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Application Brief No. 1006

Organic Acid Analysis in Wine and Grape Juice by Capillary Electrophoresis

Highlights

Organic acids influence the stability and flavor of wines. When it comes to fermenting grape juice, they help producers monitor the wine making process since they are good indicators of how far the fermentation process has progressed. Current methods of measuring organic acids are either expensive or aren't rugged enough for routine use.

Capillary Electrophoresis together with Waters™ NICE-Pak™ Chemistry Package is a new, simple, and inexpensive approach to organic acid analysis. To prepare a sample, you simply dilute it and add an internal standard. The autopurge feature of the Waters Quanta 4000 Capillary Electrophoresis System makes any other sample preparation procedures unnecessary. The method is linear over a broad range of concentrations, is reproducible and has shown good recoveries. The cost per test is a mere 50¢.

Operating Conditions

Sample preparation: Dilute 1.0 ml of juice or wine to 50 ml with HPLC grade water. Add the internal standard butyric acid, 100 µg/ml, 1:1 and mix well.

System: Waters Quanta™ 4000 Capillary Electrophoresis

Capillary: Fused silica, 75 µm X 100 cm

Electrolyte: 5 mM Potassium phthalate, 0.5 mM OFM™ Anion-BT, pH 7

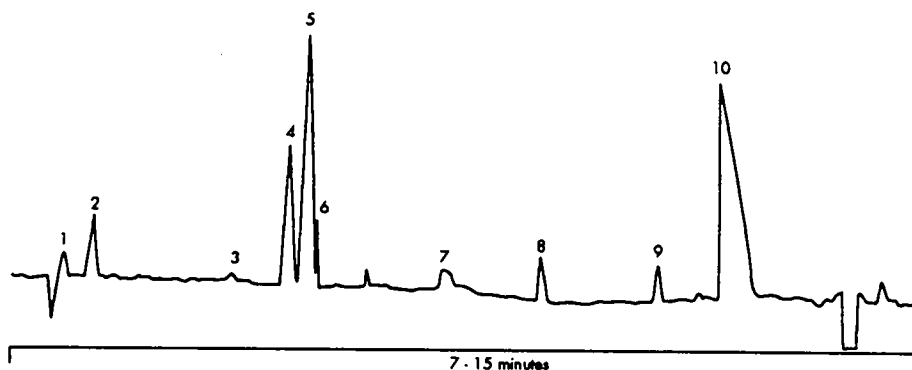
Injection: Hydrostatic 45 seconds

Voltage: 20 kV (Negative Power Supply)

Detection: 254 nm, 0.3 second time constant

Organic Acid	Original Concentration (µg/ml)
1 Chloride	
2 Sulfate	
3 Citric acid	127
4 Tartaric acid	2,645
5 Malic acid	3,291
6 Succinic acid	300
7 Phosphate	
8 Acetic acid	260
9 Lactic acid	296
10 Internal standard	

Chablis Wine

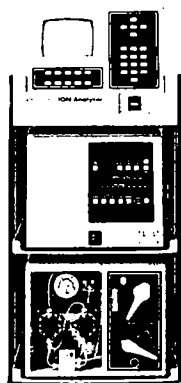


Reference

1. Jones, W.R., and Jandik, P., *Am. Lab.*, 1990, 22(9), 51-64.
2. Kenney, B.F., *International Ion Chromatography Symposium*, San Diego, Calif., Poster Presentation (1990).

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Ion Chromatography



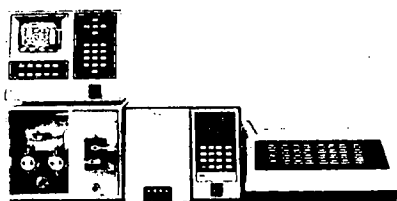
Stainless steel and non-metallic systems. Innovative detectors. Linear quantitation over a wide concentration range with single point calibration. If you need to analyze for mono- and divalent cations, ionic surfactants, organic acids, anions, metals, and metal complexes, talk to Waters.

Data management



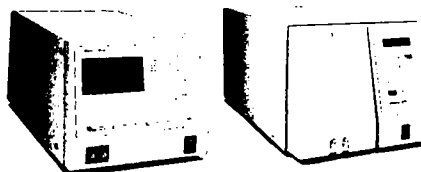
Single and multi-system data acquisition and control. Networking computers. Baseline™, Maxima™, and Expert™ Ease Chromatography Software. NEC and DEC hardware. From integrators to networking computers, Waters has a data solution to meet your every need.

PowerLine™ Systems



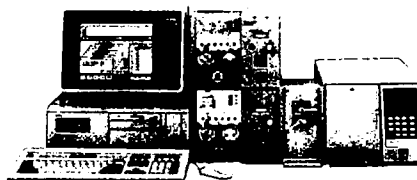
Single keyboard control and programming of pumps, injectors, and detectors with or without a separate personal computer. Waters PowerLine HPLC Systems put HPLC power where it belongs—at your fingertips. All Waters PowerLine HPLC, IC, GPC, GC and Preparative Chromatography Systems are controlled from the keyboard of the 600E PowerLine Module.

Detection



UV/Vis: photodiode array, fixed, variable and programmable wavelength. Refractive index. Conductivity. Electrochemical. Fluorescence: fixed and programmable/scanning wavelength. Waters offers the food technologist the best choice of detectors to solve separations problems now and in the future.

Special-purpose systems



Waters offers special-purpose systems for polymer analysis, amino acid analysis, peptide analysis, carbamate analysis, preparative chromatography, LC-MS, and sugar analysis. These systems come with installation and training, optimized methods, quality-tested chemistries, and the right combination of pumps, injectors, and detectors for reproducible analyses.

Chemical Products



Analytical to pilot plant scale chemistries. Bulk media. Specialty columns for amino acids, peptides, proteins, fatty acids, carbohydrates, organic acids, carbamate pesticide residues and polymers. Guard columns. Solid phase extraction cartridges. Radial compression technology. Sample filtration. Robotics. From sample preparation to post-column derivatization, Waters chemical products are essential for doing high-resolution chromatography.

Support and Service

Waters technical and service representatives are the best in the business. Along with Waters applications chemists, they create a support network which guarantees your satisfaction.

Waters
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