

Studies on Sodium Loss.*

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The method devised by Schechter, Cary, Carpentieri, and Darrow¹ was used to produce sodium insufficiency. Usually a liter of an isotonic solution of glucose (5%) was injected aseptically into the peritoneal cavity of fasting dogs. Portions of this glucose solution removed from the peritoneal cavity from one to 2 hours later were analyzed for sodium and chloride. In an effort to make the sodium loss less acute and therefore comparable to that which occurs in Addison's disease, the fluid was injected and then withdrawn each day over a period extending from 4 to 7 days. Such a lapse of time permits daily analysis of the blood and urine as well as observation of the general condition of the animal. The blood was analyzed for sodium,² chlorides,³ and urea.⁴ The creatine and creatinine content of the urine was determined by the method of Folin.⁵

Observations were made on 5 dogs and results were similar in every animal. In Table I is presented a typical experiment. The data disclose a gradual fall of sodium and chloride of the serum, while the solids of the serum and the blood urea increase. These changes are the results of the withdrawal of the electrolytes from the animals as depicted in the last 2 columns.

The urine was analyzed for creatine on the fourth day of withdrawal of electrolytes and a marked creatinuria was observed. This creatinuria is probably not a result of the brief period during which food was withheld from the dogs. Moreover, these animals were absorbing as much as 35 gm. of the glucose injected intraperitoneally daily. It is probable that the creatinuria was associated with the asthenia which developed in these animals.

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¹ Schechter, A. J., Cary, M. K., Carpentieri, A. L., and Darrow, D. C., *Am. J. Dis. Child.*, 1933 **46**, 1015.

² Hald, P. M., *J. Biol. Chem.*, 1933, **103**, 477.

³ Eisenman, A. J., *J. Biol. Chem.*, 1929, **82**, 411.

⁴ Folin, O., and Wu, H., *J. Biol. Chem.*, 1919, **33**, 81.

⁵ Folin, O., *J. Biol. Chem.*, 1914, **17**, 469.

TABLE I.
Studies on Sodium Loss.

March, 1935	Temp. C	Serum			Blood Urea mg./100 cc.	Fluid withdrawn from Peritoneal Cavity	
		Na m. eq.	Cl m. eq.	Solids gm./1 cc.		Na m. eq. per kilo Body Wt.	Cl m. eq. per kilo Body Wt.
11		137.7	109.2	—	8.1	—	—
12		141.8	111.4	.0738	13.5	4.0	4.7
13	38.6	137.5	100.2	.0801	9.6	5.0	5.9
14	38.2	125.8	88.4	.0935	28.7	2.0	2.4
15	38.2	113.5	82.8	.0910	51.0	2.0	2.2
16	38.1	105.2	74.2	.0916	72.0	2.4	2.7
Total						15.4	17.9

Weight, March 11—14.1 Kg.

March 16—11.8 "

Urine, 24 hr. sample, March 15

Total Creatinine 699 mg.

Preformed Creatinine 219 "

Creatin 480 "

Summary and Conclusion. The effects of sodium deprivation were observed in 5 dogs over periods varying from 4 to 7 days. Sodium loss produces a condition similar to that of adrenal insufficiency, namely, increased concentration of the blood and a retention of blood urea, loss of serum chlorides and a creatinuria. Sodium loss, however, does not reproduce exactly the same picture as insufficiency of the cortex of the adrenal gland. The present experiments disclose a rise in blood urea concomitant with the depletion of the sodium reserves. In adrenal insufficiency, on the other hand, the increase of blood urea may precede the loss of sodium.⁶ Furthermore, in adrenal insufficiency, the animals usually succumb with a higher level of serum sodium.

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Antigenic Individuality of Certain Papilloma Viruses.

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Papillomas of the skin and mucous membranes are frequent in man and many of the lower animals. That certain of these

⁶ Loeb, R. F., Atchley, D. W., Stahl, J., *J. Am. Med. Assn.*, 1935, 104, 2149.