

Photohaptenic properties of sunscreen agents

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Sunscreen agents are widely used for photoprotection of patients with photosensitivity as well as normal individuals receiving intense sun exposure. However, some of these agents are also known to induce photoallergic contact dermatitis as an adverse effect. To evaluate the photoallergenicity of sunscreens, including benzophenone-3, Parsol 1789, p-aminobenzoic acid, and 2-ethyl-hexyl-p-methoxycinnamate, we examined the ability of epidermal cells photomodified with these sunscreen agents to evoke delayed-type hypersensitivity in mice. For preparation of sunscreen-photomodified epidermal cells, murine epidermal cells were suspended in aqueous solutions of these sunscreens and irradiated with ultraviolet A. Mice were sensitized with subcutaneous injection of the sunscreen-photomodified epidermal cells and challenged with the photomodified epidermal cells into hind pad. The footpad swelling was measured 24 h after injection of the photomodified cells. Benzophenone-3-photomodified epidermal cells successfully immunized and elicited delayed-type hypersensitivity in mice, whereas no significant footpad swelling was induced by the other three sunscreen agents. This suggests that some of sunscreen agents have a potential to induce photoallergic contact sensitivity and that the present method is useful to estimate the photoallergic potency of sunscreens.