

The return of strength occurred from the 4th to the 8th day. In this part of the curves the rise is most rapid, and the two curves are similar. On the 10th day, in many instances, the stomach broke before the wound did—a phenomenon observed by Harvey on the 10th and 12th days. In the initial 2 days, the wounds of the experimental animals were stronger than the normals. We are unable to explain this.

Hypophysectomy resulted in no change in the rate of epithelization of skin wounds or fibroplastic repair of stomach wounds in the rats.

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Effect of Saline Infusions Upon the Blood Volume and Serum Proteins of Hypoproteinemic Dogs

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Calvin¹ reported that the total circulating proteins of normal dogs could be increased by relatively large infusions of normal saline. During the course of other experimental work² it seemed pertinent to study the effect of massive infusions of saline upon the total amount of circulating protein in both normal and hypoproteinemic dogs.

Three dogs in varying states of nutritional hypoproteinemia and one normal dog were used in this work. After a preliminary determination of blood volume and serum proteins had been made, the experimental animals were given relatively large intravenous infusions of normal saline solution during short periods of 6 to 9 minutes. The blood volumes and proteins were studied in these animals at varying intervals. The methods used for determining blood volume, serum proteins and non-protein nitrogen have been described.²

The data for the plasma volumes and serum proteins are presented in Table I. The total circulating protein is calculated from plasma volume and serum protein concentration. After relatively large saline infusions the absolute amount of circulating protein in the hypoproteinemic animals shows practically no change during the

¹ Calvin, D. B., Proc. Am. Physiol. Soc., *Am. J. Physiol.*, 1939, **126**, 454.

² Shearburn, E. W., *Surg., Gynec., and Obst.*, 1942, **74**, 343.

TABLE I.

Time after infusion, min	Plasma volume, cc	Total serum protein, g%	Total circulating protein, g	Time after infusion, min	Plasma volume, cc	Total serum protein, g%	Total circulating protein, g
Dog XI—Normal				Dog I—Hypoproteinemic			
Control	746	5.70	42.5	Control	445	4.25	18.9
350 cc Saline Injected				250 cc Saline Injected			
30"	963	4.80	46.2	30"	511	3.76	19.2
360"	785	5.68	44.6	360"	522	3.90	20.4
Dog XI—Normal				Dog V—Hypoproteinemic			
Control	700	5.62	39.3	Control	533	3.70	19.7
250 cc Saline Injected				200 cc Saline Injected			
30"	902	5.01	45.1	30"	626	3.20	20.0
360"	723	5.54	40.0	360"	580	3.52	20.4
Dog XI—Normal				Dog VIII—Hypoproteinemic			
Control	764	6.02	46.0	Control	429	5.38	23.2
350 cc Saline Injected				250 cc Saline Injected			
15"	1160	4.60	53.4	15"	579	3.79	22.0
360"	822	6.03	49.6	360"	552	4.48	24.7

first thirty minutes and at the end of 6 hours there is a slight but definite increase. On the other hand, infusions in normal animals are followed immediately by a relatively large increase in the circulating protein. At the end of 6 hours, total circulating protein decreases but does not return to the preinfusion level.

In 3 different experiments the maximum increases in total circulating protein in a normal dog were 8.7, 15, and 16% respectively at 30 minutes. The maximum increases in total circulating protein in hypoproteinemic dogs were 3.5, 6.5, and 8.0% respectively, at the end of 6 hours.

To summarize, large injections of saline in the normal dog result in an immediate increase in the total circulating protein. Apparently the labile protein stores of the normal dog enter the blood stream quite rapidly in an attempt to maintain an osmotic equilibrium. When large saline infusions are given to hypoproteinemic dogs, there is a smaller increase in the total circulating protein. Since the protein reserves are depleted, the protein influx into the peripheral circulation is considerably less and occurs more slowly.