3. There is, in the second hour, both a decrease in the O_2 and an increase in the CO_2, both changes tending to increase the R. Q
4. The O_2 consumption and the heat production would indicate that the total metabolism is not markedly increased.

31 (2554)

The influence of insulin in phloridzin diabetes.

By O. H. GAEBLER and JOHN R. MURLIN.

[*From the Department of Vital Economics, University of Rochester, Rochester, N. Y.*]

In the hope of finding a more favorable subject than the depancreatized animal for study of the influence of insulin administered orally, twelve dogs were used after the establishment of the typical D:N ratio of Lusk. Insulin produced in the laboratory by the amyl alcohol method,[1] administered subcutaneously, caused not only a sharp decline in the excretion of sugar (and nitrogen), but also a rise in respiratory quotient from diabetic level (0.69) to as high as 0.85. Sugar was administered by stomach both in control and in insulin periods. In several instances after a dose of 1 R. U. per two kilos dog the R. Q. rose within the first two hours only to 0.77 or 0.78 and immediately dropped back to diabetic level. The effect on the excretion of nitrogen was sometimes parallel with and in a few instances greater than the effect on the excretion of sugar.

Insulin was given orally in several different combinations: in cod-liver oil emulsion (no effect); in oleic acid suspension (no effect); in blood serum (some effect). The best results (rise in R. Q. to 0.77 or 0.79) were obtained after the use of 1 R. U. per kilo in the form of an enteric coated tablet containing insulin and malic acid.[2] The effect on the excretion of sugar was not so marked even with this tablet as after subcutaneous administration.

---

[1] Allen, Piper, Kimball and Murlin, PROC. SOC. EXP. BIOL. AND MED., 1923, xx, 519.

[2] Murlin, Sutter, Allen and Piper, PROC. SOC. EXP. BIOL. AND MED., 1924, xxi, 338.

There is evidence of retention of sugar as well as of combustion in some of the experiments both after subcutaneous and after oral administration. Whether the effect on combustion is direct or indirect these experiments do not permit us to say.

32 (2555)

The influence of insulin administered by alimentary tract on the blood sugar of etherized and adrenalized animals.

By H. A. PIPER and JOHN R. MURLIN.

[*From the Department of Vital Economics, University of Rochester, Rochester, N. Y.*]

Numerous experiments on some twenty-five dogs and half a dozen cats have been performed in the attempt to demonstrate clearly the absorption of insulin from the alimentary tract. This is not difficult when the insulin is placed directly in the intestine. A sharp drop in the hyperglycemia of ether anesthesia is easily obtained. But when insulin is given by mouth to animals treated with ether or adrenalin or both the demonstration often fails because when it is adequately protected against the stomach, absorption of the insulin from the intestine is much retarded and controls are difficult to establish. An interval of at least five days is necessary in order to insure a return of the glycogen storage to normal, and after half a dozen treatments with ether for several hours at a time there seems to be permanent impairment of the capacity to store glycogen. Alcohol up to 20 per cent and in amount sufficient to thoroughly intoxicate does not materially improve the absorption.

Some advantage clearly was gained from the administration of insulin both in solution and in enteric coated tablets, combined with sodium oleate.