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Paradoxical Increase of Phosphatase Activity in Preserved Serum.

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In the course of examination of the liability of serum phosphatase several samples of serum were saved for 24 hours under ordinary laboratory conditions (for about one-half to 1 hour at room temperature and in the refrigerator thereafter). It was expected that the phosphatase values would be similar to or lower than the values

In the course of examination of the lability of serum phosphatase found in fresh serum. The following data, typical of results obtained in about 30 different comparisons, will show unexpectedly increased values.

TABLE I.

Inorganic phosphorus is stated in mg., and phosphatase in units per 100 cc. of serum.

Sample No.	Inorganic P		Phosphatase		
	Fresh	24 hrs.	Fresh	24 hrs.	% Inc.
210	8.6	8.7	8.8	10.5	19.3
222	8.2	8.1	5.0	5.8	16.0
223	9.3	9.4	6.5	7.0	7.6
213	7.3	....	13.6	16.4	20.5
Ji	2.5	....	49.0	52.5	7.2
Jo	5.2	....	10.2	12.5	23.0

In these tests the differences between the 24-hour serum and the fresh serum phosphatase activities were greater than discrepancies usually found in determinations performed simultaneously upon 2 samples of the same serum (about 2%, rarely as high as 5%), and they were all *in the same direction.* It may be noted that the inorganic phosphorus in the preserved serum remains unchanged.

The interest of these results lies in their unexpectedness. Under the conditions of the test[1, 2] the assumption of an increased pH causing increased phosphatase activity is excluded (1) because our buffer maintains a pH constant during hydrolysis at about 8.7 and (2) because any slight increase in the pH that might occur with the preserved serum could not cause increases of phosphatase activity as great as those observed. It is possible (1) that during the 24 hours intervening between the separation of the serum and the analysis some factor inhibiting phosphatase activity is destroyed; (2) that a component of serum phosphatase is activated; or (3)

[1] Bodansky, A., PROC. SOC. EXP. BIOL. AND MED., 1931, **28**, 760.

[2] Bodansky, A., and Jaffe, H. L., PROC. SOC. EXP. BIOL. AND MED., 1931, **29**, 199.

that substances are formed which further phosphatase activity. However, the mechanism and significance of this apparent increase in phosphatase activity of preserved serum remain to be elucidated.

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Diuretic Action of Sodium Fluoride.

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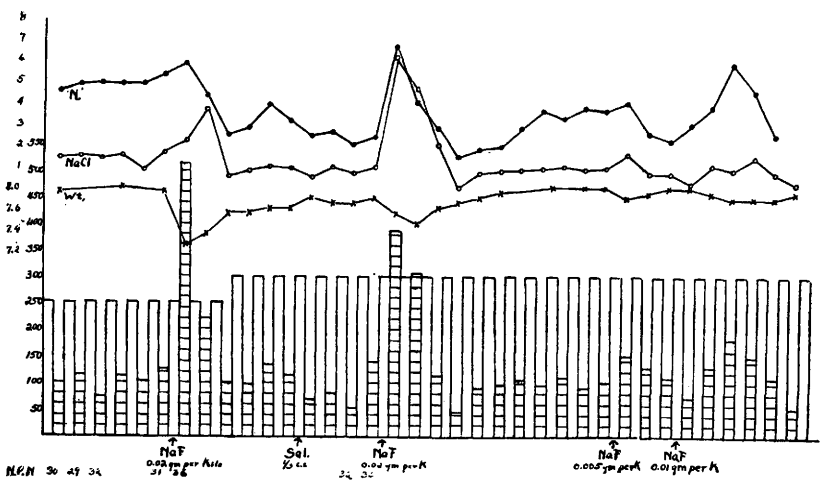
During a study of the effect of sodium fluoride on the thyroid gland of dogs, we noted that the animals had a pronounced increase of urine output after intravenous injection of the drug. Goldenberg had similarly noted a diuresis in goiter patients treated with sodium fluoride[1]. The present study was undertaken to further investigate this diuretic action.

Dogs were placed in metabolism cages and given a weighed diet of Purina Dog Chow to fulfill the food requirements and to provide a constant ingestion of salt and protein. Water was given in sufficient, but constant, daily amounts. After a control period, during which the body weight, urine output, urine chlorides and total urine nitrogen were determined daily, sodium fluoride in 1% aqueous solution was injected intravenously. The effect is shown in the following charts. The experiment was repeated and confirmed in six different animals.



[1] Goldenberg, Leon, *Presse medicale*, 1930, **38**, 1751.