Adding p-aminoazobenzene may increase the sensitivity of the European standard series in detecting contact allergy to dyes, but carries the risk of active sensitization

W. P. Arnold, T. van Joost and P. G. M. van der Valk
Department of Dermatology, University Hospital Nijmegen, P.O. Box 9101, 6500 HB Nijmegen, The Netherlands

Key words: allergic contact dermatitis; para-phenylenediamine; para-aminoazobenzene; azo dyes; textile dyes; patch testing technique; active sensitivation. © Munksgaard, 1995.

Para-phenylenediamine (PPD) is used in dyes for hair, fur, leather, printer’s ink, photographic products, X-ray film and lithography. It is not used in textile dyes and is not useful as an indicator for detecting allergies to textile dyes. The chemically-related substance para-aminoazobenzene (PAAB) may be a better detector of contact allergies to para compounds used in textile dyes. Only 17% of patients sensitive to azo dyes in clothing reacted to PPD in 2 studies (1, 2), though all patients with stocking dermatitis reacted to PPD in another (3). In the European standard series, only PPD is included as an indicator for detecting contact allergy to dyes. Would adding PAAB increase its sensitivity in detecting para-dye allergy?

Methods and Results
We carried out a retrospective analysis of patch tests performed in 5 Dutch hospitals while PAAB was added to their European standard series. The %s of positive patch tests were calculated in the subgroups A [PPD+/PAAB−], B [PPD+/PAAB+] and C [PPD−/PAAB+]. The gain in sensitivity was measured by dividing C by A+B (×100%). Results are summarized in Table 1. The mean gain in sensitivity of detecting contact allergy to para-dyes by adding PAAB was 24%.

Discussion
We demonstrated considerable variation in positive patch tests to PPD and PAAB between the different hospitals. Within 1 hospital, however, data seemed to be reproducible from year to year. We observed wide variation in the gain of sensitivity between hospitals (mean 24%; standard error of the mean 10.5). Adding PAAB to the European standard series may have the disadvantage of increasing the risk of active sensitization to PPD and PAAB, as compared to testing with PPD alone, since many late reactions were observed. In the Department of Dermatology, University Hospital Nijmegen, 0% were solely allergic to PAAB and 22% solely allergic to PPD within 4 days; 35% were allergic to both PPD and PAAB within 4 days, but 43% beyond 4 days (mean 12 days).

Acknowledgements
We acknowledge Dr G. Smeenk, St. Deventer Ziekenhuis; Dr S. Pavel, Academisch Ziekenhuis Leiden; Prof Dr T. van Joost, Academisch Ziekenhuis Rotterdam; Dr P-J. Coenraads, Academisch Ziekenhuis Groningen; Dr C. J. W van Ginkel, Academisch Ziekenhuis Utrecht; and Dr P. A. J. J. M. de Cock, Westeinde Ziekenhuis Den Haag, for their kind contribution of the data in this publication.

References

Table 1. %s of positive patch tests to para-phenylenediamine and para-aminoazobenzene in the subgroups A [PPD+/PAAB−], B [PPD+/PAAB+] and C [PPD−/PAAB+]