ANALYSIS OF ORGANIC ACIDS IN BEER BY CAPILLARY ELECTROPHORESIS

INTRODUCTION

Determination of organic acids is important at all stages of beer production, especially in control of fermentation processes and correlation of their concentrations with the taste of the finished product. Traditionally, organic ion composition of aqueous solutions is determined by ion chromatography (IC) and HPLC. Capillary electrophoresis represents new, fast, and reliable method for simultaneous analysis of organic acids in brewing processes.

MEASURING METHOD

The capillary electrophoresis method for determination of organic anions' concentrations is based on differential migration and separation of anions in the electric field due to different electrophoretic mobility. Identification and quantitative determination of the analyzed ions is performed by indirect detection by measuring the UV absorption.

CONCENTRATION RANGES

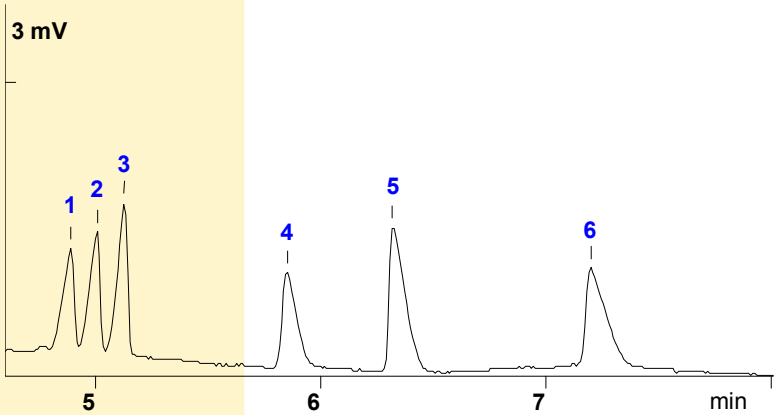
Capillary electrophoresis with indirect detection can be used for analysis of such organic acids as tartaric, malic, succinic, citric, formic, acetic, lactic, and others.
Concentration range is usually **0.1–50 mg/L**.

ADVANTAGES OF CAPILLARY ELECTROPHORESIS

Compared with determination of organic in beer samples by HPLC and IC method, capillary electrophoresis has several advantages:

- Low analysis cost
- Absence of an expensive chromatographic column
- Short analysis time

EXAMPLE OF REAL ANALYSIS



Temperature 20 °C
1 – tartaric acid
2 – malic acid
3 – succinic acid
4 – citric acid
5 – acetic acid
6 – lactic acid

Other beer components, which can be determined by capillary electrophoresis method are as follows:

- Cations and anions of water in brewing processes,
- Vitamins (B complex, ascorbic acid),
- Amino acids,
- Hop and beer bitter acids (humulones and isohumulones),
- Amines (histamine, volatile alkyl amines),
- Preservatives and coloring agents in finished products

This application note contains only basic reference data. To obtain a more detailed information please contact Lumex ltd. at Moskovsky prospect 19, Saint-Petersburg, 190005, Russia. Tel +7 812 718-5390 Fax +7 812 316-6538.
E-mail: lumex@lumex.ru, http://www.lumex.ru

05AE03.08.09-1