

# Application

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## Analyze Antihistamines Rapidly on a Deactivated HPLC Column

Using either a 5cm or 15cm SUPELCO<sup>®</sup> LC-8-DB (deactivated) column to separate many antihistamines saves time and solvent, compared to a nondeactivated 25cm column. Peaks obtained from these columns exhibit better shapes than those from nondeactivated columns under the same conditions.

### Key Words:

- antihistamines • SUPELCO<sup>®</sup> LC-8-DB column
- deactivated column

Most HPLC methods for analyzing antihistamines involve reversed phase columns requiring ion pair reagents (1-6). Cyano (7,8), phenyl (9), and silica (10,11) columns also have been used. No one method for these analyses has proven ideal. In fact, it is often necessary to separate one or two drugs of interest under conditions that cannot be used with others. This can be especially awkward when two or more antihistamines are present in the same prescription or over-the-counter tablet.

The solution is to analyze antihistamines (and other basic drugs) on SUPELCO<sup>®</sup> LC-8-DB columns. These octyl phase columns are specifically deactivated for basic compounds.

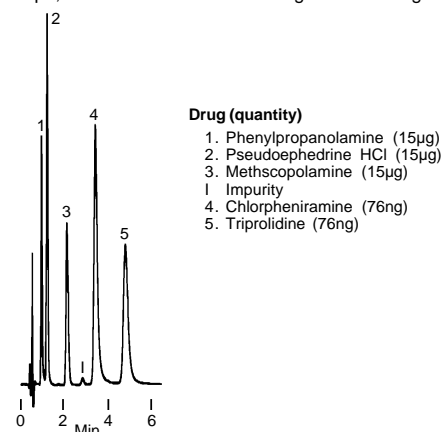
Two problems encountered most in antihistamine analyses are poor peak shape and limited selectivity. Analyses involving ion pair reagents suffer from additional drawbacks. Equilibrating the column takes longer and all traces of the reagent must be removed before the column can be used for another analysis. Furthermore, ion pair reagents can alter chromatographic characteristics of a reversed phase column. Consequently, many investigators must dedicate a column to ion pair work.

Because SUPELCO<sup>®</sup> DB columns are specifically deactivated, you can use them to separate basic compounds (including antihistamines) without ion pair reagents. We used a 5cm and a 15cm SUPELCO<sup>®</sup> LC-8-DB column, protected by a 2cm guard column, to separate several commonly used antihistamines. Figure A shows antihistamines separated on the 5cm column. The analysis was rapid and peak shape excellent.

To obtain rapid elution of several other antihistamines, the mobile phase and pH had to be adjusted (Figure B). A 15cm column was needed to separate bromopheniramine and diphenhydramine. On the other hand, phenylpropanolamine, pseudoephedrine, and methscopolamine were not retained in the mobile phase described for Figure B, while chlorpheniramine and triprolidine coeluted. For best resolution, buffers of different pH were used in Figures A and B.

Figure A. Rapid Analyses of Antihistamines

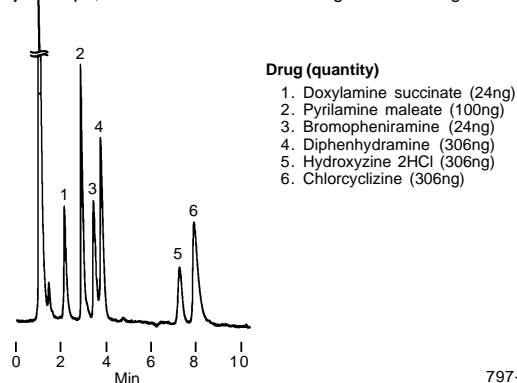
Column: SUPELCO<sup>®</sup> LC-8-DB, 5cm x 4.6mm ID, 5µm particles  
Cat. No.: 58344  
Mobile Phase: acetonitrile:0.02M KH<sub>2</sub>PO<sub>4</sub> (pH to 2.0 with H<sub>3</sub>PO<sub>4</sub>), 0.02% TEA (pH 2.2) added, 10:90  
Col. Temp.: 35°C  
Flow Rate: 2.0mL/min  
Det.: UV, 254nm, 0.02 AUFS  
Inj.: 10µL, on-column amounts of drugs listed on figure



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Figure B. Bromopheniramine and Diphenhydramine

Column: SUPELCO<sup>®</sup> LC-8-DB, 15cm x 4.6mm ID, 5µm particles  
Cat. No.: 58347  
Mobile Phase: 0.02M KH<sub>2</sub>PO<sub>4</sub> (pH 3.0) plus 200µL triethylamine (pH 3.3):methanol:acetonitrile, 53:28:19  
Col. Temp.: 35°C  
Flow Rate: 2.0mL/min  
Det.: UV, 254nm, 0.01 AUFS  
Inj.: 10µL, on-column amounts of drugs listed on figure



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Using either a 5cm or 15cm SUPELCOSIL LC-8-DB column, you can separate many antihistamines and save time and solvent, compared to a nondeactivated 25cm column. Peaks obtained from these columns exhibit better shapes than those from non-DB columns under the same conditions. This makes deactivated columns attractive for both production QA and research.

Of particular value is the versatility of SUPELCOSIL LC-8-DB columns. You can use them to analyze many basic compounds, including antiarrhythmic, calcium- or beta-blocking, and antiepileptic drugs, plus industrial materials such as phenylenediamines. You can obtain sharper peaks with less tailing. Neutral and acidic compounds also can be analyzed on DB columns. And because no ion pair reagent is required, you can use one column for several analyses, rather than having to dedicate a column to each analysis or use prolonged washing procedures. SUPELCOSIL DB columns are monitored individually for column-to-column reproducibility.

## Ordering Information:

Description	Cat. No.
<b>SUPELCOSIL LC-8-DB* Analytical Columns</b>	
5µm packing, 100Å pores	
5cm x 4.6mm	<b>58344</b>
15cm x 4.6mm	<b>58347</b>
<b>Supelguard™ LC-8-DB Guard Column Kit</b>	
One 2cm cartridge column, cartridge holder, and connecting hardware.	<b>59553</b>
<b>Supelguard LC-8-DB Guard Columns</b>	
Pk. of 2	<b>59563</b>

## References

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\*DB — Deactivated for basic compounds.

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