

cell-division it is handed over to the daughter cells unharmed by viricidal bodies. A repetition of the last experiment awaits fowls highly immune to the virus, but susceptible to leucemic cells.

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Readily Acid-Hydrolysable Phosphorus of the Blood in Infants with Rickets.

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The P fraction in red blood cells, readily hydrolysable by N mineral acid, was estimated in non-rachitic and rachitic infants.

The method of Lohmann¹ for this fraction in muscle, as adapted by Barrenscheen and Vasarhelyi² for blood, was used with slight modification. One volume of blood was added to 4 volumes of 10% trichloroacetic acid and the mixture filtered. Ortho-phosphate was determined by the method of Fiske and Subbarow.³ Two cc. of 2 N HCl were added to two cc. of the filtrate, the mixture was heated at 100°C. for 10 minutes and the P again determined. From the amount of P freed in this way, the amount of ortho-phosphate and the hematocrit reading, the whole blood and red cell content of this fraction was calculated.

Variations in time of heating from 10 to 15 minutes gave no significant difference in the amount of P freed. No difference was noted between the use of H₂SO₄ and HCl as the hydrolyzing acids. This fraction is gradually split in the trichloroacetic acid filtrate, from 0.5 to 1.0 mg. being freed in the first 24 hours at ice-box temperature. It does not give the color reaction for pyro-phosphate described by Davenport and Sacks.⁴

The results in non-rachitic and rachitic children are shown in Tables I and II. The values have been calculated for whole blood and for the red cells. Values for the ortho-phosphate content of serum, whole blood and red cells are included in the tables.

The average value for this fraction in the whole blood of non-rachitic children was 5.20 mg. % as P, with a standard deviation of 0.86 mg. % and a coefficient of variation of 16.5%. The average

¹ Lohmann, K., *Biochem. Z.*, 1928, **202**, 466.

² Barrenscheen, H. K., and Vasarhelyi, B., *Biochem. Z.*, 1931, **230**, 330.

³ Fiske, C. H., and Subbarow, Y., *J. Biol. Chem.*, 1925, **66**, 375.

⁴ Davenport, H. A., and Sacks, J., *J. Biol. Chem.*, 1928, **81**, 469.

TABLE I.
Blood P Fraction, Readily Hydrolysable by N Mineral Acid, in Non-rachitic Infants.

Case No.	Red cells vol. %	Mg. P per 100 cc.				
		Serum Ortho-phosphate	Whole Blood Ortho-phosphate	Acid hydrolysable phosphate	Red Cells Ortho-phosphate	Acid hydrolysable phosphate
1	—	—	3.7	4.0	—	—
2	—	—	4.0	5.8	—	—
3	27	6.2	6.0	5.2	5.4	19.2
4	42	—	4.4	7.6	—	18.1
5	41	—	5.0	5.6	—	13.7
6	49	—	4.8	5.8	—	11.9
7	49	—	4.3	5.8	—	11.9
8	44	—	4.0	4.5	—	10.2
9	38	5.0	3.9	5.7	2.1	15.0
10	41	—	3.3	5.9	—	14.4
11	36	—	4.8	4.6	—	12.8
12	50	—	3.3	7.0	—	14.0
13	41	—	3.6	5.0	—	12.2
14	—	—	5.3	5.7	—	—
15	—	—	3.8	4.9	—	—
16	29	—	4.3	4.8	—	16.6
17	41	—	4.5	5.6	—	13.7
18	—	—	4.0	5.3	—	—
19	37	4.7	4.0	4.1	3.0	11.1
20	32	5.6	4.2	4.3	1.3	13.5
21	30	4.7	4.1	4.3	2.7	14.3
22	31	4.6	3.7	4.1	1.7	13.3
23	33	6.0	4.6	5.4	1.7	16.2
24	37	5.5	4.3	4.4	2.3	11.9
25	—	6.0	4.6	4.9	—	—
26	37	3.0	2.5	4.8	1.6	13.0
27	34	5.0	4.1	5.1	2.4	15.0
28	37	6.5	4.8	5.7	1.9	15.5
29	29	6.7	5.0	3.9	0.8	13.5
30	34	5.5	4.2	4.5	1.6	13.2
31	32	5.8	4.9	4.7	3.0	14.7
32	34	6.5	5.4	5.9	3.3	17.4
33	37	4.7	4.1	3.8	3.1	10.3
34	38	5.3	4.5	6.4	3.2	16.8
35	40	—	4.6	5.4	—	13.5
36	—	5.2	3.9	4.8	—	—
Average		5.41	4.36	5.20	2.48	14.10
Standard deviation		0.87	0.65	0.86	1.08	2.19
Coefficient variation %		16.0	14.8	16.5	43.4	15.5

Nos. 9, 10, 12, 13, 17, 19 were older children.

value for the red cell content was 14.10 mg. % with a standard deviation of 2.19 mg. % and a coefficient of variation of 15.5%.

The average value for the whole blood of rachitic children was 3.76 mg. % as P with a standard deviation of 0.69 mg. % and a coefficient of variation of 18.4%. The average value for the red cell content was 11.40 mg. % with a standard deviation of 1.89 mg. % and a coefficient of variation of 16.6%.

The P fraction, readily hydrolyzed by N mineral acid, is reduced in the blood of rachitic children.

TABLE II.
Blood P Fraction, Readily Hydrolysable by N Mineral Acid, in Infants with Rickets.

Case No.	Red cells vol. %	Mg. P per 100 cc.				
		Serum Ortho-phosphate	Whole Blood Ortho-phosphate	Acid hydrolysable phosphate	Red Cells Ortho-phosphate	Red Cells Acid hydrolysable phosphate
1	36	4.4	4.1	3.9	3.6	10.8
2	30	1.6	1.0	2.3	—0.4	7.7
3	32	3.1	2.2	3.8	0.3	11.9
4	24	3.1	2.9	3.3	2.3	13.8
5	29	3.0	2.4	3.6	1.0	12.4
6	33	5.1	3.3	4.5	—0.3	13.5
7	33	—	2.1	4.4	—	13.2
8	33	2.4	1.6	3.9	0.0	11.7
9	26	2.1	1.2	3.2	—0.2	12.3
10	44	1.8	1.3	5.0	0.7	11.4
11	28	1.4	1.2	2.8	0.7	10.0
12	28	3.0	2.7	3.6	1.7	12.8
13	33	5.3	4.4	4.2	2.7	12.6
14	35	3.1	2.3	4.7	0.9	13.4
15	41	2.4	1.7	2.8	0.7	6.8
16	33	3.6	2.4	3.1	0.0	9.3
17	35	1.7	1.3	3.4	0.6	9.7
18	39	1.7	1.4	4.6	1.0	11.8
19	33	3.3	2.6	3.8	1.2	11.4
Average		2.95	2.28	3.76	1.03	11.40
Standard deviation		1.14	1.24	0.69	1.05	1.89
Coefficient variation %		38.7	54.3	18.4	102.0	16.6

No. 10 was an older child.

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Experimental Production of Chronic and Sub-acute Adrenal Insufficiency in Dogs and Cats.

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Chronic adrenal insufficiency, clinically and pathologically comparable with Addison's disease, has not heretofore been successfully produced in experimental animals. This has been attempted by various procedures, especially excision or denervation of the adrenals, destruction by mechanical, thermal, bacterial or chemical agents and by radiation, and ligation of blood vessels.

In 1917, I performed a number of experiments, upon cats and dogs, in which I practised mass ligation, ligation of the adrenal vein and ligation of the lumbo-adrenal vein on both sides of the gland. In general, my results were similar to those of others.^{1, 2}

¹ Torrini, U. L., *Sperim.*, 1910, **64**, 342.

² Hartman, F. A., and Blatz, W. E., *Endoc.*, 1919, **3**, 137.