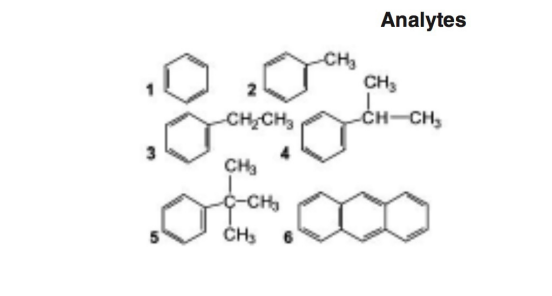
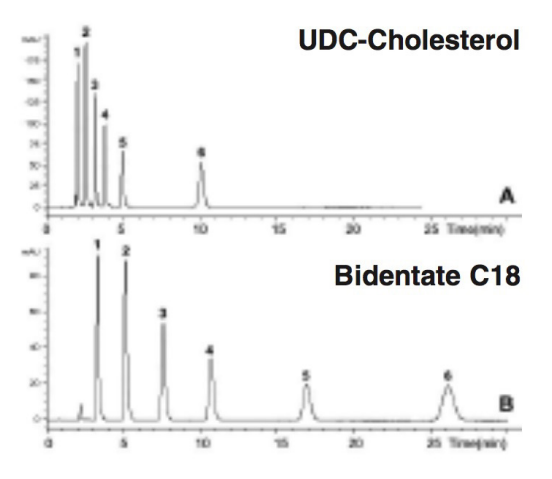
Shape and Size Selectivity

Using Cogent UDC-Cholesterol columns





Notes:

Table 1

Column	k1'	k2'	a=k2'/k1'
A. Cogent UDC	4.11	9.46	2.30
B. Cogent BDC18	19.98	31.49	1.58

Method Conditions

Column: A: **Cogent UDC Cholesterol™**, 4µm, 100Å
B: **Cogent Bidentate C18™**, 4µm, 100Å

Catalog No: A: 69069-7.5P
B: 40018-75P

Dimensions: 4.6 x 75 mm

Mobile Phase: 70% Methanol/ 30% DI H_2O

Injection vol.: 5µL

Flow rate: 1 mL/min

Detection: UV 254 nm

Sample: Universal LC Test Mix

Peaks: 1. Benzene
2. Toluene
3. Ethylbenzene
4. Isopropyl benzene
5. tert-Butylbenzene
6. Anthracene

Discussion

When comparing Cogent UDC-Cholesterol and Cogent Bidentate C18 columns, the cholesterol phase is less hydrophobic under these conditions. However from the two chromatograms shown a very interesting property of the cholesterol phase can be observed. The Cogent UDC column exhibits enhanced selectivity for anthracene when compared with the Bidentate C18 column. The selectivity factor (alpha) for both columns is listed in Table 1. The anthacene molecule is much longer and planar when compared to tert.-butylbenzene. While the retention remains clearly lower for the UDC column the selectivity for anthracene with respect to tert.-butylbenzene is considerably higher than the Bidentate C18 phase. This phenomena is due to the fact that cholesterol is a liquid crystal in the native state and that it retains a relatively ordered structure on the surface. While this example shows relatively simple molecules, the principle will work for complex drugs and in any type of separation involving selectivity for planar molecules vs. nonplanar or more bulky molecules.

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