

is due to the increased size of the individual corpora lutea in the ovaries of rats which received oestrin.

8486 C

Effect of a Previous Distention of the Intestine on Reflex Inhibition of Gastric Motility.*

JOE LALICH, R. C. HERRIN AND WALTER J. MEEK.

From the Department of Physiology, University of Wisconsin.

In studying the nerve pathways involved in the reflex inhibition of hunger contractions by distention of a Thiry fistula loop in the dog,¹ it was noticed that a previous long-continued distention of the loop brought about a lower threshold for the reflex.

In the experiments here reported, five animals were prepared with Thiry fistulae in the usual manner, the loops being 15-20 cm. long and taken from the upper ileum. After complete recovery the dogs were trained to swallow a stomach tube and to lie quietly on the table without any restraint. Gastric movements were recorded by the customary balloon-tambour method. The intestinal loops were distended by air inflation of a thin-walled balloon which was over-size relative to the lumen of the gut. The balloon was tied over a glass rod so that the expansion would be entirely lateral and the pressure readings would closely approximate the pressure actually applied to the intestinal wall. All records were made after a fasting period of 18-24 hours. In testing for inhibition of gastric motility the intestinal loops were inflated for a short period, usually 10-30 seconds. In sensitizing or reinforcing the reflex, the loops were subjected to a continuous pressure of 75 mm. Hg. for 24 hours, following which tests were again made.

The essential results may be seen in Table I and Fig. 1. In the control experiments pressures in the loops of 75 to 120 mm. Hg. produced inhibition of gastric movement in 25 out of 55 tests. Each dog responded about half the time, the percentage of responses increasing somewhat with the higher pressures. It was noted that hunger contractions of type 2 were most easily affected. Often there was a marked lowering of tonus with the presence of smaller contractions at this lower level. When pressures below

* Supported in part by the Wisconsin Alumni Research Foundation.

¹ To appear in the *American Journal of Physiology*.

75 mm. Hg. were used there were only 4 gastric inhibitions in 43 tests, one animal now failing to respond at all.

TABLE I.
Occurrence of Gastric Inhibition Produced by a Short Period of Intestinal Distention. Tests Made in 5 Animals.

Controls	After Previous Distention for 24 Hours
Pressures above 75 mm. Hg.	Pressures above 75 mm. Hg.
25 Positive	22 Positive
30 Negative	4 Negative
Pressures below 75 mm. Hg.	Pressures below 75 mm. Hg.
4 Positive	32 Positive
39 Negative	4 Negative

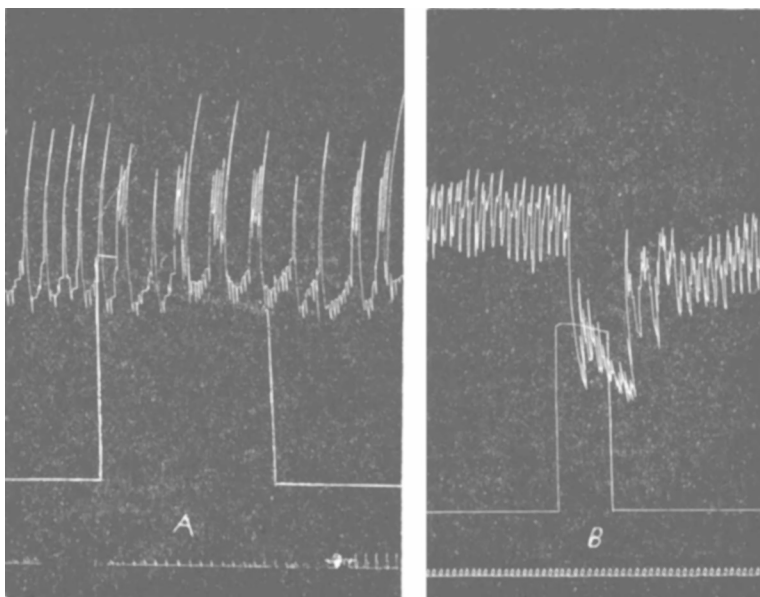


FIG. 1.

A. Control. A pressure of 68 mm. Hg. was applied to an intestinal loop for 16 seconds without any effect on the gastric contractions. B. After a previous distention of the intestinal loop for 24 hours at a pressure of 75 mm. a loop distention lasting only 8 seconds lowered the tonus of the stomach and reduced the height of contractions. The same dog was used for both records.

After the loops were distended with a pressure of 75 mm. for a period of 24 hours, the results were strikingly different. With pressures above 75 mm. there were only 4 failures in 26 tests. With pressures below 75 mm. extending as low as 25 mm., there were only 4 failures in 36 trials.

Very clearly then continued intestinal pressure lowers the

threshold for reflex gastric inhibition from intestinal distention. Whether this is an increased irritability of the gastric inhibitory mechanism or of intestinal receptors cannot be said. It is of interest to know that increased mechanical pressure in the lumen of the intestine may reinforce a visceral inhibitory reflex and especially one concerned with gastric motility.

8487 C

Liver Lipids of the White Rat Following Chloroform Poisoning, Insulin Administration and Fungus Infection.

P. L. MACLACHLAN. (Introduced by W. R. Bloor.)

From the Department of Biochemistry and Pharmacology, School of Medicine and Dentistry, The University of Rochester.

The effect of liver injury on the amount and distribution of the liver lipids has been the subject of a limited amount of investigation, with a view to gaining a better understanding of the relation between the phospholipids and the other fatty constituents of that organ. Theis¹ found for the normal liver tissue of beef, rabbits and humans that the relation between the phospholipid and neutral fat is quite constant and may be expressed as an equilibrium, 55 to 60% phospholipid $\rightleftharpoons$ 45 to 40% neutral fat, an equilibrium which is readily displaced as a result of fatty degeneration, insulin administration and disease. The abnormal organs seldom showed either less or more total lipid than the normal tissue but the percentage of phospholipid was always less. Since results obtained in this laboratory indicated that the ratio of phospholipid to neutral fat for normal liver tissue is about 72% to 22%, higher than that reported by Theis, it was felt that this problem deserved further study.

The white rat was used as the experimental animal and the effect of chloroform poisoning, insulin administration and fungus infection (*Aspergillus* and *Sporothrix*) on the amount and distribution of the liver lipids was determined. The experiments were carried out on pairs of litter mates of the same sex and approximately the same weight, one serving as the control and the other as the experimental animal. The rats were killed by a blow on the back of the head and the livers removed immediately. The total fatty acid and phospholipid contents were determined by the oxidative methods of

¹ Theis, E. R., *J. Biol. Chem.*, 1928, **76**, 107; 1928, **77**, 75; 1929, **82**, 327.