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Brief Note

An Attempt to Demonstrate DNP Groups on Epidermal Langerhans Cell of Guinea Pig Following Skin Painting with DNCB

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Recently Langerhans cells have been found to share many of the features of macrophages of the monocytic phagocyte variety. Both cell types bear surface receptors for Fc-IgG and C3 and express surface Ia antigens. It is suggested that Langerhans cells take up, process and present antigens to lymphocytes in the same way as macrophages. Langerhans cells were also shown to be involved in allergic contact reactions and are viewed as the site of hapten binding and antigen formation and hence the central taget cells in the reactions. The cells may represent the most peripheral outpost of the afferent limb of the immune system. Shelley and Juhlin[1] have demonstrated the selective *in vitro* uptake of ten different contact allergens by Langerhans cells. However, whether such uptake actually occurs *in vivo* remains to be established. The objective of experiments

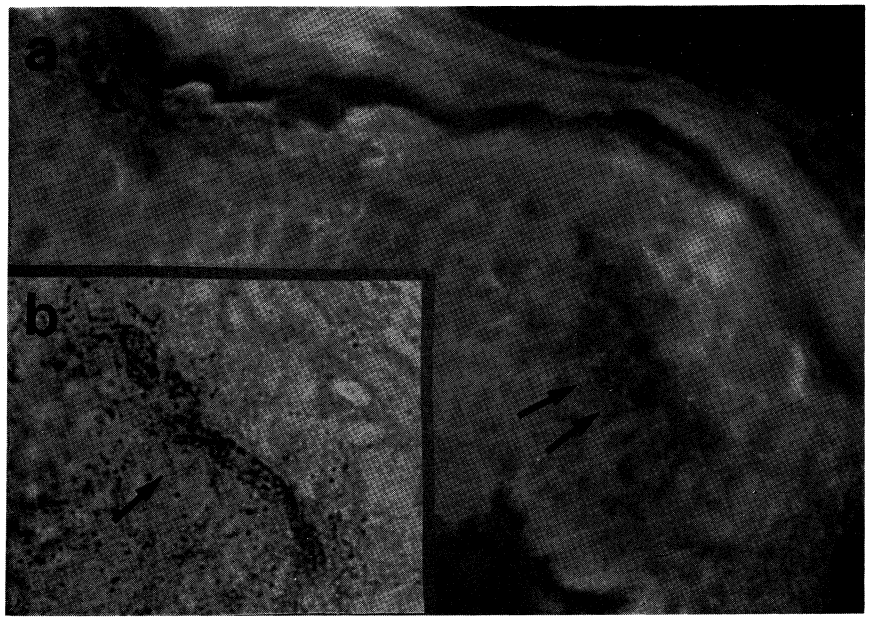

Figure 1. The area corresponding to ATPase positive cell (arrow in b) is not stained by IF method (arrows in a).

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in this report is to demonstrate the distribution of contact allergen on epidermal Langerhans cells of guinea pigs following skin painting with the allergen.

The male outbled Hartley strain guinea pigs were painted with 0.05 ml of a 5 per cent 2,4-dinitrochlorobenzene (DNCB)-ethanol solution on the shaved area of flank skin. A biopsy specimen from the application site was obtained 3 hours after painting and unfixed frozen sections were prepared from the specimens. The conventional direct immunofluorescent (IF) procedure was carried out using fluorescein isothiocyanate (FITC) labelled antibody against 2,4-dinitrophenyl (DNP) groups as described previously[2]. Each section which had been investigated with IF method was stained again by adenosine triphosphate (ATPase) method[3].

The distribution of DNP groups in the epidermal cells, especially Langerhans cells of normal guinea pigs following skin painting with DNCB was investigated by IF and ATPase methods. Fluorescence is distributed diffusely in the epidermal layer as shown in the previous paper[4] (Figures 1-a and 2-a), but the areas corresponding to the ATPase positive cells were not stained by IF method (arrows in Figures 1 and 2). In the present experiment, DNP groups were not able to be detected on epidermal Langerhans cells of guinea pigs following skin painting with DNCB. It is difficult to determine definitely at present whether Langerhans cells uptake contact allergens *in vivo* or not. Further studies have to be done in this experimental area.

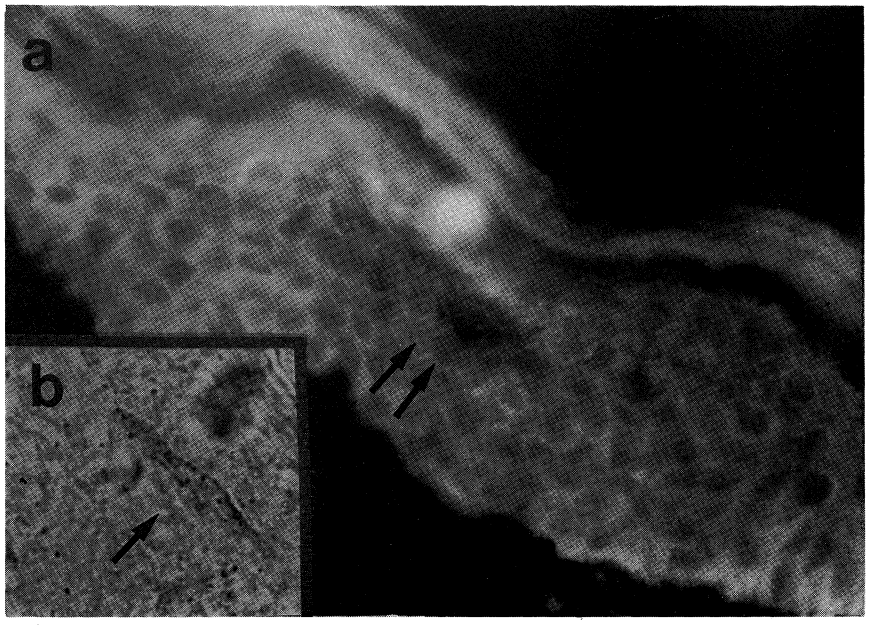

Figure 2. The area corresponding to ATPase positive cell (arrow in b) is not stained by IF method (arrows in a).

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REFERENCES

1) Shelley, W. B. and Juhlin, L. : Selective uptake of contact allergens by the Langerhans cell. Arch. Dermatol. **113** : 187–192, 1977
2) Nakagawa, S., Amos, H. E., Gotoh, M. and Tanioku, K. : The distribution of 2, 4-dinitrophenyl groups in lymphoid tissue of guinea-pig following skin painting with 2, 4-dinitrochlorobenzene. Immunology **36** : 851–857, 1979
3) Mackenzie, I. C. and Squier, C. A. : Cytochemical identification of ATPase-positive Langerhans cells in EDTA-separated sheets of mouse epidermis. British J. Dermatol. **92** : 523–533, 1975
4) Nakagawa, S., Ueki, H. and Tnioku, K. : The distribution of 2, 4-dinitrophenyl groups in guinea-pig skin following surface application of 2, 4-dinitrochlorobenzene : an immunofluorescent study. J. Invest. Dermatol. **57** : 269–277, 1971