Monitoring Antiarrhythmic Drugs and Tricyclic Antidepressants by HPLC

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

**Key Words:**
- antiarrhythmics
- tricyclic antidepressants
- HPLC
- SUPELCOSIL 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 SUPELCOSIL™ 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 SUPELCOSIL 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 SUPELCOSIL 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 SUPELCOSIL 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 SUPELCOSIL LC-PCN column to be more convenient than the corresponding separation on a SUPELCOSIL LC-8-DB column,
Figure C. Antiarrhythmic Drugs by Gradient Elution

<table>
<thead>
<tr>
<th>Description</th>
<th>Cat. No.</th>
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<tbody>
<tr>
<td>SUPELCOSIL LC-PCN Column*</td>
<td>58377</td>
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<tr>
<td>SUPELCOSIL LC-8-DB Column*</td>
<td>58344</td>
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because the latter analysis requires gradient elution. Analyses on 5cm SUPELCOSIL 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 SUPELCOSIL 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 SUPELCOSIL 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.