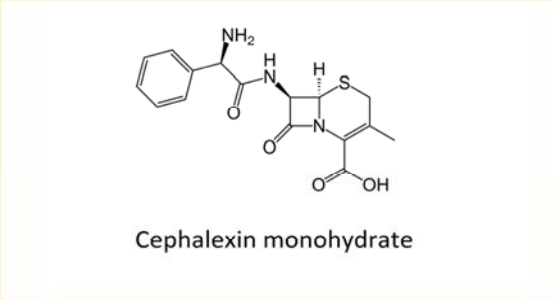
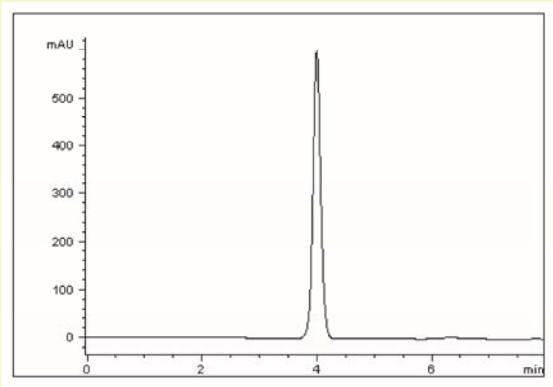
Cephalexin Monohydrate

Retention of a Polar Antibiotic



Cephalexin monohydrate



Notes: Cefalexins (brand name Keflex) are antibiotics used to treat a variety of infections in humans by actively disrupting the growth of the bacterial cell wall. Cephalexin binds to and inactivates penicillin-binding proteins (PBP) located on the inner membrane of the bacterial cell wall. By inactivating the PBPs, it interferes with the cross-linking of peptidoglycan chains necessary for bacterial cell wall strength and rigidity. This results in the weakening of the bacterial cell wall and causes cell lysis. The first-generation cephalosporins have the highest activity against gram-positive bacteria and are also effective against gram-negative organisms. Cefalexin is a useful alternative to penicillin intolerant patients.

Method Conditions

Column: **Cogent Diamond Hydride™**, 4µm, 100Å

Catalog No.: 70000 -7.5P

Dimensions: 4.6 x 75 mm

Solvents: A: DI H_2O/ 0.1% formic Acid
B: 90% Acetonitrile/ 0.1% formic Acid

Gradient:

time (min.)	%B
0	90
1	90
4	20
5	20
6	90

Injection vol.: 5µL

Flow rate: 1.0 mL/min

Detection: UV 260 nm

Samples: Cefalexin; Keflex. Final concentration: 1 mg/mL in DI H_2O
The solution was filtered through a 0.45µm nylon syringe filter (MicroSolv Tech Corp).

Peak: 1. Keflex

Discussion

Keflex is a semisynthetic cephalosporin antibacterial drug, analysis of which is of great interest to scientists from many research fields. There is a demand for a rapid, efficient and inexpensive analytical method to be applied for analysis of formulations during industrial process development as well as for monitoring of the drug level in patients after administration. It is impossible to retain this compound using conventional Reversed Phase Chromatography. In the chromatogram shown Keflex was sufficiently retained using a gradient ANP-HPLC method and the Cogent Diamond Hydride column. Peak shape is very symmetrical. The advantages of using the selected column and method are: fast equilibration between runs when gradient analysis is used, and very easy transfer to MS detection. Due to the high organic content of the mobile phase used, the ionization efficiency of an MS detector is much better when compared to high water containing mobile phase. The proposed method can be used as a convenient analysis of Keflex in both pure and dosage forms.

MANUFACTURED BY:
MICROSOLV TECHNOLOGY CORPORATION
9158 Industrial Blvd NE
Leland, NC 28451
p: 1.732.380.8900
f: 1.910.769.9435
customers@mtc-usa.com
www.Cogent-HPLC.com