

flat curve obtained in control rats.  $^{13}\text{CO}_2$  curves showed similar pattern as  $^{14}\text{CO}_2$  curves in rats with and without operation. When trace dose of  $^{13}\text{C}$ -glycine alone was administered,  $^{14}\text{CO}_2$  curves showed earlier and lower peaks than those obtained after loading dose of glycine. Our results

suggest that  $^{13}\text{C}$ -glycine-cholate can be used as clinical breath test for the detection of bacterial deconjugation of bile salts. The animal model should prove useful for the preliminary comparative studies of various  $^{14}\text{C}$ - and  $^{13}\text{C}$ -breath tests prior to their clinical application.

### Separate Counting of Gamma Rays of $^{51}\text{Cr}$ with well Scintillation Counter and Beta Rays of $^{32}\text{P}$ with Geiger Counter

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Mixed radionuclide as  $^{59}\text{Fe}$  in blood sample in determining mean red cell life span with  $\text{DF}^{32}\text{P}$  can be eliminated by chemical extraction of heme as we reported previously. However, the separation of  $^{51}\text{Cr}$  counts from  $^{32}\text{P}$  is not so easy, since the channels ratio method or chemical extraction method are not available. Therefore, we prepared the standard and blood sample for well and Geiger counting respectively.

The separate counts can be obtained by calculation using the following formula.

- |   |     |
|---|-----|
| (1) Standard of $^{32}\text{P}$ for Geiger counting | —Pg |
| " $^{51}\text{Cr}$ "                                | —Cg |
| (2) Standard of $^{32}\text{P}$ for well counting   | —Pw |
| " $^{51}\text{Cr}$ "                                | —Cw |

- (3) The constant ratios of counting efficiency in Geiger and Well for  $^{32}\text{P}$  and  $^{51}\text{Cr}$  are P and C

$$P = \text{Pg}/\text{Pw} \quad C = \text{Cg}/\text{Cw}$$

- (4) Sample S containing  $^{32}\text{P}$  and  $^{51}\text{Cr}$  is counted in Geiger and well counter

$$\text{Sg} = \text{Pg} + \text{Cg}$$

$$\text{Sw} = \text{Pw} + \text{Cw}$$

- (5) Then the formula gives respective counts needed.

$$\text{Pg} = (\text{Sg} - \text{C} \cdot \text{Sw}) / (\text{P} - \text{C})$$

$$\text{Cw} = (\text{Sg} - \text{P} \cdot \text{Sw}) / (\text{C} - \text{P})$$

This separate counting using two kinds of counters may be called "Cross Counting Method."

### A Proposal for the Standardization of Iron Absorption Test by Whole Body Counting

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Iron absorption study is an important method for the diagnosis and therapy of iron deficiency anemia and hemochromatosis. The standardization of iron absorption procedure is needed for the international comparison of iron absorption data.

We propose the method to be standardized as follows.

#### I. Oral radioiron dose

Radioiron with 4 mg of carrier in the form of ferrous sulfate is administered to the patient kept fasting overnight. Eating and drinking are not

allowed for 2 more hours after oral dose.

#### II. Counting

Whole body counting is performed 3 or more times in 14 days.

#### III. Geometry correction

The ratio of air to body count 10 to 14 days after intravenous radioiron injection and mean body radius showed correlation. This correlation is available when a ring-type whole body counter is used. For the patient to whom ferrokinetics study is scheduled in series, own geometry correction coefficient is available. For the patient to whom