

TABLE VI.
Serum Calcium Variations in Women. Comparison of Weekly Averages.

Case No.	Low	Second	Third	Fourth
1	9.50*	9.61	10.29	10.28
2	10.00	10.29	10.04*	10.10
3	9.60	10.03	10.43*	9.97
4	9.32	9.78*	9.88	9.89
5	9.49*	9.66	9.61	10.37
6	9.51*	10.03	10.17	9.97
7	9.75	10.15	9.94	9.80*
8	9.81*	9.84	10.05	9.98
9	9.95	10.17	10.50	10.10*
10	9.72	9.80	10.02	10.06*
11	9.84	10.04	10.99	10.11*
12	9.97	10.28	10.96	10.68
13	9.74	10.62	10.19	9.80*
14	9.55	9.79*	10.47	10.56
15	10.04*	10.75	10.50	10.12
16	9.76*	10.35	9.92	10.09
17	9.37	9.99	10.24*	9.94
Means	9.70	10.07	10.22	10.11

*Menstrual week.

for men. 2. There is a greater daily variation in the serum calcium for women than for men as well as a greater absolute range in calcium levels. 3. There is a tendency for the serum calcium to be highest in the pre-menstrual period and lowest in the menstrual period. This is evident in the mean serum calcium values for each week in the menstrual cycle. The fact that in 12 of 17 individuals, the lowest weekly mean serum calcium occurred in the menstrual or post-menstrual period further substantiates the finding that there is a fall in blood calcium following menstruation. 4. In women there seems to be a regular cyclic curve of blood calcium level which is not present in men.

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Variations in Plasma Phosphatase, P., Ca., and Glucose Following Administration of Glucose and Calcium Glycerophosphate.

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In the course of studies on the calcium and phosphorus metabolism of children suffering from various disorders, it was observed that the level of plasma phosphatase tended to be lower than normal

in patients with pseudo-hypertrophic progressive muscular dystrophy and in those with poliomyelitis with extensive paralyses. Kay¹ has reported a marked increase in the concentration of this enzyme in cases of *Osteitis deformans* and in certain other diseases of bone. These variations suggested to us the desirability of determining whether or not the level of phosphatase in the blood can be altered by any simple means. We have, therefore, determined the phosphatase and at the same time the inorganic phosphorus, calcium and glucose of the blood after the administration of water, of glucose and of calcium glycerophosphate in children with minor ailments or with various chronic disorders.

Following 400 cc. of drinking water alone no significant alterations in the blood values were found. The usual changes in blood sugar and phosphorus resulted from administration of 50 gm. of glucose in 400 cc. of water. A slight rise in the level of serum calcium was observed at the end of 6 hours. Although there were transient variations in the phosphatase in all of the cases receiving glucose, the only significant alterations were found in one case of progressive muscular dystrophy and in one of extensive muscular paralysis from poliomyelitis. In both of these the initial values, which were subnormal, had nearly doubled at the end of 6 hours.

The total number of cases in which complete studies of the effect of glucose, of calcium glycerophosphate or of water alone were made was 15 children.

The most striking results obtained were those following the administration of 20 gm. of calcium glycerophosphate in 400 cc. of water. While the inorganic phosphorus remained unchanged, the phosphatase, calcium and glucose each showed a slight temporary rise followed by a profound fall at the end of 6 hours. In 2 essentially normal subjects the blood glucose fell to 41 and 44 and the serum calcium to 6.0 and 6.8 mgm. per 100 cc., respectively, without the ordinary clinical signs of hypoglycemia or of tetany. Further study of these reactions must be made before their real significance can be evaluated.

¹ Kay, H. D., *J. Biol. Chem.*, 1930, **89**, 235.