



DW-K2025

High Performance Liquid Chromatography

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DW-K2025

High Performance Liquid Chromatography

DW-K2025 P1/P2/P4 Pump
(Isocratic/Binary/Quaternary)

DW-K2025AS Autosampler

DW-K2025CO Column Oven

DW-K2025UVD/DAD/FLD/RID/ELSD Detector



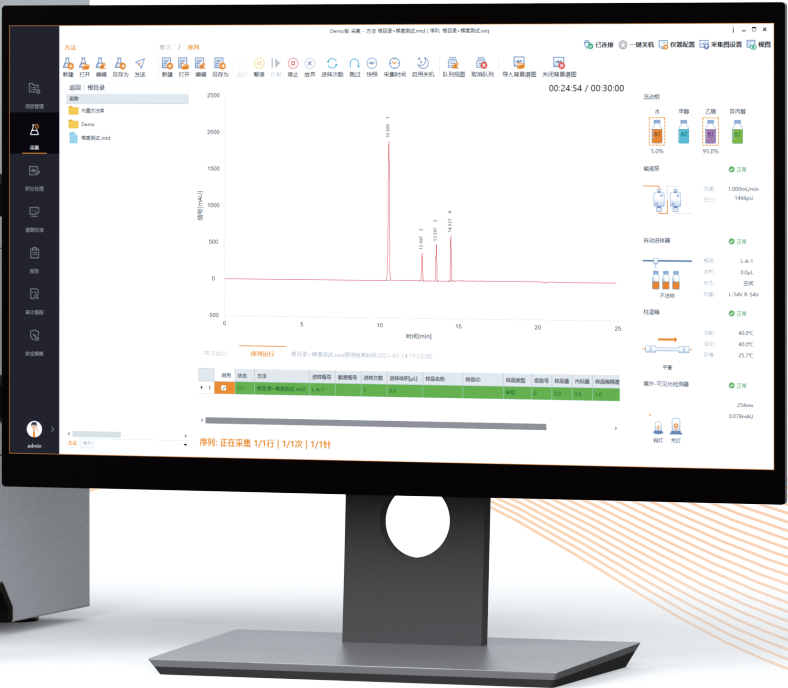
Reliability

With the reliable design and high-quality components, DW- K2025 passes the reliability test performed by authority, ensuring the long-term running in optimum condition.

Precision

The precision and accuracy of the results are guaranteed with our unique pumping and sampling technology, high sensitivity detector, and powerful data processing software.

Workstation



Ease of use

The operation is more convenient and efficient with a variety of user-friendly designs.

Compliance

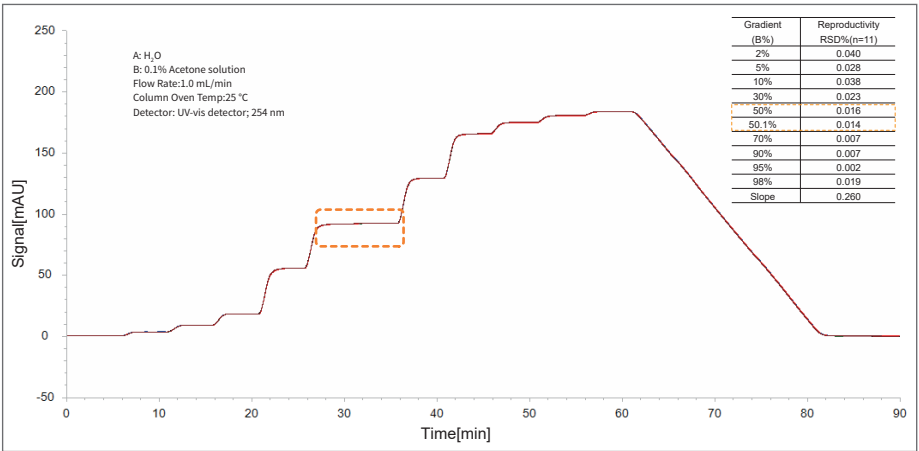
Fully complies with FDA 21 CFR Part 11 with database mode and data traceability.

DW-K2025 P1/P2/P4 Pump



Specifications:

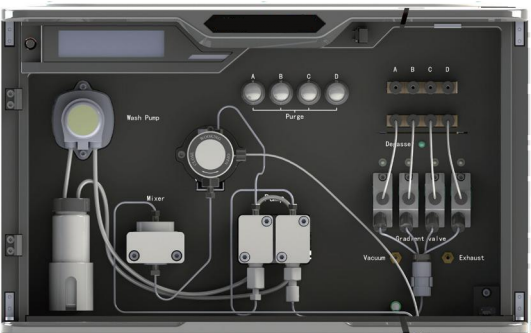
Flow rate range	0.001 mL/min~10.000 mL/min
Pump type	Isocratic(P1), Binary(P2), Quaternary(P4)
Maximum pressure	62 MPa
Plunger rinsing	Supported



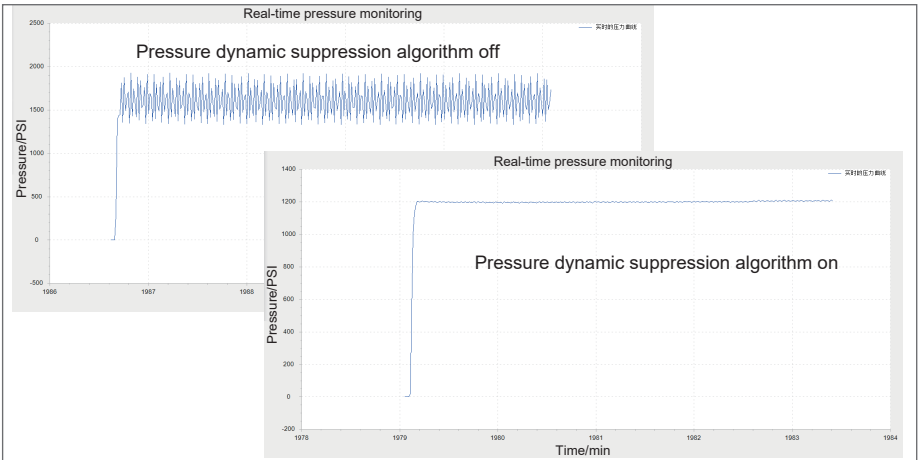
Gradient test



P2 Binary pump



P4 Quaternary pump

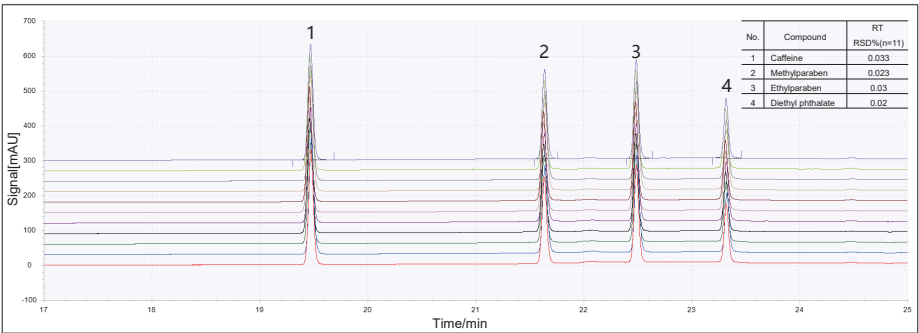


Pressure fluctuation test

Precision

Excellent repeatability

The precise gradient change and retention time are guaranteed with the reciprocating tandem plunger pump and pressure dynamic suppression algorithm. The repeatability of retention time is less than 0.2%.



Retention time repeatability test

Reliability

The reliable design makes service life longer

Material

The cam is integrally processed from high-hardness alloy steel and combined with high-frequency heat treatment technology, which makes the surface of the cam is more wear-resistant (the hardness is above 55HRC), and the service life is longer.

Power

The high-power customized motor, NSK bearings, and independent air duct make the power and life even better.

Gearing

Self-lubricating and wear-resistant materials are used for the piston drive mechanism. Also, the inner wall rifling design prevents the piston from accidentally locking, making the gearing more reliable.

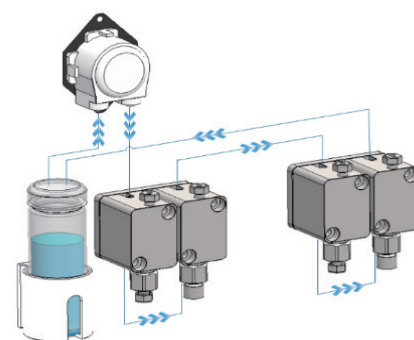
Plunger

The patented suspended floating plunger(Patent Number: ZL 2020 2 1896102.3) can adapt to the working conditions automatically, which is convenient for disassembly and prevents the eccentric wear of the sealing ring effectively. With the special sealing structure and the automatic cleaning of the plunger, the pump seal is more reliable.

Ease of use

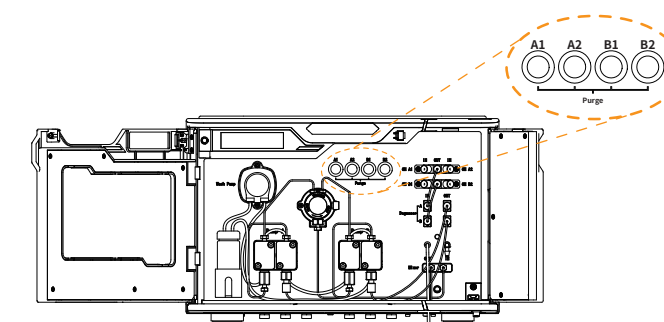
Equipped with an online automatic rinsing mechanism

When the pump is working, the rinsing pump is automatically turned on and runs periodically, which can effectively prevent the crystallization of buffer salts and the growth of microorganisms, and prolong the service life of the plunger and plunger sealing.



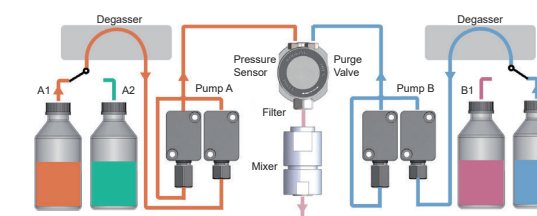
Easy to purge

Both the workstation and the instrument panel are equipped with a purging function, making it easier to purge.



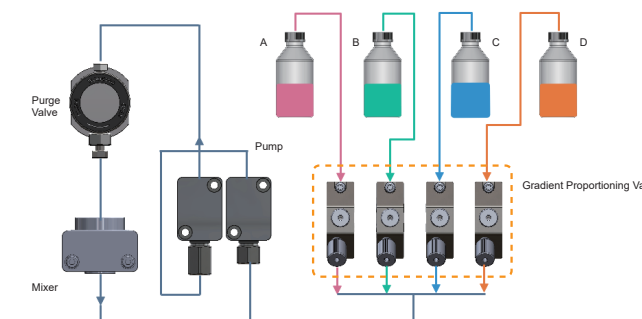
Intelligent solvent switching to improve efficiency

Equipped with a 4-channel solvent selection valve for binary pump. The solvent can be automatically switched according to the method.



Independent 4-channel gradient proportioning valve, easy for maintenance

The gradient proportioning valve of the quaternary pump adopts a 4-channel independent design. The intelligent monitoring and diagnosis can realize real-time monitoring and independent replacement of each channel, the whole design can reduce maintenance costs effectively.



DW-K2025AS Autosampler



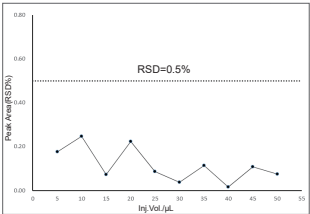
Specifications:

Sample capacity	108, 2 mL(96&384 well plates)
Injection range	0-100 μL
Injection mode	Low-loss, microliter carrying, full-loop
Injection time	Minimum to 5 s
Carryover	0.003%
Degassing unit	Online degassing(optional)
Temperature control	4-40 °C(optional)

Precision

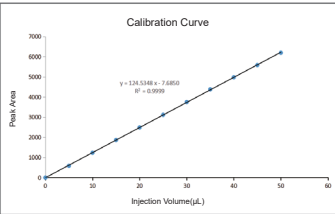
Precise injection volume

The DW-K2025 autosampler adopts a patented integrated constant pressure needle (Patent Number: ZL 2020 2 1159205.1) and a precise syringe pump, which ensures accurate injection volume and excellent linearity, making the results more precise and accurate.



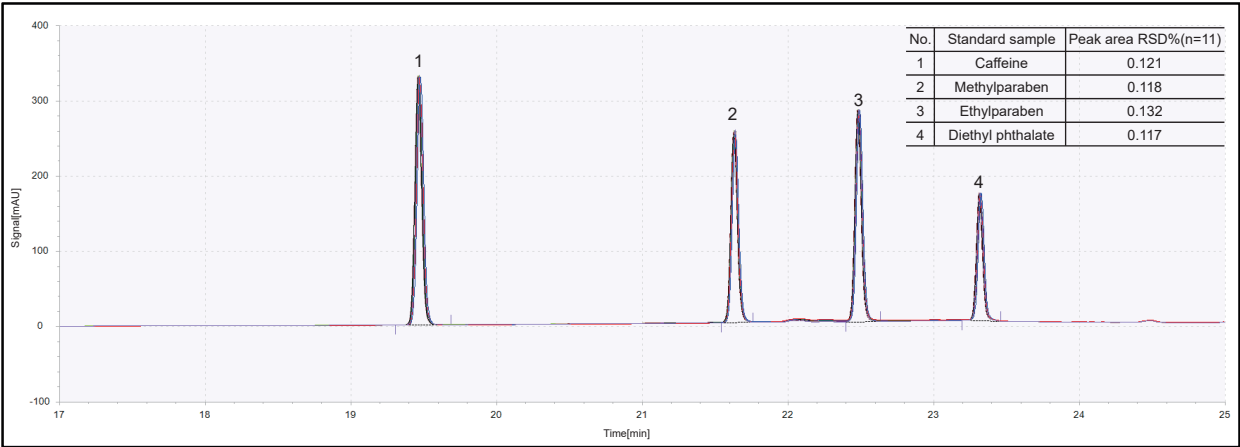
Repeatability test

RSD analysis of peak areas of 5 μL, 10 μL, 15 μL, 20 μL, 25 μL, 30 μL, 35 μL, 40 μL, 45 μL and 50 μL (N=11) injected into the same sample respectively.



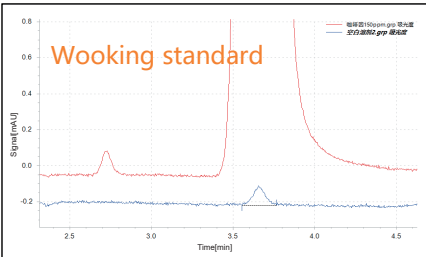
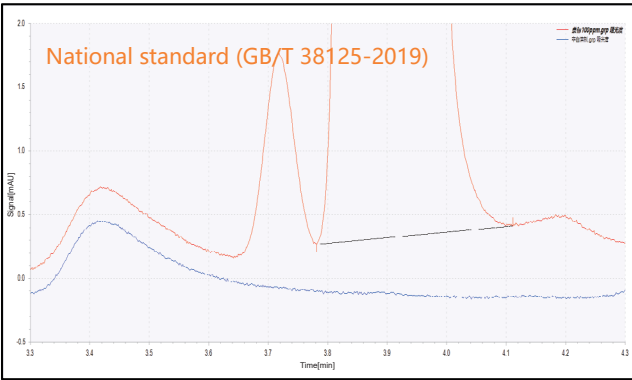
Linearity test

The same sample was injected with 5 μL, 10 μL, 15 μL, 20 μL, 25 μL, 30 μL, 35 μL, 40 μL, 45 μL and 50 μL respectively, and the fitting linear analysis was performed.



Low carryover to make results more accurate

The sampling needle is highly polished for the outer surface and passivated for the inner surface, which can effectively reduce the sample residue. The carryover is much lower when needle washing of the outer and inner surfaces are performed.



Sample	Peak area	Carryover
Caffeine 3000 ppm	Overload	0.559
Blank sample after needle washing	0.559	3286.287x20
Caffeine 150 ppm	3286.287	x100%=0.00085%

Reliability

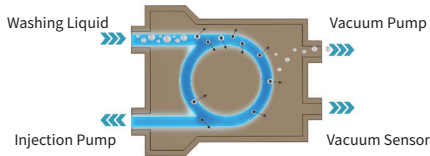
Design of needle

With our integrated constant pressure sampling needle (Patent Number: ZL 2020 2 1159205.1), the air pressure inside and outside the sample bottle can be balanced during sampling; the injection port is set on the sidewall to prevent bottle pad debris from clogging the needle during puncture.



Design of degassing unit of washing liquid

The built-in autosampler degassing unit can be used for degassing of washing liquid, avoiding interference caused by air bubbles



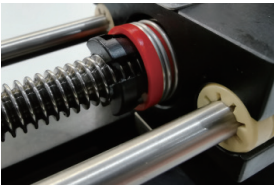
Design of mechanical arm

The ball monorail design of the mechanical arm effectively prevents the arm from locking during moving. The operation is more stable when combined with the motor closed-loop control and out-of-step protection algorithm.



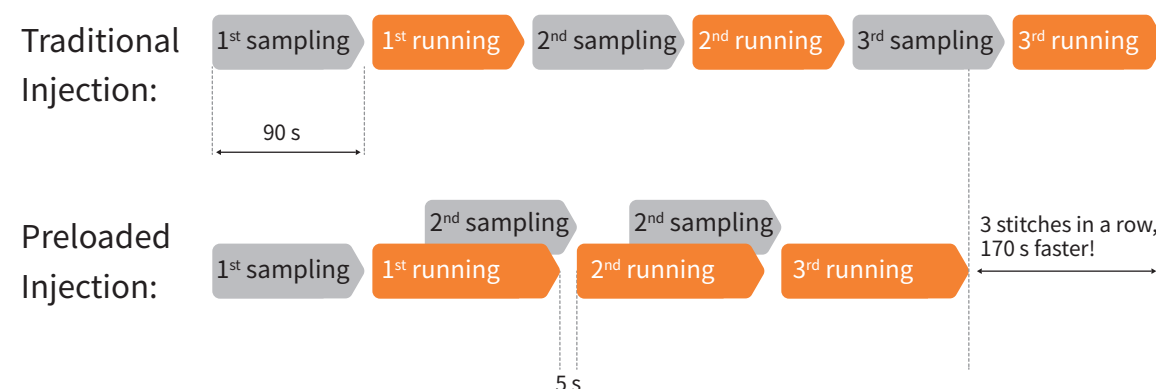
Design of self-compensation injection pump

The maintenance-free self-lubricating guide device and self-compensating sliding screw are used for real-time compensation of the slight wear, and it has excellent motion accuracy and is more durable.

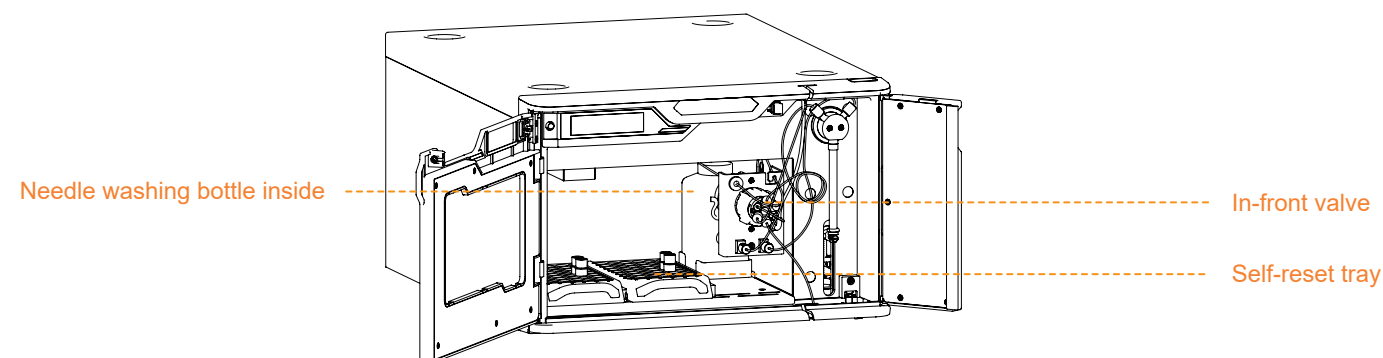


Ease of use

- Patented preloaded sample injection mode(Patent Number: ZL 2020 2 2977790.2), the injection time can be shortened to 5 s, which greatly improves the efficiency.



- A variety of injection modes combined with sample temperature control technology to satisfy different detection needs such as rare and unstable samples
- The dehumidification function is optionally equipped to avoid the generation of condensed water, effectively prevent the sample from being diluted, and ensure accurate results
- The maintenance is more convenient and efficient with the in-front injection valve.



DW-K2025CO Column Oven



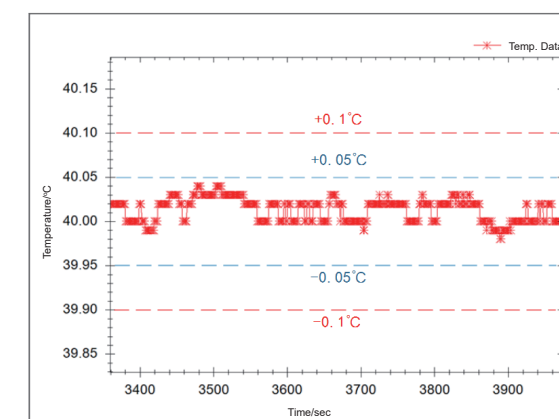
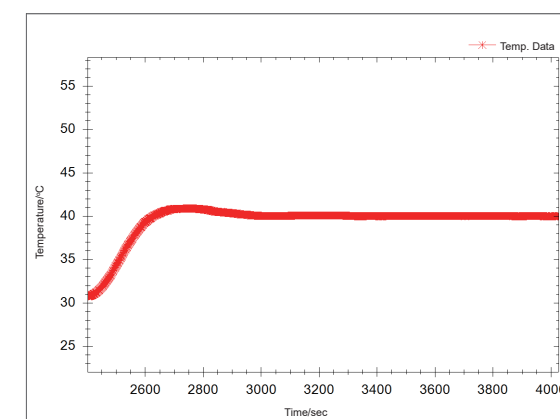
Specifications:

Operating principle	Peltier element and fan-based forced air
Temperature range	5 °C above ambient to 85 °C 10 °C below ambient to 85 °C

Precision

Precise temperature control ensures good separation and repeatability

Using fuzzy PID intelligent temperature control algorithm, fan-based air circulation, and multiple insulation layer design, the column temperature is more accurate, stable, and uniform, the temperature stability is ± 0.1 °C, and the temperature for each analysis are constant and consistent.



Reliability

Triple protection, more safe to use

Real-time liquid leak protection, intelligent monitoring of Peltier and cavity temperature, over-temperature power-off protection, triple safety protection designs, effectively prevents accidental liquid leakage and dangers caused by over-heating.

DW-K2025UVD

UV-Vis Detector



Specifications:

Light source	Deuterium(transmission type) and Tungsten lamp
Wavelength range	190-800 nm
Wavelength accuracy	+/- 1 nm
Wavelength precision	+/- 0.1 nm
Linearity	>2.5 AU
Wavelength calibration	Mercury lamp

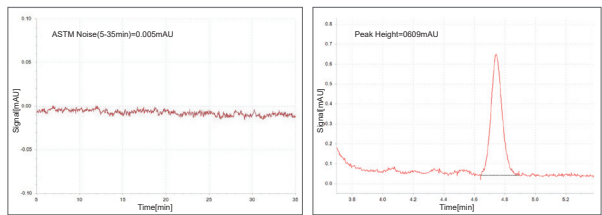
Precision

Low LOD

The high-throughput optical path, reference subtraction algorithm, and ultra-precise signal acquisition circuit ensure the detector's excellent sensitivity.

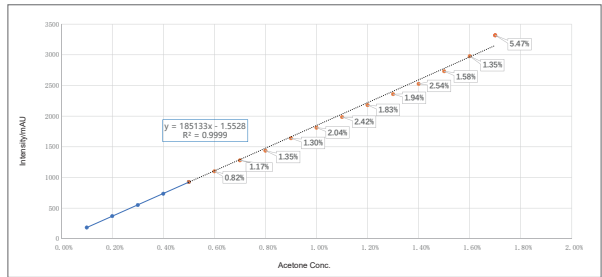
Sample: 1.0×10^{-7} g/mL Naphthalene
Column: C18, 4.6×250 mm, 5 μ m
Mobile phase: 95:5=Mehtanol: Water
Flow rate: 1.0 mL/min
Injection Volume: 20 μ L
Wavelength: 254 nm

$$\text{LOD } C_{\min} = \frac{3H_N \times c}{H} = \frac{3 \times 0.005 \times 1.0 \times 10^{-7}}{0.609} = 2.4 \times 10^{-9} \text{ g/mL}$$



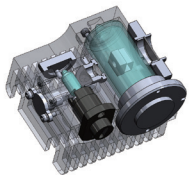
Wide linearity

The UVD covers a wide linear range of 2.5AU, making it easier to analyze high concentration samples



Reliability

The patented transmission type deuterium lamp and static light path (Patent Number: ZL 2020 2 0832429.8) allow the light source switching without moving of lamp, which is more reliable.



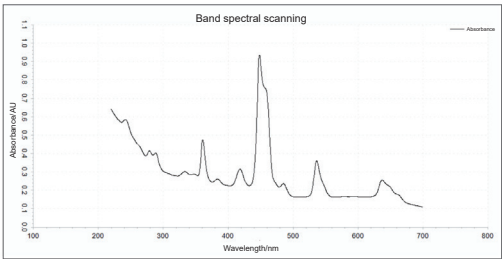
With the patented design of the optical unit (Patent Number: ZL 2020 2 0832429.8) and the light source module, the service life is much longer.



Ease of use

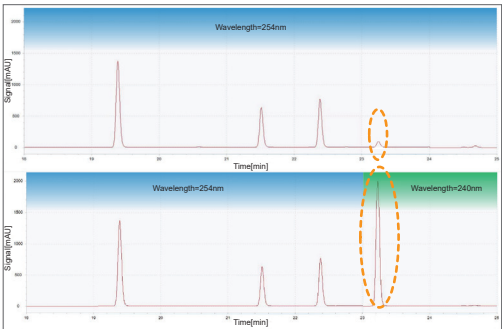
Full-band spectral scanning

A full-band spectral scanning can be performed to easily find the optimal absorption wavelength of the target analyte.

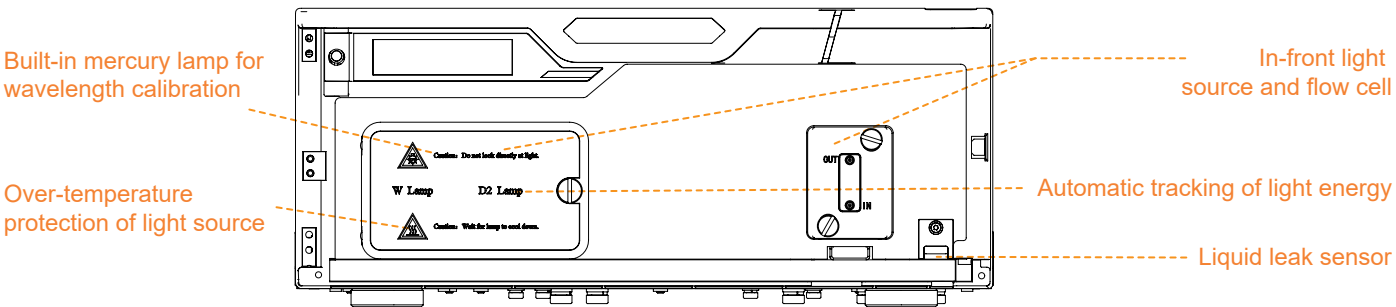


Wavelength time programming

Wavelength can be set for different analytes during different periods, to accomplish the high-sensitivity analysis of complex samples



Maintenance and safety



DW-K2025DAD

Diode Array Detector



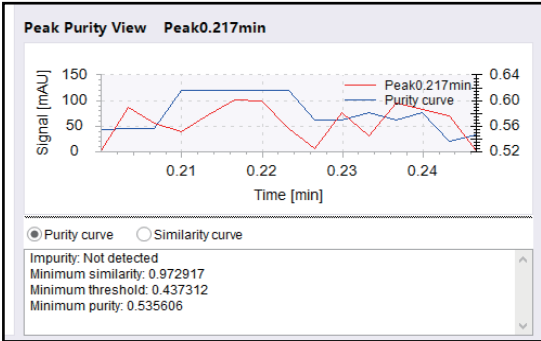
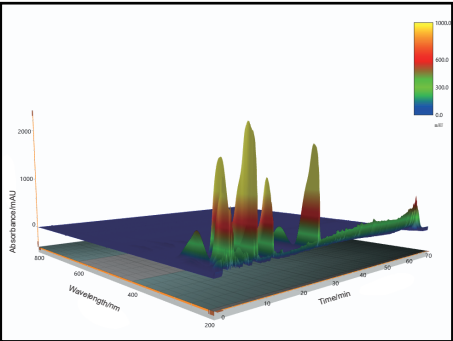
Specifications:

Light source	Deuterium (transmission type) & Tungsten lamp
Wavelength range	190~800 nm
Slit width	1 nm, 2 nm, 4 nm, 8 nm
Wavelength accuracy	+/- 1 nm
Wavelength precision	+/- 0.1 nm
Linearity	> 2.0 AU
Wavelength calibration	Holmium glass

Precision

Spectral similarity alignment and peak purity determination are performed for precise qualitative and quantitative analysis

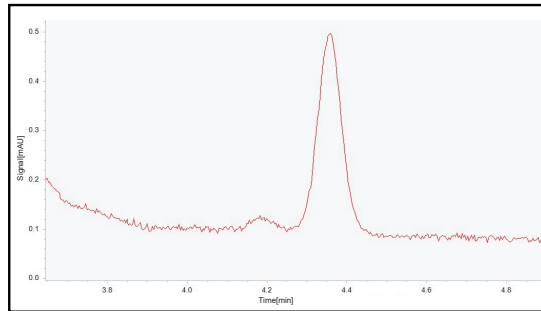
DAD provides full-spectrum information. The compounds can be identified by similarity comparison in the spectral database. Peak purity determination can be performed in the workstation.



High sensitivity—Close to UV Detector

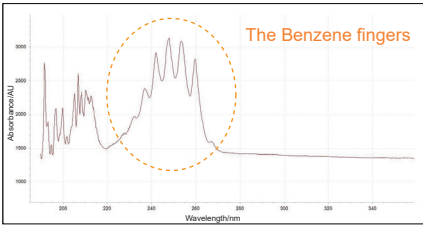
High sensitivity mode can be performed for low concentration samples, the signal-to-noise ratio of DAD can be reached to the same level of UVD.

Sample: 1.0×10^{-7} g/mL naphthalene standard solution
Column: C 18, 4.6*250 mm, 5 μ m
Mobile phase: 95% methanol +5% water
Flowrate: 1.0 mL/min
Injection volume: 20 μ L
Wavelength: 254 nm



Achieving more accurate inspection data by high-resolution spectra.

When compound detection is performed in high-resolution mode, a finer spectral map can be output for better analysis of complex samples.

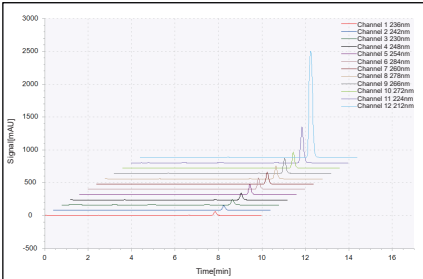


Ease of use

Supports 12-channel real-time data collection

Significantly enhance the analysis efficiency by:

- Up to 12 wavelengths can be set for real-time detection;
- Real-time analysis at a high sampling rate up to 150 Hz;
- Full-spectrum detection.



DW-K2025FLD

Fluorescence Detector

Specifications:

Light source	150 W Xe lamp
Wavelength range (Excitation)	200 to 850 nm Zero order
Wavelength range (Emission)	250 to 900 nm Zero order
Detection sensitivity (Raman peak of water S/N)	S/N \geq 900 (Baseline method)
Wavelength accuracy	± 3 nm
Wavelength repeatability	± 0.5 nm



DW-K2025ELSD

Evaporative Light-Scattering Detector

Specifications:

Noise	≤ 0.05 mV(1.0 mL/min 100% Methanol, Gain 1.00)
Drift	≤ 0.3 mV/30 min(1.0 mL/min 100% Methanol, Gain 1.00)
Min. detection limit	$\leq 5.0 \times 10^{-6}$ g/mL(500pg)



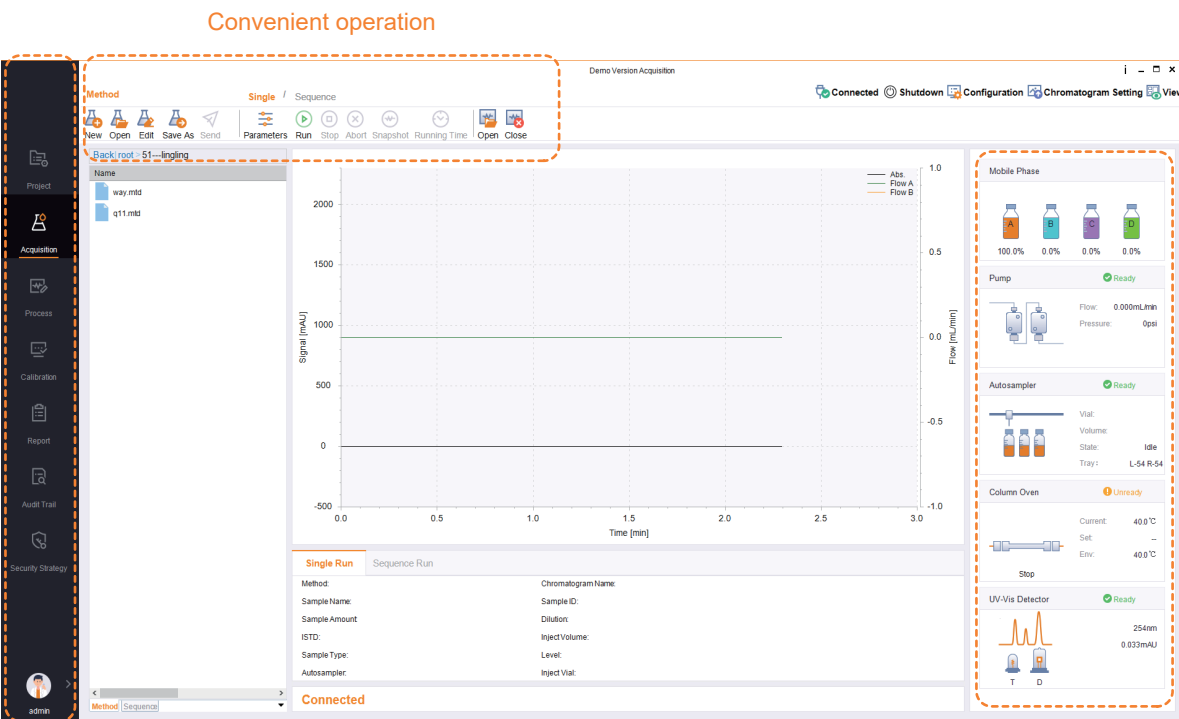
Workstation

User-friendly

Ease of use

The workstation interface is flat designed to quickly complete method development, data acquisition, data processing, report editing and printing, etc..

- ☛ The left side of the interface is the navigation area, on which functional modules can be quickly found, such as project management, spectrogram acquisition, and integral processing
- ☛ The top of the acquisition interface is a common ribbon that allows you to edit and run methods and sequences without the need for multi-level menus
- ☛ The right side of the acquisition interface is the status monitoring area, which dynamically displays the real-time status of the instrument



Organized navigation

Clear status monitoring

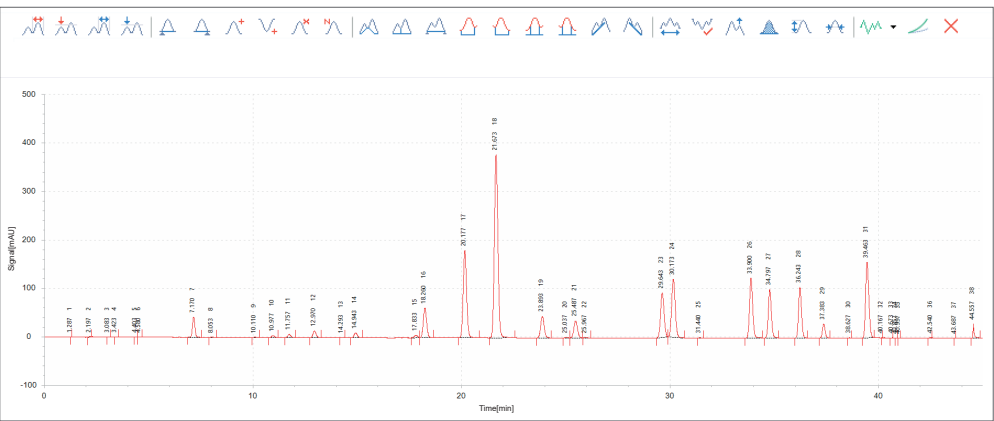
User-friendly design

- ☛ The workstation has built-in the 2020 edition of the "Chinese Pharmacopoeia" and "Chinese Veterinary Pharmacopoeia" standard method library, which can be directly retrieved and recalled to improve work efficiency
- ☛ The workstation provides intelligent diagnostics and maintenance reminders for the instrument

Precision

Powerful data-processing capability

Up to 25 integration events and 3 quantitative calculation methods (external standard method, internal standard method, and normalization method) for complex data.



Compliance

Database storage

With the professional database system, the encryption of original files and security of raw data can be guaranteed.

Backup and restore

Backup and restore of data can be easily performed in the workstation, which is convenient for users.

Multi-level user system

Supports customized multi-level system for access to data, ensuring the effectiveness of the system.

Traceability

The workstation complies with FDA 21 CFR Part 11, with complete records and integrity traceability.

Search

Start Time: 2022/3/17 11:48:52 End Time: 2022/3/17 11:48:52 Type: All User: All Description: Search

Time	Type	User	Description
2022-03-17 11:48:52	Acquisition	admin	Exit interface: Single Run Parameters
2022-03-17 11:48:59	Acquisition	admin	Enter interface: Single Run Parameters
2022-03-17 11:48:37	Acquisition	admin	After acquisition, generate chromatogram root-DAD_1.grp
2022-03-17 11:48:37	Acquisition	admin	DAD turn off tungsten lamp
2022-03-17 11:48:37	Acquisition	admin	DAD turn off deuterium lamp
2022-03-17 11:48:37	Acquisition	admin	Column Oven stop temperature control
2022-03-17 11:48:37	Acquisition	admin	Pump stop pump
2022-03-17 11:48:19	Acquisition	admin	Single Start running
2022-03-17 11:48:19	Acquisition	admin	Single Inject completed
2022-03-17 11:48:06	Acquisition	admin	Single Start updating

Applications

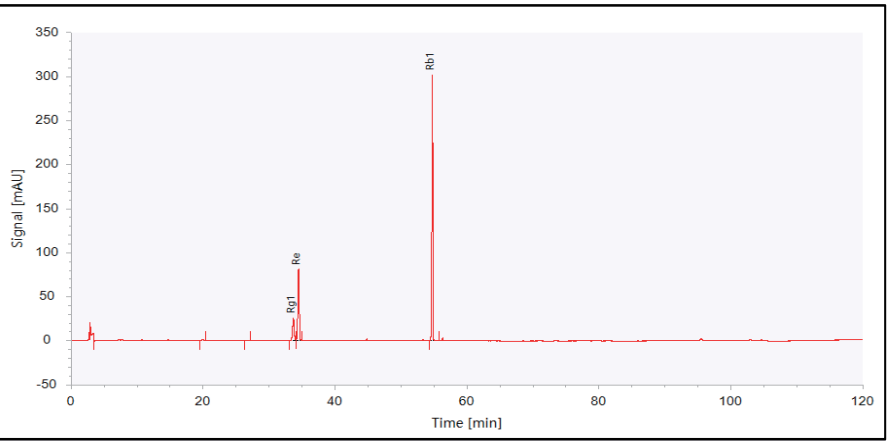
Pharmaceutical Industry

Analysis of ginsenosides of Rg1, Re, Rb1

※Referred to 2020 Chinese Pharmacopoeia

- Column: C 18 4.6×250 mm, 5 μm
- Mobile phase: A: ACN B: 0.1% phorsphoric acid/water
- Temperature: 40°C
- Injection Volume: 10 μL
- Flow rate: 1.0 mL/min
- Wavelength: 203 nm

Gradient		
Time/min	A%	B%
0	19	81
25	20	80
60	40	60
90	55	45
100	60	40
110	19	81
120	19	81

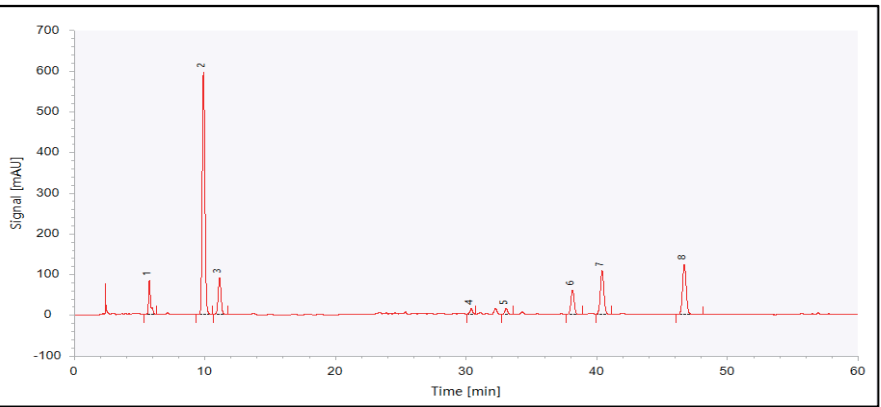


Analysis of specific spectrum of Lonicera japonica dispensing granules

※Referred to YBZ-PFKL-2021073

- Column: C18 4.6×250 mm, 5 μm
- Mobile phase: A: ACN B: 0.4% phosphoric acid/water
- Temperature: 35°C
- Injection Volume: 15 μL
- Flow rate: 1.0 mL/min
- Wavelength: 350 nm

Gradient		
Time/min	A%	B%
0	10	90
15	10	90
20	15	85
50	20	80
55	30	70
60	10	90



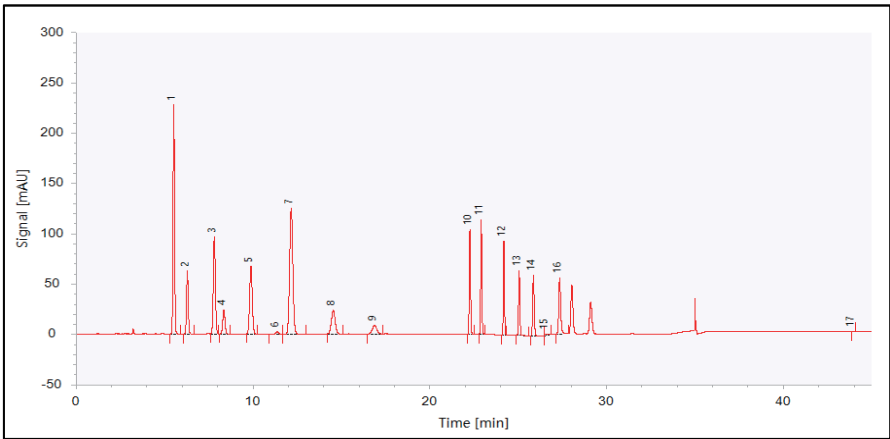
Environmental Industry

Analysis of 16 polycyclic aromatic hydrocarbons in water

※Referred to HJ 478-2009

- Column: C 18 4.6×250 mm, 5 μm
- Mobile phase: A: ACN B: Water
- Temperature: 30°C
- Injection Volume: 10 μL
- Flow rate: 1.2 mL/min
- Wavelength: time program

Gradient			Wavelength time program		
Time/min	A%	B%	Start time/min	Hold time/min	Wav./nm
0	60	40	0	9.0	220
15	60	40	9.0	4.5	254
20	100	0	13.5	5.5	220
31	100	0	19.0	3.5	290
32	60	40	22.5	4.0	254
45	60	40	26.5	0.5	290
			27.0	18.0	220

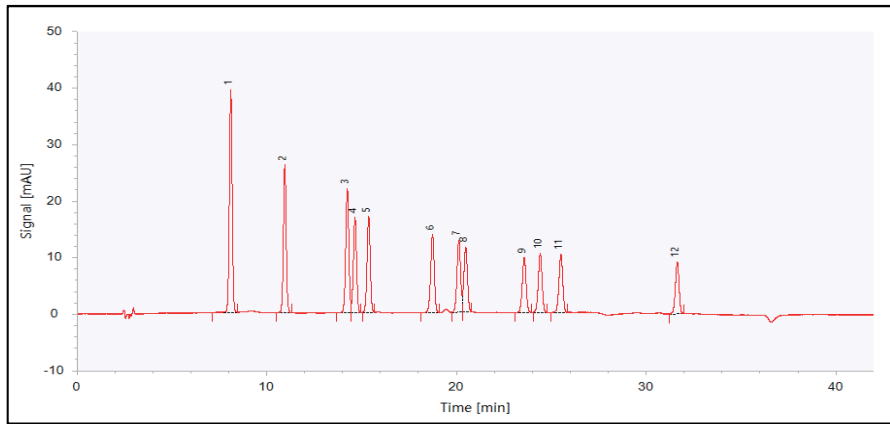


Analysis of aldehyde and ketone compounds in waste gas from stationary pollution sources

※Referred to HJ 1153-2020

- Column: C18 4.6×250 mm, 5 μm
- Mobile phase: A: Methanol B: ACN C: Water
- Temperature: 35°C
- Injection Volume: 10 μL
- Flow rate: 1.0 mL/min
- Wavelength: time program

Gradient			
Time/min	A%	B%	C%
0	45	20	35
6	70	0	30
24	80	0	20
33	45	35	20
33.1	45	20	35
42	45	20	35

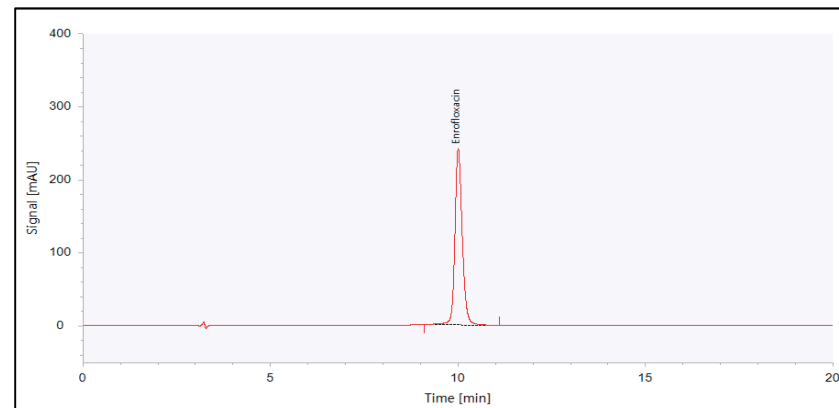


Veterinary Drugs

Analysis of the veterinary drug Enrofloxacin

※Referred to the 2020 Chinese Veterinary Pharmacopoeia

- Column: C18 column (4.6×250 mm, 5 μm)
- Mobile phase: 0.025% mol/L aqueous solution of phosphate (pH to 3.3 with triethylamine) + acetonitrile (83+17)
- Temperature: 25 °C
- Injection volume: 10 μL
- Flow rate: 1.0 mL/min
- Wavelength: 278 nm

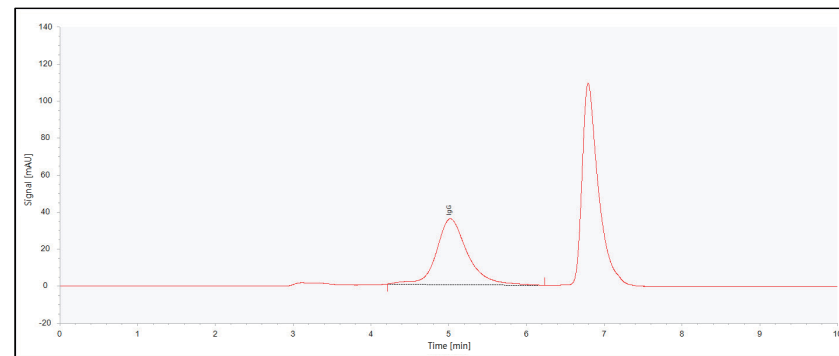


Dairy Products

Dairy immunoglobulin IgG analysis

※Referred to T/SSFS0002-2021

- Column: BioCoreTMSEC-300se column (4.6×250 mm, 5 μm)
- Mobile phase: 20 mmol/L phosphate solution (pH = 7.0)
- Temperature: 30 °C
- Injection volume: 10 μL
- Flow rate: 0.5 mL/min
- Wavelength: 214 nm

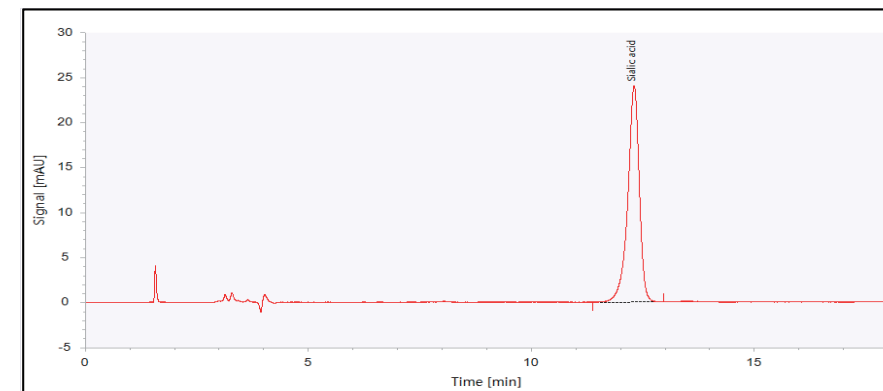


Food

Analysis of sialic acid in bird's nest and its products

※Referred to GB/T30636-2014

- Column: 300SCX Cation Exchange Column (4.6×250 mm, 5 μm)
- Mobile phase: acetonitrile + 0.1% aqueous phosphate solution (90 + 10)
- Column temperature: 30 °C
- Injection volume: 10 μL
- Flow rate: 1.0 mL/min
- Wavelength: 205 nm



Cosmetics

Analysis of p-phenylenediamine, 2,5-diaminotoluene, and resorcinol in hair dyes

※Referred to "Cosmetic Safety Technical Specifications"

- Column: C 18 column (4.6×250 mm, 5 μm)
- Mobile phase: Acetonitrile + methanol + 0.02mol/L ammonium acetate buffer (pH 7.5) (2.5 + 2.5 + 95)
- Temperature: 25 °C
- Injection volume: 20 μL
- Flow rate: 1.0 mL/min
- Wavelength: 280 nm

