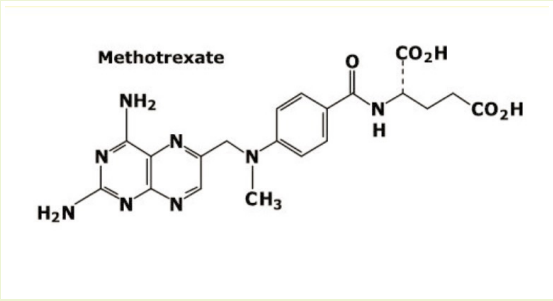
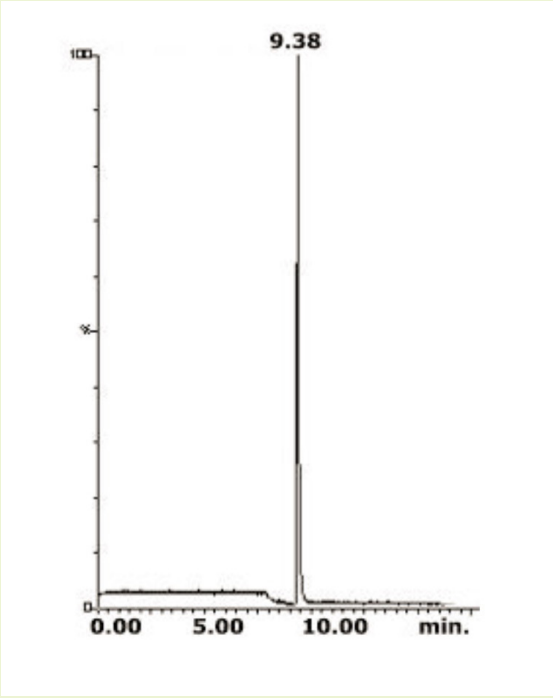
Methotrexate - Anti-Neoplastic, Anti-Tumor Drug

Analysis by LCMS





Notes: Cogent TYPE-C columns require very little time for equilibration when using a gradient. ANP (Aqueous Normal Phase) is a very MS friendly technique. By using ANP for analysis of polar compounds by LC-MS a 10-100 fold increase of sensitivity is often observed. The sample can be dissolved in water or water + organic solvent mixture, which is advantageous over other analyses.

Method Conditions

Column: **Cogent Bidentate C18™**, 4µm, 100Å

Catalog No.: 40018-25P

Dimensions: 4.6 x 250 mm

Mobile phase: A: DI H_2O/ 0.5% formic acid
B: Acetonitrile

Gradient:

time (min.)	%B
0	90
1	90
5	20
10	20
10.01	90
12	90

Injection vol.: 1µL

Flow rate: 0.5 mL/min

Detection: APCI+ Single Ion Monitoring

Sample: 0.1 mg/mL in DI H_2O/ 0.5% formic acid

Peaks: 1. Methotrexate m/z 455

Discussion

The powerful anticancer drug, methotrexate (4-amino-N10-methylpteroyl glutamic acid) acts as an antimetabolite and is used for the treatment of many neoplastic diseases including acute leukemia, osteosarcoma, non-Hodgkins lymphoma, and breast cancer. There is a great interest in pharmacological studies and clinical monitoring of methotrexate. A quadrupole mass spectrometer operating in the positive – ion mode and an atmospheric pressure ionization (API) source was used for selective detection and assured that no interfering peaks affect the quantitative results. A Cogent Bidentate C18 column was the column of choice for the ANP gradient analysis of the drug. The retention of the methotrexate is more than sufficient. The LC-MS method developed assures both high specificity and sensitivity.

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