



DETERMINATION OF ORGANIC ACIDS IN BEVERAGES

INTRODUCTION

The method is used for the determination of the mass concentration of organic acids and their salts: oxalic, formic, tartaric, malic, citric, succinic, lactic, acetic and sorbic acids in **all types of alcoholic and non-alcoholic beverages, juices, wine and wine products, beer and beer products** by capillary electrophoresis.

The method does not distinguish between organic acids and their salts. The result is the sum of the respective acid content and its salt content calculated as acid.

For the determination of preservatives, sweeteners, caffeine, ascorbic acid in beverages use Complex set (order **No. 0300002054**).

For the determination of cations (K, Na, Mg, Ca) in beverages use set (order **No. 0300002735**).

For the determination of fructose, glucose and saccharose in beverages use kit (order **No. 0300001587**).

MEASUREMENT METHOD

The measurement method is based on capillary zone electrophoresis with indirect UV detection at the wavelength of 254 nm.

MEASUREMENT RANGE

Component	Measurement range, mg/L
Oxalic, formic, tartaric, succinic, lactic, acetic, sorbic acids	1–10 000
Malic acid	1–20 000
Citric acid	1–250 000

Inorganic anions (chloride, sulfate, nitrate, fluoride, phosphate), ascorbic and benzoic acids do not deteriorate target components determination.

EQUIPMENT AND REAGENTS

The CAPEL capillary electrophoresis system is used in measurements. Data acquisition, collection, processing and output are performed using a personal computer running under WINDOWS® XP/7/8/10 operating system with installed dedicated software package ELFORUN.

Lumex Instruments set, order **No. 0300002018**.

EXAMPLES OF REAL ANALYSES

BGE: electrolyte based on benzoic acid with diethanolamine, CTAB

Capillary: $L_{\text{eff}} / L_{\text{tot}} = 50/60$ cm, ID= 75 μm

Injection: 150 mbar x sec

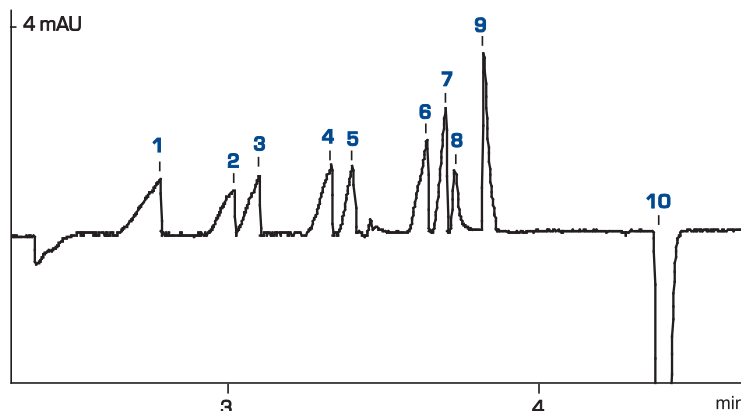
Voltage: – 20 kV

Temperature: 20 °C

Detection: 254 nm

Sample: Calibration solution

- 1 – oxalic acid (40 mg/L)
- 2 – formic acid (20 mg/L)
- 3 – tartaric acid (40 mg/L)
- 4 – malic acid (40 mg/L)
- 5 – citric acid (40 mg/L)
- 6 – succinic acid (40 mg/L)
- 7 – lactic acid (40 mg/L)
- 8 – phosphate
- 9 – acetic acid (40 mg/L)
- 10 – sorbic acid (10 mg/L) (negative peak)

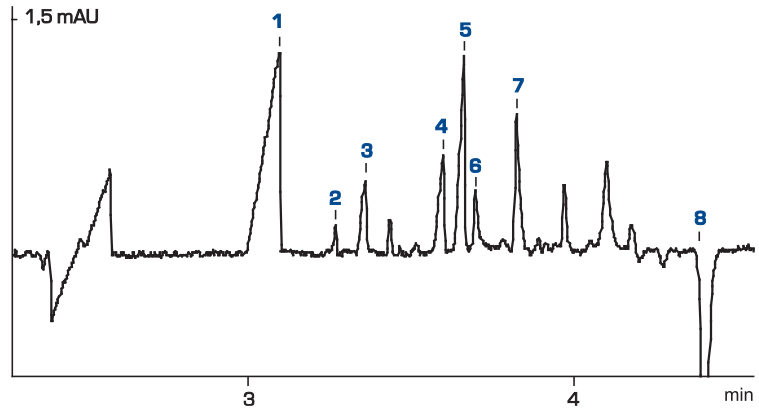




Sample: Wine (dilution 50 times).

Measurement results:

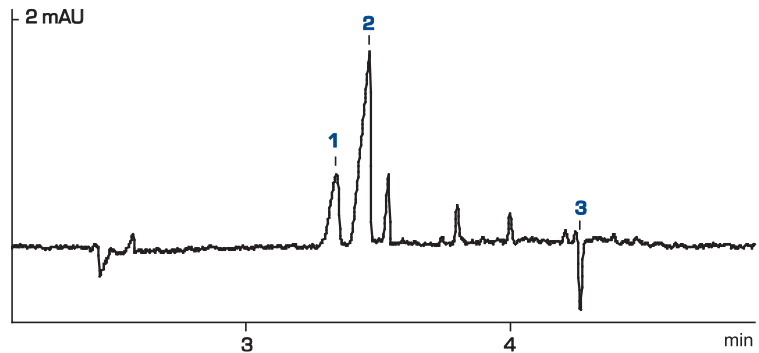
- 1 – tartaric acid (3200 mg/L)
- 2 – malic acid (90 mg/L)
- 3 – citric acid (440 mg/L)
- 4 – succinic acid (450 mg/L)
- 5 – lactic acid (830 mg/L)
- 6 – phosphate
- 7 – acetic acid (480 mg/L)
- 8 – sorbic acid (130 mg/L) (negative peak)



Sample: Juice (dilution 100 times).

Measurement results:

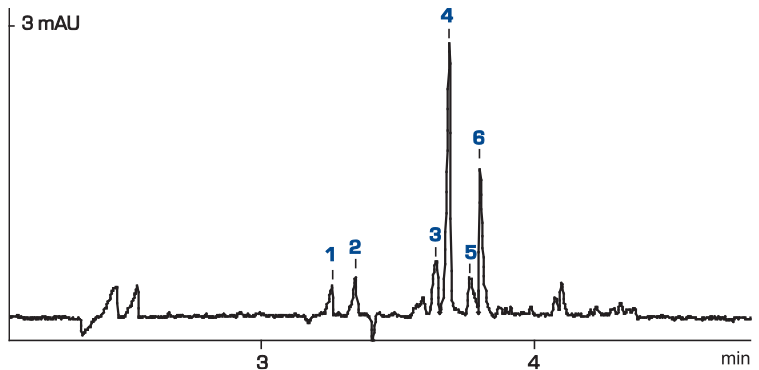
- 1 – malic acid (2200 mg/L)
- 2 – citric acid (9300 mg/L)
- 3 – ascorbic acid



Sample: Beer (dilution 20 times).

Measurement results:

- 1 – malic acid (80 mg/L)
- 2 – citric acid (180 mg/L)
- 3 – succinic acid (190 mg/L)
- 4 – lactic acid (830 mg/L)
- 5 – phosphate
- 6 – acetic acid (300 mg/L)



The contents on this paper are subject to change without notice.

To get more specific information, please contact the representative by sales@lumexinstruments.com

