abnormal enzyme activities persist, and particularly if the activities are very high.

References


E. Nemesanszky
John A. Lott

Dept. of Pathol.
Ohio State Univ. Hospitals
Columbus, OH 43210

Surfactant Phospholipids Need Not Be Extracted from Amniotic Fluid

To the Editor:

Duck-Chong et al. (1) show clearly that extraction of amniotic fluid (AF) with chloroform/methanol is ineffective. They also suggest that the choice of the extraction procedure may affect the results for phospholipid concentration and therefore the cutoff value for evaluating fetal lung maturity. This is especially important when the concentrations of the phospholipids in the pellet after centrifugation at 10,000 × g (2) or the "lamellar body" phospholipids (3) (surfactant) are determined. These lung-specific surfactant phospholipids are separated from "nonsurfactant" phospholipids by centrifugation and are hardly contaminated by inorganic "nonlipid phosphorus" or organic lipoproteins. In those cases, extraction is superfluous, because the surfactant material can be decomposed directly, with subsequent measurement of its phosphorus content.

I found 25-30% more phosphorus in the 10,000 × g pellet material when I decomposed the pellet itself instead of the material extracted by chloroform/methanol. Results of the direct treatment correlated significantly with those obtained after extraction (r = 0.99, n = 7). Therefore I suggest determining surfactant phospholipids from AF as follows: Centrifuge AF (preferably obtained by amniocentesis) at 150 × g. Centrifuge the 150 × g supernate for 15 min at 10,000 × g (using an inexpensive bench-top high-speed centrifuge for 1-mL samples), decompose the "1-mL pellet" material by direct treatment with perchloric acid, then measure the phosphorus content.

I believe that omitting the extraction procedure and standardizing the centrifugation steps will improve the reproducibility between laboratories, and the improved estimate of surfactant phospholipid content will increase the reliability of the prediction of lung maturity.

References


J. Egberts

Dept. Obstet. & Gynecol.
Leiden Univ. Med. Center
Rijnsburgerweg 10
2333 AA Leiden
The Netherlands

Chromium in Plasma and Urine as Measured by Electrothermal Atomic Absorption Spectroscopy

To the Editor:

Determination of chromium has been the subject of much effort recently (1-6), but published reference intervals for concentrations in plasma and urine still vary widely (7). Three main obstacles to accurate chromium measurement have been poor sample-handling techniques, giving rise to sample and reagent contamination; the low concentrations of the element in plasma and urine, which necessitate considerable analytical sensitivity; and interference problems in several sensitive atomic absorption spectroscopic (AAS) methods, caused by inadequate background correction around the spectral line of chromium (1, 2, 5, 6).

Formerly, a deuterium arc lamp (190-350 nm) was used as a background corrector source, but recently the use of a tungsten/halogen lamp (350-900 nm) has greatly improved correction around the chromium line (5, 6).

Here we describe a micro-analytical electrothermal AAS method for directly measuring chromium concentrations in plasma and urine with a Perkin-Elmer Model 5000 AAS with an HGA 500 graphite furnace. Tungsten/halogen background correction, automatic sample injection, and the use of pyrolytically coated graphite tubes, combined with stringent sample-handling procedures, make this method sensitive and precise.

Blood was sampled into tubes containing lithium heparin anticoagulant. The plasma was separated within 20 min. We found the syringes, needles, and collection tubes to be chromium free. Plasma was aspirated with plastic pipettes and stored in plastic tubes prepared as described below. Great care was taken at all stages to avoid hemolysis. Samples were stored at -20 °C.

Urine samples were collected with chromium-free "MSU PAK" collection sets (JMF Supplies Ltd., Sheffield, U.K.) and stored at -20 °C. All samples were analyzed within 48 h of collection.

All tubes were washed three times in water (de-ionized/distilled water used throughout), soaked overnight in dilute (100 mL/L) nitric acid (Aristar; BDH Chemicals Ltd., Poole, U.K.), and washed three times in water before use. Plastic pipettes were rinsed three times in the nitric acid, then three times in water before use.

Samples for analysis by the method of additions were prepared with similarly treated plastic disposable cups and pipette tips.

Our procedures were as follows:

Table 1. Case Findings in Eight Patients with Abnormal Values for CK, LD, and LD-1

<table>
<thead>
<tr>
<th>Age</th>
<th>Sex</th>
<th>CK*</th>
<th>LD*</th>
<th>%LD-1*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronic lymphocytic leukemia</td>
<td>60</td>
<td>F</td>
<td>2.7</td>
<td>4.8</td>
</tr>
<tr>
<td>Hyperemesis</td>
<td>34</td>
<td>F</td>
<td>5.5</td>
<td>6.0</td>
</tr>
<tr>
<td>Hypothyroidism</td>
<td>59</td>
<td>F</td>
<td>8.4</td>
<td>6.2</td>
</tr>
<tr>
<td>Megaloblastic anemia</td>
<td>48</td>
<td>M</td>
<td>3.2</td>
<td>7.8</td>
</tr>
<tr>
<td>57</td>
<td>F</td>
<td>2.8</td>
<td>5.1</td>
<td>41</td>
</tr>
<tr>
<td>63</td>
<td>F</td>
<td>2.9</td>
<td>5.5</td>
<td>42</td>
</tr>
<tr>
<td>Seminoma</td>
<td>24</td>
<td>M</td>
<td>2.1</td>
<td>6.6</td>
</tr>
<tr>
<td>29</td>
<td>M</td>
<td>2.8</td>
<td>4.3</td>
<td>38</td>
</tr>
</tbody>
</table>

*Multiple of upper reference limit for serum.

**Electrophoresis on agarose gel. Reference interval: 23 to 35%.

CLINICAL CHEMISTRY, Vol. 31, No. 1, 1985 171