

SPECIFIC PRECIPITIN REACTION OF
LEUKOCYTES *

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We wish to report briefly the results of some experiments on the specific precipitinogenic action of leukocytes. The first experiments were made with extracts of dog and guinea-pig leukocytes obtained from the injection of suspension of wheat gluten in the pleural or peritoneal cavity. The leukocytes were washed many times in salt solution, and definite quantities by weight suspended in water and shaken thoroughly; an equal amount of physiologic sodium chlorid solution of double strength was then added, and the strength of the extract designated by the relation of the weight of the leukocytes extracted to the total quantity of the fluid used, this being usually 1:10 or 20 or 100. Rabbits were injected intravenously at three-day intervals with increasing quantities of such extracts, say 2, 3, 4, 5 and 6 c.c. of a 1:20 extract, and the serum was tested about the fifth day after the last injection. The results with extracts of dog and guinea-pig leukocytes are illustrated in Table 1. As shown in the table, the precipitin for dog serum in the antiserum for dog leukocytes may be removed by means of specific absorption. Extracts of dog leukocytes obtained by fractional centrifugation of citrated dog blood gave similar results as extracts of the leukocytes in exudate.

We now turned our attention to human leukocytes, and made experiments of the same general nature as those just outlined with extracts of the leukocytes in human blood and in the exudates of pleural empyema

TABLE 1.—SPECIFIC PRECIPITINS FOR EXTRACTS OF DOG
AND GUINEA-PIG LEUKOCYTES *

Antigens	Antiserums Produced by Injections of					
	Extract of Dog Leukocytes			Extract of Guinea-Pig Leukocytes		
	Original Antiserum	After Treatment With an Equal Amount of Dog Serum 1:200, Diluted One-Half	Amount of Dog Serum 1:200, Normal Antiserum Now Diluted One-Half	Original Antiserum	After Treatment With an Equal Amount of Guinea-Pig Serum 1:200, Normal Antiserum Now Diluted One-Half	Amount of Guinea-Pig Serum 1:200, Normal Antiserum Now Diluted One-Half
Extract of dog leukocytes....	4,800	2,400	0	0	0	0
Dog serum.....	500	0	0	0	0	0
Extract of dog erythrocytes..	0	0	0	0	0	0
Ext. of guinea-pig leukocytes	0	0	1,280	640	0	0
Guinea-pig serum	0	0	80	40	0	0
Ext. of guinea-pig erythrocytes.....	0	0	0	0	0	0

* The figures give the highest dilutions in which the leukocytic extracts and serums gave precipitates by the contact method after one hour at room temperature.

and gonococcal arthritis, as illustrated in Table 2, which also gives certain results obtained with antiserums produced by injecting rabbits with a 5 per cent. suspension of whole human leukocytes—1, 2, 3, 4 and 5 c.c. at three-day intervals—and with the filtered serum of the exudate of pleural empyema, 1, 2, 4 and 6 c.c., also at three-day intervals. Here again the precipitins for homologous serum may be removed from the antiserum by mixing it with diluted human serum without any apparent reduction in the precipitin for leukocytic extract. In connection with this matter it

is of interest to note that the antiserum of rabbits injected with human leukocytic extract did not contain any precipitin for the proteins in human serum.

The erythrocytic¹ and other extracts used in the work with antileukocytic serums were prepared in the same way as the leukocytic extracts, and were shown by appropriate tests in each case to contain peculiar elements that evidently differ from derivatives of the leukocytes.

Extracts of dog, guinea-pig and human leukocytes contain specific precipitinogenic substances. Whole human leukocytes and the serum of pleural exudate in

TABLE 2.—PRECIPITINS FOR EXTRACTS OF LEUKOCYTES

Antigens	Antiserums Produced by Injections of				
	Extract of Human Leukocytes		Serum of Empyema Exudate After Passage Through Berkefeld Filter		
	Whole Human Leukocytes	Original Antiserum	After Treatment with Equal Amount of Human Serum 1:200, Antiserum Now Diluted One-Half	Normal Rabbit Serum	
Extract of human leukocytes.....	160	320	320	160	0
Human serum.....	0	10	2,500	80	0
Extract of human erythrocytes.....	0	0	0	0	0
Extract of human platelets.....	0	0	0	0	0
Extract of stroma of human erythrocytes...	0	0	0	0	0
Serum of empyema exudate.....	160	500	5,000	80	0
Serum of exudate in gonococcal arthritis.....	32	320	5,000	160	0

empyema also induce the formation of specific precipitins for extracts of human leukocytes. Leukocytes appear to contain specific elements not found in red corpuscles, platelets or blood serum, and these elements may be present in the serum of inflammatory exudates.

So far no effort has been made to study the precipitin reactions of any special kind of leukocyte. If the mononuclear and other leukocytes could be obtained pure, possibly by means of cultures, it no doubt would be of much interest to study the precipitin and other reactions of the different forms.

PROSTATIC MASSAGE: A PRACTICAL
AND THEORETICAL DISCUSSION *

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Prostatic massage first came into popular use in 1894, at which time it was adopted by the Royal Institute of Massage at Stockholm. Posner¹ of Berlin, in 1893, mentioned the cure of chronic prostatitis by repeated digital expression. Prior to the general acceptance of this therapeutic procedure, diseases of the prostate were treated by applications to the perineum in the form of counterirritation, heat, cupping, leeches and the like. Mitchell,² in 1904, suggested that the beneficial effects of horseback riding on hypertrophy of the prostate is brought about by a kind of massage of the prostate gland from the alternating pressure as the rider rose and fell to the horse's motion.

1. Hektoen, Ludvig, and Schulhof, Kamil: On Specific Erythroprecipitins (Hemoglobin Precipitins?). J. Infect. Dis. 31:32 (July) 1922.

* From the Santa Barbara Clinic.

* Read before the Section on Urology at the Seventy-Third Annual Session of the American Medical Association, St. Louis, May, 1922.

1. Posner, cited by Fuller: Disorders of the Male Sexual Organs, 1895.

2. Mitchell, cited by Cohen: System of Physiologic Therapeutics 7: 115.

* From the John McCormick Institute for Infectious Diseases.