



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 isomers 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 special 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®-105M capillary electrophoresis system is used in measurements. Data acquisition, collection, processing and output are performed using a personal computer running under WINDOWS® XP/7 operating system with installed dedicated software package ELFORUN®. All reagents must be of analytical grade or better.

EXAMPLE OF A REAL ANALYSIS

BGE: special with quinic acid

Capillary: $L_{\text{eff}}/L_{\text{tot}} = 75/65$ cm, ID=50 μm

Injection: 150 mbar*sec

Voltage: -25 kV

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

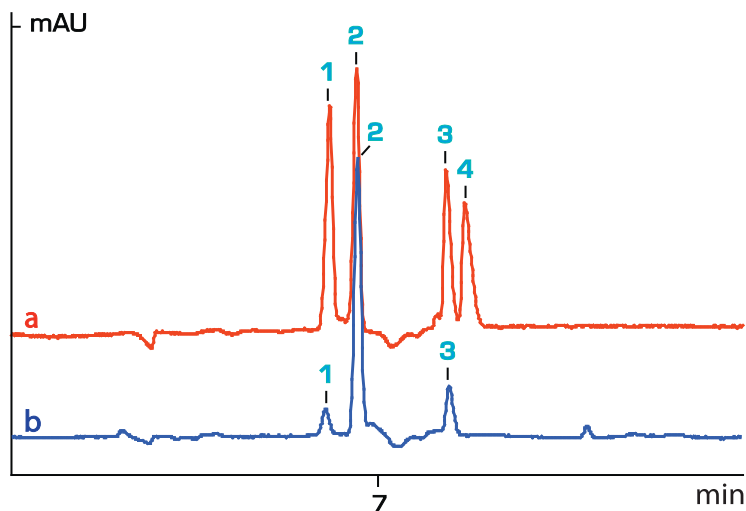
Sample: wine (low trace)

Found, (g/L)

1 – *D*-tartaric acid (0.19)

2 – *L*-tartaric acid (2.0)

3 – *L*-malic acid (0.48)



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

The information in this leaflet is supplemental. To get more specific information on this method, please contact the developer of this method Lumex Instruments Group.

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