

## A Simple Method for the Determination of Unsaturated Iron-binding Capacity of the Serum with Resin Strip

H. SAITO

*Radioisotope Laboratory, Nagoya University School of Medicine, Nagoya*

Radioactive ferric ammonium citrate solution was added to the serum, and kept for 15 minutes for binding reaction. A piece of resin strip was inserted to the test tube to remove unbound iron ion in the iron serum mixture. The test tube was covered with a cap and rotated for 60 minutes at room temperature. More than 95% of unbound ionic iron was removed by the resin strip. By removing the resin strip, test tube was counted and the net count was divided by the standard net count and the value was multiplied by iron

content of the standard solution. UIBC value obtained by the above method was compared with the value obtained by using other kinds of iron ion remover; granular resin, and magnesium carbonate powder. UIBC values by the resin strip method were consistent with those obtained by the other iron ion remover.

By this simple method, precounting of each iron solution, pipetting, and centrifugation are entirely omitted, except for the first pipetting of the sample serum.

## Effects of Some Parenteral Iron Preparations on Unsaturated Iron Binding Capacity in Serum —Studies by Using Irosorb-59—

T. MIYAZAKI, S. KASHIWAGI, K. IDAKA and T. SHIRAIISHI

*Third Department of Medicine, Hokkaido University School of Medicine, Sapporo*

Parenteral iron preparations are made so safely that the iron ion, which induces the uncomfortable side effects, i.e. so-called iron intoxication, could not become free from them. Because the complete saturation of the unsaturated iron binding capacity in serum (UIBC) is speculated as one of its causes, it is important to measure UIBC, but it is very difficult to determine correctly the value of UIBC by Peter's method because of being partially measured with using clinically the parenteral iron preparation, therefore the method by using Irosorb-59 is more convenient than the chemical one according to no effects of radioactivity upon the body, its simplicity and its good reproducibility.

Changes in UIBC due to some parenteral iron preparations (Chondroitin Sulfate Iron,

Iron-Dextran, Iron-Dextrin and Sacchrated Iron Oxide) are clinically and experimentally observed.

### Materials and Method:

In vitro studies: Each parenteral iron preparation containing as iron the concentration from 500  $\mu\text{g}/\text{dl}$  to 2  $\text{mg}/\text{dl}$  respectively, is added to the pooled serum collecting from the adult with no anemia and after the incubation for 30 minutes at 37°C, changes in UIBC are observed by using Irosorb-59.

In vivo studies: While each of them is intravenously administered to the no anemic adult with the iron concentration from 40  $\text{mg}$  to 50  $\text{mg}$ , blood before its injection, after 5 minutes and 30 minutes was drawn from them and UIBC was measured by using Irosorb-59.

## Results:

Changes in UIBC in vitro studies were not observed but the administration of the parenteral iron preparations except Chondroitin Sulfate Iron revealed significantly a little decrease of UIBC 5 minutes and 30 minutes after its injection.

## Conclusions:

Evidence that UIBC decreased in intravenously administered groups of parenteral iron preparations, has been presented.

Measuring UIBC is necessary with the their administration and the determination by using Irosorb-59 is very predominant.

## Characteristics of Iron Absorption in Hemochromatosis

H. SAITO

*Radioisotope Laboratory, Nagoya University School of Medicine, Nagoya*

THORNTON SARGENT

*Donner Laboratory, University of California, Berkeley*

Iron absorption test was performed using a whole-body counter on patients with idiopathic hemochromatosis before and after phlebotomy therapy.

In normal subjects, iron absorption rate was correlated with reticulocyte count and the rate stayed within normal range after phlebotomy as reported by author previously. If we use this correlation, the normal range becomes narrower and the differentiation is much easier.

Iron absorption test after phlebotomy was performed after serum iron and other hematologic data were within normal range. In most cases of hemochromatosis, iron absorption rate was in normal range. After phlebotomy therapy, iron absorption rate was as high as iron deficiencies, although serum iron level was normal. This is the most important evidence related to the pathogenesis of hemochromatosis.