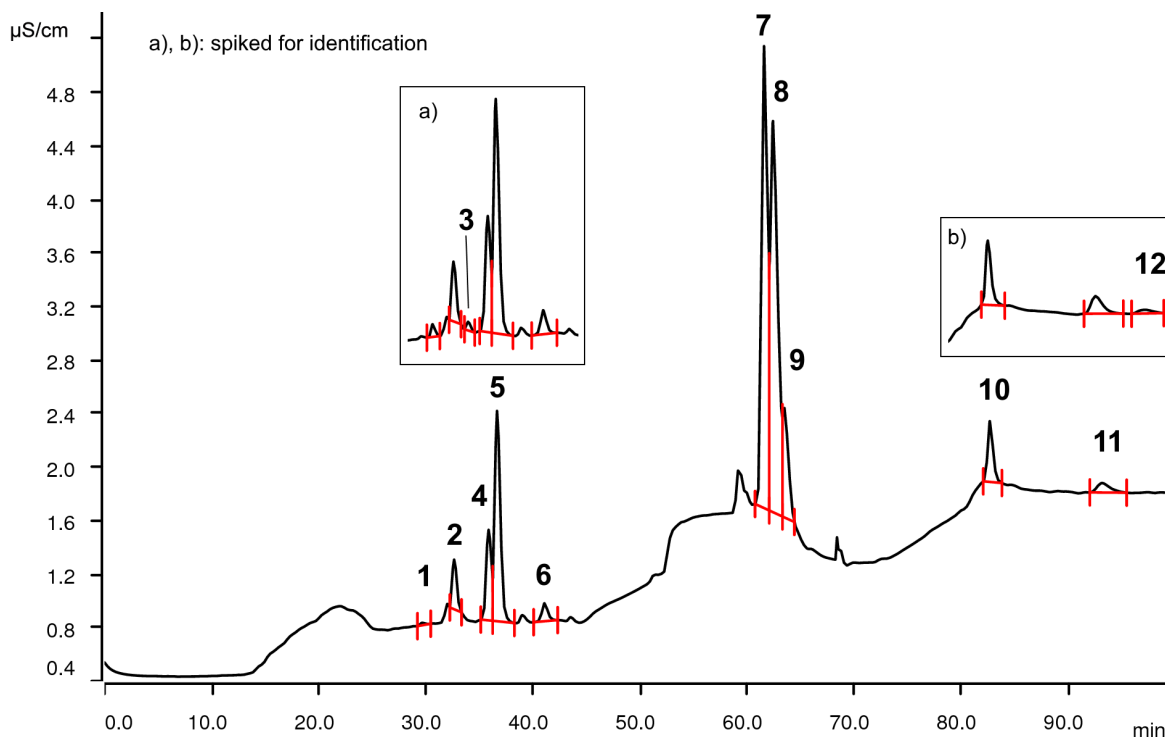


Organic acid anions in wine applying a low-pressure gradient



Organic acids in wine are omnipresent in winemaking. Some of them are present already in the grape while others appear during fermentation. The sum of organic acids and their composition have a direct influence on the taste of the respective wine. In this application a wine is tested for minor organic acids, especially shikimic and iso-citric, besides typical acids and anions. The separation is performed by anion chromatography applying a low-pressure gradient to achieve the required selectivity.

Results

Organic acid anion	Concentration [mg/L]	Sample	Concentration [mg/L]
2 Gluconate	n.q.	7 Malate	19.16
3 Shikimate	< 0.2	8 Tartrate	33.11
4 Acetate	3.17	11 Citrate	1.80
5 Lactate	9.98	12 Iso-citrate	< 0.5

Additional peaks: 1 Fluoride, 6 chloride, 9 sulfate, 10 Phosphate (identified only)

Sample

Dilution 1:100 with ultrapure water

Sample preparation

Direct injection of the diluted sample.

Columns

Metrosep A Supp 16 - 250/4.0	6.1031.430
Metrosep A Supp 7 - 150/4.0	6.1006.640
Metrosep A Supp 16 Guard/4.0	6.1031.500

Solutions

Eluent A	1.0 mmol/L sodium hydroxide
Eluent B	60.0 mmol/L sodium hydroxide
Suppressor regenerant	500 mmol/L sulfuric acid 20 mmol/L oxalic acid
Rinsing solution	STREAM

Analysis

Conductivity detection after sequential suppression

Instrumentation

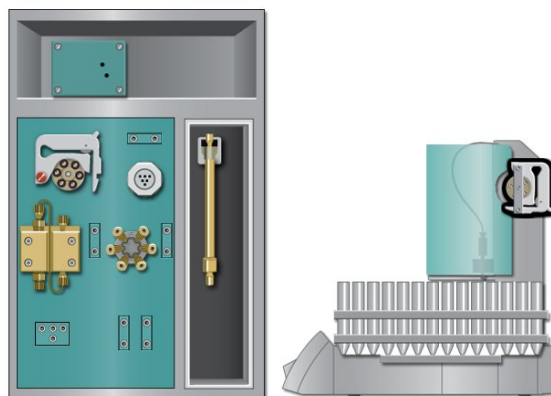
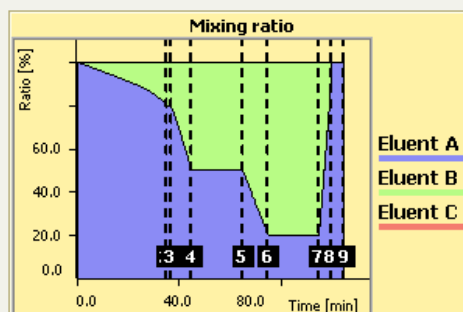
940 Professional IC Vario ONE SeS/PP/LPG	2.940.1550
IC Conductivity Detector	2.850.9010
863 Compact Autosampler	2.863.0010
MSM Rotor A	6.2832.000
Adapter sleeve for Suppressor Vario	6.2842.020

Parameters

Flow rate	0.7 mL/min
Injection volume	20 µL
P _{max}	20 MPa
Recording time	100 min
Column temperature	60 °C

Gradient parameters

Time [min]	Eluent A [%]	Eluent B [%]	Curve	Flow
1 Start	100	0		0.7
2 35.0	80	20	Concave 1	0.7
3 37.0	80	20	Linear	0.7
4 45.0	50	50	Linear	0.7
▶ 5 65.0	50	50	Linear	0.7
6 75.0	20	80	Linear	0.7
7 95.0	20	80	Linear	0.7
8 100.0	100	0	Linear	0.7



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