Commentary

A new patch test unit

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Ever since Josef Jadassohn founded the technique in 1895, patch testing has formed the most important and frequently performed investigation for arriving at a diagnosis of allergic contact dermatitis. Till date, patch test reactions are considered the best proof of allergic sensitization. Patch testing involves a patch test unit and patch test material. Various patch test units commercially available are Finn chamber on Scanpor tape, square plastic chamber (Van der Bend chambers), oval plastic chamber (Epicheck), IQ chambers (Chemotechnique Diagnostic, Sweden), TRUE (thin layer rapid use epicutaneous test), and Al test system (a filter paper disc mounted on aluminized paper). In addition, a fixing tape is required which ideally should be non-occlusive, non-allergenic and non-irritant. Since none of these patch test units are manufactured in India they need to be imported and are expensive. The only patch test unit manufactured in India (by Systopic Laboratories, India) has not been compared with the other units in terms of quality and effectiveness. In this regard, an effort to devise a locally made patch test unit which conforms to international quality standards needs to be appreciated as this can go a long way in making patch testing more cost-effective and more widely used.[1]

The authors have used low density polyethylene (LDPE; 1070 LA 17) and Micropore tape in manufacturing the new unit designated "Chamber X". Due to its low cost, the choice of Micropore tape seems to be appropriate as all tapes studied were equally non-irritant with similar adhesion potential. Although much deliberation must have gone into deciding the type of material to be used for making the patch test unit, there are certain properties of LDPE which need to be highlighted. LDPE is a thermoplastic made from the free radical polymerization of monomer ethylene under high pressure. Although relatively inert at room temperatures, it can be oxidized by strong oxidizing agents and certain organic solvents (aliphatic, aromatic, and halogenated hydrocarbons). Thus, one will need to be careful when testing for contact sensitization to such agents although the clinical relevance of such an interaction needs to be studied as aluminium in Finn chambers was earlier suspected to react with cobalt and nickel in patch test allergens but this reactivity was later found to be clinically irrelevant.[2] LDPE also has poor ultra violet (UV) resistance which means allergens may remain exposed to UV light even after they have been applied to the back. It may thus make it difficult at times to differentiate between contact allergy and photo-contact allergy. Conversely, such a property may be useful while doing a photo-patch test as one need not remove the patch test unit to expose the allergen to UV light. Other patch test units which have utilized polythene in the past (Al unit although these did not use LDPE) suffered from occurrence of occasional erythema at the test site due to oxidation of polythene by UV light and oxygen, especially in patients who were already sensitized to colophony and in humid conditions. This would be especially of interest in a tropical country like India should Chamber X become commercially available. Lastly, LDPE is flammable, a property which is of importance with regard to its storage and transport.

The authors went on to compare Chamber X with Finn chamber, IQ chamber, and locally made aluminium chambers in terms of their irritant potential, contact, occlusion, and leakage. Using spectrophotometric

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analysis and the Draize scale, the authors found Chamber X to have better occlusive property compared to other chambers, good contact, minimal leakage and no irritation. This data indicates that Chamber X fulfils the criteria for a clinically useful patch test unit. However, in the present study, the authors do not mention the dimensions of the chamber which is an important factor in determining the number of allergens tested. The shape will also be of interest as the square shape of IQ chamber is considered to be less irritant. Chamber X should also be tested against Finn chamber, IQ chamber, and even TRUE test in the clinical setting of patch testing in patients with contact allergy to validate its utility. This is important as it has been shown that the sensitivity of various patch test units to detect contact allergy may vary. Suneja *et al.*, while comparing the Finn chambers with TRUE test showed that the Finn chamber was superior in detecting clinically relevant allergies to fragrance mix, balsam of Peru, and thiuram mix, whereas TRUE test performed somewhat better in detecting relevant allergic reactions to nickel, neomycin, and, methylchloroisothiazolinone/methylisothiazolinone.[3]

In conclusion, the new Chamber X appears to be an exciting new development as an indigenously manufactured diagnostic patch test unit. However, it needs further rigorous testing and standardization in actual use conditions before it can be recommended as a home grown patch test kit.

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