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SURUSAWADEE LOHWITHEE: DETERMINATION OF STIMULANTS AND OTHER DRUGS IN URINE BY HIGH PERFORMANCE LIQUID CHROMATOGRAPHY. THESIS ADVISORS: PRAPIN WILAIRAT Ph.D., JUWADEE SHIOWATANA Ph.D. 112 p. ISBN 974-661-803-2

Amphetamine and related compounds belong to a major class of central nervous system stimulants that have been abused both in sports and in society in general. Reversed-phase liquid chromatography was developed for separation of amphetamine, methamphetamine and 3,4-methylenedioxymethamphetamine using precolumn derivatization with 6-aminoquinolyl-*N*-hydroxysuccinimidyl carbamate (AQC) in acetonitrile-0.2 M borate buffer (pH 8.8) containing 5 mM disodium-EDTA at room temperature. Two reversed-phase columns were employed; Nova-Pak C-18 (150 mm x 3.9 mm i.d.) and Purosphere RP-18 (244 mm x 4.0 mm i.d.). The separation of AQC-stimulants was achieved by gradient mode using an acetate-phosphate buffer, acetonitrile and water. Detection was by spectrofluorometry at excitation wavelength of 240 nm and emission wavelength of 410 nm. The results showed that Nova-Pak C-18 column needed a separation time of 27 minutes whereas Purosphere RP-18 required 22 minutes.

Different variables that affect derivatization such as solvent and mole ratio of AQC to stimulants were studied. The system was applied to the analysis of stimulants in urine samples. A liquid – liquid extraction with tertiary-butyl methyl ether at alkaline condition, using diphenylamine as internal standard, was used for sample preparation prior to HPLC analysis.