

DETERMINATION OF ANIONS IN BEVERAGES

INTRODUCTION

The method is used for the determination of the mass concentration of chloride, sulfate, and nitrate in beverages by capillary electrophoresis. The method can be applied for **all types of non-alcoholic and alcoholic beverages including sport and energetic drinks, juices, beer and beer products, wines, brandy and spirits, liquors, and vodka.**

MEASUREMENT METHOD

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

MEASUREMENT RANGE

The measurement ranges for the components are presented in the table below.

| Anions | Measurement range, mg/L |
|----------|-------------------------|
| Chloride | 0.5–20000 |
| Sulfate | 0.5–5000 |
| Nitrate | 0.5–500 |

Other inorganic anions (nitrite, bromide, sulfite, fluoride, phosphate, and carbonate) and organic acids (acetic, tartaric, oxalic, malic, citric and others) in concentrations, typical for the mentioned beverages do not deteriorate target anions 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 **0300001842**.

EXAMPLES OF REAL ANALYSES

BGE: chromate, with DEA and CTA-OH

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

Injection: 150 mbar x sec

Voltage: – 25 kV

Temperature: 20 °C

Detection: 254 nm

Sample: wine, tenfold diluted

Measurement results:

1 – chloride (30.5 mg/L)

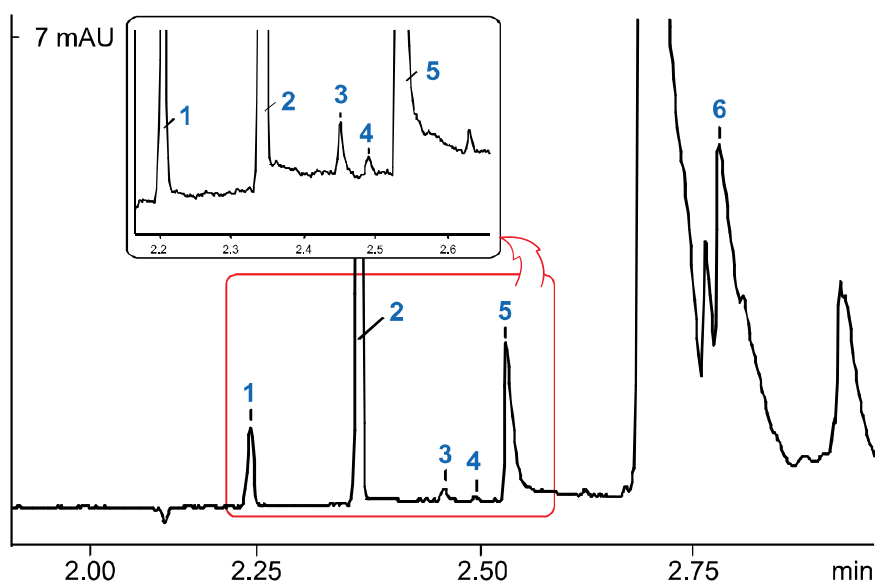
2 – sulfate (495 mg/L)

3 – oxalate

4 – nitrate (3.1 mg/L)

5 – sulfite

6 – organic acids (citric, tartaric, malic etc.)



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