REFERENCES

Boehncke W-H, Dressel D, Zollner TM, Kaufmann R: Pulling the trigger in psoriasis. *Nature* 479:777, 1996

Howell MD, Austin RK, Kelleher D, Nepom GT, Kagnoff MF: An HLA-D region restriction fragment length polymorphism associated with celiac disease. *J Exp Med* 164:333–338, 1986

Jappe U, Heuck D, Witte W, Gollnick H: Superantigen production by *staphylococcus aureus* in atopic dermatitis: No more than a coincidence? *J Invest Dermatol* 110:844–846, 1998

Lundin KE, Gjertsen HA, Scott H, Sollid LM, Thorsby E: Function of DQ2 and DQ8 as HLA susceptibility molecules in celiac disease. *Hum Immunol* 41:24–27, 1994

Reply

Our answer to the Letter entitled "Superantigens in T cell mediated skin diseases – more than a coincidence!" is rather simple and goes back to criteria established already by Robert Koch for the attribution of a particular disease to a particular microbial pathogen. *Staphylococcus aureus* was not detected in 37% of the study group and therefore this microorganism could not account for atopic dermatitis in these patients (Jappe *et al*, 1998). Furthermore, only 45% of the *S. aureus* isolates from the 63% of the study group carrying this microorganism on their skin had the genotype for the superantigens analyzed. This would clearly indicate that these superantigens were not involved in the pathology. The design of the investigation does allow the hypothesis of cause and effect, *S. aureus* and atopic dermatitis, to be tested. Assuming that genetic disposition of the individual is essential combined with an extraneous environmental factor, in this case *S. aureus* superantigen producer, then atopic dermatitis would occur only when *S. aureus* was present on the skin. The hypothesis that *S. aureus* skin colonization is a prerequisite for atopic dermatitis is greatly weakened by our data. This investigation strengthens the hypothesis that other environmental factors, apart from *S. aureus*, are important in atopic dermatitis.

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REFERENCE

Jappe U, Heuck D, Witte W, Gollnick H: Superantigen production by Staphylococcus aureus in atopic dermatitis: No more than a coincidence? *J Invest Dermatol* 110:844–846, 1998

In Vitro Determination of Erythema and Immunologic Protection Afforded by Sunscreens do not Accord with *In Vivo* Assessments

To the Editor:

As members of the cosmetic industry involved in sunscreen research and development, and currently working on photoimmunologic protection afforded by sunscreens, we would like to add our comments to those from Gasparro (1998) and Wolf and Kripke (1998) on Davenport *et al*'s publication (1997), particularly after reading Chu *et al*'s (1998) responses to these comments.

The statement "sunscreens protect against immunosuppression beyond their designated sun protection factor (SPF)" is incorrect. Re-analysis of the data shows exactly the opposite. In addition, we want to state that SPF determined *in vitro* by the Diffey method often do not correlate with the *in vivo* SPF (Diffey and Farr, 1991). For example, based on our extensive experience, sunscreen A (2% octyl-methoxy cinnamate) would be expected to have an *in vivo* SPF around 2 (5.7 found *in vitro*), sunscreen B (2% o-PABA) a SPF of 2.5 (4.5 found *in vitro*), and sunscreen E (6% ZnO) a SPF of 5 (3.8 found *in vitro*). So, the conclusion that cream A, which provided the highest immune protection, is the cream that had the highest *in vitro* SPF is valid only for an *in vitro* situation and this model of evaluation.

We also disagree with one of the other conclusions of this work: "Protection by creams D and E, broad-spectrum sunscreens, is lower than protection afforded by pure UVB sunscreens (creams A and B)." Indeed, the published *in vivo* results issued from our laboratory and from other international teams have demonstrated just the opposite: sunscreens containing both UVA and UVB filters are more effective against photoimmunosuppression than pure UVB formulations (Bestak *et al*. 1995; Damian *et al*. 1997, Serre *et al*. 1997, Gueniche and Fourtanier, 1997; Moyal, 1998). We have also demonstrated that the higher the UVA protection level, the better the immune system is protected, and that sunscreen protection factor against immunosuppression are lower than their *in vivo* SPF.

Manuscript received September 23, 1998; accepted for publication September 25, 1998.

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REFERENCES

Bestak R, Barnetson R, Nearn M, Halliday G: Sunscreen protection of contact hypersensitivity responses from chronic solar-stimulated ultraviolet irradiation correlates with the absorption spectrum of the sunscreens. *J Invest Dermatol* 105:345–351, 1995

Chu A, Davenport V, Morris J: Immunologic protection afforded by sunscreens. *J Invest Dermatol* 111:340, 1998

Damian O, Halliday G, Barnetson R: Broad-spectrum sunscreens provide greater protection against ultraviolet-radiation induced suppression of contact hypersensitivity to a recall antigen in humans. *J Invest Dermatol* 109:146–151, 1997

Davenport V, Morris J, Chu A: Immunologic protection afforded by sunscreens in vitro. *J Invest Dermatol* 108:859–863, 1997

Diffey B, Farr P: Sunscreen protection against UVB, UVA and blue light: an in vivo and in vitro comparison. *Br J Dermatol* 124:258–263, 1991

Gasparro F: Photobiology 101. *J Invest Dermatol* 110:183, 1998

Gueniche A, Fourtanier A. Mexoryl SX protects against photoimmunosuppression. In: Altmeyer P, Hoffmann K, Stucker M (eds). *Skin Cancer and UV Radiation*. Berlin, Heidelberg: Springer-Verlag, 1997, pp. 249–262

Moyal D: Immunosuppression induced by chronic ultraviolet irradiation in humans and its prevention by sunscreens. *E J Dermatol* 8:209–211, 1998

Serre I, Cano J-P, Picot M-C, Meynadier J, Meunier L: Immuno-suppression induced by acute solar-simulated ultraviolet exposure in humans, prevention by a sunscreen with a sun protection factor of 15 and high UVA protection. *J Am Acad Dermatol* 37:187–194, 1997

Wolf P, Kripke M: Immunologic protection afforded by sunscreens beyond designated sun protection factors. *J Invest Dermatol* 110:184, 1998