3292

Demonstration of a Gastric Secretory Excitant in Circulating Blood by Vivi-Dialysis.

R. K. S. LIM AND H. NECHELES.

From the Department of Physiology, Peking Union Medical College, Peking, China.

Since it has been proved that the transplanted stomach will secrete after a meal (Ivy and Farrel,[1] Lim, Loo and Liu[2]), it has become necessary to obtain the exciting substance or substances from the blood, as the first step towards identification. We have, therefore, attempted to obtain the excitant (or excitants) by dialysing the circulating blood of dogs during digestion.

The animals were either narcotised with amytal, or given no anesthetic at all. The vessels were exposed (under novocaine in the latter case), and connected with a set of dialysing membranes (Necheles[3]) immersed in warm Locke's solution. The blood was rendered incoagulable by recurring injections of heparin (Howell) or hirudin, or both. Circulation through the membranes was permitted for periods up to 5 hours, usually 2 hours, with the animal fed, 200 gr. meat and 100-200 cc. water, before or sometimes during the observation. The dialysate, concentrated or unconcentrated, was injected, subcutaneously, intravenously or intraperitoneally, into gastric pouch of dogs, whose secretory ability was determined by meal or histamine stimulation.

Three types of experiment were performed:

(1) Carotid artery and external jugular vein connected with membranes (carotid dialysis).

(2) Portal vein and external jugular vein connected with membranes (portal dialysis).

(3) Inferior *vena cava*, in thorax, and external jugular vein connected with membranes (caval dialysis).

The results in 14 satisfactory experiments were as follows:

Carotid dialysis: Six experiments, with no anesthetic except novocaine locally, gave 2 dialysates doubtfully positive, 4 negative. The experiments, under amytal, gave both dialysates feebly positive(?) after a long latent period, 2 and 4 hours.

Portal dialysis: Five experiments (under amytal), gave 2 dialysates undoubtedly positive, latent period within first hour, 2 probably positive and 1 negative.

Caval dialysis: One experiment, under amytal, gave dialysate positive.

These results prove that a gastric secretory excitant occurs in the blood, and that it is more readily recovered from the portal and inferior caval blood than from the systemic circulation, in which it is probably less concentrated. It is possible that the excitant may be found in the blood before meals. Note the one carotid dialysate obtained before feeding which gave a slightly positive result. These experiments suggest that the excitant is increased after meals.

[1] Ivy, A. C., and Farrel, J. I., *Am. J. Physiol.*, 1925, lxxiv, 639.

[2] Lim, R. K. S., Loo, C. T., and Liu, A. C., *Chinese J. Physiol.*, 1927, i, (in press).

[3] Necheles, H., *Klin. Woch.*, 1923, ii, 27; *Chinese J. Physiol.*, 1927, i, (in press).

3293

Production of Hyperglycemia in Rabbits by Subcutaneous Injections of Magnesium Salts.

A. A. HORVATH. (Introduced by F. R. Dieuaide.)

From the Chemical Laboratory, Department of Medicine, Peking Union Medical College, Peking, China.

The presence of magnesium in chlorophyll, and the important role of the latter in the metabolism of carbohydrates in plants, led us to study the effect of magnesium salts on blood sugar in rabbits. Five normal rabbits, starved for 24 hours, were injected subcutaneously with a 5 per cent solution of $MgCl_2$ or $MgSO_4$, using 5 cc. of this solution per kilo of body weight. During the experiment the rabbits were kept quiet in a tray, without restraint, and there was no struggle when the 2 cc. of blood were taken from the marginal ear vein. Such moderate bleeding does not affect essentially the blood sugar level in rabbits, as shown in a previous paper[1].

The results of the experiments are presented in the following table: