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# BRIEF NOTE
# THE INDUCTION OF CONTACT SENSITIVITY WITH THE DRAINING LYMPH NODE CELLS FROM TOLERANT GUINEA PIGS PAINTED THE SKIN WITH DNCB

We have shown that 2,4-dinitrochlorobenzene (DNCB) can penetrate through the skin and combine covalently with the membrane components of the cells in the peripheral lymphoid system, when introduced epicutaneously into body[1,2]. It is suggested that such a combination of DNCB with lymphoid cells forms an immunogenic unit for induction of contact sensitivity. This is supported by the work of Asherson and Mayhew[3] that contact sensitivity is produced by taking the regional lymph node cells from mice one to three days after painting with oxazolone and injecting them into recipients. In the preliminary experiment reported here we would like to report that the draining lymph node cells taken from normal guinea pigs at 24 hours post painting with DNCB are capable of inducing contact sensitivity in recipients but the cells taken from the animals produced an immunogenic unresponsiveness are not.

The guinea pigs used were of the male Hartley strain (350-450 g). Tolerance was induced by two intraveneous injections of 600 mg/kg 2,4-dinitrobenzene sulfonic acid sodium salt ($DNBSO_3Na$) in each with an interval of 14 days, the last dose being 14 days before harvesting lymph nodes. Intact or tolerant animals were painted with total 0.8 ml of a 5 per cent DNCB-ethanol solution on the shaved areas of both sides of auricular, axillar and inguinal vegious. The draining lymph nodes were taken 24 hours after painting and cell suspensions were prepared by teasing in Eagle's minimal essential medium (MEM). The cells were washed in Eagle's MEM three times and injected intradermally to ears of recipients. Sensitivity was tested by contact with 0.2, 0.09, 0.05 and 0.01 per cent DNCB in ethanol on the flank 14 days later. The intensities of skin reactions were assessed 24 hours after patch testing as described previously[4]. The percentage of DNCB binding cells (DNP cells) in the lymph node cells was estimated by the procedure previously described[1].

The injection of lymph node cells taken at 24 hours post painting with DNCB from intact animals was able to induce a contact sensitivity in the recipient animals as shown by a positive patch test reactions (Table). On the other hand, the donor cells from the tolerant animals were significantly less effective in induction of contact sensitivity. Tolerizing the animals with

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TABLE

The Induction of Contact Sensitivity to DNCB with the Cells from the Lymph Node after Painting the Skin of the Draining Area with DNCB

| Donor | cells | | Patch test | |
|---|---|---|---|---|
| Treatment of animals | Total | DNP cells | Positive | Intensity |
| DNCB | $3\times10^7$ | $6.0\times10^5$ | 12/15 | 2.0 |
| $DNBSO_3Na$ DNCB | $3\times10^7$ | $0.5\times10^5$ | 1/6 | 0.1 |

$DNBSO_3Na$ reduced the number of DNP cells in the node. It has been shown that the draining lymph node cells from the guinea pigs tolerized by injection of $DNBSO_3Na$ and then painted with DNCB liberate some factor(s) which combine with DNP groups on the surface of lymph node cells, resulting in the decrease of DNP cells detectable by immunofluorescent method by preventing the reaction of fluorescent antibody with DNP groups[1]. The factors possibly cause reduction in the number of detectable DNP cells in the draining lymph nodes of tolerized animals. It is possible to suggest that the factors interfere with the development of early stage in the afferent limb of sensitization in the draining node by masking of DNP groups on the lymph node cells and then preventing the recognition of the groups by immunologically competent cells. The factors seem to be autologous to the so called soluble suppressor factors which have been demonstrated by Zembala and Asherson[5] and Moorhead[6].

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## REFERENCES

1) Nakagawa, S., Amos, H. E., Gotoh, M. and Tanioku, K. : The distribution of 2, 4-dinitrophenyl groups in lymphoid tissue of guinea pigs following skin painting with 2, 4-dinitrochlorobenzene. Immunology **36** : 851-857, 1979
2) Aoshima, T., Nakagawa, S., Gotoh, M., Tanioku, K. and Amos, H. E. : Studies on the dinitrophenylated lymphocytes in guinea pig painted with DNCB. J. Dermat. **4** : 251-254, 1977

3) Asherson, G. L. and Mayhew, B. : Induction of cell-mediated immunity in the mouse : Circumstantial evidence for highly immunogenic antigen in the regional lymph nodes following skin painting with contact sensitizing agents. Isr. J. Med. Sci. **12** : 454-467, 1976
4) Nakagawa, S., Gotoh, M., Kohda, M., Namba, M. and Tanioku, K. : Studies on the retest reaction in contact sensitivity to DNCB. Dermatologica **157** : 13-20, 1978
5) Zembala, M. and Asherson, G. L. : T cell suppression of contact sensitivity in the mouse. II. The role of soluble suppressor factor and its interaction with macrophages. Europ. J. Immunol. **4** : 799-804, 1974
6) Moorhead, J. W. : Tolerance and contact sensitivity to DNFB in mice. VI. Inhibition of afferent sensitivity by suppressor T cells in adoptive tolerance. J. Immunol. **117** : 802-806, 1976