once in the height of scurvy and again during recovery. One group of animals was then starved and bled after they had lost about 20 per cent of their weight. The effect of inanition during scurvy on complement was thus controlled. Clean, sterile apparatus and exceeding care in the volumetric measurements were emphasized.

From the chart it is seen that during scurvy a definite increase in the complement titer was observed over that in the fore period, while in the convalescent period the titer remained somewhat higher than in the fore period. Starvation resulted in a lowering of the titer. The effect of age, anesthesia and repeated bleedings are negligible according to Kolmer.[1]

We realize that the number of animals used (12) is small, but in view of the consistent and unexpected results we have offered them at this time. It appears from these experiments that there may be an obscure connection between the complement of the serum and the natural effort of the body to compensate for the tremendous physiological upset incident to scurvy.

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The oral administration of insulin to rabbits.

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Two papers have recently appeared on the absorption of insulin in alcoholic solution from the stomach. Winter[1] stated that insulin in weak alcoholic solution administered to rabbits *per os* caused the blood sugar to fall to a low level. Blatherwick[2] concluded that the oral administration of a weak solution of alcohol to rabbits caused marked decrease in the blood sugar. There

[1] Kolmer, J. A., Matsunami, T., and Trist, M. E., *Am. J. Syphilis*, 1919, iii, 407.

* Introduced by H. B. Williams.

[1] Winter, L. B., *J. Physiol.*, 1923, lviii, 18.

[2] Blatherwick, N. R., Maxwell, L. C., and Long, M. L., *Am. J. Physiol.*, 1924, lxvii, 346.

TABLE I.

Date 1924	Rabbit No.	Wt.	Before injection	½ hr. after	¾ hr. after	1 hr. after	1¼ hr. after	1½ hr. after	1¾ hr. after	
			Glucose, mg. per 100 cc.							
Jan. 8	97	2400	130							1 cc. 95 per cent alcohol in 25 cc. H_2O. One additional cc. of 95 per cent alcohol was given each succeeding day in 20 cc. distilled H_2O, making 5 cc. on Jan. 12th.
Jan. 12	97	2400	158		154			111		5 cc. 95 per cent alcohol in 20 cc. H_2O.
15	97	2400	162	131						5 cc. 95 per cent alcohol in 20 cc. H_2O.
19*	97	2500	163	165			216	184		5 units of insulin in 21 cc. 20 per cent alcohol.
22	97	2500	160				136		135	100 units of insulin in 20 cc. 20 per cent alcohol (slight amount spilled).
7	56	2270	112							1 cc. 95 per cent alcohol in 25 cc. H_2O.
11	56	2300	122							One additional cc. of 95 per cent alcohol was given each succeeding day in 20 cc. distilled H_2O making 5 cc. on Jan. 14th.
14	56	2300	124	132		138		160		25 cc. of 20 per cent alcohol.
18	56	2515	116	148		160		170		2½ units of insulin in 20 cc. of 20 per cent alcohol.
20	56	2610	128	160		128				50 units of insulin in 20 cc. of 20 per cent alcohol.
Feb. 1	56	2600	154	138		108		98		0.89 units injected subcutaneously.
1	97	2500	166	77		82		84		0.875 units injected subcutaneously.

*Rabbit struggled.

was no absorption of insulin from the stomach even though large amounts were given in alcohol, whether it was dissolved in ice water or in 0.4 per cent sodium carbonate solution. There was a hypoglycemia with insulin in alcohol and with alcohol alone.

Recently, with the assistance of Levin, Allen, Malich, Nachamie, Knox and Hoff, members of the second-year class in physiology, we have carried out a series of experiments on administration of insulin in dilute alcohol. The Shafer-Hartman method for the determination of the blood sugar was used.

The rabbits were given the alcohol daily in increasing doses, thereby becoming accustomed to the stomach tube and to the narcotic effect of the alcohol. The animals were not fed in the morning before or during the experiments. The diet consisted of oats, hay and cabbage[3], a diet which should have rendered the rabbits sensitive to insulin[4].

The insulin used was the "Lilly U-20 units."

The results of these experiments are exhibited in the accompanying table.

CONCLUSION

While the results of our work are not conclusive, they make it seem improbable that insulin when administered in alcoholic solution is absorbed from the stomach in amounts that would give this method of administration any practical importance.

My thanks are due to Prof. E. L. Scott for suggesting this work.

[3] Sherman, H. C., and Gettler, A. O., *J. Biol. Chem.*, 1912, xi, 323.

[4] Page, I. H., *Am. J. Physiol.*, 1923, lxvi, 1.