serious toxicity other than some nausea. Continued treatment with intravenous theophylline resulted in compensation of her respiratory difficulties.

In its literature, Clinical Assays mentions that 8-chlorotheophylline may interfere. Dimenhydrinate is the 8-chlorotheophylline salt of the antihista

taminic diphenhydramine. In addition to the theophylline peak on chromatography, there was another peak present, which was consistent with 8-
chlorotheophylline.

Evidently, the 8-chlorotheophylline in dimenhydrinate interferes positively with the Clinical Assays theophylline assay. It is surprising that this interference is not more commonly seen, because dimenhydrinate is often prescribed for nausea, a symptom of mild theophylline toxicity.

Edward Hahn
Pathology Lab.
St. Josephs Hospital
Savannah, GA 31406

Modified Acetonitrile Protein-
Precipitation Method of Sample
Preparation for Drug Assay by
Liquid Chromatography

To the Editor:

Serum samples are commonly prepared for drug assay by liquid chromatography by mixing equal volumes of serum and acetonitrile to precipitate the proteins, and centrifuging. The supernate is injected directly onto the analytical column (1, 2). Proteins may be incompletely precipitated, and some (3, 4) have recommended that the relative volume of acetonitrile be doubled, and a larger sample volume be injected.

We find that by adding electrolyte to serum-acetonitrile mixtures a phase separation occurs, yielding an upper layer that is primarily acetonitrile. It occurred to us that this might be an efficient means of extracting drugs from serum. Dilution of the specimen could be avoided and an even cleaner solution would be available for analysis. This approach has now been successfully tested in our laboratory for several analgesic and anti-convulsant drugs, in two different analytical procedures.

The analgesic procedure was designed to analyze for acetaminophen, salicylic acid, and acetylsalicylic acid. The anti-convulsant procedure was essentially that of Kabra et al. (2) and the drugs tested were ethosuximide, primidone, phenobarbital, phenytoin, carbamazepine, and 5-ethyl-5-p-tolubarbituric acid (internal standard). We prepare specimens for analysis by mixing 1 mL of serum with 1 mL of acetonitrile containing the internal standard. To this we add about 0.4 g of a finely powdered mixture of sodium bisulfate - H2O and sodium chloride (1/4 by wt), mix vigorously on a rotary mixer for 1 min, centrifuge, and inject the clear upper phase directly onto the analytical column for analysis. We made sodium bisulfate part of the electrolyte mixture to yield a sufficiently acid pH during the phase separation to permit quantitative recovery of salicylic acid. Linearities and recoveries for the above drugs have been examined and are quite acceptable. Within-run reproducibility for the anti-convulsants gave CVs ranging from 1 to 2%.

This procedure modification is rapid and convenient. If necessary, the pH in the phase separation is easily controlled by substituting appropriate buffering salts for the sodium bisulfate. The upper phase is mostly acetonitrile, so the sample is easily concentrated by evaporation.

This general technique appears applicable wherever the drugs involved are lipophilic enough to yield favorable and reproducible partition coefficients between the two phases, if the drug concentrations are adequate for detection.

References

James C. Mathies
Margaret A. Austin
Chem. Lab.
Saint Joseph Hosp.
1835 Franklin St.
Denver, CO 80218

IgD-λ Myeloma with Separate
Heavy- and Light-Chain M-
Components

To the Editor:

We read the interesting Letter (1) about a case of IgD paraproteinaemia, in which one serum M-component reacted only with anti-δ but not with anti-light chain antisera, and the other monoclonal protein fraction consisted of free light chains. The possibility of δ heavy chain disease (HCD) reportedly was excluded by ultracentrifugation and by immunoelectrophoresis in sodium dodecyl sulfate. We have recently discovered a case of δ HCD, in whom the absence of a light chain moiety was documented by several techniques (2). We present here a new case of IgD-λ myeloma, which shows similar paraprotein characteristics to those described by Vladutiu (1). In particular, these kinds of cases necessitate discussion of the basic classification and criteria of HCD.

Our patient, a 68-year-old man, presented with a typical myeloma with multiple osteolytic lesions, heavy marrow infiltrations of pathological plasmacytoid cells, serum IgD M-component, decreased concentrations of polyclonal immunoglobulins (IgG, IgA, IgM), and light-chain-uria as well. Despite cytostatic chemotherapy, the disease proved fatal in nine months.

In repeated serum protein electrophoresis a peculiar pattern was recorded. A prominent M-component was seen at the anodic end of γ-region and a weaker one in the β1-region (Figure 1).