Florisil is also available as well as resin beads, but this requires accurate pipetting with one ml syringe after the elimination of unbound iron.

Labeling of Hemoglobin with $^{75}$Se-methionine

Y. Shimokawa, A. Kaneto, H. Sato, M. Yakushi and K. Okuda
Second Department of Medicine
M. Takamatsu
Radioisotope Laboratory, Kurume University School of Medicine, Kurume

In the study of hemoglobin, globin moiety has not in the past been labeled with gamma-emitters in contrast to labeling of heme with Fe. Recent studies all have indicated that $^{75}$Se-methionine behaves very much like methionine in vivo. We, therefore, attempted to label the globin moiety with $^{75}$Se-methionine and to produce doubly labeled Hb, by combining with it the $^{59}$Fe labeling. Rabbits were treated with $\beta$-acetyl-phenylhydrazine and blood with reticulocytes was incubated with $^{59}$Fe and $^{75}$Se-methionine for 4.5 hours in the Borsook medium under constant agitation. The obtained doubly labeled Hb was analyzed with respect to efficiency of labeling, and it was found that $^{75}$Se-mathionine labeling was just as efficient as that with $^{59}$Fe. Separate measurement of $^{75}$Se and $^{59}$Fe has been feasible in a same specimen with correction for $^{59}$Fe.

The value of Hb labeled with $^{59}$Fe and $^{75}$Se in biological systems has been studied in comparison with Hb labeled with either $^{59}$Fe or $^{75}$Se. The behavior of the two labels in the doubly labeled Hb was identical with that of the corresponding single label.

It is to be emphasized that globin of Hb can now be labeled with $^{75}$Se-methionine with good efficiency so that globin labeled with $^{75}$Se may be traced by extracorporeal measurement in man. Hb with the indicated double labels may find various applications in the study of Hb catabolism.

Studies on abnormal proteinemia with Radioiodinated-albumin and-γ-globulin tracer methods

M. Nozaki, M. Tsuchiya and K. Sambe H. Asakura, S. Matsuzaki, K. Suzuki, Department of Medicine, School of Medicine, Keio University, Tokyo

These studies were performed to clear the dynamic metabolism of abnormal proteinemia using radioiodinated-albumin and-γ-globulin.

METHOD

The study was carried out on 78 hospitalized...
patients with no abnormality of protein metabolism, and abnormal patients such as liver diseases, nephrotic syndrome, protein-losing gastroenteropathy, hypo-γ-globulinemia and miscellaneous diseases. All patients received Lugol's solution by mouth during investigations and were given radioiodinated human serum albumin or-γ-globulin intravenously, and plasma samples were analyzed for a period of 2 weeks. Degradation rate and half-life were derived according to Matthews. All radioactive samples were assayed in NaI well-type scintillation counter.

RESULTS

1) albumin metabolism

One patient with chronic hepatitis and 3 patients with mal-absorption showed prolonged half-life of albumin, but 4 of patients with chronic liver diseases and 6 of 9 patients with chronic liver diseases who were administered glucocorticoids showed short half-life. The half-life was significantly short in patients with nephrotic syndrome, protein losing enteropathy and acuate hepatitis administered glucocorticoids.

There was significant reverse correlation between half-life and degradation rate.

In patients with chronic liver diseases there was found to be significant correlation between serum albumin concentrations and degradation rate (coefficient of correlation = +0.74) and between the former and degradation (r = +0.95), but in patients with protein-losing enteropathy and nephrotic syndrome there was reverse correlation between serum albumin levels and degradation rate (r = -0.55) and a little correlation between the former and degradation (r = +0.38).

Differentiation of hypolbuminemia between protein-losing enteropathy and malabsorption syndrome was made easily by the isotopic studies using RISA, 131I-P.V.P. and purified 131I-triolein.

2) γ-globulin metabolism

The half-life of γ-globulin was shortened in half of patients with chronic liver diseases and in all of 4 patients with acute hepatitis who received glucocorticoids, but 2 patients with cirrhosis, 2 patients with acute hepatitis and a dysgammaglobulinemic patient showed a prolonged half-life. In 4 or 10 patients with chronic liver diseases, all of 8 patients with chronic liver diseases and 3 or 4 patients with acute hepatitis who received glucocorticoids, and a nephrotic patient it was found to show a high γ-globulin degradation rate, but 2 patients with cirrhosis, a patient with acute hepatitis and a patient with dysgammaglobulinemia type I showed a very low γ-globulin degradation rate.

Differentiation of hypo-γ-globulinemia between nephrotic syndrome and acquired hypoglobulinemia was made easily by the methods of Matthews and renal clearance of free 131I and trichloroacetic acid precipitated 131I.