enough to exclude the hemolysate contained free Na$_2$CrO$_4$.

4) The final labelled packed red cells were brought to the original volume with normal saline. The radioactivity of 0.3 ml of the labelled blood was measured by Well-type scintillation counter.

5) 0.3 ml of this blood was injected into the tail vein of mouse respectively.

6) 25 µl of the blood was taken from retroorbital venous plexus into the heparinized microhematocrit tube at 5, 20, 40, and 60 minutes after injection. Each blood was measured its radioactivity with Well-type scintillation counter. The cpm was plotted on semilogarithmic paper, and $t_{1/2}$ (clearance) was calculated from $^{51}$Cr-labelled blood disappearance curve.

7) The mice were sacrificed at 120 minutes after labelled blood injection. The organ uptake rate was calculated by dividing each organ cpm with initial cpm of 0.3 ml blood. Finally, the unit organ uptake rate was obtained by dividing each organ uptake rate with each organ wet weight.

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**Use of $^{198}$Au colloid for Spleen Scanning**

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The probability of visualization of the spleen with $^{198}$Au colloid is believed to be very low so far. However the visualization of spleen with $^{198}$Au colloid was successful in diseases with splenomegaly, especially when the spleen was scanned in prone position even in thick patient.

In chronic hepatitis, liver cirrhosis, Banti's syndrome, polycythemia vera, hemolytic anemia, chronic leukemia, cysts, and myelofibrosis, 100% visualization was possible.

$^{198}$Au colloid is easy to use, since it does not require any preparation, it has stronger energy and cheaper than Hg-203 MHP, Cr-51, Tc-99m and etc. In addition, $^{198}$Au colloid visualizes the liver in the same time. Therefore, the use of $^{198}$Au colloid is recommended in connection with the scanning of spleen in prone position.

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**In Vivo Measurement of Splenic Blood Flow and Its Content Using $^{133}$Xe, $^{51}$Cr Red Cells and $^{131}$I H S A**

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Plasma and red cell circulation and their content in the spleen were measured with in vivo counting technique under coeliac catheterization.

Following successive injection of $^{133}$Xe saline solution, $^{51}$Cr erythrocytes and $^{131}$I
HSA, change in their respective radioactivity over the spleen, (liver, precordium and head) was measured and recorded as radiosplenogram. Disappearance rate of splenic $^{133}$Xe, tissue-blood partition coefficient of 0.75 and hematocrit value in the systemic circulation gave us plasma and red cell flow rate per unit weight of spleen tissue. Using analog computer including systemic re-circulation circuit, $^{51}$Cr and $^{31}$I splenic curves were analyzed and mean transit time through the spleen of plasma, $\tau_P$ and of red cell, $\tau_C$ was calculated. Flow rate times mean transit time gave us the volume contained there of plasma, $V_{pVt}$ and red cell, $V_{cVt}$, as millilitre per gram tissue.

Resembled values between $\tau_P$ and $\tau_C$ of 8 to 32 seconds were obtained in 8 normals with $V_{pVt}$ being 0.11 to 0.21 ml/ gr and $V_{cVt}$ being 0.08 to 0.15 ml/ gr. In cases with iron deficiency anemia and hypoplastic anemia, $\tau_P$ and $\tau_C$ fell within normal range but $V_{cVt}$ was decreased. Despite their enlarged spleen, cases with chronic myeloid leukemia and Gaucher's disease showed approximately normal value of $\tau_P$ and $\tau_C$ and both $V_{pVt}$ and $V_{cVt}$ values were significantly decreased.

In polycythemia vera and congenital spherocytosis $\tau_C$ was much elongated with $\tau_P$ being normal and $V_{cVt}$ exceeded $V_{pVt}$. In the latter case $\tau_C$ of autogenic cell was much more elongated than that of isologous normal cell and difference between their respective miscible space was disclosed in the spleen.

In portal congestive splenomegaly such as "Banti's syndrome" and hepatic cirrhosis especially in those with enlarged spleen, both $\tau_P$ and $\tau_C$ were remarkably elongated and the value of $\tau_C$ was significantly correlated with splenic volume calculated by scintigrams. Increased value of $V_{tVt}$ and $V_{cVt}$ of 2 or 3 times normal was also obtained in these cases and their circulating leukocytes counts were closely correlated with $V_{cVt}$ but not with $V_{pVt}$ nor with $\tau_P$ or $\tau_C$.

These findings suggest the mechanism to manifest hypersplenismic syndrome in relation to the alteration in hemodynamics of the spleen in these cases.

This method was considered to be valuable scince it enable us to measure splenic circulation and blood content more precisely under more physiological condition than the other method and it would provide us several information concerning pathophysiology of splenic diseases.

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**Metabolism of $^{57}$Co- and $^{14}$CH$_3$-labeled Methylcobalamin**

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The metabolism of methylcobalamin, one of the major natural vitamin B$_{12}$, has been investigated in relation to its structural change in rats, using $^{57}$Co-label in the stable structure of the vitamin and $^{14}$C in the methyl moiety which will split off the cobalt atom as the first change ever to occur. The compound is extremely labile in vitro, particularly to light. When a doubly labeled compound was injected intramuscularly to rats in comparison with its photolysis product, it was found that the ratios of $^{14}$C to $^{57}$Co in tissues were quite different from those obtained with a photolyzed preparation, yet the two different labels were not parallel, suggesting that the methyl group was not immediately detached but was gradually released in tissue.

Large amounts of $^{14}$C accumulated in liver following oral administration of the photolyzed preparation in distinct contrast to the closer ratios of the two labels in this organ obtained with doubly labeled methylcobalamin. Expiration of $^{14}$CO$_2$ was far greater with the photolysis product regardless of the route of