It therefore seems reasonable to conclude that the horse T protein is an IgG subclass rather than the equivalent of IgA and it is suggested that in future it is described as IgG(T).

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[1] Gross, E., and Witkop, B., *J. Biol. Chem.*, **237**, 1856 (1962).
[2] Givol, D., and Porter, R. R., *Biochem. J.*, **97**, 32C (1965).
[3] Piggot, P. J., and Press, E. M., *Biochem. J.*, **99**, 16P (1966).
[4] Press, E. M., Piggot, P. J., and Porter, R. R., *Biochem. J.*, **99**, 356 (1966).
[5] Kekwick, R. A., and Record, B. R., *Brit. J. Exp. Path.*, **22**, 29 (1941).
[6] Van der Scheer, J., and Wyckoff, R. W. G., *Proc. Soc. Exp. Biol. Med.*, **43**, 427 (1940).
[7] Weir, R. C., and Porter, R. R., *Biochem. J.*, **100**, 63 (1966).
[8] Prahl, J. W., *Proc. Roy. Soc.*, B, **166**, 108 (1966).
[9] Cebra, J. J., and Robbins, J. B., *J. Immunol.*, **97**, 12 (1966).
[10] Cebra, J. J., and Small, P. A., *Biochemistry* (in the press).

Lymphocyte Transformation in Acute Uraemia

TECHNICAL advances in tissue and organ transplantation have created a need for satisfactory pre-operative histocompatibility tests. The lymphocyte transfer test has been found to aid in the selection of donors[1,2], but has shown an altered response in uraemia[3]. Mixed cultures of peripheral blood lymphocytes have been found to undergo transformation processes which can be correlated with antigenic differences between individuals[4–6].

Lymphocyte transformation showed a high degree ($R = -0{\cdot}88$) of correlation with the rate of skin rejection in squirrel monkeys, and so the system was tested for its applicability in uraemia. Sixteen squirrel monkeys were randomly grouped into fours, in such a way that two animals served as donors for each of two recipients, yielding four tests per group. Blood was drawn before operation for blood urea nitrogen (BUN) determination and control lymphocyte transformation cultures. Bilateral ureteral ligation was then performed on the recipient animals under 'Sernylan' anaesthesia. Lymphocyte cultures were prepared as previously described[7] by adding donor lymphocytes killed by repeated freezing and thawing to live recipient lymphocyte suspensions in tissue culture 199. After 3 days at 37° C, the cells were treated with 'Colcemide' for 3 h followed by hypotonic treatment for 10 min, fixation in 60 per cent glacial acetic acid: normal hydrochloric acid (9 : 1), staining in 2 per cent aceto-orcein, then lightly squashed under a coverslip. The percentages of transformed cells were then determined by counting the number per 1,000 mononuclear cells, omitting cells which were obviously macrophages (that is, cells with eccentric nuclei and phagocytic cytoplasmic inclusions). As the process of lymphocyte transformation includes cellular enlargement, a decrease in density of chromatin clumping, and the appearance of prominent nucleoli, only those cells containing one or more distinct nucleoli were scored as transformed cells in order to ensure consistency in counting. Utilizing the same donor-recipient pairs, the lymphocyte cultures and BUN determinations were repeated 3 days after ureteral ligation.

Table 1 summarizes the results. Pre-operative BUN levels ranged from 11 to 15 mg per cent and BUN levels at the time of repeat lymphocyte cultures ranged from 120 to 200 mg per cent. The percentages of lymphocytes transformed ranged from 7·1 to 26·3 per cent in the entire group. In specific test pairs, the percentage differences

Table 1. LYMPHOCYTE TRANSFORMATION IN SQUIRREL MONKEYS BEFORE AND AFTER URETERAL LIGATION

Recipient	Donor	Pre-operative BUN 11–15 (mg per cent)	3 days post-operative BUN 120–200 (mg per cent)	Difference
A_1	1	8·5	7·1	−1·4
A_1	2	13·0	15·6	+2·6
B_1	1	10·5	9·8	−0·7
B_1	2	8·0	8·2	+0·2
A_2	3	10·5	9·1	−1·4
A_2	4	12·0	12·2	+0·2
B_2	3	11·0	13·1	+2·1
B_2	4	10·3	8·2	−2·1
A_3	5	8·3	7·8	−0·5
A_3	6	20·8	22·1	+1·3
B_3	5	18·1	15·0	−3·1
B_3	6	11·1	11·0	−0·1
A_4	7	26·3	25·7	−0·6
A_4	8	16·6	17·1	+0·5
B_4	7	18·1	17·9	−0·2
B_4	8	16·3	17·0	+0·7

$$F = \frac{SS_b}{SS_a} = \frac{444{\cdot}75}{401{\cdot}25} = 1{\cdot}1$$

$1{\cdot}1 < 2{\cdot}4$, variance ratio for $P = 0{\cdot}05$

$$s^2_p = \frac{SS_a + SS_b}{30 \times 8} = 3{\cdot}52;\ s = 1{\cdot}88$$

$$t = \frac{(\bar{x}_a - \bar{x}_b)}{s} = 0{\cdot}085$$

$0{\cdot}085 \ll 2{\cdot}04$, t value for $P = 0{\cdot}05$

in lymphocyte transformation ranged only from − 3·1 to +2·6. The variance ratio was only 1·1, which is much less than 2·4, the variance ratio for a significant difference at the P level of 0·05. The t test gave a value of 0·085, which is much less than 2·04, the value for P level of 0·05. No significant difference could therefore be detected in the percentage of lymphocyte transformation before and 3 days after ureteral ligation.

Thus, it appears that the lymphocyte transformation test is not affected by acute uraemia in squirrel monkeys. The reliability of the test in preparations producing chronic uraemia has yet to be evaluated, but should provide information of even greater value, since most patients requiring renal transplantation suffer from chronic uraemia.

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[1] Brent, L., and Medawar, P. B., *Brit. Med. J.*, ii, 269 (1963).
[2] Gray, J. G., and Russell, P. S., *Lancet*, ii, 863 (1963).
[3] Bridges, J. M., Nelson, S. D., and McGeown, M. G., *Lancet*, i, 581 (1964).
[4] Bach, F., and Hirschhorn, K., *Exp. Cell Res.*, **32**, 592 (1963).
[5] Rubin, A. L., Stenzel, K. H., Hirschhorn, K., and Bach, F., *Science*, **143**, 815 (1964).
[6] Bain, B., and Lowenstein, L., *Science*, **145**, 1315 (1964).
[7] Moynihan, P. C., Jackson, J. F., and Hardy, J. D., *Lancet*, i, 453 (1965).

A New Anti-Ag Serum (Serum B.N.)

DURING an investigation of sera from about 200 polytransfused individuals (collected at the City of Stockholm Blood Transfusion Centre), one serum (from patient B. N.) was found which formed precipitates with 230 (93·9 per cent) of 245 sera from unrelated individuals living in the Stockholm area. This patient suffers from severe haemophilia A and has received forty-five transfusions since 1943. The method used for demonstrating this isoprecipitin is a gel diffusion on microscope slides as described elsewhere[1].

Absorption tests with sera of different Ag types[1] did not show any physically separable antibodies with different specificities. The antibody in serum B. N. is