exoenamidase that is hexosaminidase A); noncarriers 63–0%, obligate heterozygotes 30–57%, inconclusive 56–62%, Tay–Sachs patients 0–15%.

This direct gel electrophoretic determination can be done about a third the time required for determination by heat activation, and results are quite comparable, when one considers that different properties of the isoenzymes are being assessed. Electrophoretic determination may be more convenient as an initial screening and, with the use of a pool with activity determined by heat inactivation, provides a measure of the total specific activity. This method can also be used for amniotic fluid or cultured amniotic cells.

References


Bilirubin Interference in the Enzymatic Determination of Bicarbonate in the Olympus DEMAND, Brooks Jackson, James Baldwin, Catherine Leendecker-Foster, Constance Picca, and John Eckfeldt (VA Medical Center, Minneapolis, MN; Dept. of Lab. Med. and Athol., University of Minnesota, Minneapolis, MN 55455; and Northwest Clinical Laboratory, Seattle, VA) (Address correspondence to J. E.)

We have developed a simple modified procedure for enzymatically measuring bicarbonate in the Olympus "DEMAND" analyzer that eliminates the bilirubin interference that we observed. We found that serum bicarbonate concentrations are falsely increased by as much as 13 mmol/L at serum bilirubin concentrations of 300 mg/dL when the test parameters stated in the Worthington procedure manual are used. The degree to which bicarbonate is falsely increased is directly proportional to the total bilirubin concentration, with the bicarbonate being falsely increased by 40 μmol/L per milligram of bilirubin per liter.

By changing the biometric wavelengths from 380/410 to 340/380, increasing the volumes of reagent concentrates from 70 to 100 μL, decreasing sample size from 7 to 5 μL, and diluting the NADH-containing reagent approximately 3.5-fold, interference by bilirubin was essentially eliminated. Linear regression analysis demonstrated excellent agreement (r = 0.971) between bicarbonate results by this modified procedure and those by a potentiometric method used in Beckman's "ASTRA-8" analyzer.

Estimation of Low- and High-Density Lipoprotein Cholesterol, J. Aitken (Dept. Clin. Chem., Prince of Wales Hospital, High St., Randwick, N.S.W., Australia 2031)

Separation of lipoprotein fractions consumes time and serum. After centrifuging samples and measuring the cholesterol of the high-density (HDL-C) and very-low-density (VLDL-C) lipoprotein fractions, I estimated the low-density lipoprotein cholesterol (LDL-C) by difference: LDL-C = total chol. – VLDL-C – HDL-C. I compared this procedure with Friedewald's formula, replacing the factor of 5 for mg% by 2.2 for mmol/L:

\[
LDL-C = \frac{\text{total triglycerides}}{2.2} - \text{HDL-C}
\]

For 223 specimens the correlation coefficient was 0.995 when total triglycerides were <10 mmol/L. With total triglycerides >10 mmol/L, the LDL-C is unlikely to be involved in the current pathophysiological disorder. Type III hyperlipidemia cannot be detected by this method but requires the use of lipid electrophoresis. Electrophoresis of a type III specimen on polyacrylamide gel shows no distinct beta band and an increased pre-beta band, whereas on agarose a broad beta band appears. A type IV hyperlipidemia may give a similar pattern on polyacrylamide, but with total triglycerides greater than total cholesterol, while in type III the ratio of total cholesterol to total triglyceride is approximately 2:1.

In addition, I compared results for HDL-C in serum and plasma, frozen and unfrozen, using precipitation with polyethylene glycol and estimating cholesterol enzymatically. The correlation coefficients for HDL-C were as follows:

<table>
<thead>
<tr>
<th>No. of spec.</th>
<th>Comparison</th>
<th>r</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>S unfroz. vs P unfroz.</td>
<td>0.890</td>
</tr>
<tr>
<td>35</td>
<td>S unfroz. vs S froz. 3 days</td>
<td>0.946</td>
</tr>
<tr>
<td>35</td>
<td>S unfroz. vs S froz. 8 days</td>
<td>0.981</td>
</tr>
<tr>
<td>30</td>
<td>S froz. 8 days vs P froz. 3 days</td>
<td>0.986</td>
</tr>
<tr>
<td>30</td>
<td>S froz. 8 days vs P froz. 8 days</td>
<td>0.993</td>
</tr>
</tbody>
</table>