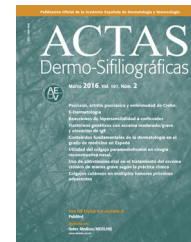




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LETTER TO THE EDITOR

Allergic Sensitization to Isothiazolinones in Patients Referred for Photobiologic Study[☆]



Sensibilización alérgica a isotiazolinonas en pacientes remitidos a estudio fotobiológico

Dear Editor:

Isothiazolinones are preservatives found in cosmetic, industrial, and home cleaning products. The isothiazolinone mix Kathon—methylchloroisothiazolinone (MCI) and methylisothiazolinone (MI)—was approved in 1980. Since then, several cases of allergic contact dermatitis to these preservatives have been detected, with sensitization rates > 5%. Despite regulation of the maximum concentration in cosmetics, sensitization rates remain high, especially in recent years after the approval of MI alone at high concentrations. These rates have now reached epidemic proportions (8%-11%).¹

Allergic contact dermatitis to isothiazolinones mainly affects middle-aged women and is associated with the use of cosmetics. It manifests as dermatitis affecting the face and dorsum of the hands; therefore, many patients are initially considered to have photodermatosis and are referred for a photobiologic study (Fig. 1).

The objective of the present study was to identify cases of allergic sensitization to MCI/MI in patients sent for a photobiologic study. The secondary objective was to investigate clinical-epidemiological variables.

We performed a retrospective descriptive study of all patients assessed at the Photobiology Unit of the Dermatology Department of Hospital General de Valencia, Valencia, Spain between January 2013 and December 2015 for eczematous dermatitis affecting areas exposed to sunlight. The clinical histories were reviewed, and all cases of sensitization to isothiazolinones were recorded. We also collected demographic variables (eg, sex and age), source of sensitization, and personal or family history of atopy.



Figure 1 Case 1. Erythema and desquamation at the level of the face and intermammary area sparing the retroauricular area and base of the neck fold.

All patients were assessed using photopatches according to the recommendations of the European Society of Contact Dermatitis. The patches were applied in duplicate, and one of the series was irradiated at 48 hours using UV-A lamps (5 J/cm²). We also applied the standard series of the Spanish Contact Dermatitis and Skin Allergy Research Group (Martitor) in use at the time, as well as an MI patch at 500 ppm.

Depending on the clinical history, complementary patch tests were performed with specific allergen series or with the patient's own products.

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Of the 142 patients referred to the Photobiology Unit during the study period, 18 were sensitized to isothiazolinones (12.7%). Most were sensitized both to MCI/MI and to MI alone (72.2%), 16.7% were sensitized to MCI/MI alone, and 11.1% to MI alone.

More cases were identified in women (77.8 vs 22.2%) with a mean age of 62 years (median, 59 years). Atopy was reported by 16.7% of patients, and 16.7% had a positive phototest result. The source of sensitization in all cases was cosmetics, mainly moisturizing cream. Of note, the source of sensitization was sunscreen in 3 cases ([Supplementary Material](#)).

Of the patients initially considered to have photodermatitis and therefore sent for the photobiologic study, 12.7% actually had allergic contact dermatitis to isothiazolinones. Consequently, skin allergy to isothiazolinones must always be taken into consideration in the differential diagnosis of photodistributed skin lesions. In fact, this percentage is probably underestimated: our experience led us to progressively reclassify many of these patients with apparently photodistributed eczema as contact dermatitis and refer them directly to the skin allergy unit.

Moreover, with the application of the new standard series of the Spanish Contact Dermatitis and Skin Allergy Research Group, which has double the concentration of MCI/MI and includes MI at 2000 ppm, the number of cases detected is expected to decrease; therefore, we must familiarize ourselves with the habitual clinical presentation of these allergens.²

In 2015, Pirmez et al.,³ found that up to 70% of patients sensitized to isothiazolinones presented photodistributed lesions.

A possible explanation for the distribution of the skin lesions is that the exposed areas (face, intermammary area, forearms, dorsum of the hands) are where cosmetics, and sunscreens in particular, are most commonly applied, as we observed in 16.7% of the cases in the present study. However, other theories can be proposed. In 2014, Aerts et al.⁴ reported a case of potentially photoaggravated sensitization to isothiazolinones. A subsequent photopatch-based study

published in the *British Journal of Dermatology* demonstrated the role of isothiazolinones in photoaggravation.^{3,4}

Therefore, we conclude that not only should ACD to isothiazolinones be taken into consideration in the differential diagnosis of patients with photodermatitis, but that studies are also necessary to identify the pathogenic mechanism.

Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at [doi:10.1016/j.adengl.2018.02.016](https://doi.org/10.1016/j.adengl.2018.02.016).

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