B49 Simultaneous High Performance Thin Layer Chromatographic Determination of Heroine, Morphine, Cocaine, and MDMA

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The goal of this presentation is to propose a HPTLC (High Performance Thin Layer Chromatohraphy) technique for identifying major psychoactive drugs (morphine, heroine, cocaine, MDMA) on the same plate with a well separated mobile phase.

This presentation will impact the forensic community by discussing a proposed HPTLC method shown to be useful to detect related drugs simultaneously from samples and could be easily quantified densitometrically. Furthermore this method will impact the forensic science community by assisting police investigations in classifying street drugs according to their ingredients to find the manufacturer.

The capability of the technique was tested with authentic biological samples. This method provides an advantage for routine forensic analysis.

Background: These psychoactive drugs are frequently abused as all over the world and in our country. Decreasing prices for drugs may indicate increased availability. Recently, parents have admitted suspicious substances found in their children's possessions to our institute for identication. These situations may confirm our opinion as told above. Immunoassay and Thin Layer Chromatography (TLC) are most common screening methods. Each method has advantages and disadvantages. The traditional thin-layer chromatography (TLC) is an indispensable technique for forensic narcotic and systematic toxicology laboratory analysis for qualitative determinations. HPTLC is a new modern analytic instrument for semi-quantitative analysis based upon TLC. It assures quantitative determinations with direct densitometric measurements of chromatographic spots *in situ* on the plate. Here, a method for the drug determination in street samples with a HPTLC Scanner Photodensitometer and a sample applicator is presented. The HPTLC method has proven to be rapid, sensitive and accurate for quantitative determinations of these drugs in street and biological samples.

Experimental Method: Chromatographic separation was developed with Toluene:Acetone:Ethanol:NH_3(25%) (67:25:5:3) mobile phase using an automated HPTLC system. F254 10 cm×20 cm on glass, layer thickness 0.1 mm was used. All the standards were commercially pure products. All the solvents were purchased as analytical grade. Samples were applied with an automated HPTLC sampler. All standard solutions were prepared by dissolving 2 mg of reference substances with 1mL methanol. Standard solutions of related drugs were applied to the same plate in incremental amounts (5–2000 ng), checked visually, to obtain the limit of detection (LOD) of the technique.

Conclusions: Under optimized HPTLC conditions, morphine, heroine, cocaine, MDMA were baseline separated with the Rf of 0.14, 0.45, 0.80 and 0.35, limit of detection values are 25, 25, 5, 10 ng/µL, respectively. In conclusion, the proposed HPTLC method showed to be useful to detect related drugs simultaneously from the samples and could be easily quantified densitometrically. Furthermore this method may be useful for police investigation by classify the street drugs according to their ingredients to find the manufacturer.

HPTLC, Simultaneous Determination, Major Drugs

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