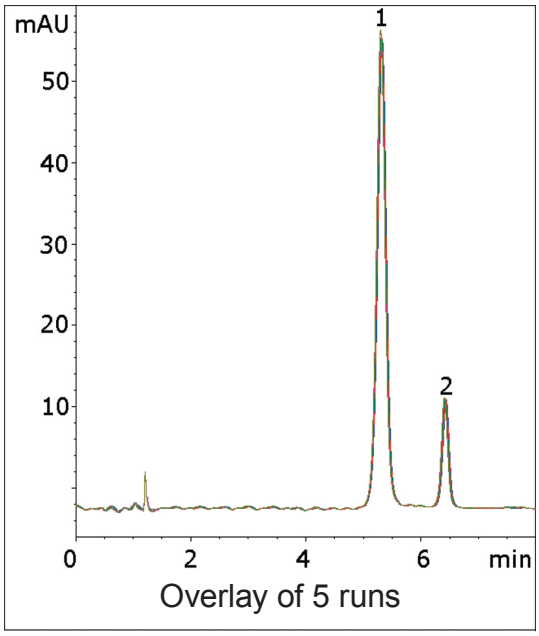
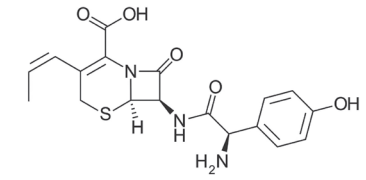
Cefprozil E and Z Isomers

LC-MS compatible method





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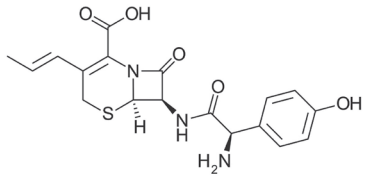

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Note: Cefprozil is a cephalosporin antibiotic used to treat conditions such as bronchitis and infections of the ear, skin, throat, and sinuses.

Method Conditions

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

Catalog No.: 69020-7.5P

Dimensions: 4.6 x 75 mm

Mobile Phase: A: DI H_2O / 0.1% formic acid
B: Acetonitrile / 0.1% formic acid

Gradient:

time (min.)	%B
0	5
6	20
7	5

Temperature: 45˚C

Post Time: 1 min

Injection vol.: 10µL

Flow rate: 1.0 mL/min

Detection: UV 280 nm

Sample: Stock Solution: 500 mg strength cefprozil tablet was ground with a mortar and pestle. The ground tablet was added to a 100 mL vol. flask with 50 mL 50% solvent A / 50% solvent B diluent. The flask was sonicated 10 min, diluted to mark with the diluent, and filtered.
Working Solution: A 100µL aliquot of the stock was diluted with 900µL of the diluent.

Peaks: 1. Cefprozil (Z-isomer)
2. Cefprozil (E-isomer)

t_0: 0.9 min

Discussion

The USP assay method for cefprozil uses a phosphate-based mobile phase, which is not compatible with LC-MS. In this method using a Cogent Phenyl Hydride column, only formic acid is needed in the mobile phase. The method meets the isomer resolution criterion of not less than 2.5 with an average calculated value of 4.4. The tailing factor was 1.0, which is within the USP acceptable range of 0.9–1.1. Finally, the calculated efficiency was 5600 theoretical plates, which exceeds the requirement of not less than 2500.

The excellent repeatability of the figure overlay illustrates the column durability and fast gradient equilibration.

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