



Fig. 1. Effect of some surfactants on the absorbance of the composite reagent Hg(II)-TPTZ-Fe(II), on standing at room temperature

See text for details

Stability of the Composite Solution [Mercury(II)-TPTZ-Iron(II)] Used for the Automated Determination of Serum Chloride

To the Editor:

Recently de Jong et al. (1) proposed an improved automated method for determination of serum chloride, based on the reaction between chloride and the colorless complex of mercury(II) with 2,4,6-tripyridyl-*s*-triazine (TPTZ) in the presence of iron(II). Preferential complexation of mercury(II) with chloride releases an amount of TPTZ that reacts with iron(II) to form an intensely blue complex.

Upon testing this method, it soon

came to our attention that the absorbance of the composite reagent was gradually increasing (due to the partial formation of iron(II)-TPTZ complex), making necessary a day-to-day re-adjustment of the baseline, thus reducing the accuracy and sensitivity of this method. We have found that the presence of Brij-35 surfactant in the composite solution causes this problem.

We prepared the composite solution exactly as described in reference 1, except we omitted the addition of Brij-35 before the final dilution. The resulting solution was divided among four bottles. To three of these bottles the following surfactants were added to give an approximate final 0.6 g/kg concentration:

(bottle a) Brij-35 (Technicon); (bottle b) Tergitol NPH (BDH); (bottle c) Triton X-100 (Merck). No surfactant was added to the fourth bottle (d). All bottles were kept at room temperature.

The absorbances of all solutions were measured with a Beckman DK-1A double-beam spectrophotometer, at 600 nm, vs water, in a 1.000-cm cell, for a period of about three months. The results are illustrated in Figure 1.

Whereas a gradual increase of absorbance is obvious for all solutions containing surfactants, the absorbance of solution in bottle d remained practically stable. Probably a slow reduction or complexation of mercury(II) by the surfactants takes place, causing a subsequent release of TPTZ, which reacts with iron(II) to increase the overall absorbance of the solution.

We suggest that users of this method delete the surfactant in preparing the stock of the composite solution, but add the surfactant only to the portion of the composite solution that is to be used each day.

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Reference

1. De Jong, E. B. M., Goldschmidt, H. M. J., van Alphen, A. C. C. M., and Loog, J. A., An improved automated method for serum chloride. *Clin. Chem.* **26**, 1233-1234 (1980). Letter.

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