

**B-38. ON THE INTESTINAL IRON ABSORPTION IN
ETHIONINE-TREATED RATS
—EFFECTS OF PANCREATIN ADMINISTRATION—**

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Quantitative determinations of the intestinal iron absorption were carried out in normal and ethionine-treated rats. Intestinal iron absorption was estimated by determining the fecal radioactivity following an oral administration of radioiron through a gastric tubing. A group of male albino rats, weighing approximately 150 g., was pretreated with an intraperitoneal injection of dl-ethionine, 10 mg. daily, for 20 days. At the end of treatment, a marked increase was observed in the intestinal iron absorption, serum iron, and hepatic non-hemin iron content. However, no significant alteration was found in Hb level.

A similar effect could be reproduced when nearly all pancreatic tissues were segregated from intestinal loop by the use of electric cauterization.

On the other hand, an accelerated intestinal absorption of iron was found to return to a normal level when pancreatin administration was made to the ethionine-treated rats. Fractionation of pancreatin by the use of SE-Sephadex column chromatography, revealed that the activity to suppress the increased iron absorption in rats treated with ethionine reside in Fraction 1, in which potent amylase activity was detected. Essentially no activity was found in the fractions with lipase or trypsin activities.

The above results seemed to indicate the presence of intimate relationship between pancreatic function and intestinal iron absorption in rats.

**B-39. A TESTING METHOD FOR DIGESTIVE FUNCTION
—DIGESTIVE TESTING BALL METHOD—**

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Based on the experiences on the performance of the digestive absorption test for ten years, we have developed a method named 'Digestive Testing Ball Method'. This ball is constructed by two layers. The inner substance is barium sulfuricum as a contrast material of X-ray. This barium is carefully coated by the outer capsule to be even on all the surface of the barium ball. The outer capsule is made from 5.3 mg of the egg white protein. The shape of the testing ball is 6 mm in diameter and 3 mm in thickness and round discus formed. When five testing balls are administered to patients with 200 cc of water, the outer capsule of protein is digested by the digestion ability of each case. When the inner barium is exposed in the gastrointestinal tract, the ball is destroyed, and one can investigate this situation by X-ray photography promptly. The routine checking time of the X-ray is three hours and five hours after the administration of the testing balls. The account of the number of the balls, the shape and the location of balls are examined.

This new simple method reflects the summarized ability of the digestion power of the patient including not only the digestion force of the secreted juice, but also the motility function of the patient. This method does not analyze the individual function of the digestion. However, a result of this examination is directly applicable to the therapy of patients who have a lack of digestion ability. The clinical applicability is discussed further.