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## Influence of Anesthesia upon Pancreatic Function.*

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When a dog with pancreatic fistula secreting continuously is subjected to ether anesthesia the spontaneous secretion is largely or entirely suppressed according to the animal's susceptibility to ether. Under these conditions the level of blood amylase rises. In determinations according to Wohlgemuth, the normal level of blood amylase varies between 66 and 300 units in different animals, but it is constant in the same animal. Following ether anesthesia there is a 75% to 150% increase above normal values, as observed in 4 fistula dogs and 3 normal animals. Sodium amytal has little effect on the rate of secretion and none on the amylase level in the blood. (2 fistula dogs and 1 normal.) From this and other data we conclude that continuous secretion cannot be observed directly in acute experiments under ether anesthesia, but evidence of the continuous secretory function remains in the rise of blood amylase. Mechanical blocking of the flow has the same effect.

These observations led to the following comparative study concerning the influence of ether, avertin and spinal anesthesia upon blood amylase in man. Blood samples were obtained for analysis before anesthesia was induced and at frequent intervals during the 24 hour period immediately afterward. Normally, the blood was found to contain 12.5 to 20 units of amylase. The patients were of both sexes and varied from 24 to 57 years in age. They underwent various types of operations, such as hernioplasty, reduction of a fracture or removal of diseased adnexa. Upper abdominal operations were not included in order to avoid the possible effect of handling the pancreas upon blood amylase.

The amounts of ether varied from 226 cc. to 360 cc. The dosage of avertin was 100 mg. per kilo of body weight. Spinal anesthesia was induced by the injection of 120 mg. of novocain into the subarachnoid space.

In 4 patients subjected to ether there was a definite rise in blood amylase, reaching its maximum within 3 to 8 hours after induction

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of the anesthesia. The increase was 2 to 3 times the original level. A return to normal limits occurred within 24 hours. On the other hand, in 4 patients subjected to avertin anesthesia (3 supplemented with ether) and in 2 patients with spinal anesthesia no change in blood amylase was detected. In one patient with avertin anesthesia supplemented by ether, a slight rise in amylase was noted at the end of 14 hours; in this case the operation was a very difficult and prolonged one and there was considerable post-operative shock.

*Conclusions.* Following ether in man, there is a definite increase in blood amylase which does not occur after avertin or spinal anesthesia. According to the results obtained in dogs with fistulas, this is due to the fact that ether causes a cessation of the transport of pancreatic juice to the intestine while pancreatic secretory activity continues, resulting in a temporary accumulation of amylase in the blood.

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## Differences in Bactericidal Power of the Blood Within an Inbred Strain of Rats.

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During the course of experiments on the rôle of heredity in the resistance of rats to infection with *S. enteritidis,* some discrepancies from the uniform mortality rate to be expected in a highly inbred strain of animals were encountered.[1] An immunological study of the animals from this strain showed marked differences in the bactericidal power of the whole blood. Loeb and King[2] had previously found marked differences in reaction to tissue transplants in rats within each of the Wistar "A" and "B" strains.

The animals used in our experiments were descended from one pair of rats of the Wistar "A" strain, obtained in 1924 from Doctor Helen Dean King. These rats were then in the 48th generation of brother-sister matings. These brother-sister matings have been continued in our tests. All rats used have been shown not to excrete *S. enteritidis* in their feces and were carefully kept free from ex-

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[1] Irwin, M. R., *Genetics,* 1929, **14**, 337.

[2] Loeb, Leo, and King, H. D., *Am. J. Path.,* 1927, **3**, 143.