

An advanced selective photo clearing system to target *Propionibacterium acne* bacteria and photo-aging skin

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Venue: Sheraton Hotel, Hong Kong
Speaker: Dr. Yoram Harth
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Organiser: The Hong Kong Society of
Dermatology and Venereology

The speaker compared different modalities of light therapy. Laser delivers coherent light of the same wavelength, intense pulse light produces light of a broad spectrum of wavelength, light emitting diode (LED) produces radiation at one wavelength but of low intensity, and phototherapy delivered

light with a spectrum matching the maximal therapeutic efficacy of the targeted skin condition. The most important point in light therapy of any sort is to tailor the exact spectral emission to the specific targeted disease. He introduced another light machine that delivered blue/violet light (405-420 nm) and near infrared light (850-890 nm). The blue/violet spectrum can be used in acne vulgaris whereas both the blue/violet spectrum and the near infrared spectrum are of potential use in nonablative photorejuvenation and in enhancement of skin healing after plastic or laser surgery.

Propionibacterium acne is one of the targets in the treatment of acne vulgaris. They produce endogenous porphyrins (mostly coproporphyrin III)

as part of their normal metabolism. Upon absorption of blue/violet light, the porphyrins are photo-activated, leading to bacteria destruction. Besides killing the bacteria directly, the blue/violet spectrum of light can reduce the production of proinflammatory cytokines. It has rapid onset of action and therapeutic effect can be seen within one month. A typical course is two times per week for four weeks. It is FDA-approved in the management of inflammatory acne vulgaris. However, for severe nodulocystic acne, the treatment of choice is still isotretinoin unless otherwise contraindicated. In a multicentre follow up study, about 70% improvement is observed after eight treatments. The procedure is painless, does not have the side effect of photosensitivity, hyperpigmentation and there is no need to monitor the liver function. It adds onto the list of armamentarium that can be used in acne therapy.

There are several elements of aged skin. These include yellowish skin due to impaired microcirculation, inelastic skin due to accumulation of oxidative stress, wrinkles induced by collagen destruction due to chronic microinflammation, and

irregular mottled pigmentation. The near infrared spectrum can induce both the release of nitric oxide that improves microcirculation and increase in ferritin that is an anti-oxidant. The blue/violet spectrum can decrease collagen destruction by reducing the production of pro-inflammatory cytokines. These changes at the cellular level are then translated to the clinical observation of rejuvenated skin. The use of skin peeling before the procedure and vitamin C post-therapy is suggested. The improvement in dermal blood circulation may enhance lymphatic drainage and both can improve wound healing. As a result, another potential use of the machine is the enhancement of post-surgical or post-laser wound healing.

Learning points:

To optimise light therapy, the exact spectral emission should be tailored to the specific targeted disease. Light therapy is approved for the treatment of inflammatory acne vulgaris.



Web sites of Dermatology & Venereology in Hong Kong

The homepage of The Hong Kong Society of Dermatology & Venereology
<http://www.medicine.org.hk/hksdv/>

Hong Kong Dermatology & Venereology Bulletin
 (Official Publication of The Hong Kong Society of Dermatology & Venereology)
<http://www.medicine.org.hk/hksdv/bulletin.htm>

The homepage of The Asian Dermatological Association
<http://www.medicine.org.hk/ada/>

