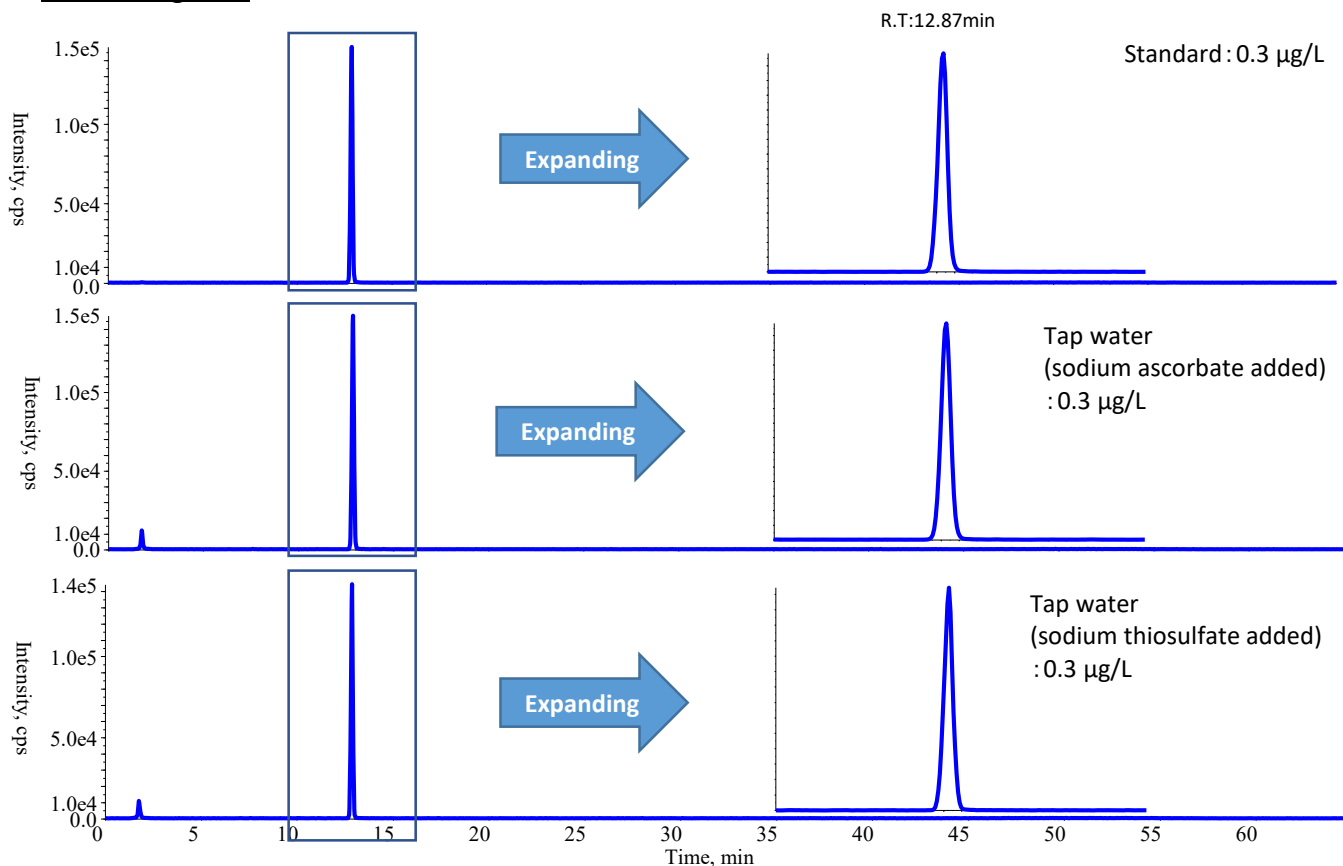


Validity evaluation of methidathione oxone in tap water by using LC-MS/MS

On March 31, 2022, the Ministry of Health, Labor and Welfare Health Bureau Notification “Establishment of Ministerial Ordinance Concerning Water Quality Standards and Partial Revision of the Ordinance for Enforcement of the Water Supply Act” (Notification No. 1010004 of Health Bureau, Ministry of Health, Labor and Welfare dated October 10, 2003) was partially revised. In the revision, it was stated that “Methidathione oxone, which is the oxone form of methidathione, should also be measured.”, it has been added as a component to be measured in Attachment 20-2 “Liquid Chromatograph - Simultaneous Analysis Using a Mass Spectrometer (LC-MS/MS Method)”. This time, we used InertSustain C18, which has a high degree of inertness, as the analytical column, and sodium ascorbate and sodium thiosulfate as dechlorinating agents for tap water. (R. Takahara)

Chromatograms



HPLC conditions

System LC : ExionLC AD (Sciex), MS : QTRAP 6500+ (Sciex)

Column InertSustain C18 HP (GL Sciences Inc.)
(3 µm, 150 × 2.1 mm I.D)

Cat. No. 5020-14415

Eluent A) 5 mmol/L CH₃COONH₄ in CH₃OH
B) 5 mmol/L CH₃COONH₄ in H₂O

Flow Rate 0.2 mL/min

Injection Vol. 30 µL

Col. Temp. 40 °C

Detection MS/MS (ESI, Positive, Negative, SRM)
CUR CAD IS TEM GS1 GS2
25 10 4500 400 70 70

Sample: Methidathione oxon (Q1 : 287 / Q3 : 145)

Time(min)	A (%)	B (%)
0	10	90
7	45	55
42	80	20
46	100	0
51	100	0
55	10	90
65	10	90

Accuracy and repeatability of methidathione oxone by addition of tap water

Dechlorinating agent: sodium ascorbate

Conc. (µg/L)	Accuracy (recovery)						Repeatability (RSD)
	Sample1	Sample2	Sample3	Sample4	Sample5	Average	
0.03	102%	92%	103%	88%	92%	95%	7%
0.3	107%	103%	107%	91%	115%	104%	8%

Dechlorinating agent: sodium thiosulfate

Conc. (µg/L)	Accuracy (recovery)						Repeatability (RSD)
	Sample1	Sample2	Sample3	Sample4	Sample5	Average	
0.03	95%	88%	88%	85%	83%	88%	5%
0.3	106%	90%	86%	99%	107%	98%	9%

Product used

analytical column

Item	Particle size (µm)	inner diameter (mm)	Length (mm)	Cat. No.
InertSustain C18 HP	3	2.1	150	5020-14415

Note) Joint type is UP type only.

guard column for UHPLC

Item	Particle size (µm)	inner diameter (mm)	Length (mm)	Cat. No.
Cartridge (2 pcs) + holder (1 pcs) set Inert Sustain C18	3	2.1	10	5020-20374
Replacement cartridge (set of 2) Inert Sustain C18	3	2.1	10	5020-20323

Note) Joint type is UP type only.

GL Chromatodisc Aqueous <A type>

Model	filter diameter (mm)	Pore size (µm)	Quantity	Cat. No.
4A	4	0.2	100	5040-28500
13A	13	0.2	100	5040-28501



Dedicated holder



Replacement cartridge



GL Chromatodisc

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