED phototherapy systems with clinically proven wavelengths at optimum intensities. It is a novel technology that allows surgeons to get even better results, faster, based on the true science of phototherapy,’ says Dr Calderhead. **csbm**