Acute infectious hepatitis	γ_2	mg/c.c. $\gamma_1 A$	$\gamma_1 M$	$\frac{\gamma_2}{\gamma_1 A}$	$\frac{\gamma_2}{\gamma_1 M}$
M. V.	15·2	1·71	2·25	8·9	6·7
R. M.	12·4	2·28	1·17	5·4	10·6
C. S.	16·4	1·40	2·86	11·7	5·7
R. B.	13·9	0·90	2·86	15·4	4·9
S. P.	26·8	1·46	1·26	18·6	22·3
D. W.	25·4	1·30	1·30	19·5	19·5
Average	18·3	1·51	1·94	13·2	11·6
Cirrhosis					
M. H.	17·6	8·04	1·38	2·2	12·8
A. R.	24·2	7·02	1·56	3·4	15·5
F. Y.	19·8	8·92	1·88	2·2	10·5
M. B.	19·0	6·20	1·38	3·1	13·8
L. C.	17·6	5·01	1·57	3·5	11·3
R. M.	14·6	5·00	0·89	2·9	16·5
H. M.	15·1	6·20	3·00	2·4	4·7
Average	18·3	6·63	1·67	2·8	12·1
Normal, 18 cases					
Average	10·0	1·56	1·08	6·4	9·3

secretions including saliva, certain *G*1 fluids and bile[5]. The livers of patients with certain chronic liver diseases have been shown to produce γ-globulin[6] although the type(s) of γ-globulin produced has not been determined.

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IMMUNOLOGY

Immunological Investigations of Cytochrome c

Rather conflicting results have been given by several authors[1–3] concerning the antigenic power of cytochrome *c*. This divergency may apparently be attributed to some difference between the degree of purity of the preparations used. This was, however, still to be confirmed.

Having at our disposal two commercial and specially purified samples of equine origin *A* (No. 3424) and *B* (No. 6357) cytochrome *c* from 'L'Industrie Biologique Française S.A.', Gennevilliers, France) (Table 1), we have examined the immunological reactions of rabbits and guinea pigs following the injection of these products.

This work was carried out on a total of 40 rabbits and 18 guinea pigs.

The rabbits were subjected for 3 weeks to a treatment involving the injection (4 times a week) of increasing doses of either a cytochrome *c* solution in saline or a 50 per cent w/v cytochrome *c* emulsion in Freund's adjuvant, the former being administered intravenously, the latter by the intraperitoneal route. According to the groups, the doses were: 5, 10, 20, 40, 80 and 100 mg/kg per injection. Several of those animals further received secondary injections for one or two weeks.

Guinea pig sensitization was effected by 1–3 successive injections (intraperitoneal or subcutaneous) of cytochrome *c* (*A* and *B*) emulsified in Freund's adjuvant, at the following doses: 20, 40, 80 and 100 mg/kg per injection. These animals were then left to rest for about 20 days.

Eight to 15 days after the last cytochrome *c* injection, rabbit sera contained no detectable precipitin: the ring test[4] and the immuno diffusion method on agar according to Ouchterlony[5] were negative. Sera obtained at various times after secondary injections also gave negative results.

Three to four weeks after the sensitizing injections, guinea pigs either were subjected to the Schultz–Dale test or received an intravenous injection with the view of producing an anaphylactic shock.

Table 1

Cytochrome *c*	Foreign proteins	Iron content (g %)	Spectral data $E^{1\%}_{1cm}$ 550 mμ (reduced)	Enzymatic activity (Warburg) (%)
A	0	0·44	22·5	98
B	0	0·44	22·6	98

The Schultz–Dale test on guinea pig ilea gave absolutely negative results in such experimental conditions as these ilea underwent a maximal contraction with a histamine concentration of 10^{-8} in the medium.

The intravenous injection of a 1 per cent w/v solution in saline of the cytochrome *c* preparations (*A* and *B*) in sensitized guinea pigs provoked neither shock response nor death.

These findings seem to show the lack of any antigenic reaction in rabbits and guinea pigs after parenteral injections of the cytochrome *c* preparations *A* and *B* which have been examined.

This rather surprising phenomenon for a protein from heterologous species tends to demonstrate that the allergic accidents hitherto reported by several workers who used cytochrome *c* for therapeutic purposes in man were probably due to the presence of proteic impurities in the preparations utilized by the parenteral route, rather than to a true anaphylactogenic potency of the chromoprotein.

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ANATOMY

Changes in Permeability of Articular Cartilage with Age

The nutrition of the chondrocytes of articular cartilage is derived in part at least from the synovial fluid, by diffusion through the matrix[1]. Many workers have studied the permeability of cartilage by observing the diffusion of dyes and other substances into the tissue, but few have noted the effect of ageing[2–5]. To this end, the penetration into cartilage of 'Protargol', a silver proteinate, has been compared in rabbits of two age-groups: (1) 3–4 months, (2) 21 months and older.

Immediately after death, one or both femora were rapidly dissected out and the femoral heads were then rolled gently to and fro in a Petri dish containing 0·9 per cent saline. After 2 min, the same treatment was continued in 5 per cent 'Protargol' for a further 5 min. The foregoing procedure was invariably completed within 10 min of death, preliminary experiments having confirmed that the permeability of articular cartilage in the rabbit decreases markedly after this time[4]. A small chip of tissue was then taken from the treated area, fixed in formalin and embedded in paraffin. Sections 7 and 15μ in thickness were cut approximately perpendicular to the joint surface, and the silver reduced and developed by the method of Bodian[6].