



DETERMINATION OF INORGANIC CATIONS IN DRINKS

LUMEX Method M 04-52 (2008)

INTRODUCTION

The method enables fast determination of inorganic cations (sodium, potassium, calcium, and magnesium) in the samples of juices, beer, wines, brandies, brandy alcohols, and raw materials by capillary electrophoresis.

MEASUREMENT METHOD

The capillary electrophoresis method for evaluation of cations concentration is based on differential migration and separation of cations in electric field due to the difference in their electrophoretic mobility. Identification and quantitative determination of the analyzed cations is performed by indirect detection measuring UV absorption at 254 nm (for "CAPEL[®]-103RT/104T" systems) or 267 nm (for "CAPEL[®]-105/105M" systems) wavelength.

MEASUREMENT RANGE

Cations	Measurement range, mg/L
Calcium	1.0–500
Magnesium	0.5–500
Potassium	1.0–4000
Sodium	1.0–500

The determination is not hindered by the presence of anions of ammonia, lithium, strontium, barium, manganese, ferrum (II) in the quantities that are typical for the analyzed drinks.

EQUIPMENT AND REAGENTS

The "CAPEL[®]" capillary electrophoresis system with high-voltage positive polarity is used in measurements. Data acquisition, collection, processing and output are performed using a personal computer running under "WINDOWS[®] 2000/XP" operating system with installed dedicated software package for acquisition and processing of chromatography data.

All reagents must be of analytical grade or better.

EXAMPLE OF A REAL ANALYSIS

Buffer: benzimidazole solution, with tartaric acid and 18-crown-6

Capillary: L_{EFF}/L_{TOTAL} 50/60 cm, ID 75 μm

Injection: 150 mbar x sec

Voltage: + 13 kV

Detection: 267 nm, indirect

Sample: white wine sample from Krasnodar region, Russia (dilution 1:24)

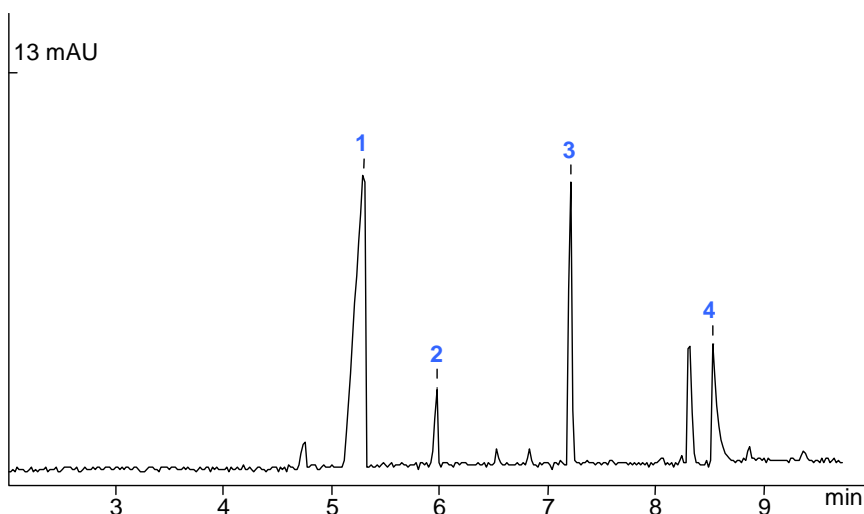
Measurement results:

1 – potassium (1220 mg/L)

2 – sodium (42 mg/L)

3 – magnesium (77 mg/L)

4 – calcium (130 mg/L)



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