

XVI. Fenokinetics

Isotope Dilution Method for the Determination of Serum Iron

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Acidification for the release of serum iron (SI) and neutralization of the serum for the binding of added radioactive ferric ammonium citrate and SI mixture were tested. Unsaturated iron-binding capacity was also determined for the calculation of serum iron. The results were compared with the values obtained by colorimetry. In addition, total iron-binding capacity (TIBC) was determined by

author's method and SI was obtained by subtracting UIBC from TIBC.

The results showed small difference in the methods of colorimetry and TIBC-UIBC. However, isotope dilution method showed rather unstable results.

For the isotope dilution, there is no evidence whether or not SI was entirely released from transferrin.

Standardization of Iron Absorption Test

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Iron absorption test is not standardized yet, and international comparison of the data is difficult.

This is therefore to propose the international standardization of iron absorption test method.

We have chosen 4 mg of ferrous sulfate as carrier dose, since this is almost equivalent to one third of the amount of daily iron intake from the food. Ferrous form is absorbed better than ferric form, and ferrous sulfate dose not require any reducing agent. Labelling of food for absorption test is time consuming, and difficult to obtain the same specific activity. Addition of unlabelled food to radioiron would make the interpretation difficult. If carrier iron dose is increased higher than the amount in a single food, the difference in

absorption rate decreases as observed by Saito et al.

Whole-body counting is the easiest way for the test. Oral dose and standard source are counted in air. Whole-body count fluctuates when radioiron is in the stomach, but the count after the completion of absorption becomes stable.

Attenuation of gamma rays was proportional to body radius calculated from patient's height and weight, and body radius was used to correct attenuation. No relation was found between count rate and % Utilization.

Counting of stool tends to give higher absorption rate and blood counting gives lower value. Double isotope method is not simple and not always exact in case of iron excess.