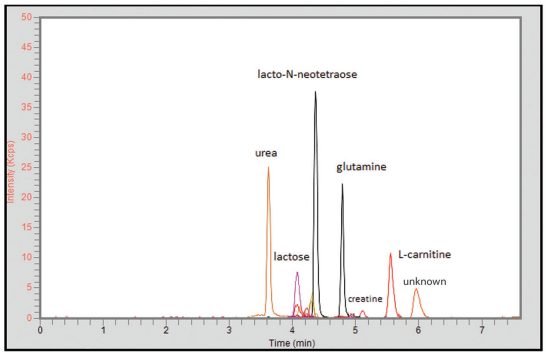
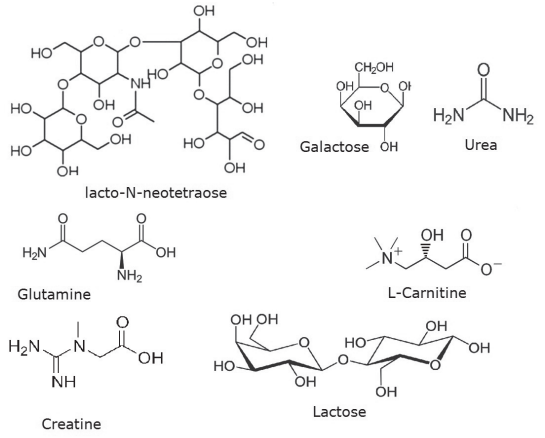
Milk Extracts

Analysis of composition using LC-MS





Note: Milk was highly susceptible to microbial growth contamination prior to the advent of pasteurization. Named after the French chemist Louis Pasteur who invented it, pasteurization is a technique that extends the shelf life of milk by killing harmful microbes. In addition to his work in the field of microbiology, Pasteur also made significant contributions to our current understanding of chirality through the isolation of enantiomers of tartaric acid crystals.

Method Conditions

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

Catalog No.: 70000-15P-2

Dimensions: 2.1 x 150 mm

Solvent: A: DI H_2O / 0.1% formic acid (v/v)
B: Acetonitrile / 0.1% formic acid (v/v)

Gradient:

time (min.)	%B
0	90
1	90
7	20
11	20
12	90

Post Time: 3 min

Injection vol.: 1µL

Flow rate: 0.4 mL/min

Detection: ESI – POS - PerkinElmer, Flexar SQ 300 mass spectrometer

Sample: Milk extract reconstituted in 65 micoL of 80% acetonitrile / 20% DI H_2O

Peaks:

Name	*m/z [M+H]⁺*
Urea	61.0396
Lactose	343.1235
Galactose	181.0707
lacto-N-neotetraose	708.2557
Glutamine	147.0764
Creatine	132.0768
L-Carnitine	162.1125
Unknown	105.1148

t_0: 0.9 min

Discussion

Milk components are polar compounds that are not well retained or resolved by traditional reversed-phase chromatography. In addition, many of the compounds do not contain strong chromophores, resulting in low specificity and sensitivity in UV detection. The analysis using the Cogent Diamond Hydride column and MS detection provides separation and detection of all the compounds of interest. This column is an excellent choice for analysis of polar compounds in biological matrices.

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