Photodermatol Photoimmunol Photomed 2006; 22: 52
Blackwell Munksgaard

Photodermatology
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Letter to the Editor

Action spectrum for healing of psoriasis

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To the Editor,

In their recent review on the mechanisms of ultraviolet B (UVB) phototherapy, Weichenthal and Schwarz (1) comment that radiation in the spectral range between 311 and 313 nm clears psoriasis better than other wavelengths. Similar statements appear not infrequently in publications concerning TL-01 narrowband lamps. We suggest that the limited experimental data on wavelength dependence of psoriasis clearance has been over-interpreted and that the reason for arriving at this conclusion has more to do with physics than biology.

In their early studies of the UV wavelengths effective in clearing psoriasis, Fischer and colleagues (2–4) examined the efficacy of discrete wavelengths from 254 to 405 nm. They demonstrated that a wavelength of 313 nm was effective for psoriasis clearance, particularly at higher doses. However, other UVB and UVC wavelengths between 254 and 313 nm were not studied and therefore these data have only limited clinical relevance. Furthermore the reason for the choice of wavelengths studied (254, 313, 334, 365 and 405 nm) was that they are all characteristic spectral lines emitted by the mercury arc lamps that were used by these investigators.

Parrish and Jaenicke (5) studied the response of psoriasis to different wavelengths (254, 280, 290, 296, 300, 304 and 313 nm), by irradiating small areas of lesional skin on a daily basis, using various multiples of the minimal erythema dose (MED). No clearance of psoriasis was found with wavelengths of 290 nm or less. Clearance was achieved at wavelengths of 296–313 nm, with some suggestion of a better response at 313 nm. However, only four patients were studied, and they were found to have relatively treatment-resistant psoriasis. Furthermore, as would be expected with such a small sample size, when we applied analysis of variance to the authors' data, we found no significant difference between the four different UVB wavelengths (296, 300, 304 and 313 nm) in terms of lowest effective daily dose (LEDD) relative to the MED to clear psoriasis ($P = 0.20$), the number of treatments needed to clear with the LEDD ($P = 0.45$), or the lowest number of treatments to clear ($P = 0.47$).

So while phototherapy using narrowband (311 nm) UVB fluorescent lamps proves to be an effective treatment for psoriasis (6), we should remain cautious about attributing this particular wavelength of the UVB spectrum with special healing properties.

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Accepted for publication 5 October 2005

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