C190-E234

SHIMADZU
Excellence in Science

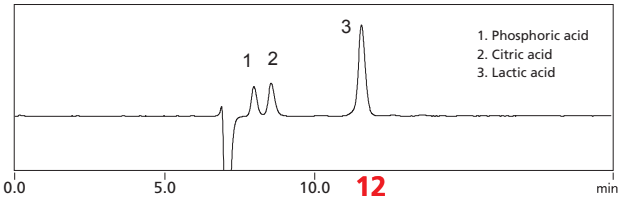
Quick and easy monitoring of culture or fermentation processes

High-speed Organic Acid Analysis Column: Shim-pack™ Fast-OA

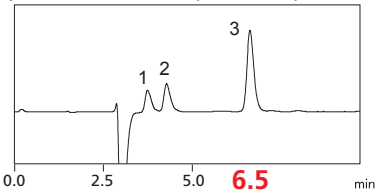
In the fields of fermented food production and bio-industry, organic acid metabolites are monitored to control the activity of yeast or bacteria. The quantity of organic acids needs to be checked and the production environment adjusted accordingly in order to improve production and quality control, and these checks must be carried out in a timely manner.

The Shim-pack Fast-OA is a column for the high-speed analysis of organic acids. It can separate multiple organic acids in a short time and supports real-time monitoring of their concentration levels.

Shim-pack SCR-102H
(8.0 mm I.D. ×300 mm, 1 column, flow rate 0.8 mL/min)

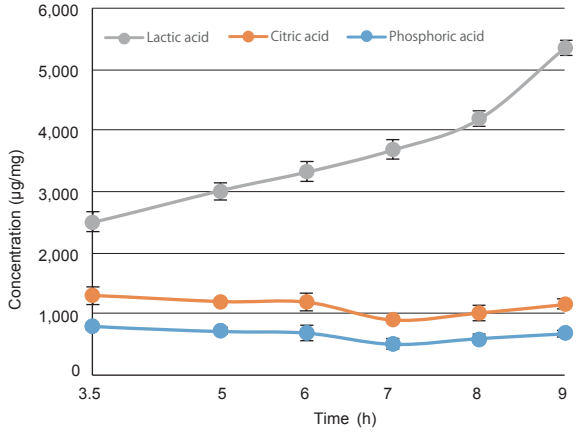


Shim-pack Fast-OA
(7.8 mm I.D. ×100 mm, 2 columns, flow rate 0.8 mL/min)



Analysis time reduced to around half

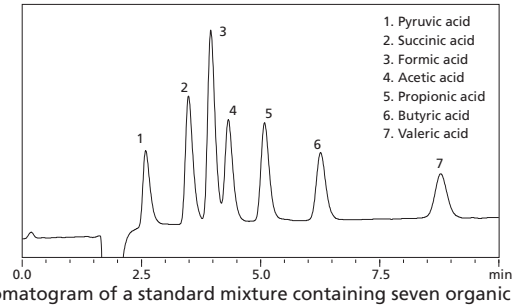
Chromatograms of home-fermented yogurt



Monitoring of organic acid content in home-fermented yogurt

Analysis of short-chain fatty acids with strong retention in under 10 minutes

The Shim-pack Fast-OA column can also be used to analyze short-chain fatty acids with strong retention, of interest in the study of intestinal flora, in less than 10 minutes.



Chromatogram of a standard mixture containing seven organic acids

Analytical conditions

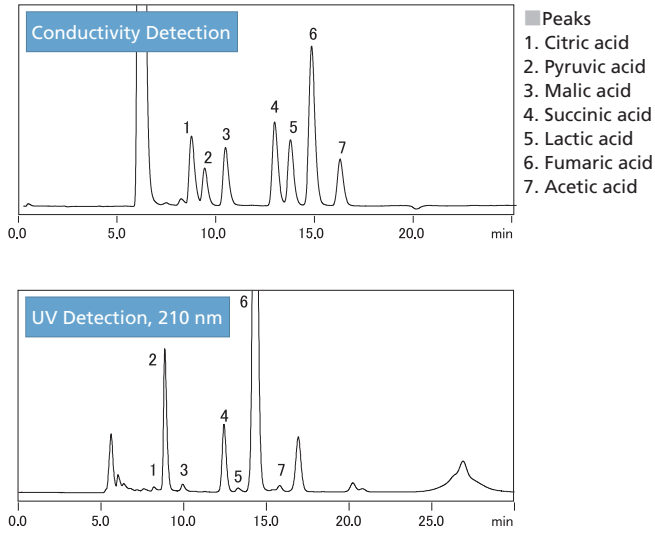
Column	: Shim-pack Fast-OA
Mobile phase	: 5 mmol/L p-toluenesulfonic acid
pH buffer solution	: 5 mmol/L p-toluenesulfonic acid 20 mmol/L Bis- Tris 0.1 mmol/L EDTA
Flow rate	: 0.8 mL/min
Detection method	: Conductivity detector (CDD-10AVP)

Selective detection of organic acids

Post-column pH-buffering conductivity detection of organic acids is highly selective

Culture mediums and food samples contain not only organic acids but also various impurities. With UV detection, the absorbance varies depending on the type of organic acid, so quantification may be difficult due to variations in sensitivity or the effects of impurities.

A detection method combining post-column pH buffering and conductivity detection allows you to carry out highly-selective quantitative analysis of organic acids without worrying about overlapping contaminant peaks.



Peaks
1. Citric acid
2. Pyruvic acid
3. Malic acid
4. Succinic acid
5. Lactic acid
6. Fumaric acid
7. Acetic acid

Chromatogram of a liquid culture medium with organic acid additives

*Analysis conditions differ between the upper and lower graphs.

Shim-pack Fast-OA product lineup

Shim-pack Fast-OA is an ion-exclusion chromatography column. Up to three columns can be connected according to the target compounds*. A guard column, the Shim-pack Fast-OA (G), can be used in combination to protect the analysis column. The guard column is a cartridge-type, and the cartridge can be replaced.

Part Number	Product name	Size	Remarks
228-59942-41	Shim-pack Fast-OA	100 mm×7.8 mm I.D.	Analytical column
228-59942-42	Shim-pack Fast-OA (G)	10 mm×4.0 mm I.D.	Guard column, includes a column holder and a cartridge
228-59942-43	Shim-pack Fast-OA (G) Cartridge (4 pcs)	—	Replacement cartridge for guard column

*For details about the piping, please refer to the technical report *High-Speed Analysis of Organic Acids Using Shim-pack Fast-OA and pH-Buffered Electrical Conductivity Detection* (C190-E237)

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