

Solid Phase Extraction of Basic Drugs from Biological Matrices using Strata SCX

SPE Cartridge: Strata SCX, 500 mg / 3 ml. Phenomenex Part Number 8B-S010-HBJ

Introduction:

This method relies upon using the mixed mode properties of the SCX bonded phase. The SCX sorbent is a benzene sulfonate attached to the surface of the silica particle by a propyl chain. The sulfonic acid provides the cation exchange interaction, while the benzene ring and propyl spacer provide non-polar interactions. For elution, it is necessary to use basic conditions (ammonia) in order to neutralize the charged analytes.

Specimen Preparation:

Dilute urine (1 – 3 ml) is made acidic by dilution with an equal volume of 10mM phosphoric acid, pH 3.4

Condition:

1. 3 ml methanol
2. 1 ml D.I. water
3. 1 ml 10 mM phosphoric acid, pH 3.4

Load:

Apply the sample at a rate not to exceed 5 ml / minute. Allow air to pass through the cartridge for 30 – 60 seconds.

Wash:

1. 2 ml 10 mM phosphoric acid, pH 3.4
2. 1 ml 0.1 M acetic acid
3. 2 ml methanol

Dry:

Apply full vacuum to the cartridges for 30 – 60 seconds.

Elute:

With the vacuum turned off, apply 3 ml of methanol:NH₄OH (97:3) and slowly aspirate through the cartridge at a rate not to exceed 3 ml / minute.

Analysis:

The extract of this method is volatile making it easy evaporate and reconstitute in a solvent compatible with the analytical system. Be aware that volatile bases such as amphetamine/ methamphetamine can be lost during evaporation if not careful.

Note: This SPE protocol is transcribed from Journal of Analytical Toxicology, Vol. 14, May/June 1990. Pg. 154 – 159. “Rapid Screening for 100 Basic Drugs and Metabolites in Urine Using Cation Exchange Solid-Phase Extraction and High Performance Liquid Chromatography with Diode Array Detection”; Authors: B. Logan, Stafford, et. al.