

Contamination of plasma samples by plasticizers: another source

M. T. ROSSEEL*, M. G. BOGAERT, *Heymans Institute of Pharmacology, University of Gent Medical School, Gent, Belgium*

More and more reports appear about the presence of phthalate ester plasticizers in biological material; plasticizers can e.g. migrate in blood during storage in plastic packs (Persiani & Cukor, 1975) or during hemodialysis (Ono, Tatsukawa & Wakimoto, 1975). It is however increasingly appreciated that, when small quantities of plasticizer are found in a biological sample, contamination during analysis should be excluded, and various sources of contamination during analysis (polyethylene tubing, cork, tygon tubing, etc.) have

chromatogram, masking completely the peak of isomannide dinitrate that is added as internal standard. G.c.-m.s. examination showed a mass peak of m/e 149, that can be attributed to a protonated phthalic anhydride (Oswald, Albro & McKinney, 1974).

It was soon realized that the contamination was only present when the samples were obtained with a plastic syringe. This is illustrated in Fig. 1, which shows chromatograms of 2 samples: after insertion of the needle into the vein, the first 10 ml of blood was

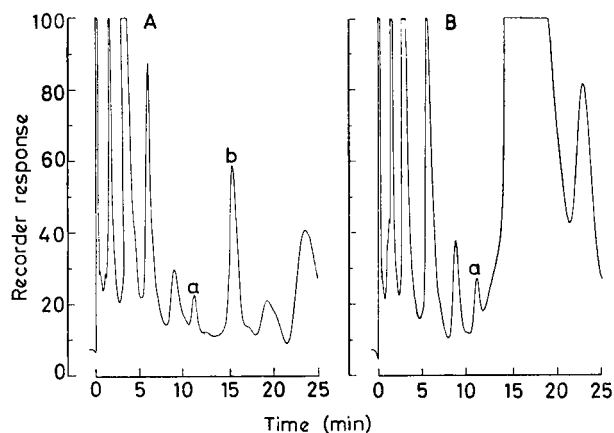


FIG. 1. Gaschromatograms of extracted plasma obtained in a volunteer, 2 h after oral intake of isosorbide dinitrate; before extraction, isomannide dinitrate was added as internal standard. A: blood collected directly into a test tube. B: blood collected with a plastic syringe, and transferred immediately to a test tube. a—Isosorbide dinitrate, b—Isomannide dinitrate.

been described (Giam, Chan & Neff, 1975); Cotham & Shand (1975) found the stopper of a collecting tube to be the source of spuriously low values of plasma propranolol.

We recently were faced with this possibility during the gas liquid chromatographic analysis, with electron capture detection, of plasma concentrations of isosorbide dinitrate in man (Rosseel & Bogaert, 1973). In some samples, an enormous peak appeared on the

collected directly from the needle into a test tube; the second 10 ml sample was then taken up from the same needle into a sterile plastic syringe (Terumo Disposable Syringe, 10 ml) and immediately transferred to a second test tube. The plasticizer contamination undoubtedly takes place during the brief contact of the blood with the plastic syringe.

We think it is important to be aware of the fact that contamination of biological samples with plasticizers can occur already before the sample reaches the analysis room.

June 1, 1976

* Correspondence.

REFERENCES

- COTHAM, R. H. & SHAND, D. (1975). *Clin. Pharmac. Ther.*, **18**, 535-538.
 GIAM, C. S., CHAN, H. S. & NEFF, G. S. (1975). *Analyt. Chem.*, **47**, 2225-2229.
 OSWALD, E. O., ALBRO, P. W. & MCKINNEY, J. D. (1974). *J. Chromat.*, **98**, 363-448.
 ONO, K., TATSUKAWA, R. & WAKIMOTO, T. (1975). *J. Am. med. Assoc.*, **234**, 948-949.
 PERSIANI, C. & CUKOR, P. (1975). *J. Chromat.*, **109**, 413-417.
 ROSSEEL, M. T. & BOGAERT, M. G. (1973). *J. pharm. Sci.*, **62**, 754-758.