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MALIWAN AMATATONGCHAI : DETERMINATION OF OXALATE IN URINE AND PLASMA SAMPLES BY ION CHROMATOGRAPHY. THESIS ADVISORS: JUWADEE SHIOWATANA Ph.D., SOMNUEK DOMRONGKITCHAIPORN Ph.D., NOUWARATN SUKHAPANTH Ph.D. 120 p.

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The oxalate concentration of body fluids is an indicator for various bodily disorders, especially the growth of kidney stones. An accurate analytical result of urinary and plasma oxalate is an important tool for diagnosis and evaluation of treatment of patients with the above disorder. Ion chromatography (IC) equipped with column suppressor was developed for separation of oxalate. Using a Dionex AS10A column and 9/7 mM of Na_2CO_3/$NaHCO_3$ solution as a mobile phase, separation was achieved and oxalate was detected by conductivity detector. The effect of interferences on the separation behavior was investigated. Interfering compounds in the urinary samples were eliminated by passage of the samples through a preparative C_{18} cartridge before direct injection to IC. For plasma sample, online preconcentration by utilizing column switching technique was performed. The procedure of sample preparation for plasma was deproteinization with Amicon membrane and acetronitrile reagent. Parameters that affect preconcentration system such as volume of eluent used in conditioning, washing and stripping steps were optimized. Two deproteinization methods i.e. by acetronitrile and by Amicon membrane were compared for their effectiveness. The system was applied to the analysis of oxalate in plasma samples. Plasma samples after deproteinization with Amicon membrane gave satisfactory results. Plasma samples deproteinized with acetronitrile required sample pH adjustment to 3.5 - 5.6 to enhance the ability of oxalate to quantitatively retain on the concentrator column.