$$UIBC = \frac{Fe \times tube\ counts\ after}{tube\ counts\ before}$$

counting before the elimination of unbound iron is not necessary, if standard FeFe-59 solution is counted. No pipetting after the elimination, nor centrifuging is needed. No buffer is added.

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. Yakushiji 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 β-acetyl-phenylhydrazine and blood with reticulocytosis 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 abnromality of protein meta-
bolism, and abnormal patients such as liver
diseases, nephrotic syndrome, protein-losing
gastroenteropathy, hypo-γ-globulinemia and
micellaneous diseases. All patients received
Lugol's solution by mouth during investiga-
tions 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 prolong-
ed 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 entero-
pathy and acuate hepatitis administered gluco-
corticoids.

There was significant reverse correlation be-
tween 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 albu-
min 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, ^{131}I-P.V.P. and purified
^{131}I-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 dysgammaglo-
bulinemia type I showed a very low γ-globulin
degradation rate.

Differentiation of hypo-γ-globulinemia be-
tween nephrotic syndrome and acquired hypo-
globulinemia was made easily by the methods
of Matthews and renal clearance of free ^{131}I
and trichloroacetic acid precipitated ^{131}I.