

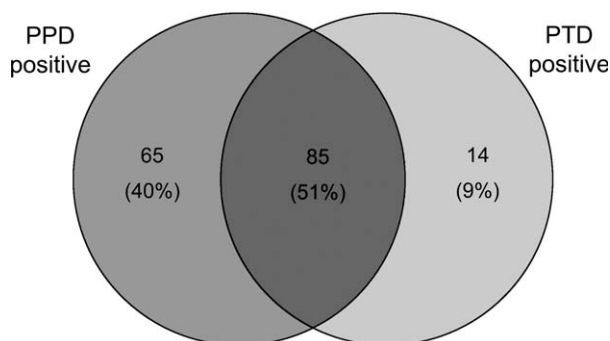


Fig. 1. Sensitization pattern of 511 patients simultaneously tested to PPD and PTD. PPD, *p*-phenylenediamine; PTD, toluene-2,5-diamine.

Toluene-2,5-diamine may be an isolated allergy in individuals sensitized by permanent hair dye

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S. M. Winhoven, K. J. Rutter
and M. H. Beck

The Dermatology Centre, University of
Manchester, Hope Hospital, Salford,
Manchester M6 8HD, UK

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Allergy to permanent hair dyes is not always recognized by patients or clinicians as a cause for ongoing skin problems. It is paramount that unsuspected allergy is detected. Screening is generally undertaken by standard series testing with *p*-phenylenediamine (PPD). However, other chemicals may be used for permanent hair dyeing, especially the structurally similar toluenylenediamines, in particular toluene-2,5-diamine (PTD), which differs from PPD by producing a redder colour (1).

2 index cases of hair dye allergy to PTD that were negative to PPD lead to investigation of sensitization patterns of PPD and PTD. The electronic records of 10 722 patch-tested patients were evaluated. All were patch tested to PPD. Records of the 511 patients simultaneously tested to PPD (1% PPD in white soft paraffin; Crawford Pharmaceuticals, Goostrey, Cheshire, UK) and PTD (1% PTD in petrolatum, Trolab, imported and distributed by Bio-Diagnostics Ltd Worcester, UK) were analysed. Readings were taken at 96 hr

(D4) according to the guidelines of the international contact dermatitis research group.

14 (9%) of 164 patients allergic to these permanent hair dyes were only allergic to PTD (Fig. 1). 13 of the 14 were women, and the average age was 33 years. 8 were currently or had previously worked as hairdressers, 4 reported skin problems relating to hair dye, and 2 gave no clear history of hair dye problem.

Hair dye allergy is commonly suspected, but many cases are only identified retrospectively when an allergic reaction to hair dye is found on patch testing. Our analysis shows the risk of missing unsuspected permanent hair dye allergy from PTD, particularly in those with facial rashes.

Many of the leading European hair dye manufactures commonly use both chemicals. However, some manufactures only use PTD especially in those countries where PPD has been banned. A recent analysis of 9 products on the Danish market showed 8 of these to contain PTD but only 1 PPD (2).

In previous studies, 49 (19%) of 261 Italian hairdressers' clients showed 1 or more positive reactions to hair-dressing chemicals, with PPD being the most frequent sensitizer (7.3%) closely followed by PTD (4.6%) (3). In a Belgian study of more than 5000 routinely tested patients, 7.2% were allergic to PPD and 1.6% to PTD (4).

As concomitant allergy to PPD and PTD is very common and they are commonly found together in hair dyes, it is difficult to be certain whether such sensitizations are because of cross-sensitization or independent.

In conclusion, because hair dye allergy is not always suspected, we suggest that PTD is routinely included in not only the hairdressing series but also the face/cosmetic series.

References

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Address:

Dr Sandra Winhoven
The Dermatology Centre
Hope Hospital
Salford
Manchester M6 8HD
UK
Tel: +44 0161 2061014
Fax: +44 0161 2061018
e-mail: swinhoven@hotmail.com