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Evaluation of a New Ferritin Radioimmunoassay Kit

To the Editor:

We have evaluated the new (125I) Ferritin Radioimmunoassay (RIA) Kit (Diagnostic Products Corp., Los Angeles, CA 90045), in which human liver ferritin calibrators in a protein matrix are used over a range of 0-1000 μg/L. Free is separated from bound by a single-step addition of a double antibody-polyethylene glycol-saline solution.

The procedure requires 100 μL of patient's serum and involves a 3-h incubation at room temperature. Average initial bindings of bound/total (B/T) were about 30%, with nonspecific bindings of 2-4%. Calibrator bound/bound zero (B/B₀) ranged from 95% for the 5 μg/L standard to 12% for the 1000 μg/L standard.

Table 1 shows the within-run precision we found, and comparable results for the Clinical Assays (125I) Ferritin RIA Kit (Cambridge, MA 02139).

Linearity was assessed by diluting a high-ferritin serum sample with zero standard and measuring the percentage analytical recovery at each dilution, based on the measured value of the undiluted serum sample (Table 2). The regression equation was: measured = 0.99 (expected) + 2.4 μg/L (r = 0.99).

Comparison of 41 patients' samples with the Clinical Assays Kit gave the regression equation: Diagnostic Products = 1.0(Clinical Assays + 17.9 μg/L (r = 0.99). Ferritin concentrations measured in 57 ostensibly healthy men and women, 17 patients with iron-deficiency anemia, and 10 patients with liver disease are shown in Figure 1. A cut-off value of 20 μg/L appears to separate normal values from those measured in iron-deficiency anemia. Patients with liver disease exhibit values that are well above those seen in healthy individuals.

Serum or plasma (heparin- or EDTA-treated) can be used for the assay with no significant difference in results.

These preliminary data indicate that the new Diagnostic Products Corp. (125I) Ferritin RIA Kit gives results comparable to those by an earlier kit procedure, both in precision and clinical accuracy. In addition, it offers the advantage of only one incubation period at room temperature.

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Table 1. Within-run Precision for Ferritin in Serum

<table>
<thead>
<tr>
<th>n</th>
<th>X (and SD), μg/L</th>
<th>CV, %</th>
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<tbody>
<tr>
<td></td>
<td>Diagnostic Products</td>
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</tr>
<tr>
<td>19</td>
<td>18 (1.0)</td>
<td>5.7</td>
</tr>
<tr>
<td>20</td>
<td>149 (4.8)</td>
<td>3.2</td>
</tr>
<tr>
<td>20</td>
<td>542 (42.5)</td>
<td>7.8</td>
</tr>
<tr>
<td></td>
<td>Clinical Assays</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>16 (1.4)</td>
<td>9.1</td>
</tr>
<tr>
<td>20</td>
<td>171 (15.3)</td>
<td>8.9</td>
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</table>

Table 2. Linearity Data

<table>
<thead>
<tr>
<th>Dilution</th>
<th>Measured (M)</th>
<th>Expected (E)</th>
<th>(M/E) %</th>
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<tbody>
<tr>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Ferroin, μg/L</td>
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Diluent pH and the Stability of the Thiol Group in Monothioglycerol, N-Acetyl-L-Cysteine, and 2-Mercaptoethanol

To the Editor:

Recently (1) we demonstrated that decreasing the pH of the diluent to 6.5 can stabilize human creatine kinase (EC 2.7.3.2) isoenzymes CK-3 and CK-2 for at least seven days at 4 °C in the absence of a protective sulfhydryl agent. How-