Benzoic and Sorbic Acid in Milk Powder
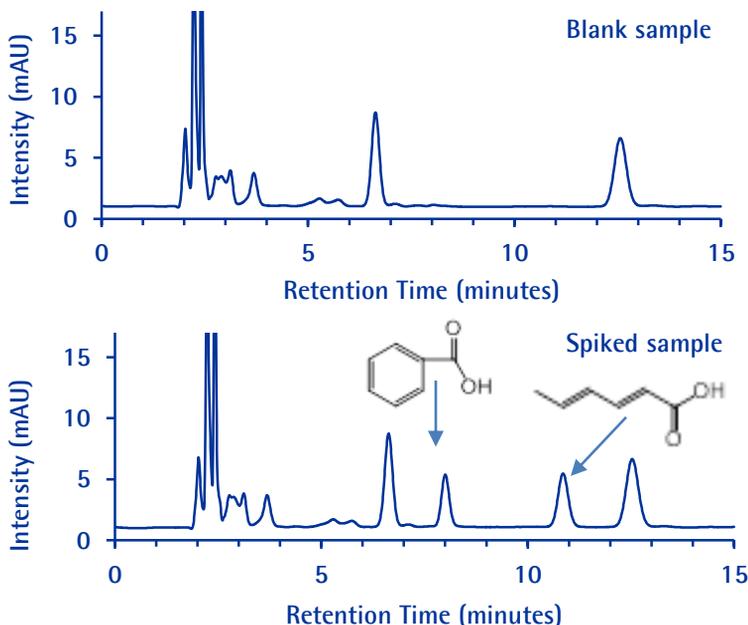## Purospher® STAR RP-18 endcapped

Chromatographic Conditions

Column:	Purospher® Star LP RP-18 endcapped (5 µm) 250x4.6 mm	1.56200.0008
Injection:	10 µL	
Detection:	UV@ 227 nm	
Cell:	1ul/10mm	
Flow Rate:	1.2 mL/min	
Mobile Phase:	Phosphate buffer solution (pH6.7).Dissolve 2.5g KH_2PO_4 and 1.91g K_2HPO_4 in 1L H_2O. Mix Methanol and phosphate buffer solution 10:90 (v/v).	
Temperature:	30 °C	
Diluent	MeOH	
Sample:	Weigh 3.00 g of milk powder into a 100 mL volumetric flask. Add 10 mL water, 25 mL of 0.1 mol/L NaOH solution, sonicate for 15 minutes. After the solution is cooled down to room temperature, adjust pH value to 8.0 with 0.5 mol/L of H_2SO_4 solution. Add 2 mL of 92 g/L of $K_4Fe(CN)_6$ solution, 2 mL of 183g/L of ZnAC solution. Shakes vigorously the flask, cool the solution to room temperature. Add methanol to volume. Filtrate the solution with filter paper and 0.45 µm filter membrane respectively before analysis.	
Pressure Drop:	192 Bar (2784 psi)	

Chromatographic Data

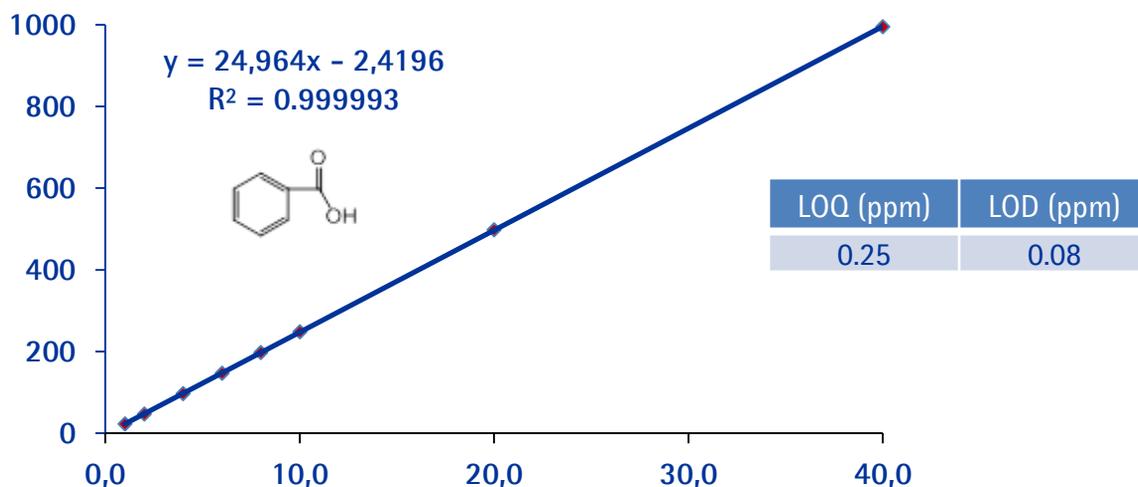| No.	Compound	Retention Time (min)	Theoretical Plates	Tailing Factor
1	Benzoic acid	8.0	8323	1.05
2	Sorbic acid	10.9	8528	1.03

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Repeatability: Analysis of repeated injections of 4 ppm standard solution (n=5).

Standard	Benzoic Acid	Sorbic Acid
1	97.9	141.0
2	97.3	139.5
3	97.3	139.1
4	97.4	139.6
5	97.6	139.8
Average	97.5	139.8
STDEV	0.219	0.655
RSD (%)	0.2	0.5

Linearity – Benzoic Acid: Analysis of repeated injections (n=5) of standard solutions in the calibration range 1–40 ppm (µg/mL).

Concentration (ppm)	Intensity (mV)
1.0	22.911
2.0	46.666
4.0	97.139
6.0	146.50
8.0	197.38
10.0	248.13
20.0	498.24
40.0	995.40

$y = 24{,}964x - 2{,}4196$

$R^2 = 0.999993$

LOQ (ppm)	LOD (ppm)
0.25	0.08

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Average	97.5	139.8
STDEV	0.219	0.655
RSD (%)	0.2	0.5

Linearity – Sorbic Acid: Analysis of repeated injections (n=5) of standard solutions in the calibration range 1–40 ppm (µg/mL).

Concentration (ppm)	Intensity (mV)
1.0	41.180
2.0	67.673
4.0	139.50
6.0	208.53
8.0	283.83
10.0	354.38
20.0	712.40
40.0	1422.6

$y = 35.594x - 1.1187$

$R^2 = 0.99995$

LOQ (ppm)	LOD (ppm)
1.1	0.35