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CHROMATOGRAPHY/GAS CHROMATOGRAPHY

SIRIKANYA RUANGSRI : SEPARATION OF METHAMPHETAMINE AND
DIMETHYLAMPHETAMINE IN SEIZED DRUGS BY THIN LAYER CHROMATOGRAPHY (TLC)
AND GAS CHROMATOGRAPHY (GC). THESIS ADVISORS : SIRIRAT CHOOSAKOONKRIANG,
Ph.D AND SUPACHAI SUPALAKNARI, Ph.D . 78 pp.

Currently, the dimethylamphetamine (DMA) has been increasingly found in seized drugs. It is thus necessary to examine the methods of separation and determination of DMA in the seized drugs. In this work, the methamphetamine (MA) and DMA were separated and analysed by Thin Layer Chromatography (TLC) and Gas Chromatography (GC). The drug sample was extracted by using methanol as a solvent prior to analysis.

In TLC study, it was found that the separation of MA, DMA and Caffeine can be achieved by using a solvent system of ethyl acetate : methanol : ammonia (85:10:6,v/v/v) as a mobile phase and using 1% Fast Black K Salt as a plate developer. For 30 samples analysed, the average R_f values of MA, DMA and caffeine are 0.5315, 0.7629 and 0.6857 respectively.

In the GC analysis, a flame-ionization detector was used with a HP-5 capillary column (0.32 mm i.d. x 30 m, 0.25 μ m film thickness). The MA and DMA peaks can be separated with a resolution greater than 1.5 . Linearities of the calibration curves for MA, DMA and caffeine were obtained with acceptable results ($R^2 > 0.9995$ in all cases). Limits of detection were determined for the three analytes as follows MA: 0.0489 g/L, DMA: 0.0431 g/L and caffeine: 0.0462 g/L. Limits of quantitation were 0.0503 g/L for MA, 0.0439 g/L for DMA and 0.0527 g/L for caffeine. GC analyses of 20 samples of seized drugs revealed that the contents of MA, DMA and caffeine were in the ranges of 19.65-34.65 mg/tablet, 11.70-34.30 mg/tablet and 24.90-52.90 mg/tablet respectively.