

DETERMINATION OF ORGANIC ACIDS IN FEEDSTUFFS AND FODDER ADDITIVES

Lumex Method M 04-74-2012

INTRODUCTION

The method¹ is used for the determination of the mass concentration of oxalic, formic, fumaric, succinic, malic, citric, acetic, propionic, lactic, benzoic, sorbic, butyric acids in **fodder additives** and butyric acid in **silage and haylage** by capillary electrophoresis.

For the determination of ascorbic acid and its salts in food additives and fodder additives use the method M 04-86-2016 (Lumex Instruments set, order No 0300002717).

MEASUREMENT METHOD

The measurement method is based on capillary zone electrophoresis with direct UV detection at the wavelength of 190 nm.

MEASUREMENT RANGE

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

Compound	Measurement range, %	Compound	Measurement range, %
Acetic acid	0.1–80	Lactic acid	0.12–80
Benzoic acid	0.005–50	Malic acid	0.05–80
Butyric acid	0.05–50	Oxalic acid	0.03–10
Citric acid	0.05–80	Propionic acid	0.1–80
Formic acid	0.15–80	Sorbic acid	0.025–50
Fumaric acid	0.005–80	Succinic acid	0.05–80

Inorganic anions (chloride, sulfate, nitrate and phosphate) in concentrations, typical for the mentioned samples do not deteriorate organic acids 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 0300001897**.

EXAMPLES OF REAL ANALYSES

BGE: phosphate, with CTAB

Capillary: $L_{\text{eff}}/L_{\text{tot}}$ 40/50 cm, ID 50 μm

Injection: 150 mbar x sec

Voltage: – 17 kV

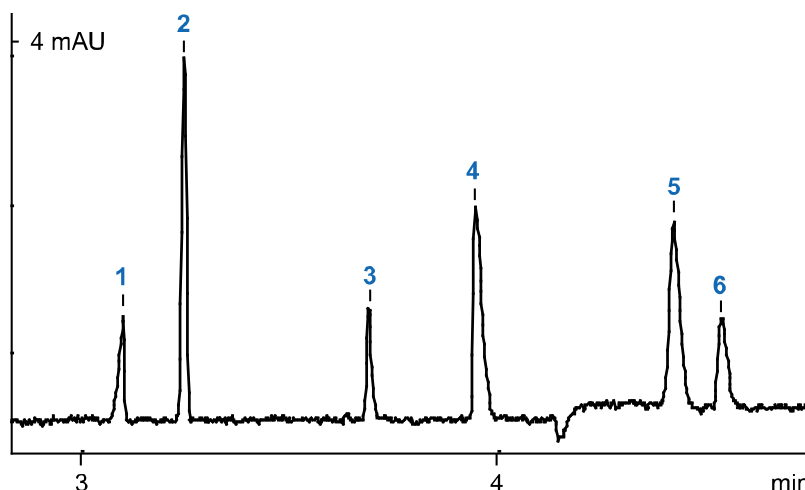
Temperature: + 20 °C

Detection: 190 nm

Sample: fodder additive

Measurement results:

- 1** – formic acid (9.4%)
- 2** – fumaric acid (0.5%)
- 3** – acetic acid (4.4%)
- 4** – propionic acid (11%)
- 5** – benzoic acid (0.22%)
- 6** – sorbic acid (0.25%)



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

¹ National Standard GOST R 56373-2015.