



DETERMINATION OF **CAFFEINE** AND **THEOBROMINE** IN TEA, COFFEE, COCOA, AND DIETARY SUPPLEMENTS

Lumex Method M 04-60-2009

INTRODUCTION

The method is used for the determination of the mass fraction of caffeine and theobromine in **tea and tea products, coffee and coffee products, cocoa and cocoa products, and dietary supplements**.

MEASUREMENT METHOD

Capillary electrophoresis method for the determination of the mass fraction of caffeine and theobromine is based on micellar electrokinetic chromatography (MEKC). Identification and quantitative determination of the components is performed by direct UV detection at the wavelength of 254 nm.

MEASUREMENT RANGE

The measurement range for the components is **100 to 100 000 mg/kg (ppm)**.

Preservatives (sorbic and benzoic acids), sweeteners (acesulfame K, saccharin, aspartame, cyclamate), sodium glutamate, synthetic dyes, vitamins of the B group, vitamin C, vanillin in the concentrations that are typical for the products of interest does not influence the determination of the components.

ADVANTAGES OF CAPILLARY ELECTROPHORESIS

As compared with the HPLC method of determination of caffeine and theobromine, the capillary electrophoresis method shows the following advantages:

- High separation efficiency that is unachievable with HPLC.
- Rapid analysis.
- Low analysis cost.
- No need for expensive chromatographic columns.

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.

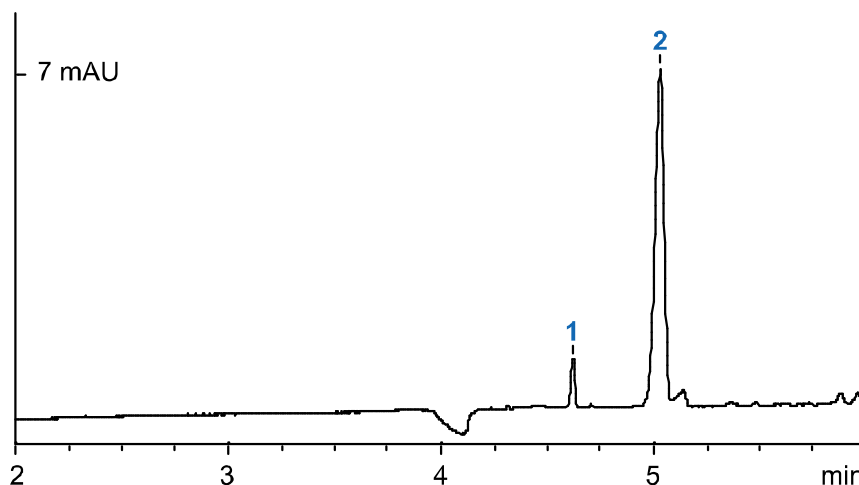
Lumex Instruments complex set, order **No 0300002054**.

EXAMPLES OF REAL ANALYSES

BGE: borate, with SDS
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: black tea

Found, mg/kg:
1 – theobromine (1 700)
2 – caffeine (30 200)



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

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