Intestinal Absorption of ^{35}S-labeled Reduced Glutathione

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Intestinal absorption of reduced form of ^{35}S-labeled glutathione (GSH) was studied in relation to the chemical change and subsequent tissue distribution. G^{35}SH in doses of 1—10 mg was given to rats through a gastric tube or into the jejunum or ileum by injection. Blood removed from the portal vein or the heart, and the liver, kidneys and small intestine taken at necropsy were subjected to radiometric analyses. Plasma G^{35}SH was identified from the electrophoretic mobility using 0.02 M phosphate buffer of pH 6.9; distribution of radioactivity on paper strips was determined by placing cut pieces of paper on the bottom of the counting vial containing scintillator for beta counting. Under such conditions, direct counting of paper was only about 20% less in relative counting efficiency compared with thorough extraction from paper which is subject to much inconsistency. The radioactivities of homogenized tissues, whole plasma and protein-free plasma were also determined.

The results showed that absorption of G^{35}SH was very rapid, about 50% being absorbed from the intestine in 5 minutes, and more than 80% of orally administered G^{35}SH appeared in the portal blood immediately after instillation in the small intestine. Shortly after administration, a small fraction of GSH in venous blood was in its oxidized form. About 80% of ^{35}S in plasma was precipitated with TCA after 3 hours, but no such binding to protein was demonstrated during incubation with whole blood. Radioactivities found in tissues in relation to time indicated that the liver takes up absorbed GSH very rapidly and to a greatest extent, and distribution to other tissues is slower.

Amino Acid Intestinal Transport in Intestinal Lymphangiectasia

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During the past few years the gastrointestinal tract has been proved to play a significant role in the degradation of the plasma protein. Gastrointestinal protein loss with regard to these views has been a development of special importance. In protein-losing enteropathy, recently, indigestion and malabsorption have been demostrated especially to fat, but it has not been investigated in detail.

Then it was determined to investigate four kinds of amino acid intestinal transport in rats with intestinal lymphangiectasia which was a major cause of protein-losing enteropathy. The albino-rats were ligated in thoracic duct and mesenteric lymphnodes and used after two weeks. These rats were tested by Gordon's test, and intestinal protein loss was highly accounted for in ligation groups.

The experimental method employed was the perfusion technique, and the proximal 80 cm of the small intestine was used. The four amino acid were L-alanine, L-arginine, L-methionine and α-aminoisobutyric acid (AIB), and at a concentration of 5m M, each amino acid dissolved in the Ca free Krebs-Ringer phosphate buffer with ^{14}C or ^{35}S labelled amino acid as a tracer. Radioactivity was