ntransferase, alanine aminotransferase, and creatine kinase in the serum, before and after addition of the 1,6-hexanediol solution. Addition of 1,6-hexanediol did not affect the measurement of activities of these enzymes.

We found the proposed automated assay method to be reliable for accurate, rapid quantification of LD-1 and LD-2 deenzyme activities in serum.

**Liquid-Chromatographic Assay of Cefuroxime in Plasma, Claudia A. Sanders** (Dept. of Pharmacy Services, University of Michigan Hospitals, Ann Arbor, MI) and Emory S. Moore (College of Pharmacy, University of Texas at Austin, Austin, TX; formerly at Dept. of Pharmacy Services and College of Pharmacy, University of Michigan Medical Center, Ann Arbor, MI)

This modified "high-pressure" liquid-chromatographic method for determining cefuroxime in plasma is easier to use than one previously described by Nilsson-Ehle and Nilsson-Ehle (Clin Chem 1978;24:365-7). Our method requires a smaller sample (250 µL vs 1.0 mL), involves less sample processing, and eliminates costly filtering devices. It is both precise and accurate over a greater concentration range (3-200 µg/mL vs 1-20 µg/mL) than the other method and may be more suited to the assay of concentrations expected in plasma during pharmacokinetic studies.

Two successive 20-s extractions of plasma (250 µL) and the resulting viscous supernate (100 µL) with 200 µL of dimethylformamide yield a clear, deproteinized supernate. After diluting the final extract twofold with water, we injected 40 µL of this onto a C₁₈ bonded reversed-phase column. Use of a mobile phase of methanol/water/glacial acetic acid (28/71/1, by vol) at a flow rate of 2.0 mL/min produces sharp, symmetrical peaks eluted at 5.8 min; the absorbance at 280 nm is recorded. Pre-column filters (Guard-Pak, Waters Assoc., Milford, MA) eliminate the need for individual filtering devices, which may save an average of $1.15 to $1.68 per sample injected.

Six standard curves (three weighed additions of drug analyzed in duplicate on three separate days) were prepared by adding cefuroxime standard to blank plasma samples (final concentration range, 3-200 µg/mL). The CV for the slopes of the curves was 1.7%. Intra-assay variation (CV) for the three days was 2.4%, 0.29%, and 1.5%. Assays of concentrations of 3 µg/mL (0.75 µg/250 µL; lowest concentration measured) showed a mean analytical recovery of 3.1 µg/mL and a CV of 4.2%. Mean analytical recovery for all samples assayed (n = 42) was 98.4%. Values for cefuroxime-supplemented plasma that had been frozen for 30 days at −20 °C were stable and reproducible, as determined in concurrent assays with freshly prepared samples.

**Measurement of CSF Total Protein in the Olympus Demand Analyzer, Susan B. Schotters, Denis O. Rodgerston, James H. McBride, Margaret H. McGinley, and Marilyn Pisa** (Clin. Chem. Lab., Dept. of Pathol., UCLA School of Medicine, Los Angeles, CA 90024)

A modification of the trichloroacetic acid (TCA) turbidimetric method for the measurement of total protein in cerebrospinal fluid (CSF), originally described by Meulemans (1), was developed for use in the Olympus Demand Analyzer Model AU 500 (Cooper Biomedical Inc., Malvern, PA 19355). To obtain a final 30 g/L working concentration of TCA in the cuvet with the CSF sample, we programmed the Demand appropriately for sample volume, reagent volume, primary and secondary wavelengths, and timing. We used a 195 g/L TCA reagent (Mallinckrodt Inc., Paris, KY 40361), sample volume 15 µL, reagent volume 40 µL, primary wavelength 600 nm, secondary wavelength 660 nm, first photometer #0, second photometer #4, assay type "end," and the reaction direction positive (+). The instrument was calibrated once every 24 h with "Flouzyme" (Cooper Biomedical Inc.) diluted 100-fold in saline. Three concentrations of calibrator material were used for assessment of within-run precision, one for assessment of between-run precision. For the former, at 321 mg/L the CV was 7.8%, at 613 mg/L it was 5.9%, and at 2.2 g/L it was 1.5%. For the latter, at 602 mg/L the CV was 6.4%. The standard curve was linear from 0.2 to 2 g/L. Protein measured in 50 CSF samples in the ASTRA-8 (Beckman Instruments, Inc., Brea, CA 92621) by a rate biuret method (2) was compared with results from the Demand. The correlation was Demand = 0.9243 Astra − 52 mg/L, r = 0.9636. We find this method to be stable and a very useful addition to our Demand test menu.

**References**


**Screening for Cannabinoids in Urine with the Technicon RA-1000 Analyzer, Donald J. Cannon and Lonnie Blankenship** (Toxicol. Lab., John L. McClellan Veterans Administration Medical Center, North Little Rock, AR 72116)

We adapted the EMIT dau Cannabinoid 20 Assay (Syva Co., Palo Alto, CA) to the RA-1000 analyzer (Technicon Corp., Tarrytown, NY) equipped with version 2.5 software. We then compared results from this system with those from the EMIT kit run with the Syva LP-6500. For the RA-1000, assay components were prepared as described in the kit insert. Working reagents A and B were prepared by mixing one part of the reconstituted reagents with nine parts of EMIT buffer solution. The RA-1000 was programmed as described in Technicon publication SQ4-0817D85 (Syva EMIT dau Cannabinoid 100 Assay) except that the CAL FACT was set at 2667. Analysis conditions used with the LP-6500 were as described in the package insert and instrument manual. We routinely assay the Syva calibrators, a negative control (Utak Labs, Inc., Canyon Country, CA), and a positive control (Contox, Kaulson Laboratories, W. Caldwell, NJ) with each batch of patients’ samples. The Syva low calibrator is assayed after every ninth patients’ sample.

Intra-run CV (n = 21) for the Syva calibrators run in the RA-1000 was 0.5% (negative), 0.3% (low), and 0.5% (medium); for the controls it was 0.7% (negative) and 1.2% (positive). Inter-run CV, measured on 10 days, was 3.5% (negative), 3.2% (low), and 3.0% (medium) for the Syva calibrators, 3.1% for the negative control, and 2.7% for the positive control.

Comparison of 182 clinical samples (121 negative, 61 positive) with results from both methods showed 93% agreement for the negative and 98% for the positive samples. Working reagents were stable for at least two weeks. With these procedures, the RA-1000 can generate 120 test-results per hour, and >400 tests can be run with a single 100-test EMIT kit.