

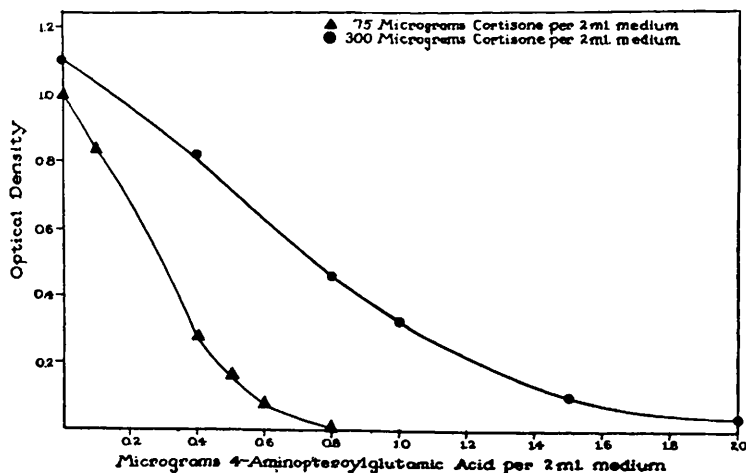


Fig. 1. Effect of Cortisone on inhibition of growth of *Leuconostoc citrovorum* by Aminopterin.

Control rats were fed the same diet with added PGA. As shown in Table III crystalline cortisone markedly stimulated the oxidation of tyrosine by liver homogenates from rats on both diets. Cortisone had no effect on endogenous respiration *i.e.* without added tyrosine. PGA and leucovorin had no discernible effect on tyrosine oxidation by liver homogenates from either group of rats. Presumably the rats fed the succinylsulfathiazole were not deficient enough to demonstrate the reported effect of PGA *in vitro*. The magnitude of the cortisone stimulation of tyrosine oxidation ap-

pears to be considerably greater than that reported for PGA(7).

Summary. 1. Cortisone was found to replace pteroylglutamic acid and citrovorum factor for growth of *Streptococcus faecalis* and *Leuconostoc citrovorum*, respectively. Cortisone reversed the growth inhibition of *Le. citrovorum* produced by toxic amounts of Aminopterin. 2. Cortisone *in vitro* stimulated the oxidation of tyrosine by liver homogenates from rats fed a purified diet containing 1% succinylsulfathiazole with or without PGA.

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Effect of Parenterally Administered Glycine upon Action of Insulin in Rabbits.* (18740)

R. A. YOUNGMAN AND RALPH HASKINS. (Introduced by D. M. Pace.)

From the Lincoln Clinics, Lincoln, Neb.

Varying reports have been made of the effect of amino acids given orally and parenterally upon the blood glucose level. Izumi(1) found that glycine administered intravenously caused a slight rise in the level of glucose in the blood and that glycine administered perorally caused a slight lowering over a four-

hour period. Schenck(2) found that 1 g of glycine administered to an animal perorally produced a hypoglycemia, whereas 1.5 g by the same route produced a hypoglycemia. This effect was more intense in an animal weighing 2810 g than in one weighing 1260 g. Hypoglycemia was produced in man by administration of glycine by the same route according

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1. Izumi, K., *Biochem. Z.*, 1932, v248, 383.

2. Schenck, E. G., *Arch. Exp. Path. and Pharm.*, 1932, v167, 201.

to Schenck. Johlin(3) has reported the effect of parenteral administration of glycine on the sensitivity of rabbits to insulin. According to his findings, the injection of 3 mg of glycine per kg in rabbits produced an increased sensitivity to insulin. This could be demonstrated at 3-week and 10-week intervals by producing insulin shock with half the usual convulsive dose. Studying this problem from another aspect, Cunningham, Barnes, and Todd(4) reported that oral feeding of glycine to rats, not only maintained the liver glycogen content in greater concentration after administration of insulin, but also tended to prevent hypoglycemia.

In view of the conflicting reports of the effect of glycine administration on the blood glucose level, it was felt worth while to repeat the work of Johlin to see whether his findings might be verified. We have accordingly repeated Johlin's work, varying the procedure slightly.

Procedure. Nearly grown male albino rabbits were used as test animals. These animals were all fed the same standard diet. Each rabbit was fasted 18 hours before being tested. A fasting blood sugar was determined. Insulin was then administered in the dosage of 0.7 unit per kg. Blood sugar determinations were then made hourly, for 5 hours, following the administration of insulin. Following the final blood sugar determination, glycine was administered intravenously in the amount of 3 mg/kg. In 3 weeks the same procedure was repeated except that no further glycine was administered.

Our results substantially bear out those of Johlin, in that we found a fairly consistent reduction in the blood sugar levels following the administration of insulin. The increased hypoglycemia began within the first hour following insulin and persisted for 5 hours. The composite results from 7 rabbits have been prepared in graph form (Fig. 1). For these 7 animals the average fasting blood sugar preceding administration of glycine was 97 mg

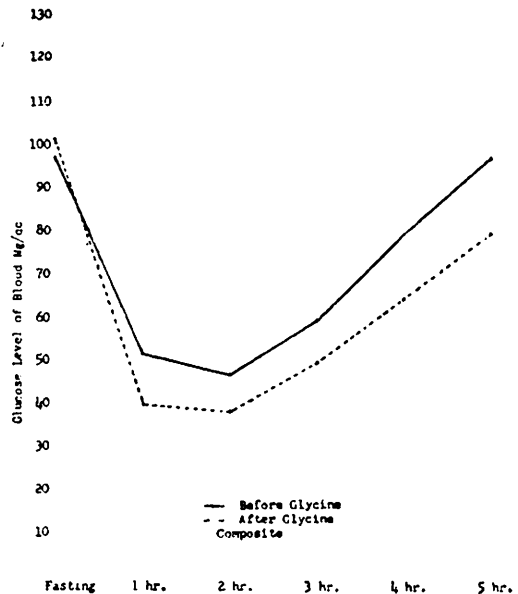


FIG. 1. Composite graph showing effect of equivalent amounts of insulin on blood glucose level before and after glycine.

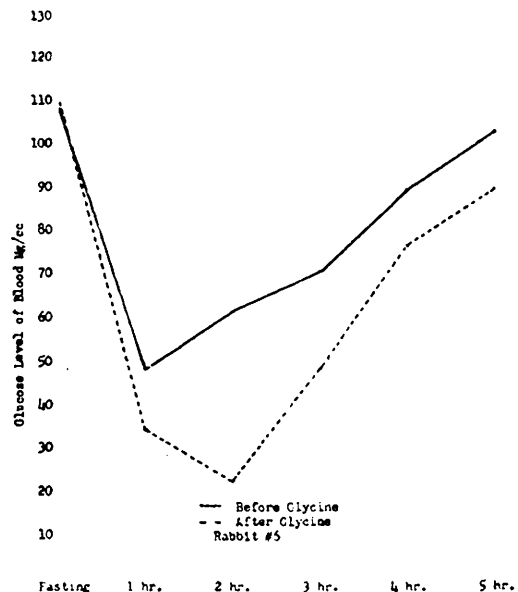


FIG. 2. Graph showing effect in a single rabbit of equivalent amounts of insulin on blood glucose level before and after glycine.

per 100 cc. One hour after subcutaneous administration of 0.7 unit of insulin per kg, the blood sugar fell to a mean of 50.7 mg. At the end of the second, third, fourth, and fifth hours, the blood sugar was 46.2 mg, 58.7 mg,

3. Johlin, J. M., *PROC. SOC. EXP. BIOL. AND MED.*, 1949, v71, 425.

4. Cunningham, L., Barnes, J. M., Todd, W. R., *Arch. Biochem.*, 1947, v16, 403.

78.1 mg, and 95.2, respectively. Three weeks after administration of glycine to these animals a mean fasting blood sugar of 101 mg was found. The same dose of insulin according to weight was then given and blood sugar determinations were made hourly. At the end of one hour the blood sugar was 39 mg. At the second, third, fourth, and fifth hours it was 37.4 mg, 48.5 mg, 63.5 mg, and 78.7 mg, respectively. This gives in rough figures a decrease of approximately 10 mg after the first hour and extending to the fifth hour. In the case of animal No. 6 (Fig. 2) the effect was somewhat more striking. Prior to the administration of glycine in this animal the fasting blood sugar was 110 mg. After administration of insulin the lowest blood sugar, 48 mg, as shown in the accompanying graph, occurred at the end of one hour. It rose gradually to 102 mg 5 hours after insulin. When retested 3 weeks after the administration of glycine, a fasting blood sugar of 113 mg was found. Following administration of insulin the lowest blood sugar level was 22 mg occurring 2 hours

after insulin and rising to 89 mg 5 hours after insulin.

There was considerable variation in the response of different animals. Rabbit No. 9, for some reason not apparent had a consistently higher blood sugar following the administration of glycine than prior to it. If this animal is excluded, results are considerably more impressive.

Why a normally occurring constituent of the body should have this effect or why it should have any effect when given in these relatively small amounts is not apparent. There are instances in which the body controlling mechanism may be disrupted by the administration of excessive amounts of normally occurring substances.

Summary. 1. The effect of parenteral administration of glycine in rabbits on the effect of insulin is reported. 2. Parenteral glycine under certain conditions renders rabbits more sensitive to insulin.

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Early Histological Changes Following Obstruction of Pancreatic Ducts in Dogs: Correlation with Serum Amylase. (18741)

G. E. GIBBS* AND A. C. IVY.

From the Department of Pediatrics, University of Maryland and the Department of Clinical Science, University of Illinois.

Clinical diagnosis of pancreatitis depends largely upon detection of elevated serum amylase levels. The relationship between these and the extent or duration of early pancreatic changes remains relatively obscure. After ligation of the pancreatic ducts in experimental animals, previous investigators have noted a transient rise in serum amylase reaching a maximum during the subsequent few days(1). In cats fasting 48 hours, pan-

creatic ligation produced no histologic evidence of inflammatory reaction in the pancreas unless stimulants such as secretin or parasympathomimetic drugs were given(2). The early microscopic changes resulting from duct ligation plus stimulation were widening of the septa and presence of inflammatory cells in these spaces. More severe reactions showed inflammatory cells within the lobules and destruction of acinar cells. In rabbits fasted 48 hours before the experiment, vacuolation of some acinar cells and dilatation of a few ducts were present 24 hours after ligation. After 11

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1. Popper, H. L., and Sorter, H. H., *Proc. Soc. Exp. Biol. and Med.*, 1941, v48, 384.

2. Lium, R., Portsmouth, N. H., and Maddock, S., *Surg.*, 1948, v24, 593.