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BRIEF NOTE

THE INDUCTION AND SUPPRESSION OF CONTACT SENSITIVITY WITH REGIONAL LYMPH NODE CELLS FROM GUINEA PIGS PAINTED THE SKIN WITH DNCB

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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. It has however, been shown by Amos that 2, 4-dinitrophenylated (DNP) cells in regional lymph node taken at 24 hours post painting with DNCB are capable of inducing a contact sensitivity in recipients, but cells taken at 1 hour and 6 hours are not (personal communication). In the preliminary experiment reported here we show that this 1-hour cells suppress the induction of contact sensitivity by injecting 24-hour cells into recipients.

The male outbred Hartley strain guinea pigs (350-450 g) were painted with total 0.2 ml of a 5 per cent DNCB-ethanol solution on the shaved areas of both sides of inguinal skin 1, 12 and 24 hours before harvesting lymph nodes. The draining lymph nodes were taken and cell suspensions were prepared by teasing the tissues in Eagle's minimal essential medium (MEM). The cells were washed in Eagle's MEM three times and injected intradermally to ears of recipients. A group of recipient animals were injected with 24-hour cells mixed with 1-hour cells. 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 DNP cells in the lymph node cells was estimated by the procedure previously described[5].

The injection of lymph node cells taken at 24 hours post painting with DNCB was able to induce a contact sensitivity in the recipient animals as shown by a positive patch test reactions (Table). The donor lymph node cells

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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

Time taken after DNCB painting	Donor cells		Patch test	
	total	DNP cells	positive	mean intensity
1 hr	2.2×10^7	3.5×10^5	1/6	0.2
12 hr	2.0×10^7	9.6×10^5	6/6	0.5
24 hr	2.3×10^7	4.6×10^5	6/6	1.7
1 hr 24 hr	2.5×10^7 2.3×10^7		2/5	0.3

were significantly less effective at 1 hour and 12 hours after painting. The 24-hour cells contained DNP cells which were less than 12 hour number. This indicates that the ability of the lymph node cells to induce sensitivity to DNCB is not merely dependent upon supplying antigen. The 1-hour cells depressed the ability of the 24-hour cells to induce contact sensitivity. We do not at present know the mechanism of the suppression by the 1-hour cells. Further studies have to be done in this experimental area.

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