

Effect of Acute Infection on Iodine Number of Serum Fatty Acids.

A. V. STOESSER. (Introduced by Irvine McQuarrie.)

From the Department of Pediatrics, University of Minnesota.

The marked fall in the ester cholesterol content of the serum during the height of acute infections observed in the preceding paper¹ is paralleled by a moderate drop in the plasma total fatty acids. Little significance has been attached to the changes which occur in the fatty acids of the blood in infection. However, recent interest in the unsaturated fatty acids in relationship to nutritional disorders has given stimulus to studies concerning the possible influence of acute infection on the unsaturation of the serum fatty acids. Investigations have been started.^{2, 3}

This paper deals with a study including 12 children with acute infections. They are the same subjects which were carefully followed in the cholesterol study. All blood samples drawn during and after the febrile period were collected between 12 and 16 hours after a meal. The first blood sample was obtained on the sixth day of the disease, and the second blood sample on the ninth day of

TABLE I.
Iodine Numbers of Serum Fatty Acids in Infections of the Respiratory Tract.

Case No.	Total fatty acids Mg. per 100 cc. serum	Iodine absorbed	Iodine number
The height of the disease			
1	334	342	102
2	217	223	103
3	352	303	86
7	346	327	94
8	180	152	85
12	432	476	110
Aver.	310	304	96
The period of convalescence			
1	437	524	120
2	332	475	143
3	411	398	97
7	368	420	114
8	274	322	117
12	494	592	119
Aver.	386	455	118

¹ Stoesser, A. V., *PROC. SOC. EXP. BIOL. AND MED.*, 1935, **82**, 1324.

² Achard, C., Grigaut, A., Leblanc, A., and David, Marcel, *J. de physiol. et de path. gen.*, 1928, **26**, 415.

³ Stoesser, A. V., and McQuarrie, Irvine, *Am. J. Dis. Child.*, 1935, **49**, 658.

TABLE II.
Iodine Numbers of Serum Fatty Acids in Pneumonia

Case No.	Total fatty acids Mg. per 100	Iodine absorbed cc. serum	Iodine number
The height of the disease			
4	333	326	98
5	298	294	99
6	214	192	95
9	329	269	81
10	286	337	118
11	387	337	87
Aver.	307	292	96
The period of convalescence			
4	420	520	123
5	394	494	125
6	272	319	117
9	367	363	98
10	364	426	117
11	432	447	103
Aver.	375	428	114

convalescence. Bloor's methods⁴ were used to determine the blood lipids. The Rosenmund-Kuhnhehn method⁵ as modified by Page, Pasternak and Burt⁶ was used to determine the iodine absorption of the serum fatty acids.

The results from the study are shown in Tables I and II.

The iodine absorption values are definitely lower during the height of the disease. This change accompanied by a moderate fall in the total fatty acids yields an average iodine number of the serum fatty acids which is significantly lower during the febrile period of the illness than during the afebrile period of convalescence. This indicates that the serum fatty acids are less unsaturated in acute infection, thereby constituting a rather important factor to be considered in all investigations dealing with changes in the serum fatty acids. In addition, the shift in the ratio of unsaturated fatty acids to saturated fatty acids may be significant in throwing more light on the chemical studies involving the immune processes which occur in acute infections.

⁴ Bloor, W. R., *J. Biol. Chem.*, 1928, **77**, 53.

⁵ Rosenmund, K. W., and Kuhnhehn, W., *Z. f. unter. d. Nahr. d. Nahr. u. Genuss.*, 1923, **46**, 154.

⁶ Page, H. H., Pasternak, L., and Burt, M. L., *Biochem. Z.*, 1930, **223**, 445.