

## 204 (2164)

## Clinical observations on the use of the anti-diabetic substance.

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Following the attempts to improve the condition of diabetic patients by administering pancreatic extracts by mouth and by duodenal tube, purified preparations have been given hypodermatically and intravenously. Most of these preparations were made by acid aqueous extraction; the fresh pancreas of ox or pig being ground in a mill with acid media and the resultant filtrate concentrated and purified. Other material was obtained by perfusing the pancreas with acid aqueous media and then concentrating and purifying the perfused fluid.

The patients on whom the preparations were used were mostly of severe type not being previously controlled by dietetic regulation. All of these cases were hospitalized in order that rigid control of diet, urinary excretion and blood sugar levels could be obtained. The cases in this series were 12 adults ranging from 26 to 55 years of age.

Charts of the clinical data on these cases and graphs showing the changes in blood sugar levels and urinary sugar excretion were demonstrated.

## CONCLUSIONS

1. Potent preparations of the internal secretion of the pancreas can be made by aqueous acid extraction and perfusion.
2. These preparations were made non-toxic and non-irritant for hypodermatic and intravenous administration.
3. The hyperglycemia can be markedly reduced and the glycosuria and acetonuria can be made to disappear by means of these preparations.
4. The clinical condition of patients can be markedly improved, *e. g.*, the thirst and polyuria diminished, edema removed, weight gained and mental sluggishness caused to disappear.
5. The carbohydrate tolerance is increased commensurate with the amounts of extracts employed.
6. Dessicated pancreatic extracts taken in capsule form by stomach have thus far not proved to be effective in reducing blood or urinary sugar.
7. Patients in complete coma can be brought back to a rational condition, their acidosis controlled and the non-protein nitrogen and creatinine lowered to a normal level.

8. Thus far no definite evidence has been obtained to show that the carbohydrate tolerance of a diabetic patient is permanently raised by temporary extract treatment.

### 205 (2165)

#### The degeneration of the testis of rats on a milk diet.

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The degeneration of the testis of rats on rations in which all the protein and vitamins are supplied by milk<sup>1</sup> has also been observed when such rations are supplemented by nucleoprotein and by those proteins of first quality<sup>2</sup> found in kidney and liver. When 2 per cent. or 5 per cent. of these dried tissues or 2 per cent dried thymus (Parke, Davis) or 2 per cent. yeast nucleic acid was supplied in rations containing 50 per cent. dry whole milk, 15 per cent., lard, 2 per cent., salts, and starch, evidences of degeneration and atrophy appeared as early as 155 days of age. Among 27 animals on such rations, the oldest animal still possessing normal gonads was 139 days of age. Of 25 animals over 155 days of age only one had gonads whose weight was normal and in these animals there were other evidences of degeneration. Without exception litter mates of these animals on stock rat food had normal organs. Aside from the decreased weight which was occasionally even less than one-half the normal for the weight of the animal the degenerating glands have a semitransparent glassy appearance; when ruptured they collapse and there exudes a clear colorless liquid which coagulates like lymph. Histologically these glands show a profound degeneration of the germinal epithelium and an abundant proliferation of the interstitial tissue together with numerous clear amorphous areas. In the main these are the features which Allen<sup>3</sup> described as resulting from the absence of water-soluble B in the diet. Since in our milk rations there can be little or no question as to the adequacy of the vitamin B supply, especially when liver or kidney is added, it would appear that the lack of some other substance than vitamin B, and as yet unrecognized, may be solely or jointly concerned in the disappearance of the reproductive function.

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<sup>1</sup> Mattill, H. A., and Stone, N. C., *Jour. Biol. Chem.*, 1923, *lv*, 443.

<sup>2</sup> McCollum, E. V., Simmonds, N., and Parsons, H. T., *J. Biol. Chem.*, 1921, *xlvi*, 235.

<sup>3</sup> Allen, E., *Anat. Rec.*, 1919, *xvi*, 93.