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Letter to the Editor

A quantitative method for the simultaneous determination of carbamazepine, mephenytoin, phenylethylmalonamide, phenobarbital, phenytoin and primidone in serum by thin-layer chromatography. Additional comments to the analysis of carbamazepine-10,11-epoxide

Sir,

In a previous note [1] we described a quantitative method for measuring antiepileptic drugs in serum by thin-layer chromatography (TLC). While checking for substances interfering in the method, we found that phenylethylmalonamide (PEMA), a metabolite of primidone [2], has an R_F value similar to that of carbamazepine-10,11-epoxide. This means that the four patients in our carbamazepine study [1] who were given both carbamazepine and primidone, have to be excluded. The amended values will therefore be: mean carbamazepine concentration in 27 sera, 4.2 mg/l with a range 1.3–7.3; and for the

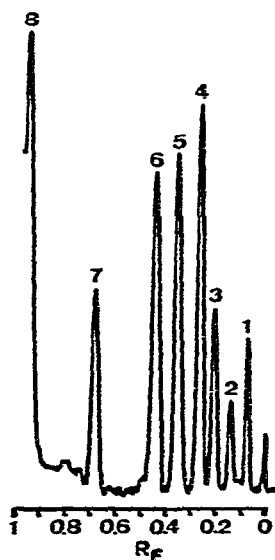


Fig. 1. TLC separation of a serum extract containing 2.5 μg of caffeine (3) and carbamazepine (4), and 5.0 μg of primidone (1), phenylethylmalonamide (2), phenytoin (5), phenobarbital (6) and mephenytoin (7). Peak 8 is the solvent front. Developing solvent: chloroform–acetone (87:13). In situ scan of reflectance at 215 nm.

epoxide metabolite, 0.9 mg/l with a range 0.3–1.7, which is 21.4% of the carbamazepine concentration (previously determined, 26.2%).

PEMA was kindly donated by ICI-Pharma, Luzern, Switzerland. A working standard solution was prepared containing 12.5 mg each of caffeine and carbamazepine, together with 25 mg each of mephenytoin, PEMA, phenobarbital, phenytoin and primidone, per 100 ml of ethanol. This standard was added to drug-free serum, extracted and chromatographed as described previously [3, 4]. A scan of this thin-layer separation is shown in Fig. 1. PEMA does not exhibit any absorption maxima between 200 and 300 nm, only increasing absorption towards 200 nm. The recovery of PEMA added to serum was found to be 61%.

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