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Blood Sugar Changes in Avian Polyneuritis.

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One of the most striking symptoms found at autopsy of a polyneuritic pigeon, is the remarkable condition of the alimentary canal. The entire gastro-intestinal tract is gorged with food, yet the pigeons appear to be starving. The small intestine in the region of the pancreas atrophys to such an extent that the wall is almost transparent. The pancreas also atrophys. The typical coral pink color of health changes to a dead white or gray and small hemorrhages are generally visible. When examined histologically, the pancreas shows marked changes. McCanison[1] regards pancreatic insufficiency as one of the most important of the effects of food deficiency.

There is also in polyneuritic pigeons a marked decrease in efficiency of the digestive enzymes. This investigation was undertaken in order to determine what effect, if any, the above changes would have on blood sugar. Funk and von Shonborn[2] reported hyperglycemia in pigeons when placed on a diet deficient in vitamin B for 14 days. Funk[3] later repeated the work in an attempt to determine what effect extracts of the ductless glands would have on polyneuritis. He says, "each of the substances to be tested was administered to pigeons on normal food (serving as controls), and to pigeons fed on polished rice for several days, after which the animals were bled from the heart by means of a canulae under A. C. E. anesthesia." The effect of ether anesthesia on blood sugar is well known. The pigeons in the last investigation were fed polished rice but twelve days. In neither group was the stage of convulsive attack reached.

Eggleton and Gross, studying the effects of polyneuritis on rats, contradicted Funk's findings. They furnish a graph showing a lowering of the blood sugar after 50 days on Vitamin B deficient diet. While the average of their tabulated results show an increase blood sugar from 0.09 gm. in normal rats to 0.115 gm. in polyneuritic rats after forty days on deficient diet.

In this investigation, blood was drawn from the heart (by means of needle and syringe without anesthetic). All the polyneuritic pigeons were in the acute or convulsive stage when blood was drawn. The blood filtrate was prepared and sugar determined according to

the method of Folin and Wu.[5] The diet of the normal pigeon consisted of a commercial chicken feed mixture, while the polyneuritic pigeons received autoclaved grain as long as they would eat it voluntarily. It was then necessary to use forced feeding, 20 grams of the synthetic lard diet of Suguira and Benedict[6] being given each day.

The results of the blood sugar determinations are given in the following table:

TABLE I. Blood Sugar of Pigeons.

	Milligrams of Glucose	Means
Normal	186.9, 187.7, 186.0, 176.2, 198.0, 215.0, 206.1.	193.7
Polyneuritic	241.0, 263.1, 421.0, 422.0, 316.0, 412.3, 555.0, 482.0, 312.5, 296.2, 336.1.	368.7

As is brought out in the table the polyneuritic pigeons show an unmistakable hyperglycemia. The average blood sugar of the polyneuritic pigeon being almost double that of the normal.

[1] McCanison, "Studies in Deficiency Diseases." 1921. London.
[2] Funk, C., and von Shonborn, V., *J. Physiol.*, 1914, xlviii, 328.
[3] Funk, C., *J. Physiol.*, 1919, liii, 247.
[4] Eggleton, P., and Gross, L., *Biochem. J.*, 1925, xix, 633.
[5] Folin, O., and Wu, *J. Biol. Chem*, 1920, xxxviii, 81.
[6] Suguira, K., and Benedict, S. R., *J. Biol. Chem.*, 1923, lv, 33.

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An Undescribed Bile-Expelling Mechanism in the Guinea Pig.

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The anatomy of the extra-hepatic biliary system in the guinea pig is in general similar to that in other laboratory mammals, but that it possesses certain peculiar features. The system consists of hepatic ducts, gall-bladder, cystic duct and common bile duct; but the latter terminates in a dilatation, or ampulla, which is closely applied to the surface of the duodenum on its postero-superior aspect and is situated about 7 to 10 mm. beyond the pylorus. From near the distal end of this ampulla there arises a small duct which passes directly through the duodenal wall and terminates at the head of a papilla.