

However, perhaps the most significant difference is found in comparing the reproductive capacity of the two inbred mouse strains used, i.e., the CD-1 versus the NAMRU strain. The CD-1 litter sizes were routinely between 10 to 12 whereas the NAMRU strain litter sizes were 20 to 80% less in number. Since reproductive loading produces marked degrees of metabolic and hormonal change in mice, it would appear that the Baltimore versus Cebu experi-

ments do not have reproductive rate comparability. Thus it would not be surprising to find an all-or-none difference in the embryotoxic effects of B1912 metabolites.

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Transfer Factor Exerts Nonspecific Effects?

TO THE EDITOR:

The results of transfer factor (TF) therapy in 16 leprosy patients by different investigators have been summarized in an editorial by Hastings (³). Out of these 16 patients, only 4 cases receiving a very large dose of TF showed enhanced rates of bacterial clearance. In the same article, the author had said "unquestionably TF exerts nonspecific effects but a number of observations strongly suggest that the material also has antigen specific effects."

Recently, Epstein and Byers in a paper entitled "Transfer of contact sensitivity to beryllium using dialyzable leukocyte extracts (transfer factor)" have shown that subjects who had been subclinically primed and received transfer factor, showed transient patch test reactivity to the challenge of beryllium (²). On the other hand, subjects who received transfer factor, but were not primed, showed no such conversion. Thus their experiment showed that antecedent subclinical immunity is required before transfer factor can effect a conversion of cellular immunity. However, the authors mentioned that it was not known if an antigen-specific transfer factor was absolutely required for the transfer of beryllium sensitivity.

For the last several years we have been engaged in the potentiation of cell-mediated immunity of lepromatous leprosy patients by several immunologic reagents (^{5,6,7}). We have treated 4 lepromatous patients with intravenous infusions of crude undialyzed (sic.) TF obtained from healthy but lepromin and

tuberculin positive donors. These donors were never exposed to DNCB and were unresponsive to the challenge of 50 μg of the hapten. Before receiving TF, the patients were sensitized with 2,000 μg DNCB and were subsequently challenged with 50 and 100 μg of the hapten. It was found that only one out of the four patients was unresponsive to this challenge before immunotherapy. However, this patient showed DNCB conversion after TF therapy without further resensitization with the hapten. Thus our study showed that antigen specific transfer factor was not required for the successful transfer of contact sensitivity in humans and nonspecific transfer factor might work equally well. A similar view was expressed by Bloom (¹), who suggested that transfer factor might act nonspecifically as an adjuvant, enhancing the reactivity of a subthreshold number of competent lymphocytes. Our recent study on the passive transfer of immunity into active lepromatous patients by human fetal thymic grafts lends further support to the above notion (³). Seven active lepromatous patients received human fetal thymic grafts obtained from 16–19 week old fetuses. Before receiving thymic grafts, these patients were unresponsive to the challenge of DNCB. Of this group, 5 showed conversion after thymus implantation. Indeed, fetal thymic cells were never exposed to DNCB, and thus these cells must have been uncommitted. They might have stimulated the impaired immune system of the lepromatous patients by an allogeneic effect nonspecific-

cally⁽⁴⁾. Thus the use of both the immunologic reagents insured that DNCB conversion might follow the administration of DNCB negative TF as well as nonspecific thymic grafts to primed but previously unresponsive recipients.

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REFERENCES

1. BLOOM, B. R. Does transfer factor act specifically or as an immunologic adjuvant? *N. Engl. J. Med.* **288** (1973) 908–909.
2. EPSTEIN, W. L. and BYERS, V. S. Transfer of contact sensitivity to beryllium using dialyzable leukocyte extracts (transfer factor). *J. Allergy Clin. Immunol.* **63** (1979) 111–115.
3. HASTINGS, R. C. Transfer factor as a probe of the immune defect in lepromatous leprosy. *Int. J. Lepr.* **45** (1977) 281–291.
4. KATZ, D. H. The allogeneic effect on the immune system and its potential application to tumour immunity. *In: Immunopotentiality. Ciba Foundation Symposium*, Vol. 18, Amsterdam: Elsevier/Excerpta Medica, 1973, pp. 141–172.
5. SAHA, K., DUTTA, R. N., DUTTA, A. K. and MOHAN, T. K. Reversal reaction in patients with lepromatous leprosy after transplantation of human fetal thymic grafts. *Vox Sang.* **35** (1978) 81–90.
6. SAHA, K., MITTAL, M. M. and MAHESHWARI, H. B. An attempt of passive transfer of immunity to leprosy patients by transfusion of allogeneic lymphocytes, inactivated with mitomycin C. *Vox Sang.* **34** (1978) 104–110.
7. SAHA, K., MITTAL, M. M. and MAHESHWARI, H. B. Passive transfer of immunity into leprosy patients by transfusion of lymphocytes and by transfusion of Lawrence's transfer factor. *J. Clin. Microbiol.* **1** (1975) 279–285.