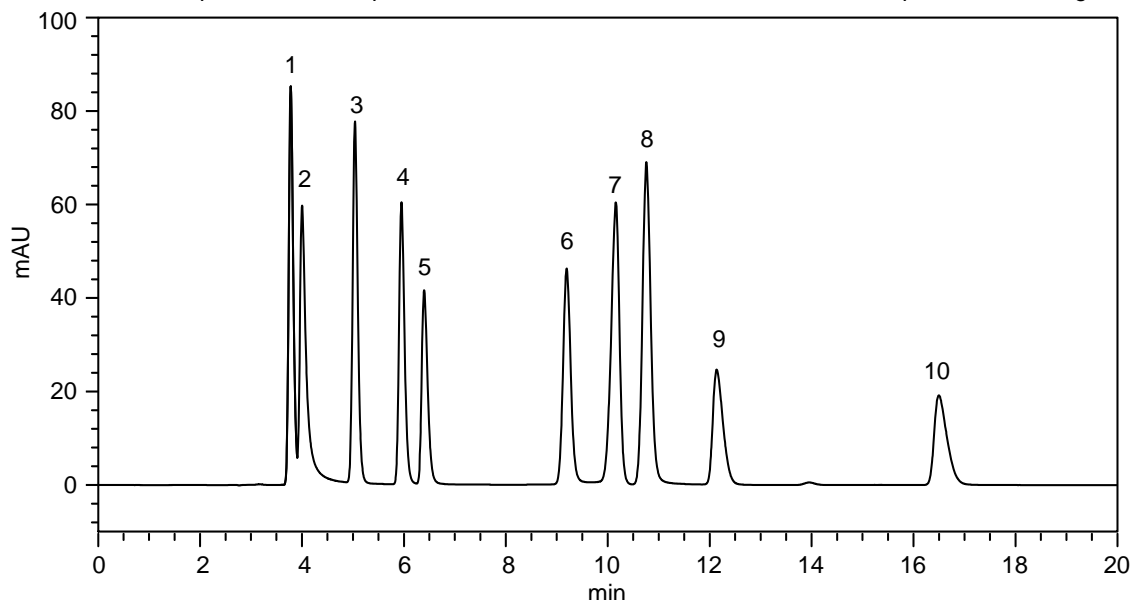


## Analysis of Organic Acid Standards

Organic acids can be easily analyzed by using a highly versatile reversed phase column with the UV absorbance detection at 210 nm. This is the analysis of highly polar organic acids and thus, LaChrom C18-AQ column which can be used with 100% aqueous eluents was used. The simultaneous analysis of 10 organic acid standards and the analyses of the organic acids in drinks, wine, and vinegar were performed. As components other than organic acids are detected by this analytical system, this system is suitable for samples containing organic acid as a main component and with little contaminants. One of the simple methods to distinguish target components from contaminants is to compare the elution positions with the standards when the column temperature is changed.



\* Standard Solution

Component	Conc. (mg/L)	Component	Conc. (mg/L)
1. Tartaric acid	500	6. Pyroglutamic acid	100
2. Formic acid	1000	7. Citric acid	1000
3. Malic acid	1000	8. Fumaric acid	10
4. Lactic acid	1000	9. Succinic acid	1000
5. Acetic acid	1000	10. Propionic acid	1000

Calibration curves with good linearities were obtained for the concentration ranges shown below.

Formic acid, Malic acid, Lactic acid, Acetic acid, Citric acid, Succinic acid, Propionic acid : 5 - 1000 mg/L

Tartaric acid : 2.5 - 500 mg/L, Pyroglutamic acid : 0.5 - 100 mg/L, Fumaric acid : 0.05 - 10 mg/L

SAMPLE	10 $\mu$ L of Std. Soln. *	PRESSURE	
PACKING MATERIAL	HITACHI LaChrom C18-AQ (5 $\mu$ m)	TEMPERATURE	25°C
COLUMN SIZE	4.6 mm I.D. $\times$ 250 mm (P/N : 891-5059)	SEPARATION METHOD	Partition/Adsorption
ELUENT	1 mmol/L H <sub>2</sub> SO <sub>4</sub> + 8 mmol/L Na <sub>2</sub> SO <sub>4</sub> (pH 2.8)	DETECTOR	UV 210 nm
FLOW RATE		1.0 mL/min	INSTRUMENTS Chromaster 5110 (Pump), Chromaster 5210 (Autosampler), Chromaster 5310 (Column Oven), Chromaster 5420 (UV-VIS Detector)

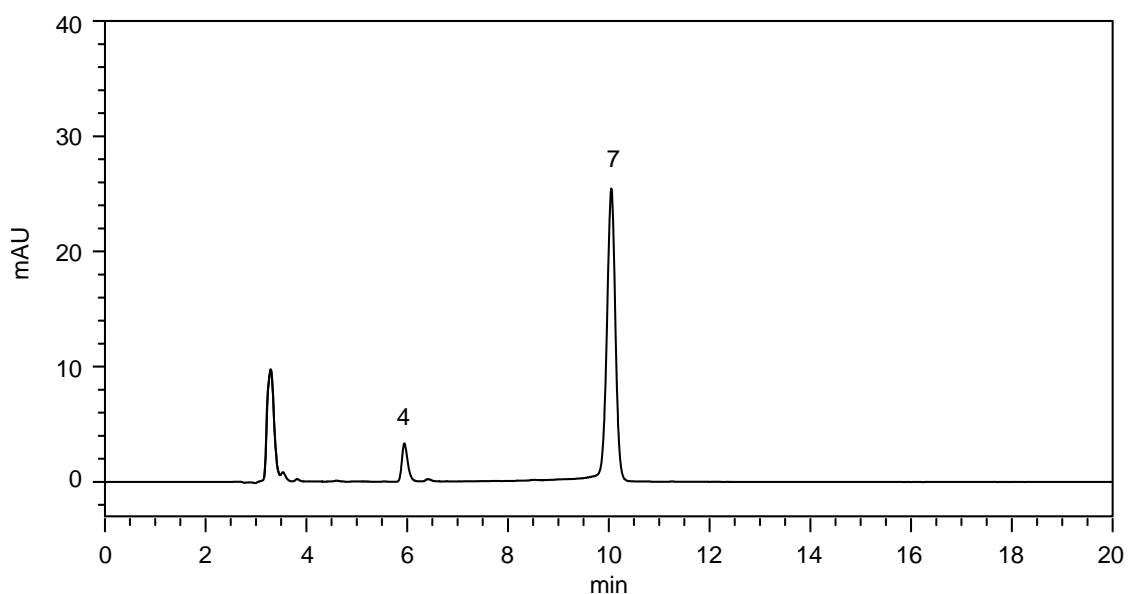
### KEY WORDS

Bio/Medical Science/Food/Pharmaceutical, Food, Food Component, Organic Acid, Sports Drink, Supplement Drink, Wine, Vinegar, UV-VIS Spectrometry, Health, Chromaster, LaChrom C18-AQ, Partition/Adsorption

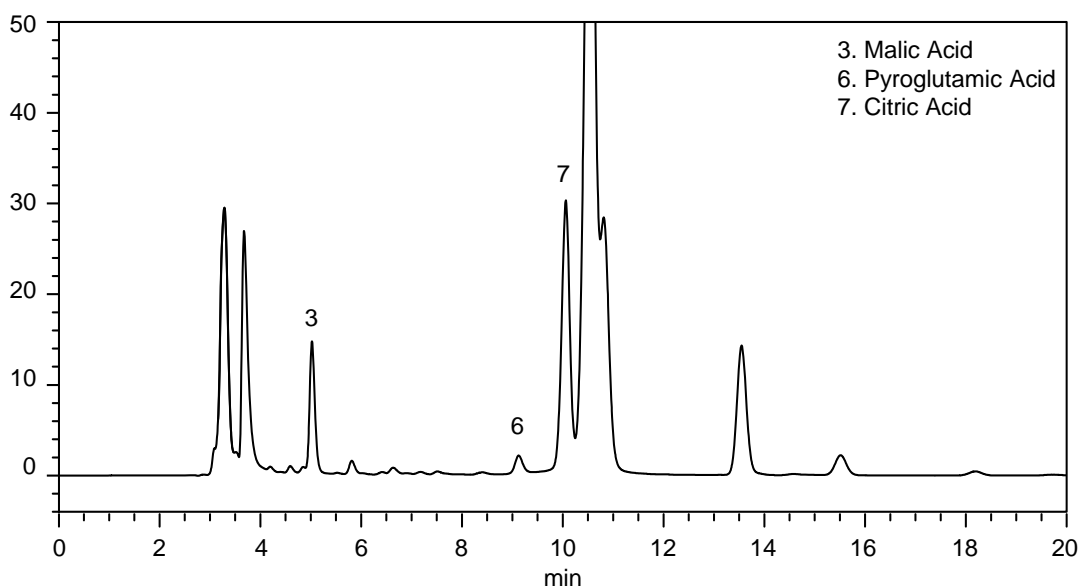
High Performance Liquid  
Chromatograph (HPLC)

Sheet No. LC100029-01

# Analyses of Organic Acids in Sports Drink and Supplement Drink



[Chromatogram of Sports Drink]



[Chromatogram of Supplement Drink]

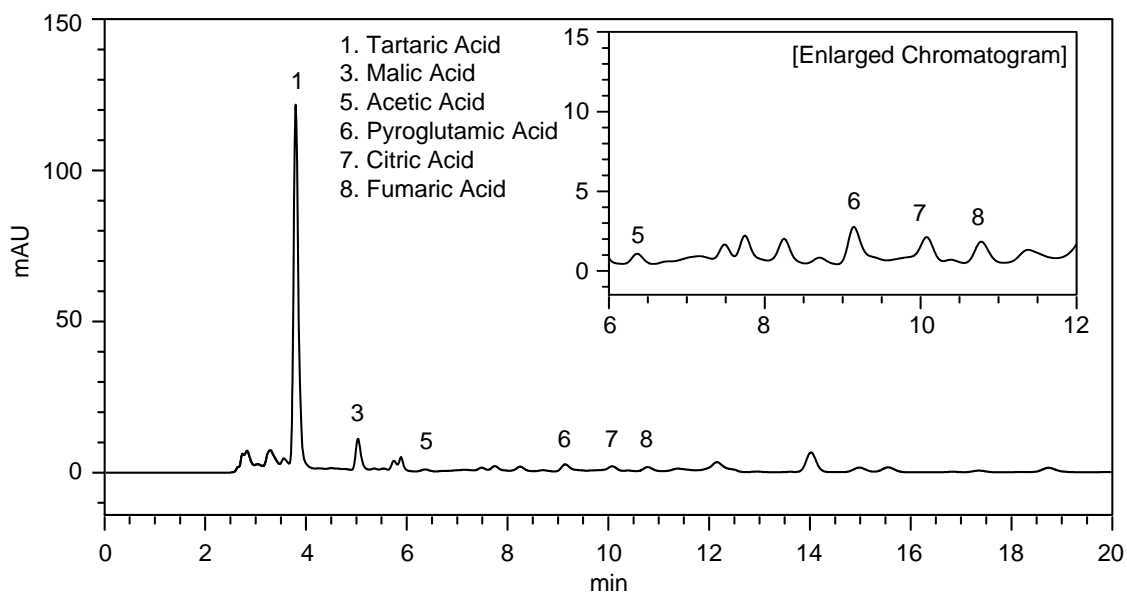
[Sample Preparation Method]

Dilute to 5 times with purified water and filter through a 0.45  $\mu\text{m}$  filter

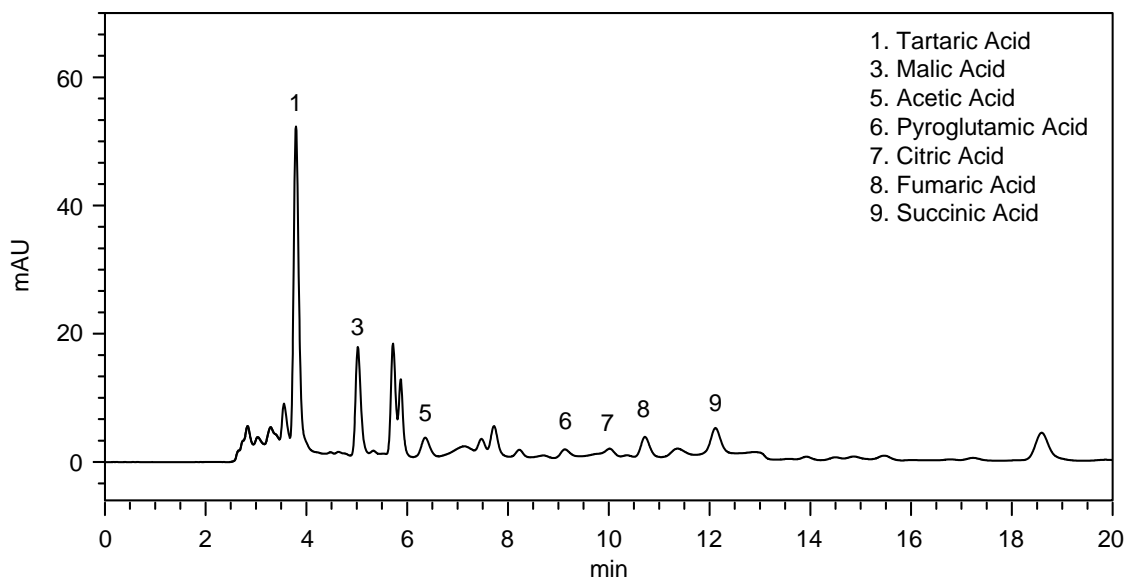
High Performance Liquid  
Chromatograph (HPLC)

Sheet No. LC100029-02

# Analyses of Organic Acids in Red Wine and White Wine



[Chromatogram of Red Wine]



[Chromatogram of White Wine]

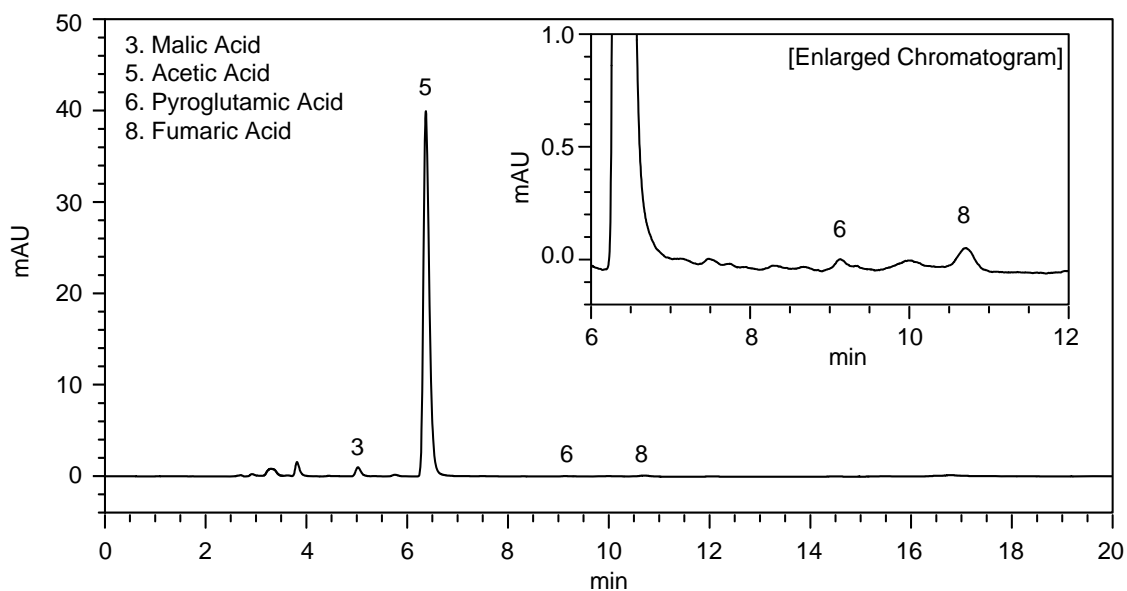
[Sample Preparation Method]

Dilute to 5 times with purified water and filter through a 0.45  $\mu\text{m}$  filter

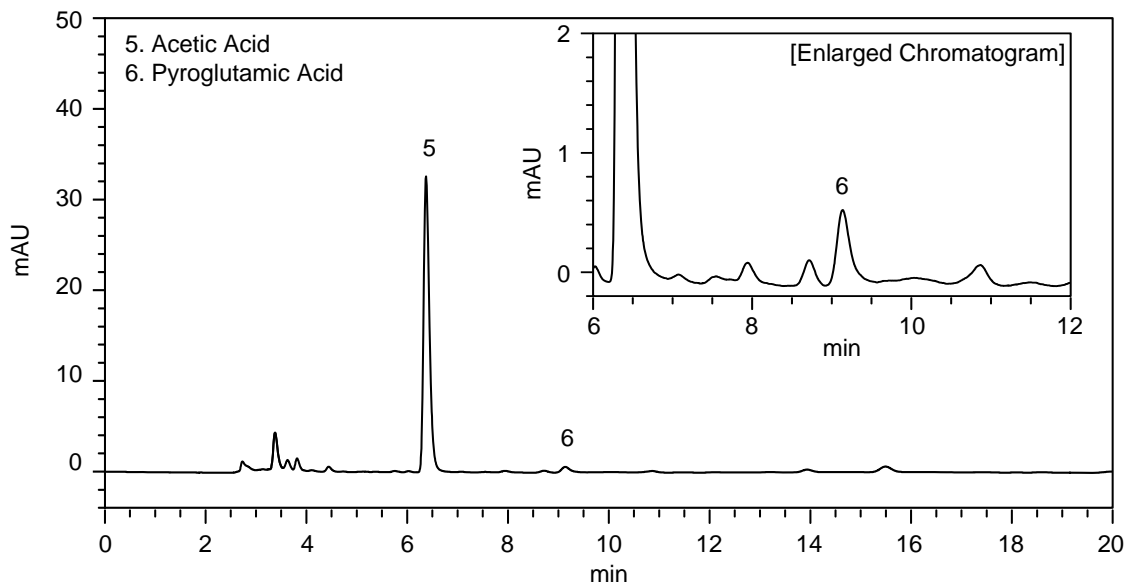
High Performance Liquid  
Chromatograph (HPLC)

Sheet No. LC100029-03

# Analyses of Organic Acids in Apple Vinegar and Grain Vinegar



[Chromatogram of Apple Vinegar]



[Chromatogram of Grain Vinegar]

[Sample Preparation Method]

Dilute to 50 times with purified water and filter through a 0.45  $\mu$ m filter

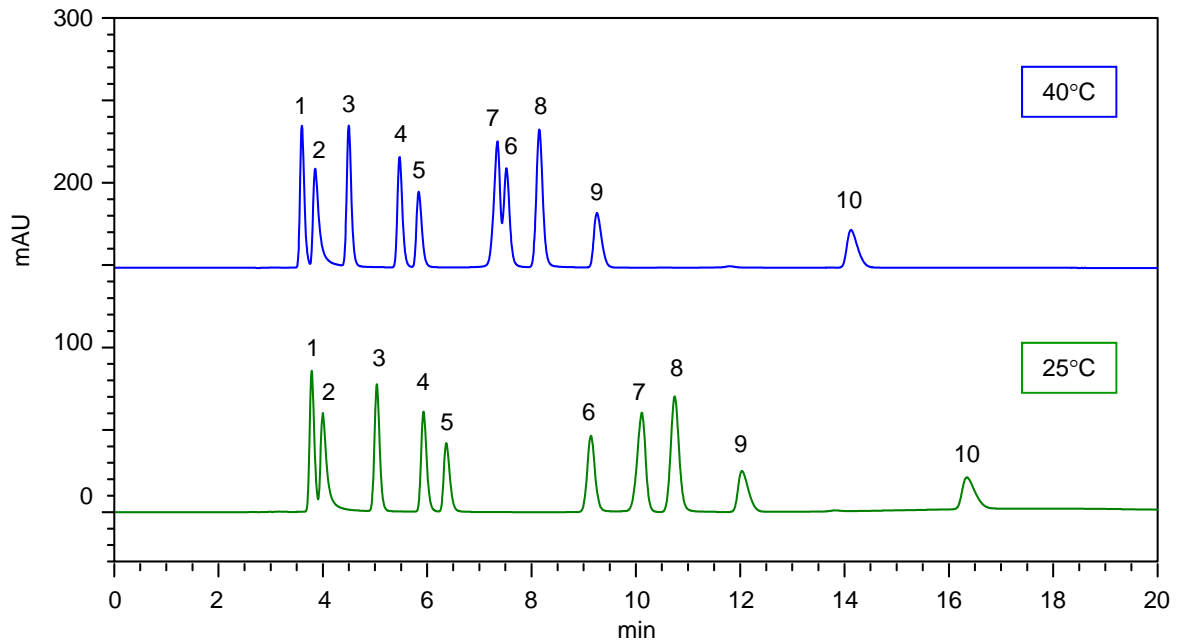
High Performance Liquid  
Chromatograph (HPLC)

Sheet No. LC100029-04

## Comparison of Column Temperature

The elution positions of 10 organic acid standards were compared by changing the column temperature.

The results obtained at the temperatures of 25°C and 40°C show that the elution positions of pyroglutamic acid and citric acid become switched, indicating that the elution behavior changes depending on the analysis temperature.



1. Tartaric acid	6. Pyroglutamic acid
2. Formic acid	7. Citric acid
3. Malic acid	8. Fumaric acid
4. Lactic acid	9. Succinic acid
5. Acetic acid	10. Propionic acid

High Performance Liquid  
Chromatograph (HPLC)

Sheet No. LC100029-05