The authors of the paper in question respond:

To the Editor:
The major thrust of our paper was to report a rapid technique for producing a phospholipid profile of amniotic fluid. Bustos et al. (1), Tsai and Marshall (2), and Hallman et al. (3) have reported the importance of amniotic fluid phosphatidylglycerol (PG) in assessing fetal lung maturity. Many laboratories (4–8), in addition to ours, have recently published methods for determining the presence of PG in amniotic fluid. All of the other methods of determining PG simultaneously with an L/S ratio are quite time consuming.

We admit that the stain reported by Verhoven and Merkus (9) is more suited for quantitation of desaturated lecithins than are copper-based stains. Their stain, however, requires heating the TLC plate to 140 °C for 1 h to make the phospholipid spots visible. Our entire procedure takes little more than 1 h. Their stain also contains sulfuric acid, which some small laboratories try to avoid. The U.S.A. has OSHA requirements for toxic fumes that most clinical laboratories find cost prohibitive.

We found with our method that an L/S ratio of 2+ and the presence of PG was as good an indicator of fetal lung maturity as a much higher L/S ratio alone. We would welcome a rapid stain that would detect the disaturated component of amniotic fluid lecithin. But as we stated in our publication: “The simplicity and speed are definite advantages... when prompt decisions regarding acute cases are required.”

References

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Lithium Interference with Potentiometric Sodium Determination

To the Editor:
Measurement of sodium by direct ion-selective electrode (ISE) methodology is popular, especially for urgent determinations, because whole blood can be used. There are two situations in which lithium ions may interfere with sodium ion determination with ion-selective electrodes.

First, lithium carbonate is used as an antipsychotic drug in psychiatry. Lithium concentrations in the serum of such patients are 0.5–1.0 mmol/L, and urinary concentrations may reach 25 mmol/L (1). Second, lithium heparin is used as an anticoagulant in blood-collection tubes, the concentration being greater when the tube is not completely filled.

We investigated these putative interferences on five different instruments: Corning 902 (Corning Ltd., Halsted CO9 2DX, U.K.), Electrolyte 2 (Beckman Instruments, Brea, CA 92621), IL 502 (Instrumentation Laboratory, Inc., Lexington, MA 02173), Microlyte (KONE OY, SF-02320 Espoo, Finland), and NOVA 1 + 1 (NOVA Biomedical, Newton, MA 02164). Electrolyte 2 is an indirect instrument. Indirect potentiometry means measuring after dilution, so we did not check heparin-treated blood with the Electrolyte 2.

The respective selectivity coefficients (2) for lithium for each of these instruments are: 0.06, 0.21, 0.03, 2.8, and 0.07. The selectivity coefficients are nearly independent of the sodium concentration between 130 and 150 mmol/L for serum. For urine, there is no significant interference of lithium measured with the Corning 902 and the IL 502; the value for the Electrolyte 2 is 0.10, for the Microlyte 5.9, and for the NOVA 1 + 1, 0.06.

Interference of lithium heparin in blood samples was substantial only on the Microlyte, the least-squares regression equation being y = 34x + 135.6, where y = sodium(mmol/L) and x = inverse blood volume to 143 int. units of lithium heparin per milliliter. This interference was independent of the sodium concentration. The experiment was performed with 10-mL Venoven lithium heparin blood-collection tubes (lot no. 780912), from Terumo Europe S.A., Belgium.

We conclude that for the Microlyte lithium caused an increase in apparent serum sodium of 2.8 mmol/L at 1 mmol of lithium per liter. For urine, at a lithium concentration of 25 mmol/L, we found an apparent sodium increase of 2.5 mmol/L for the Electrolyte 2 and of 97 mmol/L for the Microlyte. Interference by lithium in the NOVA 1 + 1 was judged to be clinically insignificant. The experiment with lithium heparin blood-collection tubes showed that only the Microlyte was influenced, but this effect can be limited by adequately filling the blood collection tubes. The tubes from Terumo all contain 143 int. units of lithium heparin, whether for 2-, 3-, 5-, 7-, or 10-mL tubes.

References

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