Glycerol-like contamination of commercial blood sampling tubes

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SUMMARY Commercial blood sampling tubes have been found to be heavily contaminated with a glycerol-like substance. Thus, use of these tubes may lead to falsely elevated plasma concentrations of glycerol.

SUPPLEMENTARY KEY WORDS plasma glycerol · Vacutainers · plasma triglycerides

IN VIEW OF the widespread use of cleaned, packaged, and stoppered test tubes (Vacutainers, purchased from Becton-Dickinson & Co., Rutherford, N.J.) for clinical studies, we wish to draw the attention of investigators utilizing these tubes to possible serious chemical contamination by a glycerol-like material. Blood samples drawn in heparinized tubes (15-ml green top, No. 3218KA, or 7-ml green top, No. 3204KA) have been found to contain appreciable and variable quantities of material reacting as glycerol when analyzed by an enzymatic fluorometric procedure (1). In fasting man, normal plasma glycerol concentrations are 0.03–0.14 mM (2). When 5.0 ml of doubly distilled water was added to the 15-ml type 3218KA tube, the concentration of the glycerol-like material (calculated as glycerol) was 0.75–1.90 mM (mean ± SEM was 1.21 ± 0.12 mM; 15 tubes, from three separate lots). Expressed in terms of the quantity of glycerol-like material per tube, the mean was 6.05 μmoles. Thus, when 5.0 ml of blood are introduced into these tubes, contamination with the glycerol-like material amounts to 10–40 times the amount of glycerol normally present.

Furthermore, some laboratories currently employ the enzymatic hydrolysis of plasma triglycerides (3, 4) and the subsequent assay of liberated glycerol as the means of determining plasma triglyceride concentrations. It is apparent that heavy contamination of blood samples by the glycerol-like material from the test tube and stopper will produce falsely and grossly elevated levels for this assay as well.

Recently the labels on individual cartons of tubes of types 3204QS (EDTA), 3200 (no additive), and 3204KA (sodium heparin added) have indicated that glycerine is used as the stopper lubricant. However, no such information is supplied on the canisters in which types 3218KA (15 ml, heparin) or 3204KA (7 ml, heparin) are supplied.

In view of these findings we urge that investigators interested in the assay of glycerol or of triglycerides screen all apparatus used in the collection of blood samples for contamination with glycerol or glycerol-like material.

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