

Patch Testing with Ethyl Alcohol

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Précis

It is necessary to know the correct technique of patch testing with ethyl alcohol since evaporation can cause false results.

Discussion

A 77-year-old woman with degenerative osteoarthritis and vertebral fractures developed erythematous and itchy lesions at the sites of a few transdermal patches with fentanyl (Duragesic analgesic patch, Janssen Pharmaceutica N.V., Beerse, Belgium) after a few months of continuous use. She had never drunk alcoholic beverages. Eczematous lesions appeared at the elbow flexure some hours after cotton wool soaked in ethyl alcohol had been applied there immediately after blood collection.

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It is well known that ethyl alcohol can act as a sensitizing agent when it is applied by transdermal drug delivery systems, more frequently containing estrogens.¹ Ethyl alcohol at a concentration of 0.1 mL/10 cm² is also a component of the Duragesic analgesic patch, which is applied for 72 hours and is intended for long-term use. Patch tests were performed with the standard battery of the Grupo Español de Investigación de Dermatitis de Contacto, the acrylates series, a resins and adhesives series (Chemotechnique Diagnostics, Malmö, Sweden), fentanyl, and absolute ethyl alcohol (analytic grade) 10% aqueous (Panreac Química S.A., Montcada i Reixac, Barcelona, Spain). Ethyl alcohol, applied immediately after its preparation, yielded + reactions only at 48 and 96 hours. This indicated a delayed hypersensitivity reaction and not an irritant dermatitis.² Patch tests with ethyl alcohol 10%

Table 1. Ethyl Alcohol Patch-Test Readings with Laser Doppler Flowmeter

Patch Placement	Reading at 48 Hours (PU)	Reading at 96 Hours (PU)
Immediately placed	110	95
Placed after 10 minutes	12	7
Placed after 20 minutes	8	9
Normal skin (no patch)	7	8

PU = perfusion units.

aqueous were administered to 10 control subjects; all had negative results.

To study if the evaporation of the ethyl alcohol could influence the results of the patch tests, patch testing was repeated with analytic grade ethyl alcohol applied in Finn Chambers (Epitest Ltd Oy, Tuusula, Finland) immediately placed 10 minutes and 20 minutes after its preparation, thus allowing evaporation. Readings with a Periflux PF3 laser Doppler flowmeter (Perimed AB, Stockholm, Sweden) were performed at 48 and 96 hours, as well as readings of nonpatched skin on the back (Table 1). Only the ethyl alcohol that was applied immediately after preparation yielded a positive (+) reaction.

This case demonstrates that a person sensitive to ethyl alcohol can have positive patch-test reactions to this substance only when it is applied in occlusion immediately following its preparation. This agrees with the fact that some persons who are sensitive to ethyl alcohol do not present signs of dermatitis after open application of the product (because it evaporates) but do when it is applied occlusively (as in transdermal patches) or with cotton wool after blood collection.² Patch testing of the control subjects indicated that ethanol is not an irritant when it is applied immediately after preparation, contrary to what was

previously believed.^{3,4} We have found that the ethanol patch test with Finn Chambers is adequate although the use of the van der Bend Chamber (van der Bend B.V., Brielle, the Netherlands) has been suggested because it avoids the spreading of the ethanol.⁵

Pearl

When allergic contact dermatitis is suspected of being caused by ethyl alcohol, it is important to know the correct way of performing patch tests with this substance to avoid false-negative results.

References

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