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# Comparison of fluorescence polarization immunoassay and high performance liquid chromatography for the quantitative determination of phenytoin, phenobarbitone and carbamazepine in serum.

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**Abstract**

The Abbott TDx fluorescence polarization immunoassay (FPIA) system has been evaluated and compared with well-established high performance liquid chromatography (HPLC) for the determination of three anticonvulsant drugs: phenytoin, phenobarbitone and carbamazepine. These assays were evaluated for precision, calibration curve stability, specificity and accuracy. Within-run precision studies using control samples (n = 15) in the subtherapeutic, therapeutic, and toxic concentrations, resulted in coefficients of variation in the range of 1.79-3.99% (FPIA) and 1.16-2.52% (HPLC), respectively. Between-run precision ranged from 2.32-6.34% for FPIA and from 2.04-3.38% for HPLC. Comparison of 122 patient samples assayed with both methods indicated an extremely good analytical correlation (r = 0.96) for all three comparisons. The FPIA method offers significant advantages in calibration curve stability while maintaining accuracy and precision comparable with those of established HPLC procedures.