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The fate of parenterally introduced glycogen in human and experimental diabetes.

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It has been shown by F. Voit and P. Mayer that glycogen parenterally introduced into the normal body of man or lower animal, is utilized, there being no elimination of glycogen, dextrin or glucose in the urine. Mendel repeated this work with rabbits, cats and dogs and found, on the contrary, that 5 per cent. to 18 per cent. of the glycogen introduced was eliminated as a dextrin over a period of two days.

In human and experimental pancreas diabetes the administration of glycogen gave the following results:

I. Human diabetes, first trial, E. P., age 16 yrs., wgt. 110 lbs.
   Glycogen subcutaneously, 28.0 gm.
   Glycogen in urine as gluc. 28.0 gm.
   Elimination time, under 24 hours.

II. Human diabetes, second trial (same case).
   Glycogen subcutaneously, 21.5 gm.
   Glycogen in urine as gluc. 21.5 gm.
   Elimination time under 24 hours.

III. Complete pancreas extirpation; bitch, 8.5 kilos.
   Glycogen intraperitoneally, 9.5 gm.
   Glycogen recovered in urine as glucose 6.0 gm. = 66 per cent.
   Glycogen recovered in urine as dextrin 3.5 gm. = 34 per cent.
   Elimination time under 24 hours.

IV. Complete pancreas extirpation; bitch, 14.5 kilos.
   Glycogen intraperitoneally, 25 gm.
   Glycogen recovered in urine as glucose, 22.0 gm. = 88 per cent.
   Glycogen recovered in urine as dextrin, 3.0 gm. = 12 per cent.
   Elimination time under 22 hours.

These observations show definitely that glycogen is not a utilizable form of carbohydrate for the diabetic organism and they indicate that there is a more rapid conversion of glycogen to glucose in the diabetic than in the normal body.

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Decerebration and the action of morphine in frogs.

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Morphin given in sufficient dose to normal frogs causes tetanus which does not come on, however, until several hours or even days after the injection.

I have found that decerebration hastens the onset of tetanus and also causes a marked reduction in the amount of morphin required to induce tetanus.

The smallest dose with which tetanus can be induced regularly in normal frogs at room temperature is ⅓ of a milligram per gm. (10 milligrams for a 30 gm. frog). This tetanus comes on in about 24 hours.

In decerebrated frogs, at room temperature, tetanus comes on after such a dose in from ½ to 6 hours, and may be induced with certainty after 6 to 24 hours by a dose of 1/10 milligram per gram (3 mg. for a 30 gram frog).

When frogs are kept cold tetanus can be induced by much smaller doses, as we have stated in an earlier paper. Thus, intact frogs kept in the cold show tetanus after doses of 1/30 mg. per gm. (1 milligram for a 30 gram frog). Tetanus comes on after such a dose in from 18 to 24 hours. Decerebrated frogs show tetanus after such a dose in from 4 to 12 hours, and it may be induced with certainty by doses of 1/300 milligram per gm. (1/10 mg. for a 30 gm. frog) after an interval of 1 to 3 days.

Frogs with the entire brain including the medulla destroyed, do not respond as well as frogs with the entire brain except the medulla destroyed.