154 (1736)

Cholesterol and cholesterol esters in blood showing a positive Wassermann reaction.[1]

By ARTHUR KNUDSON, THOMAS ORDWAY and HAZEL FERGUSON.

[*From the Departments of Medicine and Biological Chemistry, Albany Medical College and Albany Hospital.*]

Blood was taken from a series of patients having various forms of syphilis and showing a strongly positive Wassermann reaction. Total cholesterol and cholesterol esters were determined on the whole blood by the method of Bloor,[2] and Bloor and Knudson,[3] respectively. The syphilitic cases having a positive reaction were grouped into syphilis of the heart and blood vessels, syphilis of the central nervous system, syphilis with skin manifestations. Several cases with positive Wassermann reaction but showing no physical signs and control cases with negative Wassermann reaction were also studied. The results of these determinations are given in Table I. They indicate that the total cholesterol content is not effected but the amount of cholesterol as esters is considerably decreased in the various syphilitic conditions. The percentage of cholesterol ester in the normal patients with negative Wassermann reaction averages 34.4 per cent. which agrees very closely with the results reported by Bloor and Knudson.[4] The per cent. of cholesterol esters in the cases with syphilis showing positive Wassermann reaction and distinct physical signs averages about 21–22 per cent. It is of interest to note that the three cases with a positive Wassermann reaction but no physical signs of syphilis do not show a very marked reduction of the cholesterol esters.

[1] The researches reported in this investigation were supported by a grant from the United States Interdepartmental Social Hygiene Board.

[2] Bloor, W. R., *Jour. Biol. Chem.*, 1916, xxiv, 227; *ibid.*, 1917, xxix, 437.

[3] Bloor, W. R., and Knudson, A., *Jour. Biol. Chem.*, 1916, xxvii, 107.

[4] Bloor, W. R., and Knudson, A., *Jour. Biol. Chem.*, 1917, xxix, 7.

TABLE I.

CHOLESTEROL AND CHOLESTEROL ESTERS IN HUMAN BLOOD.
Mg. per 100 c.c.

Case No.	Wassermann Reaction.	Total.	As Esters.		Diagnosis.
		mg.	mg.	Per Cent.	
2	negative	190	70	36.8	Normal.
8	negative	223	76	34.0	"
20	negative	166	58	34.9	"
139	negative	183	69	37.7	"
138	negative	196	62	31.0	"
Average.				34.8	
213	++++	215	47	21.8	Syphilis of heart and blood vessels.
102	++++	143	25	17.4	" " " " " "
119	++++	178	46	25.8	" " " " " "
103	++++	143	29	20.2	" " " " " "
104	++++	174	36	20.6	" " " " " "
118	++++	223	46	20.6	" " " " " "
116	++	192	59	30.6	" " " " " "
207	++++	190	47	24.7	" " " " " "
Average.				22.7	
203	++++	175	46	26.2	Syphilis of central nervous system.
166	++++	208	44	21.1	" " " " "
106	+++	217	55	24.2	" " " " "
137	++++	196	35	17.8	" " " " "
141	++++	192	22	11.4	" " " " "
Average.				20.1	
208	++++	208	44	21.2	Syphilis with skin manifestations.
38	++++	234	60	25.6	" " " "
179	+++	185	31	16.7	" " " "
Average.				21.2	
202	++++	230	82	35.6	No physical signs of syphilis.
204	++++	139	36	28.5	" " " " "
212	++++	190	58	30.5	" " " " "
Average.				31.5	

The cholesterol and cholesterol ester content has also been studied in a series of rabbits' blood before and after they have developed a four positive Wassermann reaction as a result of experimental inoculation with spirochete pallida. The results of these experiments are given in Table II. Of the seven rabbits studied all but one show a marked reduction in the amount of cholesterol esters. The average percentage of cholesterol combined as esters in the rabbits before inoculation is 34.3 per cent. and after de-

veloping a positive Wassermann reaction it has dropped to an average of 22.9 per cent. These results are in close agreement with the determination on the human cases.

The balance between cholesterol and its esters is very significant in both of these experiments. In no other disease so far reported in the literature has such an altered relation between bound and free cholesterol been observed. No conclusion as to the significance of these results can be drawn as yet but it may be possible that they are bound up in the question as to the nature of the Wassermann reaction.

TABLE II.

CHOLESTEROL AND CHOLESTEROL ESTERS IN RABBIT BLOOD.
Mg. per 100 c.c.

Rabbit Number.	Wassermann Reaction Negative.			After Developing four Positive Wassermann Reaction.		
	Total.	As Esters.		Total.	As Esters.	
	mg.	mg.	Per cent.	mg.	mg.	Per cent.
470	102	36	35.2	99	24	22.2
471	111	39	35.1	117	15	12.8
472	93	33	35.4	117	19	16.1
473	96	25	26.0	98	27	27.5
474	92	30	32.6	93	26	27.9
475	114	45	39.7	90	21	23.2
476	85	33	36.0	87	27	31.0
Average.			34.3			22.9

155 (1737)

On the elimination of the x-chromosome from the egg of drosophila melanogaster by x-rays.

By JAMES W. MAVOR.

[*From the Department of Biology, Union College, Schenectady, N. Y.*]

The experiments to be described were performed with a view to determining if x-rays by affecting the x-chromosome could disturb the inheritance of a sex-linked character. Wild type (red-eyed) females of *Drosophila melanogaster*, homozygous for