Skin Test of Inhalant Allergens by Topical Iontophoretic Delivery in Comparison to Common Skin Prick Tests

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In an interesting comment, recently published in this journal, Singh and Maibach [1] state that extensive research is still required to maximize iontophoresis for controlled systemic transdermal administration of charged, hydrophilic and large drug molecules. It has been known for a long time that even large molecules such as grass pollen allergens had been provided by topical iontophoresis [2]. Grass pollen allergen extracts are today believed to form a mixture of heterogeneous proteins and glycoproteins with molecular weights of 11,000 and 31,000 D [3]. Therefore, in a clinical study, 52 patients with allergic rhinitis relevant to five common allergens were tested by the method of iontophoresis in comparison to the skin prick test [4]. The results of both methods corresponded to a large degree (90%). Set against the results of the RAST, iontophoresis seems to show an even better comparison than the prick test (86% in comparison to 81%). Advantages of this method are the semiquantitative application of allergen (depending on time and intensity of electric current) and their harmless application (no pricking of the skin is necessary).

In a further study we tested the permeability of intact skin for high-molecular-weight allergenic proteins from grass pollen extracts dependent on molecular size [5]. For this purpose a molecular-weight-fractionated grass pollen extract was tested using iontophoresis as well. The results proved percutaneous absorption of proteins and glycoproteins even with a large molecular weight of about 30,000 D. These results give rise to questions about the penetrant entry of the allergens through the skin, via the hair follicles, the sweat glands or across 'leaks' in the stratum corneum.

References

Singh J, Maibach HI: Topical iontophoretic drug delivery in vivo: Historical development, devices and future perspectives. *Dermatology* 1993;187:235-238.

Abramson HA: Skin reactions. X. Preseasonal treatment of hay fever by electrophoresis of ragweed pollen extracts into the skin: Preliminary report. *Allergy* 1941;12:169-175. Cottam GP, Moran DM, Standring R: Physi-chemical and immunochemical characterization of allergenic proteins from rye-grass (*Lolium perenne*) pollen prepared by a rapid and efficient purification method. *Biochem J* 1986;234:305-310.

Remy W, Siebenwirth J, Karl S, Szliska CH, Rakoski J: Perkutane Testung von Typ-I-Allergenen mittels Iontophorese. *Haut Ge-schlechtskr* 1993;68: 512-516. Gauger J, Remy W, Wachter E, Vocks E, Jess-berger B, Rakoski J: Perkutane Iontophorese von

Molekulargewichtsfractionen aus Gräser-pollenextrakten bei Allergikern. Allergologie
1990;13:339-343.

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