Table 1. ORGAN SPECIFICITY AND HEAT LABILITY OF CYTOLYTIC ACTIVITY OF GUINEA PIG SERUM FOR OWN TESTICULAR CELLS

Treatment of serum	Reciprocal of 50 per cent cytolytic titre against own testicular cells	Reciprocal of titre at which live spermatozoa first seen*	Reciprocal of 50 per cent hæmolytic complement titre
Guinea pig 'A'			
Fresh (unheated)	32	32	512
Heated 10 min 45° C	32	32	512
Heated 10 min 48° C	32	8	512
Heated 10 min 52° C	—	—	—
Heated 10 min 56° C	—	—	—
Absorbed × 3 own testicular cells	—	—	256
Heated 10 min 52° C + 1 : 15 absorbed serum	4	—	
Heated 10 min 56° C + 1 : 15 absorbed serum	4	—	
Fresh (unheated) + M/100 EDTA	—	—	—
Guinea pig 'B'			
Fresh (unheated)	64	64	512
Absorbed × 2 own testis	2	—	256
Absorbed × 2 with either own liver or spleen	32	32	256
Absorbed × 2 own kidney	32	32	128

* The suspension of testicular cells contains some spermatozoa and the titre recorded in this column indicates the first dilution in which live sperm are seen.

absorptions with testicular cells from the same animal but could not be removed by two absorptions with similar proportions of the animal's own liver, spleen and kidney, indicating the organ specificity of the responsible factor (Table 1).

This evidence suggests that there is a naturally occurring, organ specific, complement-fixing auto-antibody in male guinea pigs which reacts *in vitro* with their own testicular cells.

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[1] Metchnikoff, E., *Immunity in Infective Diseases*, 101 (Camb. Univ. Press, 1905).

[2] Bordet, J., *Traité de l'Immunité dans les Maladies Infectieuses*, 348 (Masson et Cie., Paris, 1920).

IMMUNOLOGY

Unspecific Lipoprotein Precipitation in Experiments for Detection of Tuberculosis-specific Antibodies

SOME authors[1–5] have shown that, in certain conditions, unspecific precipitations occur if serum lipoproteins are brought into contact with various sulphated polysaccharides. Following a communication by Allerhand and Zitrin[6] we tried to demonstrate tuberculosis-specific antibodies in the sera of 35 tuberculosis patients. We surmised that it could be possible to obtain a differential diagnosis for these patients in contrast to patients with certain forms of carcinoma of the lungs.

We used the double-diffusion test in agar gel in tubes according to Oudin modified by Parlett, Youmans *et al.*[7]. On our investigations with the sera of the tuberculosis patients different results were indicated by appearance of uncharacteristic precipitations. These results we could definitely prove by comparative experiments carried out with the double-diffusion test in agar gel according to Ouchterlony modified as a micro-method. In many cases we found by these tests 2–3 precipitation lines, but not localized on the points which are characteristic for antigen–antibody reactions occurring in agar gel.

Our method was as follows The sera of the tuberculosis patients were diffused against old tuberculin obtained from the *H37Rv* strain (*M. tuberculosis*) by homogenizing with an Ultra-Turrax homogenizer, and in parallel investigations against sodium barbiturate buffer, using physiological saline only. Furthermore, we usedvarious concentrations of agar (1–1·5 per cent) in sodium barbiturate buffer or saline (0·9 per cent). In every series we noted precipitations of lipoproteins, which could be identified by staining with sudan black *B*. The sera used were not lipæmic. The blood was taken from the patients in the morning before breakfast. Under various conditions precipitations in agar gel were found and on another occasion we did not succeed in reproducing these results with the sera of the same patients. Only the sera of 3 of 35 patients gave the typical antigen–antibody precipitation lines in agar gel by diffusing against old tuberculin. Additional immunoelectrophoreses carried out with the sera of the same 35 patients in all cases were negative. At present investigations are being continued with the separate protein fractions of these sera according to Allerhand and Zitrin.

Similar effects were found in previous experiments for the detection of cancer-specific antibodies in human sera[8] with the aid of the agar-binding reaction according to Csaba and Torö[9–11]. In a control group of 5 patients with a progressive tuberculosis, 3 sera of those 5 gave different positive results[12], simulated by unspecific lipoprotein precipitations.

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[1] Bernfeld, P., *Fed. Proc.*, **14**, 182 (1955).

[2] Oncley J., Walton, K. W., and Cornwell, D. G., *Abstr. 128th Meeting Amer. Chem. Soc.*, **41**, C (1955).

[3] Burstein, M., and Samaille, J., *C.R. Acad. Sci., Paris*, **241**, 664 (1955).

[4] Cornwell, D. G., and Krüger, F. A., *J. Lipid Res.*, **2**, 110 (1961).

[5] Wieme, R. J., *Studies on Agar-Gel Electrophoresis, Techniques and Applications* (Brussels, 1959).

[6] Allerhand, J., and Zitrin, C. M., *J. Immunol.*, **89**, 252 (1962).

[7] Parlett, R. C., Youmans, G. P., Rehr, C., and Lester, W., *Am. Rev. Tuberc.*, **77**, 462 (1958).

[8] Teichmann, B., Wittig, G., and Schneeweiss, U., *Acta biol. med. german.*, **10**, 618 (1963).

[9] Csaba, G., and Torö, J., *Orv. Hetilap.*, **45**, 1237 (1957).

[10] Csaba, G., and Torö, J., *Z. Krebsforschung*, **62**, 481 (1958).

[11] Csaba, G., and Kiss, F. J., *Magyar Onkol.*, **4**, 167 (1958).

[12] Teichmann, B. (unpublished results).

Antibody Response of Mice to a Leukæmogenic Virus

THE *S*-63 strain of leukæmia virus kills new-born *ICR* mice (obtained from the A. R. Schmidt Co., Inc., Madison, Wisconsin) in 15–21 days. When the same virus is injected into young adult mice, there develop generalized lymphadenopathy, significant splenomegaly, and leucocytosis of 50,000–90,000 white blood cells/cm², made up predominantly of lymphoid cells. Leukæmia develops in about 20 per cent and those mice die in 4 or 5 weeks. The surviving animals gradually recover with a stabilization and eventual subsidence of the gross signs.

Virus could be extracted from both the brain and reticuloendothelial tissues of the infected animals by the following technique: The tissues were minced in Hanks's balanced salt solution (BSS), containing 1·5 mg per cent hyaluronidase, to make a 20 per cent homogenate. The *p*H was adjusted to 7·2 with sodium bicarbonate. The homogenate was digested for 1 h at room temperature, with occasional stirring. It was then ground in a glass tissue mill to a fine suspension and centrifuged at 5° C for 15 min at 1,500*g*. The supernatant fluid was diluted 1 to 5 with cold BSS, passed through a clarifying filter and collected in a pre-chilled container. The clarified supernatant fluid was filtered through a 'Millipore' filter (0·45 mμ); an aliquot was tested for bacterial sterility, and the remainder centrifuged in a Spinco model *L* preparatory centrifuge for 1 h at 107,000*g*. The pellet thus obtained was re-suspended in BSS on the basis of

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