

without further treatment. These proved exceedingly toxic causing extensive sloughing and ulceration of the tissues into which they were injected, and sometimes even caused the death of the dog. These wounds were sterile unless secondarily infected. Simple alcoholic extracts likewise produced toxic effects, particularly when only small volumes of alcohol were used and the trypsin was for this reason not wholly destroyed. Later these toxic effects were very largely eliminated by purification of the extracts.

Tables and graphs of experimental data were given showing abrupt falls in blood sugar, disappearance of urinary sugar and rise of the respiratory quotient following injection of extracts.

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Three months study of the influence of the anti-diabetic substance on a case of severe diabetes.

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Anti-diabetic substance, prepared at the University of Rochester was given to a case of severe diabetes mellitus (adult) by the duodenal tube, by mouth and by subcutaneous injections. Accurate study was made to determine the potency of the pancreatic extract, the dosage required and the most efficient and practical method of administration.

Glycosuria had been present at least for five years and was progressively increasing. Acidosis was constant during the past year. At the time of beginning this study the elimination of urinary sugar was greater than the intake of carbohydrate.

The patient was placed in the Rochester General Hospital, July 6, 1922, and studied while on a weighed diet consisting of carbohydrate 29.5 gms., protein 69 gms., fat 107.48 gms., and total calories 1394. During this study the blood sugar averaged from 0.410 to 0.513; the urinary sugar averaged from 32 to 45 grams; and the acetone and diacetic acid was 2+.

Anti-diabetic extract was given fifteen times through the duodenal tube from July 12, 1922 to July 29, 1922 inclusive. The blood sugar was reduced, reaching its lowest, 0.241 on July 26,

1922. The urinary sugar at this time reached its lowest point, 9.17 gms. Acetone was reduced about one half the former quantity and diacetic acid was absent on fourteen of the eighteen days treatment.

The patient was transferred to his home July 31, 1922 and kept at rest and on a diet consisting of carbohydrate 28.52 gms., protein 76.16, fat 127.04, and total calories 1,900. No treatment was given from July 29, 1922 to August 13, 1922. During this time the blood sugar rose somewhat but did not return to the level before treatment was started. The urinary sugar averaged from 39 to 52 grams. The acetone and diacetic acid 1+.

Forty-five injections were given subcutaneously during the period from August 13, 1922 to October 13, 1922. From one to three injections were given daily with occasional intermission. Extracts secured by different methods were used. By means of the subcutaneous method of injection, the blood and urine sugar, acetone and diacetic acid were reduced to normal. The clinical symptoms entirely disappeared. Marked reduction in blood sugar was at times noted. On August 25, 1922 the blood sugar was reduced from 0.320 to 0.200 six hours after a single injection of the pancreatic extract. On September 9, 1922 the blood sugar was reduced from 0.200 to 0.092, a reduction from 0.328 to 0.092 in twenty-three hours by four injections subcutaneously. The blood sugar rose over night to 0.200. In six hours by a single injection it was reduced to 0.070. The urinary sugar, acetone and diacetic acid disappeared entirely. The diet was increased to carbohydrate 50.52 gms., protein 119, fat 167, and total calories 2,500. The urinary sugar, acetone and diacetic acid remained absent. The blood sugar showed a slight rise.

Some of the earlier injections showed some pain, local edema and occasionally temporary redness. Only three of the forty-five injections showed definite local reaction. Later injections were non-toxic and non-irritating. Pain is no greater than can be accounted for by tissue distention.

Subcutaneous injections were discontinued October 4, 1922 and the extract given by mouth for two days. During the next three days the extract was given in salol-coated capsules. Neither method was plainly effective.

Subcutaneous injections were again given and the blood and urinary sugar were reduced.