

Monitoring Antiarrhythmic Drugs and Tricyclic Antidepressants by HPLC

SUPELCOSM LC-PCN columns are conditioned for both antiarrhythmic and tricyclic antidepressant drug analyses.

Key Words:

- antiarrhythmics • tricyclic antidepressants • HPLC
- SUPELCOSM column

The rate at which a particular therapeutic drug is metabolized varies among individuals. Drug levels must be monitored in each patient to ensure that an effective level is maintained. Two classes of therapeutic drugs—antiarrhythmics and tricyclic antidepressants—can be analyzed easily and reliably on SUPELCOSM LC-PCN HPLC columns. LC-PCN columns are filled with cyano (nitrile) polar bonded phase packings, and are conditioned for stable drug retention.

Standard cyano phase columns should be conditioned for analyses of antidepressant drugs by passing about 1 liter of mobile phase through the column (or by recycling smaller volumes). The column must be conditioned similarly with the appropriate mobile phase prior to analyzing cardiac drugs. To simplify preparations for analyses of these two drugs, Supelco offers SUPELCOSM LC-PCN columns filled with a pre-conditioned cyano packing. These columns are ready for analyzing antidepressant or antiarrhythmic drugs after only 10 to 20mL of mobile phase are passed through them.

Four of the most commonly prescribed types of antiarrhythmic cardiac drugs — procainamide, quinidine, lidocaine, and the disopyramides — are separated easily on a SUPELCOSM LC-PCN column with a simple isocratic mobile phase (Figure A). If the mobile phase is modified to include methanol and less phosphate buffer, the common tricyclic antidepressants can be separated rapidly on the same column (Figure B). Convenient internal standards for quantitative analyses have been included in both analyses (p-chloro disopyramide with antiarrhythmics and protriptyline with tricyclic antidepressants). A single SUPELCOSM LC-PCN column, therefore, is useful for monitoring both of these classes of therapeutic drugs.

We consider the isocratic separation of antiarrhythmic drugs on a SUPELCOSM LC-PCN column to be more convenient than the corresponding separation on a SUPELCOSM LC-8-DB column,

Figure A. Antiarrhythmic Drugs

Column: SUPELCOSM LC-PCN, 15cm x 4.6mm ID, 5µm particles
Cat. No.: 58377
Mobile Phase: acetonitrile:water (0.45mL of 45N H₃PO₄/L, pH 7.0), 50:50 (v/v)
Flow Rate: 2mL/min
Det.: UV, 215nm
Inj.: 10µL containing 1-26µg each drug

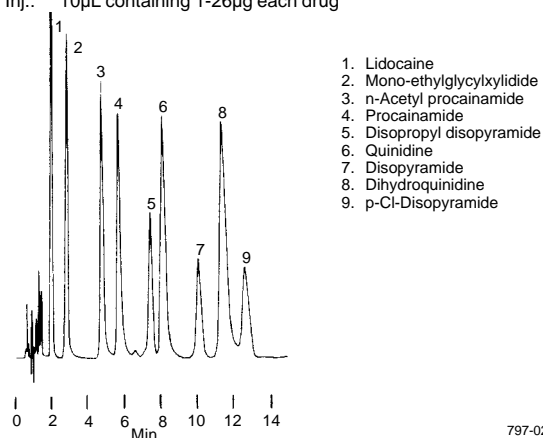


Figure B. Tricyclic Antidepressants

Column: SUPELCOSM LC-PCN, 15cm x 4.6mm ID, 5µm particles
Cat. No.: 58377
Mobile Phase: acetonitrile:methanol:0.01M K₂HPO₄, pH 7.0, 60:15:25 (v/v/v)
Flow Rate: 2mL/min
Det.: UV, 215nm
Inj.: 10µL containing 1-2µg each drug

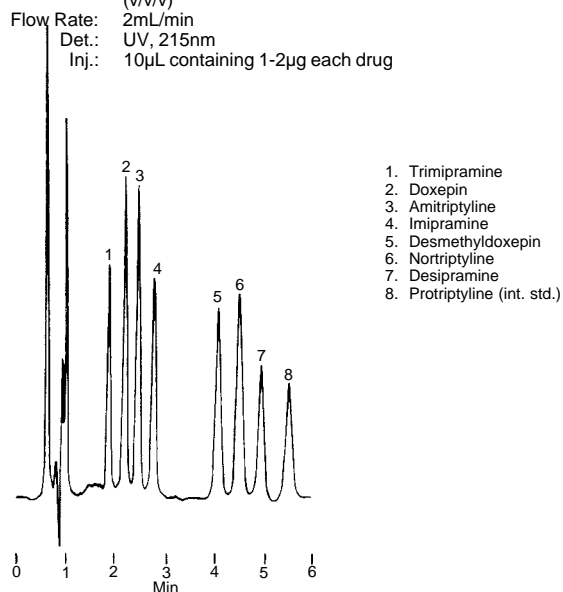
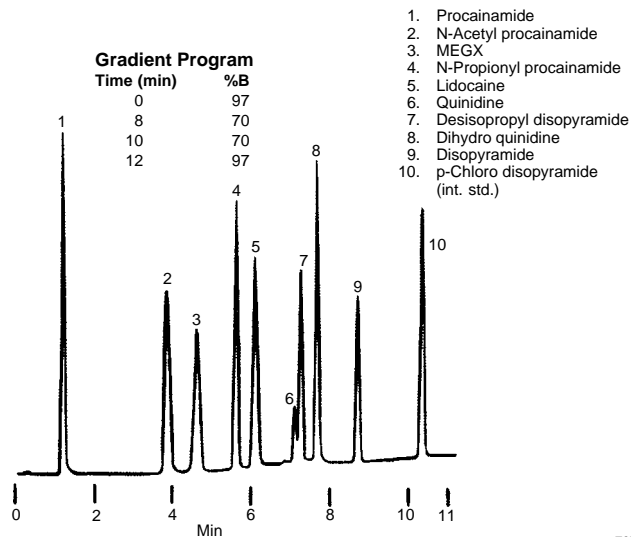


Figure C. Antiarrhythmic Drugs by Gradient Elution

Column: **SUPEL COSIL LC-8-DB, 5cm x 4.6mm ID, 5µm particles**
 Cat. No.: **58344**
 Mobile Phase: A = acetonitrile
 B = 100mM K₂HPO₄ (pH to 3.0 with HPO₄)
 Oven: 30°C
 Flow Rate: 2mL/min
 Det.: UV, 215nm
 Inj.: 0.01-0.1mg/mL each drug in 10µL



because the latter analysis requires gradient elution. Analyses on 5cm SUPEL COSIL LC-8-DB columns are more convenient than those on conventional octyl-phase columns, however, because analysts can separate the antiarrhythmic drugs without adding ion pairing reagents to the mobile phase (Figure C).

The single conditioning treatment for SUPEL COSIL LC-PCN columns prepares these columns for either antiarrhythmic drug or tricyclic antidepressant analysis because the mobile phases used in the two analyses are similar. Although SUPEL COSIL LC-PCN columns are conditioned specifically for the two drug analyses described here, these columns are suited to other purposes if conditioned with appropriate mobile phases.

Ordering Information:

Description	Cat. No.
SUPEL COSIL LC-PCN Column*	
(Pre-conditioned cyano)	
15cm x 4.6mm ID, 5µm particles	58377
25cm x 4.6mm ID, 5µm particles	58378
SUPEL COSIL LC-8-DB Column*	
5cm x 4.6mm ID, 5µm particles	58344
Supelguard™ Guard Columns	
2cm length, 5µm SUPEL COSIL packings	
LC-PCN Kit (holder and one cartridge)	59504
LC-PCN Columns (pk. of 2 cartridges)	59514
LC-8-DB Kit (holder and one cartridge)	59553
LC-8-DB Columns (pk. of 2 cartridges)	59563

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*Other sizes are available. Please refer to our catalog or contact your local Supelco representative.

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 for expert answers to your questions.

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