

Excited Skin Syndrome Associated with Patch-Test Application Technique

To the Editor:

Excited skin syndrome (ESS) was described by Mitchell in 1975¹ and is characterized by multiple positive reactions in patch tests; however, not all reactions are reproducible when patients are retested. Several factors contribute to the induction of ESS, including the substances tested. The interference of substance positioning in the application of patch tests has been studied by many authors.^{2–5} Brash and colleagues,⁶ in a study published in 2003, demonstrated a group of substances with chemical affinity having a higher frequency of simultaneous positive patch tests.

In 2002, Duarte and colleagues³ demonstrated that substances with chemical affinity (cosensitizers or substances tending to have cross-reactions) induced false-positive tests when applied close to each other. Hence, the authors concluded that apart from the already standardized techniques, the positioning of the substances during test application should be considered.

The objectives of this work were to determine the prevalence of ESS in patients subjected to epicutaneous tests using the patch test standard series, taking into account the positioning of the substances, and to compare the results obtained with a group of patients with ESS assessed by the authors in the period from 1998 to 2000.

From January 2002 to June 2004, 450 patients with diagnoses of contact dermatitis were tested. The substances of the series with chemical affinity were applied at a distance from each other (Table 1). The ESS patients were compared with others suffering from the same condition tested from 1998 to 2000, when the standard series used comprised the same substances but application did not

Table 1. Patch Test Series and Positioning of Substances,* 2002–2004 Study Period

1. Anthraquinone	16. Mercapto mix
2. Balsam of Peru	17. Benzocaine
3. PPD mix	18. Quaternium-15
4. Hydroquinone	19. Quinoline mix
5. Potassium dichromate	20. Nitrofurazone
6. Propylene glycol	21. Parabens
7. p-tert-Butylphenol	22. Epoxy resin
8. Neomycin	23. Thimerosal
9. Irgasan†	24. Turpentine
10. Kathon CG‡	25. Carba mix
11. Cobalt chloride	26. Promethazine
12. Lanolin	27. Nickel sulfate
13. Thiuram mix	28. Colophony
14. Ethylenediamine	29. p-Phenylenediamine
15. Fragrance mix	30. Formaldehyde

PPD = p-phenylenediamine.

*Substances with chemical affinity were placed distant from one another.

†Ciba Specialty Chemicals, Basel, Switzerland.

‡Rohm and Haas Company, Philadelphia, PA.

Table 2. Positioning of Substances in Test Series Applied to Patients' Backs, 1998–2000 Study Period

1. Anthraquinone	16. Neomycin
2. Balsam of Peru	17. Nitrofurazone
3. Benzocaine	18. Parabens
4. Potassium dichromate	19. p-Phenylenediamine
5. p-tert-Butylphenol	20. Fragrance mix
6. Carba mix	21. PPD mix
7. Cobalt chloride	22. Promethazine
8. Colophony	23. Propylene glycol
9. Ethylenediamine	24. Quaternium-15
10. Formaldehyde	25. Quinoline mix
11. Hydroquinone	26. Epoxy resin
12. Irgasan*	27. Nickel sulfate
13. Kathon CG†	28. Turpentine
14. Lanolin	29. Thimerosal
15. Mercapto mix	30. Thiuram mix

PPD = p-phenylenediamine.

Substances with chemical affinity or cross-reactions are shown in boldface.

*Ciba Specialty Chemicals, Basel, Switzerland.

†Rohm and Haas Company, Philadelphia, PA.

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take into account the chemical affinity of the substances in their positioning (Table 2).

Among the 450 patients, 15 (3.3%) were considered as suffering from ESS. In the group tested from 1998 to 2000, 39 patients (6.2%) had ESS. When the number of patients with ESS in the two groups were compared, the difference was statistically significant ($p < .05$). Using the same series of tests and changing the application method only in the positioning of the substances decreased the prevalence of ESS in the group recently assessed.

The concern with placing substances that tend to have cross-reactions and the cosensitizing elements distant from each other in the group of 450 patients led to ESS manifesting only in those with multiple sensitization. This fact favors the idea that ESS is triggered by substances with chemical affinity that are applied close to each other.

The present study demonstrated in a practical fashion the need to value the positioning of the substances when performing patch tests, so that the results are more accurate and so that adverse reactions such as ESS may be avoided.

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Correction

Please note two errors in Table 3, page 7. In “Sunscreen Allergy: A Review of Epidemiology, Clinical Characteristics, and Responsible Allergens” (2006;17(1):3–11). The chemical name octyl methoxycinnamate, which appears as a synonym for cinoxate in the third entry down in the first column, should appear as a synonym for Parsol MCX in the first entry in that same column. The remaining synonym for cinoxate in the third entry of the first column contains a misspelling. The correct spelling is “2-ethoxyethyl-p-methoxycinnamate.” The corrected table appears below.

Note: This table has been revised.

Table 3. Cinnamates

Compound	Patch-Test Concentration*
Parsol MCX (2-ethylhexyl-4-methoxycinnamate, octyl methoxycinnamate, Escalol 557)	10% pet
Isoamyl p-methoxycinnamate (amylcinnamate)	10% pet
Cinoxate (2-ethoxyethyl-p-methoxycinnamate)	2% pet
Ethyl cinnamate	4% pet

pet = petrolatum.

*Recommended concentrations (adapted from Chemotechnique Diagnostics³⁶; De Groot AC⁴⁷; Trolab/Hermal⁴⁸).

We regret the mistakes and apologize for the inconvenience.