of radioactive valine was only inhibited by about 40 per cent with similar doses for identical periods. The nature of this inhibition is under investigation in our laboratory, because it needs to be analysed in relation to the synthesis of specific basic proteins.

It seems possible to increase the efficiency of artificial messengers in "host" embryos by prior or simultaneous inhibition of endogenous RNA synthesis. A certain degree of competition from endogenous messengers is nevertheless likely to persist, as is shown by the differential effect of poly A and actinomycin *D* on blood islands as compared with nervous tissue. The greater inhibition by actinomycin *D* of nervous differentiation than of haematopoiesis would explain such a difference[14–19].

Despite the interest of such a test system for the biological specificity of messengers, its complexity cannot be ignored and exhaustive experimental analysis of the mechanism of action of synthetic polynucleotides and of the differential effects of inhibitors of RNA synthesis is required before an accurate picture can be obtained.

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Gastric Iron Binding Protein in Iron Chelation by Gastric Juice

DURING an investigation of the possible role of chelation in the gastrointestinal absorption of iron in man, we have considered the endogenous ligands which could be secreted into the gut. Gastric juice seemed likely to be an important source because the rapid formation of iron chelates would require a low *p*H and because dietary iron is split off from protein during acid–peptic digestion in the stomach.

Samples of gastric juice were obtained from nine normal people who were in a state of fast and at 15, 30, 45 and 60 min after stimulation of gastric secretion by histamine. A preliminary assessment of iron chelating ability was made using a radioiron solubility test[1]. This test is based on the ability of chelated ferric iron to remain in solution at *p*H 8·0, whereas ionic iron precipitates as the hydroxide at this *p*H. Results of this examination showed that the resting and histamine stimulated gastric juice samples possessed a marked iron binding capacity in all subjects examined. The average amount of iron bound/ml. of gastric juice was 0·04 mg/ml. of fasting juice and 0·02 mg/ml. in the histamine stimulated samples. The normal 24 h secretion of gastric juice is 2–3 l., so it is evident that sufficient iron binding substance should be secreted in gastric juice to chelate all the 15 mg of dietary iron present in a typical diet.

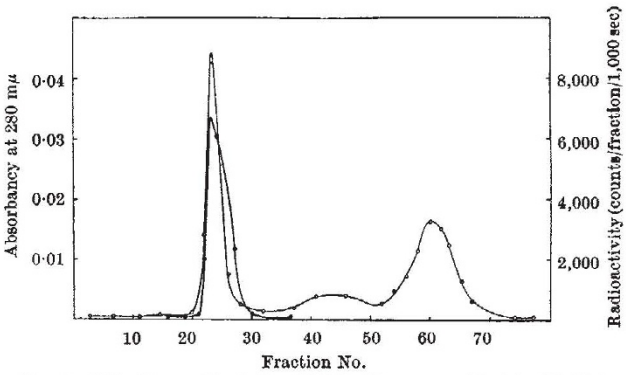

Fig. 1. Filtration on 'Sephadex *G*-200' of human gastric juice labelled with radioiron. Sample volume was 2 ml. Column dimensions were 2·5 × 40 cm, 3·5 ml. fractions were collected at a flow rate of about 30 ml./h. ●, Absorbance; ○, radioactivity.

The iron binding ability of gastric juice was further examined by passage of gastric juice labelled with radioiron through a molecular sieve. Physiological saline buffered to *p*H 8·0 with 0·02 molar ammonium chloride and ammonium hydroxide was used as solvent and the samples were passed upward through a 2·5 × 40 cm column of 'Sephadex *G*-200'. The effluent from the column was collected in fractions which were assayed for relative protein content by ultra-violet light absorption at 280 mμ and for iron by measurement of the iron-59 gamma activity in a well-type scintillation counter.

Repeated experiments indicate that while the gastric juice is resolved into three major fractions by this technique, the radioiron is bound exclusively by the totally excluded high molecular weight fraction (molecular weight in excess of 200,000). A typical elution curve is shown in Fig. 1. Elution curves of similarly treated samples of albumin and transferrin show that the gastric iron binding protein is not identical with these substances.

The results of these experiments show that gastric juice is capable of binding or chelating iron, and to a degree sufficient to keep in solution the amount of iron present in a normal diet. It therefore seems unlikely that iron is present in the intestinal lumen in ionic form to any appreciable degree. Experiments are in progress to determine the nature of the iron binding protein of gastric juice, to find out whether it facilitates or inhibits iron absorption and to estimate its concentration in clinical conditions of iron deficiency and iron overload.

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Relation of Magnesium to Calcium in Human Blood Serum

ACCURATE methods for measuring the magnesium in human blood serum have been developed and used to establish the range of values for normal individuals[1–15]. Differences in normal mean values have been reported[13,14]. None of these investigators has compared the concentration of magnesium and calcium in the serum of the same individuals. In the present investigation we have determined the concentrations of magnesium and calcium in the blood serum of a series of 133 randomly selected patients and healthy members of the hospital staff and have found a correlation between the two ions in individuals with normal serum calcium values.