DETERMINATION OF *D*- AND *L*- ISOMERS OF TARTARIC AND MALIC ACIDS IN WINES, WINE MATERIALS, AND FOOD ADDITIVES

INTRODUCTION

Naturally occurred is predominantly *L*-form of tartaric acid whereas its *D*-form and the relevant racemic mixture can be artificially synthesized. Generally, artificial acidification of wine with tartaric acid is allowed by OIV, but only pure *L*-form must be used for this purpose. Thus, the analysis of tartaric acid isomers either in food additives or directly in wine can be an important parameter in clarifying any deviations in wine production. Analysis of enantiomers of malic acid is also within the necessary oenological procedures stated in OIV recommendations.

LUMEX INSTRUMENTS offers the present method, which allows determination of ***L*- and *D*-forms of tartaric and malic acids in wine, wine materials, and food additives** by capillary electrophoresis method.

MEASUREMENT METHOD

The capillary electrophoresis method for the determination of tartaric and malic acid isomers is based on their differential migration and separation in a fused silica capillary under the influence of an electric field. Separation occurs due to the differences in *D*- and *L*-isomers mobilities in electrolyte with a specially added chiral selector.

MEASUREMENT RANGE

Measurement range for isomers of both organic acids is **0.05–10 g/L** in wines and wine materials and **5–100%** in food additives.

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. All reagents must be of analytical grade or better.

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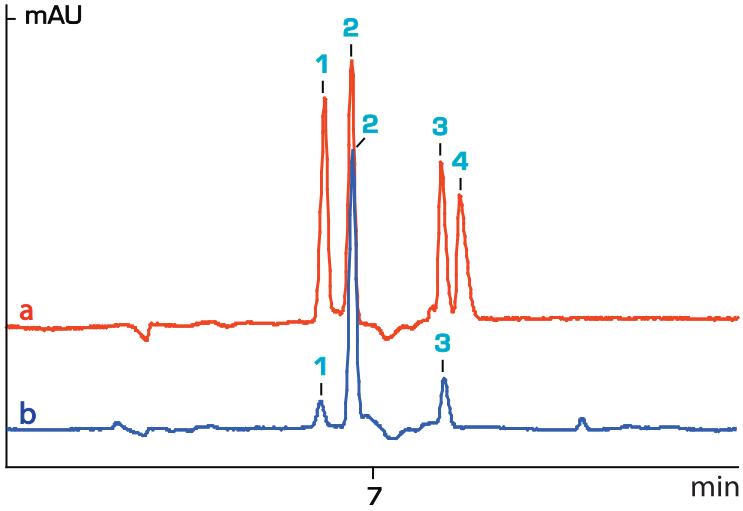
EXAMPLES OF REAL ANALYSES

BGE: electrolyte based on D-quinic acid
Capillary: L_{eff}/ L_{tot} = 65/75 см, ID=50 µm
Injection: 150 mbar x sec
Voltage: – 25 kV
Temperature: 20 °C
Detection: 250 nm, direct

Sample: artificial mixture of *L*- and *D*-isomers of tartaric and malic acids (upper trace)
1 – *D*-tartaric acid
2 – *L*-tartaric acid
3 – *L*-malic acid
4 – *D*-malic acid

Sample: wine (low trace)
Found, (g/L)
1 – *D*-tartaric acid (0.19)
2 – *L*-tartaric acid (2.0)
3 – *L*-malic acid (0.48)



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