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Letter to the Editor

Quantitative analysis of (3-methoxy-4-sulphooxyphenyl)ethylene glycol (MHPG sulphate) in human urine

Sir,

We have read with interest the communication by Eichholtz et al. [1] which appeared recently in this journal. The authors describe a method for measuring (3-methoxy-4-sulphooxyphenyl)ethylene glycol (MHPG sulphate) in urine using gas—liquid chromatography (GLC) and state that this method is an improvement on that developed several years previously by ourselves [2]. We feel that the criticisms of the earlier work given by Eichholtz et al. [1] in justifying this statement are not valid.

Firstly, our procedure uses combined gas chromatography—mass spectrometry (GC—MS) with selected-ion monitoring, a very sensitive technique which is much more specific than GLC alone. Secondly, we synthesised a deuterated analogue of MHPG sulphate for use as an internal standard in the GC—MS assay [2]. This is an ideal internal standard in that it parallels as closely as is possible losses of MHPG sulphate through the analytical procedure. Thus, overall recovery, as long as it is not so low as to limit the sensitivity of the assay, becomes irrelevant. The method of Eichholtz et al. [1] does not incorporate an internal standard and a standard curve is not constructed. Instead, exogenous MHPG sulphate is added to duplicate urine samples as a recovery standard. Thirdly, we have made a detailed study of the reaction of a range of sulphate esters with trifluoroacetic anhydride, pentafluoropropionic anhydride and heptafluorobutyric anhydride and have found that aromatic sulphates readily form perfluoroacyl derivatives of the parent alcohol in quantitative yield [3]. Thus, MHPG sulphate can be readily converted to a perfluoroacyl derivative of MHPG without the need for an enzymatic hydrolysis step, which can often be inefficient and introduce impurities.

We feel that the superiority of the earlier method is demonstrated by the fact that while the procedure of Eichholtz et al. [1] has a standard deviation of ± 20%, our method [2] gives a standard deviation of ± 2%. The time taken for each of the analyses would appear to be about the same (2—3 days) and the only obvious advantage of the method of Eichholtz et al. [1] is that less expensive analytical equipment is required.

Eichholtz et al. [1] report that they developed a new assay for MHPG

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sulphate in urine because they believe that this conjugate is formed predominantly in the central nervous system and may therefore be used as a measure of central catecholamine turnover. We [4] and other groups have shown this theory to be incorrect.

Department of Clinical Pharmacology,
Royal Postgraduate Medical School,
Hammersmith Hospital,
Ducane Road, London W12 0HS (U.K.)

S. MURRAY*
D.S. DAVIES

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