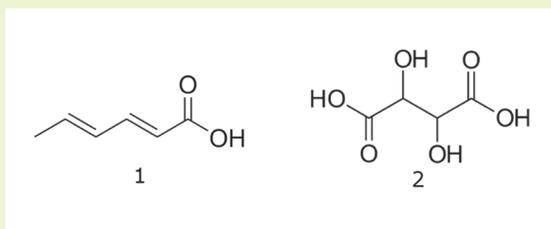
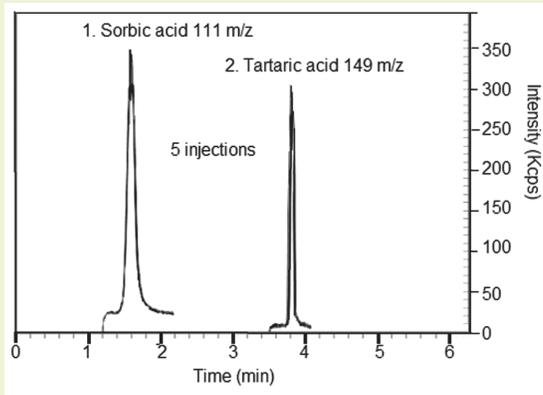


Sorbic and Tartaric Acids in Wine

Minimal sample preparation and analysis by LC-MS



Note: Sorbic acid (SA) is used worldwide as a preservative for various food and beverages, including wine. It is used to inhibit yeasts and molds. However, in sorbate treated wines lactic bacteria have been found to convert SA to 2-ethoxyhexa-3, 5-diene, which gives the wine an unpleasant geranium like smell. Tartaric acid is a by-product in wine production. It is important to determine the amount of tartaric acid in the evaporated powder or after purification.

Method Conditions

Column: Cogent Diamond Hydride™, 4µm, 100Å

Catalog No.: 70000-15P-2

Dimensions: 2.1 x 150 mm

Solvents: A: DI H₂O / 16.5 mM ammonium acetate
B: 90% acetonitrile / 10% DI H₂O / 16.5 mM ammonium acetate (v/v)

Gradient:	time (min.)	%B
	0	95
	1	95
	4 & 9	30
	9.5	95

Post Time: 3 min

Injection vol.: 1 µL

Flow rate: 0.4 mL/min

Detection: ESI - NEG - PerkinElmer Flexar SQ 300 mass spectrometer

Samples: Red and white wine samples were filtered using a MicroSolv Tech Corp. filter (0.45µm, nylon) and diluted using 50/50/0.1 methanol / DI H₂O / formic acid.

Peaks: 1. Sorbic acid 111 m/z
2. Tartaric acid 149 m/z

t₀: 0.9 min

Discussion

A simple, rapid, and reproducible LC-MS method for the determination of the sorbic and tartaric acids in wines is described. The method doesn't require complex preparation or extraction of the wine samples. It allows detection of both acids in a short gradient run, with rapid equilibration of the column after each run.

Calibration curves were constructed in the ranges 1-300ppm and 100-3000ppm for sorbic acid and tartaric acid respectively. Correlation coefficients for both acids were close to 0.997. In the sample of the red wine analyzed, it was determined that the concentration of sorbic acid was 8 ppm and tartaric acid was 500 ppm.