

The role of self-tests in the diagnosis of hair dye allergy

The Department of Health is promoting the delivery of medical care as close to the patient's home as possible. Primary care is not the only means of delivery; self-testing may prove even more convenient for the general public. Reports suggest a preference for self-tests in members of the public with minor disease.¹ Examples of widely used diagnostic and monitoring self-tests include pregnancy tests, blood pressure machines and kits to test for *Chlamydia*, prostate-specific antigen, faecal occult blood and diabetes mellitus. Benefits may include increased privacy and a reduction in the reluctance some patients have to access medical care.²

Hair dye allergy is a serious and increasing public health problem throughout the world,³ with patch testing being the gold standard investigation. International guidelines on methodology, test substance concentration and grading of the results ensure that testing is sensitive, reproducible and causes as few side-effects as possible. A safe, sensitive and reproducible screening self-test would be a welcome tool to prevent severe allergic reactions to hair dye. Hair dye products are not meant to be applied to the skin and therefore performing the recommended skin test before dyeing the hair may be harmful, by potentially causing sensitization or false negative results.⁴ The Scientific Committee on Consumer Products (European Commission, Directorate for Health and Consumer Protection) is currently considering these issues with regard to whole-product self-tests.⁵ Perhaps with these issues in mind, a self-test product, Colourstart® (Trichocare, Ridgmont, Beds, U.K.), is being marketed as what the manufacturer claims to be a 'standardised and simple procedure'.⁶

In this issue, Orton⁷ investigates the sensitivity of Colourstart® in eight subjects known to be hair dye allergic. Although this study is small, its results suggest that Colourstart® does not identify all those with allergy to *p*-phenylenediamine (PPD; the most important hair dye allergen), with four of seven Colourstart® reactions being false negatives. Colourstart® is not designed to identify other hair dye allergens (with the exception of resorcinol) and is hence potentially liable to mislead consumers into thinking that they are not at risk of an allergic reaction on dyeing the hair.

Colourstart® was withdrawn from the market in Denmark because it is classed as a medical device (i.e. a product designed to make a medical diagnosis) and had not been authorized by the Danish Medicines Agency.⁷ The Agency informed the competent authorities of all other EU Member States of its decision and of the removal of the product from the Danish market. Diagnostic tests should use standardized test substances (e.g. test chemical purity). These data, as well as the predictive value of the test and the manufacturer's initial study results, are not available for the Colourstart® product, despite enquiries by Orton and others.

Another important consideration is the interpretation of any positive result. Neither hairdressers nor consumers are trained in the interpretation of patch tests. While a blistering (+++) reaction should be easy to evaluate, such reactions are rare. PPD, the main ingredient of Colourstart®, frequently causes minor irritant reactions, which may be confused for allergic reactions. In an opinion of the Scientific Committee of Cosmetology from 1992, sensitivity testing 'should be performed by adequately trained dermatologists who will be medico-legally responsible for any problems related to false negative results and active sensitization, and who are trained to evaluate any response and can give advice accordingly'.⁸ Even for experienced clinicians routinely patch testing, the interpretation of results is not 'simple', as is claimed in an advertisement for another testing system (the TRUE test®) intended for use by general practitioners in primary care.⁹

The consequences of inadequate testing (either due to a poor test system or due to poor interpretation of the results) may be significant. False reassurance of the consumer leading to a severe allergic contact dermatitis may be as bad a consequence as the consumer who is erroneously informed that s/he is allergic to hair dyes and avoids them in future, despite a perceived social need. Active sensitization by patch testing, although uncommon, may potentially lead to an increased public health problem. Active sensitization to PPD is as low as 0.3%,¹⁰ but 70% of women in developed countries dye their hair. If all women who dye their hair were to perform a self-test for hair dye allergy only once, there could be 62 000 women actively sensitized by the test procedure in the U.K. (according to population data from the 2001 census).

Even if better, validated self-tests become available, problems of interpretation might still prove insurmountable (particularly the common scenario of a weakly positive reaction which could be of either irritant or allergic origin). Patch testing should be reserved to dermatologists having appropriate training¹¹ and, as an *in vivo* diagnostic procedure, necessary assurances on quality and efficacy need to be demonstrated.

Department of Cutaneous Allergy,
St John's Institute of Dermatology,
St Thomas' Hospital, Lambeth Palace Road,
London SE1 7EH, U.K.

J.M.L. WHITE
I.R. WHITE

References

- 1 Porteous T, Ryan M, Bond CM, Hannaford P. Preferences for self-care or consulting a health professional for minor illness: a discrete choice experiment. *Br J Gen Pract* 2006; **56**:911–17.

- 2 Ryan A, Greenfield S, Wilson S. Prevalence and determinants of the use of self-tests by members of the public: a mixed methods study. *BMC Public Health* 2006; **6**:193.
- 3 McFadden JP, White IR, Frosch PJ et al. Allergy to hair dye. *BMJ* 2007; **334**:220.
- 4 White IR. Second cite. *Clin Exp Dermatol* 2006; **31**:724–6.
- 5 Scientific Committee on Consumer Products. Preliminary opinion on sensitivity to hair dyes – consumer self testing. Available at: http://cc.europa.eu/health/ph_risk/committees/04_sccp/docs/sccp_0_100.pdf (last accessed 10 August 2007).
- 6 Trichocare. Direct quote from the Colourstart® packet. Trichocare Diagnostics Ltd, Beckerings Park, Ridgmont, Bedfordshire MK43 0RA, U.K.
- 7 Orton DI. A clinical assessment of patch test kits marketed to U.K. hairdressers for detecting hair dye allergy. *Br J Dermatol* 2007; **157**:1017–20.
- 8 Scientific Committee of Cosmetology (SCC), European Commission. Opinion SPC/54/92 of February 1992 concerning current requirements for requesting user test for allergy before use of some hair dyes. (Cited in reference 5).
- 9 Diagenics. Advertisement from September 2006. Diagenics Ltd, South House 3, Bond Avenue, Bletchley, Milton Keynes MK1 1SW, U.K.
- 10 Dawe SA, White IR, Rycroft RJG et al. Active sensitization to para-phenylenediamine and its relevance: a 10-year review. *Contact Dermatitis* 2004; **51**:96–7.
- 11 Aberer W, Andersen KE, White IR. Should patch testing be restricted to dermatologists only? *Contact Dermatitis* 1993; **28**:1–2.