HÆMATOLOGY

Xg Blood Groups of Chinese

Samples of blood from 64 normal unrelated Chinese people, mostly from Singapore, were tested for the X-linked blood group antigen Xg^a with the following results:

	Xg(a+)	Xg(a−)	total
Males	16	19	35
Females	20	9	29

The number is small because the supply of anti-Xg^a plasma is being used mainly for the investigation of X-linkage and of abnormalities of sex, but the results are sufficient to show that the antigen is less common in Chinese than in Europeans.

Chinese gene frequencies calculated from the male and female results are: Xg^a 0·46 and Xg 0·54. These gene frequencies re-applied to the 64 show the male and female results to be mutually concordant (Table 1), and this suggests that the gene frequencies may be about right despite the small number of tests.

Table 1. Mutual Concordance of the Chinese Male and Female Phenotype Frequencies in the Sample of 64

	Expected proportion	Expected absolute	Observed
Males Xg(a+)	0·46	16·1	16
Males Xg(a−)	0·54	18·9	19
Females Xg(a+)	0·71	20·6	20
Females Xg(a−)	0·29	8·4	9

Estimates of the gene frequencies of people so far tested with anti-Xg^a are given in Table 2. The Bombay Indian frequencies are recalculated from the male and female figures in Bhatia's results[1]. The Chinese sample differs significantly from the Caucasian and almost significantly from the Indian, but it is too small to show whether it differs significantly from that of the Negroes.

Table 2. Xg Gene Frequencies in Various People Calculated from the Male and Female Results

	No. tested	Xg^a	Xg
Caucasians (ref. 2)	2,000	0·662	0·338
Bombay Indians (ref. 1)	100	0·65	0·35
Negroes (ref. 3)	219	0·55	0·45
Chinese	64	0·46	0·54

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Wong Hock Boon

University of Singapore,
Department of Paediatrics,
General Hospital, Sepoy Lines,
Singapore, 3.

Jean Noades
June Gavin
R. R. Race

M.R.C. Blood Group Research Unit,
The Lister Institute,
London, S.W.1.

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Dose-response Curve of Phytohæmagglutinin in Tissue Culture of Normal Human Leucocytes

Phytohæmagglutinin (PHA) stimulates division of normal lymphocytes from venous blood *in vitro*[1]. Little or no cell division occurs when it is omitted from culture[2]. Other workers[3] have suggested a relationship between the amount of protein in the culture and the rate of cell division, but have not reported a systematic study. The relationship between a single dose of phytohæmagglutinin and the kinetics of cell division has been described[1]. This communication reports the effect of various doses of PHA on cell division with other conditions constant. The goal of the investigation is a reproducible biological model of the induction of cell division.

Phytohæmagglutinin *P* (PHA-*P*, Difco Laboratories, batch 457925), a partially purified protein, contained 8·5 mg protein/ml. by the Kjeldahl method. Venous blood from six normal human subjects was incubated with dextran (Abbott Laboratories, 6 per cent dextran in normal saline) in a final concentration of 1 per cent. The blood was allowed to stand 45 min at room temperature. Two ml. of leucocyte-rich supernatant plasma were removed and mixed with 8 ml. tissue culture Medium 199. Varying concentrations of PHA-*P* were added in approximately 0·2 ml. buffered saline. Fifty aliquot cultures were made. Cultures were incubated at 37° C and uniformly terminated at three days. Colchicine 10^{-7} M was added for 2 h prior to death of the culture and air-dried metaphase preparations made. From each culture $1–10 \times 10^3$ cells were counted and the number of mitoses tabulated. The mitotic index was expressed as percentage mitoses per hour exposure to colchicine.

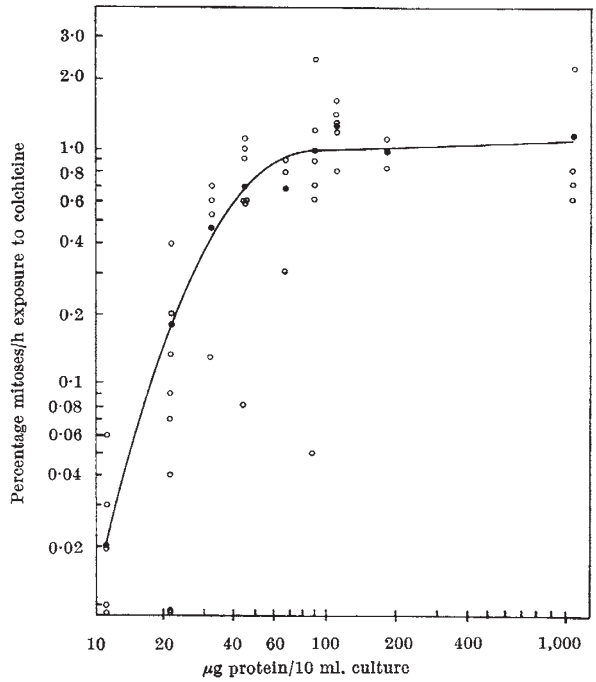

Fig. 1. Dose-response curve of phytohæmagglutinin in tissue cultures of human peripheral blood. Open circles represent individual mitotic indices at various concentrations of PHA; solid circles represent mean values. Log_{10} log_{10} plot

The lower four points were linear using probit analysis. The curve shows that the concentration of the protein and the proportion of cells which divide are directly related. The maximum response was obtained with 85 μg, and a half-response with 30 μg protein. One per cent mitosis was the maximum response which could be obtained by varying the concentration of protein. There was no detectable threshold of mitosis-stimulating activity. Fig. 1 shows the mitotic index plotted against the dose. The variations in mitotic index were attributed to large deviations from the mean which occur at low percentages[4], and variations among normal subjects.

The measurement chosen did not involve gradation. Either the cell was dividing or it appeared dormant. The assay resembles pharmacological investigations in which mortality or other single event is measured. It differs from the mortality investigations because cell division rather than death is its end-point.