administration. Thus structural stability of methylcobalamin during absorption was indicated. To further corroborate the finding, [57]Co-methylcobalamin was fed by mouth, the intestine was washed after 1.5 hours, the mucosa homogenized and digested, and the supernatant after protein precipitation was applied to paper for chromatography. The radioactivity was demonstrated at Rf corresponding to that of pure preparation, which shifted to the hydroxocobalamin position following exposure to light. Double labeling, with one label in the stable moiety of a compound in question, and the other in the moiety expected to split off, is a worthwhile technique in the study of chemical changes in relation to its metabolism in animals as well as in man.

A Simple Method of Analyzing Radioiron Appearance Curve in Ferrokinetics Study Using Analog Computer

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Appearance curve of radioiron in circulating erythrocytes was analyzed in ferrokinetics study with simple method using analog computer.

The computer circuit was composed of the third order filters for the process through erythropoiesis and two first order filters in series was added in recircuit in those cases with increased peripheral hemolysis for erythrocytes destruction and iron re-utilization respectively.

Successful simulation of actually obtained data with computed curve gave us four parameters which represent the curve's figure reflecing effective erythropoietic charakteristics. The parameters were initial imput for computation, U, which implies fractional amount of radioiron for "effective" incorporation into erythrocytes and three parameters of the third order filters, α_1, α_2 and α_3, lined from the larger.

Mean transit time for radioiron through erythropoiesis, τ_p was calculated accoading to the formula, $\tau_p = {}^1/\alpha_1 + {}^1/\alpha_2 + {}^1/\alpha_3$.

In nine normals U was from 0.76 to 0.97 and was between 3.3 and 5.3 days with being from 0.7 to 1.6, being from 0.65 to 1.5 and being from 0.25 to 0.7 day^{-1}.

In 64 studies of 59 cases with various hemotological diseases nine groups could be distinguished in the combination of elevated, normal or depressed U versus shortened, normal or elongated. On the other hand four main types could be discernible according to the pattern of α_1, α_2 and α_3 which decide the shape of the curve. Type I resembles the curve of lower order filters with exceedingly large value of α_1 and Type IV shows typical shape of the third order filters of deep S figure with similar value of three parameters. Type II and the type III are intermediate patterns predominantly observed in normals.

In hemolytic anemias appearance curve belonged to Type I with remarkably shortened τ_p.

In some cases with iron deficiency anemia and hypoplastic anemia and hemolytic type of portal congestive Splenomegaly Type I pattern was observed with shortened τ_p. Shortened τ_p was also observed in iron deficiency anemia and iron deficiency type of congestive splenomegaly showing rather Type II or Type III pattern. With iron administration in these deficiency cases or in cases with non-deficiency type of congestive splenomegaly, Type III pattern was more often encountered with somewhat shortened

There was significant positive correlation of τ_p with mean erythron life span calculated by Huff's method and also with half survival of ^{51}Cr tagged erythrocytes generally in the

measured cases.

This simple method of analyzing radioiron appearance curve would also be valuable to detect ineffective erythropoiesis.

Studies on the Release of Blood Cells of Bone Marrow

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The bone marrow functions, especially the release of blood cells, were studied by using female rabbits, weighing about 2500g, under morbid conditions with microautoradiographic technics and liquid scintillation counter.

The femur of one side was irradiated ^{60}Co or blockaded by indian ink, and then the rabbits were affected by infection or phlebotomy. One week later, 3 μCi of ^{3}H-thymidine was administered intravenously to the rabbits and one hour later blood samples were obtained from the nutrient veins of the bilateral femur marrows and peripheral artery.

These samples were used partly for radioautographic studies, and partly for liquid scintillator countings of serum.

The mean grain counts in myeloblasts of the rabbits blockaded by indian ink or affected by infection were decreased and those of the rabbits affected by phlebotomy were increased. Similar results were noted in the granulocytic series.

The mean grain counts in the granulocytic series of the rabbits treated with ^{60}Co were lower than those of the rabbits blockaded by indian ink, (especially in myeloblasts).

The mean grain counts in the erythroblastic series of the rabbits affected by phlebotomy were increased.

Radioactivity of ^{3}H-thymidine in blood plasma of the rabbits affected by phlebotomy showed higher levels.

These results suggest that the proliferative actiivty of granulocytic cells is decreased by ^{60}Co irradiation or blockade of bone marrow, and that erythropoiesis is increased by phlebotomy.

Studies on Bone Marrow Distributions of ^{99m}Tc Sulfur Colloid with Scintillation Camera

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In normal subjects, the bone marrow figures obtained with ^{99m}Tc sulfur colloid were relatively clear and sharp only in larger bone such as skull, pelvis, humerus, and femur. The figures of sternum, foot and hand were hardly obtained. The intensity of the figures were seemed to be well corresponded anatomically to red bone marrow distributions.

In the patients with hypoplastic anemia the bone marrow pictures were able to be classified into two types. One is the islet form with clear and distinctive high density figures in obscure and low density background in skull, pelvis, shoulder, vertebrae, humerus and femur. This type of hypoplastic anemia was considered to be classified as the bone marrow