

Study of Cholesterol Fractions in Acute Infections.

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In previous communications^{1, 2} the plasma lipids were reported low during the height of acute infections. Cholesterol values were found to fall to definitely subnormal levels during the febrile period of the illness, returning up to or within the normal range during convalescence. This change in the cholesterol content of the blood serum has repeatedly been considered as a possible significant factor in the defense mechanism of the host against the invading organisms of an acute infection. Cholesterol is known to combine readily with bacterial toxins thereby rendering them less toxic.

Since cholesterol, however, exists in the blood as free cholesterol and in combination with fatty acids as ester cholesterol, it is of special interest to determine the individual changes which occur in the levels of the various plasma cholesterol fractions in acute infections. Twelve children ranging in age from 18 months to 13 years were chosen for this study. Six of the subjects had rather extensive infections of the respiratory tract, and the remainder were ill with pneumonia. The first blood sample was obtained at the height of

TABLE I.
The Plasma Cholesterol Fractions in Infections of the Respiratory Tract.

Case No.	Total cholesterol Mg. per 100	Cholesterol esters cc. serum	Free cholesterol
The height of the disease			
1	142	50	92
2	138	47	91
3	130	66	64
7	112	47	65
8	94	32	62
12	160	71	89
Aver.	129	52	77
The period of convalescence			
1	224	155	69
2	226	125	101
3	218	138	70
7	201	111	90
8	234	154	80
12	220	180	40
Aver.	220	143	75

¹ McQuarrie, Irvine, and Stoesser, A. V., PROC. SOC. EXP. BIOL. AND MED., 1932, **29**, 1281.

² Stoesser, A. V., and McQuarrie, Irvine, *Am. J. Dis. Child.*, 1935, **49**, 658.

TABLE II.
The Plasma Cholesterol Fractions in Pneumonia.

Case No.	Total cholesterol Mg. per 100 cc. serum	Cholesterol esters	Free cholesterol
The height of the disease			
4	160	71	89
5	126	71	55
6	122	55	67
9	110	43	67
10	101	55	46
11	158	74	84
Aver.	129	61	68
The period of convalescence			
4	280	167	113
5	235	181	54
6	232	167	65
9	226	137	89
10	214	167	47
11	236	154	82
Aver.	237	162	75

the disease, the average time being the sixth day of the illness. The second sample of blood was drawn during the convalescent period on or about the ninth day of normal temperature. All blood samples were collected between 12 and 16 hours after a meal. Bloor's methods^{3, 4, 5} were used to determine the total, ester, and free cholesterol values.

The results are summarized in Tables I and II.

The total cholesterol values are much less during the height of the disease than in the period of convalescence. This reduction in acute infections is due to a marked fall in the ester cholesterol, while the free cholesterol content of the blood serum undergoes very little change. The underlying cause of this definite change in the ester fraction is the subject of further investigations which are in progress.

³ Bloor, W. R., *J. Biol. Chem.*, 1916, **24**, 227.

⁴ Bloor, W. R., and Knudson, Arthur, *J. Biol. Chem.*, 1916, **27**, 107.

⁵ Bloor, W. R., personal communication to the author.