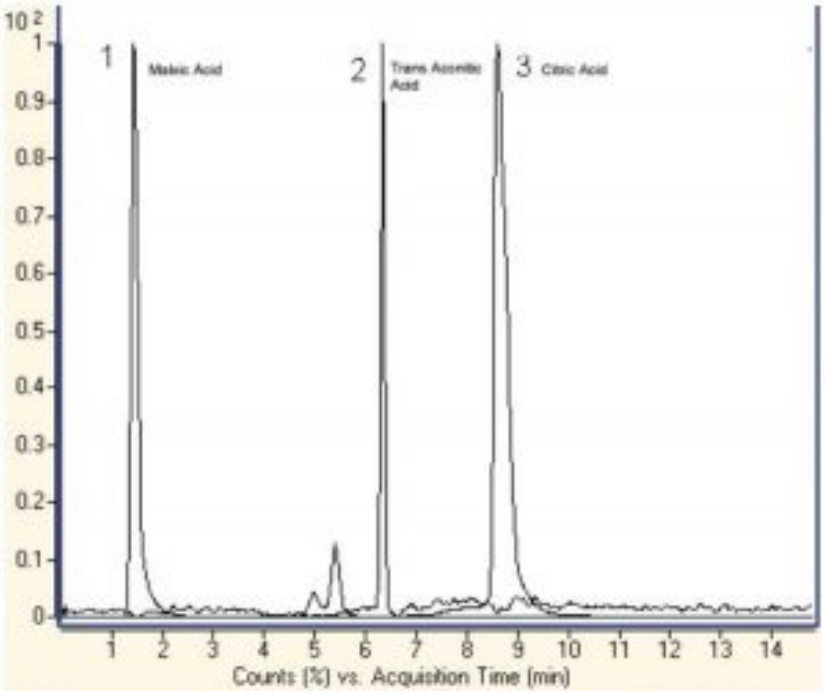
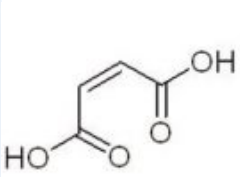
Citric, Aconitic & Maleic Acids Analyzed with LCMS – AppNote

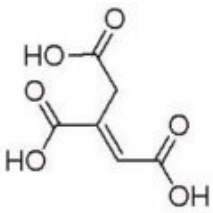
Low Molecular Weight Organic Acids

Low mass Acids were retained and Separated in this Method with the Aqueous Normal Phase mode of HPLC. The Method was able to resolve the three compounds in 10 minutes. Limits of Detection (LOD) for them ranged from 0.05 to 24 micromolar.

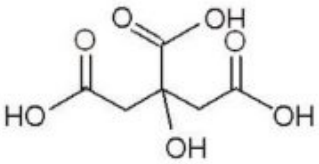




1. Maleic Acid



2. *trans*-Aconitic Acid



3. Citric Acid

Peaks:

1. Maleic Acid 115.0031 m/z (M-H)-
2. Trans-Aconitic Acid 173.0086 m/z (M-H)-
3. Citric Acid 191.0192 m/z (M-H)-

Method Conditions

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

Catalog No.: 70000-15P-2

Dimensions: 2.1 x 150mm

Mobile Phase:

A: DI Water / 0.1% Ammonium Acetate

B: Acetonitrile / 0.1% Ammonium Acetate

Gradient:

Time *(minutes)*	%B
0	90
2	90
5	70

6	70
6.1	30
7	30
7.1	30
10	90

Flow rate: 400µL / minute

Detection: ESI – neg – Agilent 6210 MSD TOF Mass Spectrometer

Sample Preparation: Sample mixture was prepared in 50:50 DI Water / Acetonitrile

Notes: *ANP Chromatography with MS Detection (ANP-LCMS) has become more and more popular for analysis of certain mixtures of organic acids because of the Simplicity, Rapidity and Stability of the Method. The statutory Methods for the determination of low molecular mass organic acids are Turbidimetric and Colorimetric Methods and Ion-Exchange Chromatography. "Turbidimetry by means of calcium oxalate precipitation and colorimetry by means of Zinc Ferricyanide color development are time-consuming and only achieve limited rather than exact results".*

Attachment

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MicroSolv Technology Corporation
9158 Industrial Blvd. NE, Leland, NC 28451
tel. (732) 380-8900, fax (910) 769-9435
Email: customers@mtc-usa.com
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