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# One hundred years of allergic contact dermatitis due to oxidized terpenes: What we can learn from old research on turpentine allergy

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## Abstract

Although in recent years the focus on sensitizing terpene oxidation products has been on oxidized limonene and linalool, the autoxidation of terpenes in relation to allergic contact dermatitis is not new and dates back to the early part of the 20th century with the use of turpentine causing occupational contact dermatitis in painters. This review is written in a way as to allow us to get closer to the work of the scientists in earlier days, to participate in the successes, and also to observe the weak points. The researchers concluded that the main culprit in Scandinavian turpentine was  $\Delta^3$ -carene hydroperoxides. This explains its high sensitizing effect compared with French turpentine which is of the Iberian type with no or only traces of  $\Delta^3$ -carene. Historical exposure to turpentine showed that ending the industrial exposure stopped the occupational skin sensitization. Patch test studies demonstrated that monoterpene hydroperoxides, far from being an obsolete source of contact allergy solely related to turpentine, is a common cause of contact allergy in the population. A hundred years of extensive chemical and clinical studies worldwide should be sufficient to meet the evidence requirement regarding allergic contact dermatitis caused by terpenes.

**Keywords:** air-oxidized terpenes; allergic contact dermatitis; hydroperoxide; occupational contact dermatitis; oil of turpentine;  $\Delta^3$ -carene.

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