

photodynamic therapy

Sydney cosmetic surgeon **Dr Samuel Seit** says the cosmetic and therapeutic uses of photodynamic therapy are expanding all the time. Lise Taylor reports.

Photodynamic therapy using Intense Pulsed Light (IPL), also known as photodynamic photorejuvenation, has been available for some time to rejuvenate the skin. The broad-spectrum intense light of the IPL stimulates the production of collagen, which firms and tightens the skin, while at the same time treating discolouration, blemishes or broken capillaries.

Sydney cosmetic surgeon Dr Samuel Seit says that, in recent times, the capabilities of photodynamic therapy have begun to expand into more therapeutic uses to cater for more and more skin conditions. Today, it can be used to treat non-melanoma skin cancers, actinic keratoses (pre-malignant sun spots), and many types of acne, including comedonal acne and inflammatory acne.

Sun spots

Dr Seit is one of the first doctors in Australia to offer a revolutionary photodynamic IPL technique for the treatment of pre-cancerous sun spots. The procedure entails applying a solution of photo-sensitising 5-aminolevulinic acid (ALA) to the affected area.

Around 70 per cent of Australians will develop sun spots, which if left untreated may evolve into melanomas or other forms of skin cancer, so it is critical that they be treated

as early as possible.

Dr Seit says photodynamic IPL is the latest big thing in the US. 'If a client has only one or two sun spots, I may simply use cryosurgery, or 'freeze' them off,' he explains. 'But if they have multiple spots, photodynamic photorejuvenation will remove the spots and rejuvenate the entire skin at the same time.'

There are several steps to the treatment protocol. Dr Seit generally recommends preparing the skin with microdermabrasion to remove all dead skin cells and to ensure it is really clean. The ALA solution is then applied to the area and left for about one hour. During this time, the parts of the skin where cancerous or precancerous cells



BEFORE



AFTER photodynamic therapy by Dr Seit



BEFORE



AFTER photodynamic therapy by Dr Seit

exist selectively absorb more of the ALA. The area is then washed before Dr Seit applies the IPL. He explains, 'This activates the ALA to produce unstable oxygen radicals, which kill off the precancerous cells.'

The area is then treated with red light to quench off any remaining ALA. The entire procedure takes about three hours, after which the treated area will appear a little red and flushed and the sun spots will show up. Patients need to stay out of the sun for at least 48 hours afterwards, as the skin becomes very sensitive to sunlight.

Acne

As impressed as Dr Seit is with light-based therapies in the prevention of sun damage, he is equally enthusiastic about their application in the treatment of severe acne, using Light Heat Energy (LHE) technology. 'LHE is Intense Pulsed Light combined with heat,' he explains. 'Acne occurs when bacteria proliferate in blocked hair follicles and metabolise the sebum secreted by the oil glands. When LHE is pulsed into the skin, the light is absorbed in the acne lesion, creating oxygen radicals that kill the bacteria.'

In addition, Dr Seit is now using ALA in combination with IPL or LHE for the treatment of acne. 'ALA, besides being absorbed by precancerous actinic keratoses, is also absorbed by the sebaceous glands, which are overactive in acne,' he says.

Dr Seit explains that the oil that is excreted from the sebaceous glands onto the skin, call sebum, actually consists of live cells, which are replicated in the glands. When ALA is applied onto these cells, they selectively absorb and metabolise the ALA into natural photosensitisers, making them super sensitive to light. Then, on exposure to a very specific wavelength light source and in the presence of oxygen, a photodynamic reaction occurs where toxic oxygen radicals are formed in the cells and subsequently destroy them. This photodynamic reaction also causes the toxic oxygen radicals to kill the acne bacteria.

'Photodynamic therapy is a complex treatment process. Different light sources are used to activate the ALA and not all patient's skin is the same, so the patient needs to be individually assessed so the correct ALA dose can be formulated. In addition, because not all photodynamic therapies are the same, the light dose also needs to be suited to the needs of the patient,' he explains.

Dr Seit points out that, other than Roaccutane, this ALA treatment is the only acne treatment that destroys the sebaceous glands. 'Other therapies for acne treatment don't do this,' he says.

What about future uses of photodynamic photorejuvenation? Dr Seit says there is a great deal of research currently being conducted in the US into additional uses for photodynamic therapy such as for hair removal, and to treat warts and psoriasis. It seems we have a lot to look forward to when it comes to therapeutic uses of this powerful light therapy. **acsm**

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