Aqua 800

High Performance
Liquid Chromatograph

HPLC

GBC

ISO 9001
Quality Accreditation

GBC has always placed a strong emphasis on quality in all aspects of our operation, from design and manufacture to the provision of service and support to our customers, and we are fully committed to continuous evaluation and improvement in all areas.

The GBC Quality Management System has been accredited to the ISO 9001 quality standard by Lloyd's Register Quality Assurance Limited. This certification is your assurance that the procedures and processes used to produce the goods and services which GBC provides comply with the relevant International Standard, and demonstrates commitment to meeting the needs and expectations of our customers.

Since 1978 GBC has been at the forefront of scientific technological development, manufacturing and marketing a wide range of award winning, quality scientific instruments.

GBC's Product Lines

Visionary Technology

GBC Scientific Equipment will advance people's knowledge and their capacity to enhance the quality of life for all humankind.

GBC

Aqua 800
High Performance
Liquid Chromatograph

Features

- Microcomputer controlled wavelength selection, temperature control, semiconductor refrigeration column oven.
- Building block modular design: standing vertical column oven, allows convenient column installation.
- Allows quick switching between analytical LC and semipreparative LC.
- Connectable to post-column derivatization tool, compatibility with various detectors.

High Performance Variable Wavelength UV-Visible Detector

- Patented differential refractive index technology, ensures very low noise and drift.
- 20 mm super light pathlength detection cell, enables high detection sensitivity.
- New optical design, concave holographic grating, high stability.
- Multiwavelength 10-segment time program, full band pump-stop scanning, allows accurate selection of the best detection wavelength.
- Direct digital-to-analog conversion, RS232 interface output, RS485 communication protocol for control interface.
- Long lifespan D2 lamp, working for more than 2000 hours.

Features

High Performance Liquid Chromatograph

High precision vertical standing isothermal column oven

- Can accommodate any 2 analytical columns (15 cm, 25 cm, 30 cm), compatible with semipreparative column.
- Advanced semiconductor refrigeration temperature control, suits low temperature separation of biological samples and samples susceptible to higher temperature degradation.
- Column installation and replacement is user-friendly, with consideration on semipreparative column installation.

High pressure infusion pump

- Double plunger reciprocating large stroke high pressure pump, wide flow rate range.
- Software control, enables dual-pump gradient elution.
- Imported integrated check valve, easy replacement for plunger rod and sealing ring.
- Equipped with online automatic plunger rod cleaning function.
- Split 4-ports fitting, with dedicated air bubble removal port, for easier air bubble removal operation.

Chromatographic workstation

- Intuitive software control functions; for easy control of pump, detector, column oven.
- Power data processing function, allows various types of quantitative algorithm.
- Powerful chromatogram comparison function.
- Friendly calibration curve function.
- Record chromatogram raw data and related information; meets GLP requirements.
- Customizable report output format.

Technical Specifications

High Pressure Pump

Working pressure	0-42 MPa
Flow range	0.001 - 15.00 mL/min (maximum flow 50.00 mL/min, suitable for semi-prep)
Flow accuracy	RSD＜0.1%
Gradient range	Isocratic, binary gradient
Set value error of pump flow	±0.2%

Column Oven

Temperature range	Semiconductor cooling 5℃~80℃ (ambient temperature <25℃)
Temperature accuracy	±0.5℃
Temperature stability	≤0.2℃/h
Column oven volume	Can fit 2 columns simultaneously, compatible with semipreparative column

UV-Vis Detector

Light source	Deuterium lamp
Wavelength range	190 nm~700 nm
Spectral bandwidth	5 nm
Wavelength indication error	±0.5 nm
Wavelength accuracy	≤0.2 nm
Wavelength scanning	Multi-wavelength programming (10 wavelength ranges)
Range of linearity	$>10^4$
Noise	$<5\times10^{-5}$ AU
Drift Cell width	$<2.5\times10^{-4}$ AU /30 min 20 mm
Minimum detectable concentration	4×10^{-8} g/mL （naphthalene）

EL-100

Evaporation Light Scattering Detector Features

- Appearance and structure: compact and modern design; front panel LCD displays real-time instrument's status; detector can be controlled by the instrument's front panel keys or workstation software.
- High-efficiency atomizer: gas-liquid separation double-hole quartz atomizer, relies on high-pressure constant flow pump to deliver mobile phase to make aerosol more stable. Collision ball equipped at the front of atomizer improves atomization efficiency, and small aperture at carrier gas outlet significantly reduces gas consumption, easy installation and blockage proof.
- Low temperature evaporation drift tube: heating layer is close to the outer wall of drift for faster heating. Precise temperature sensor and sensitive over-temperature protection device, gives high evaporation efficiency.
- Stable LED light source: utilizes adjustable constant current powered LED as the incident light source, for more stable light intensity; reduces instrument baseline noise and drift, and improves detection accuracy.
- PMT detection cell: using a high-magnification side window type photomultiplier tube as signal collection device. Front end is equipped with optical lens and diaphragm, shields interfering stray light to make the detection more accurate.
- Compatibility: matches perfectly with Aqua 800 HPLC systems; also can be used with HPLC systems from any other manufacturers.

EL-100 major technical specifications	
Evaporation area temperature range	Room temp ~ 110℃
Temperature control precision	±0.5℃
Temperature control increment	1℃
Gas input pressure	0.2-0.5 MPa
Gas requirements	Dry and clean N_2 or air
Solvent flow rate	10 μL/min ~ 3 mL/min
Gas flow rate	300 mL/min ~ 1.5 L/min
Light source	450 nm blue LED
Detection element	Photomultiplier tube
Detection limit	<1 ng （glucose, direct injection）
Noise level	<0.1 mV (1 mL/min)
Instrument dimensions	Length width height：580×170×480

EL-100 Evaporative light scattering detector

Baseline and noise of EL-100 evaporative light scattering detector

Column：C18， 5 μm，150×4.6 mm　　Column temperature：25℃
Mobile phase： methanol: water (9+1) solvent　　Flow rate：1 mL/min
Evaporation temperature：40℃　　Carrier gas flow rate：700 mL/min

Diagram 1. Baseline noise and baseline drift test

Detection limit of cholesterol by EL-100 evaporative light scattering detector

Column：C18， 5 μm，150×4.6 mm　　Column temp：25℃
Mobile phase： Methanol（HPLC grade）　　Flow rate：1 mL/min
Carrier gas type：N2　　Carrier gas flow rate：700 mL/min
Evaporation temp：35℃　　Sample: 5 μg/mL Cholesterol methanol solution

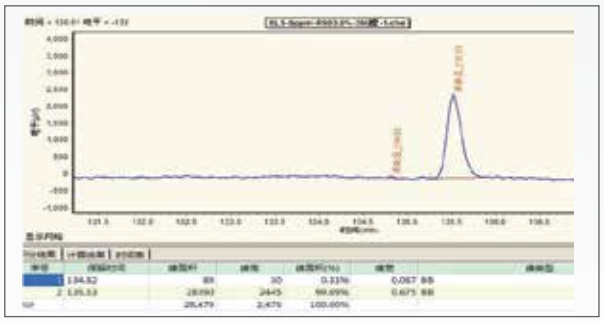

Diagram 2. Chromatogram of 5 μg/mL cholesterol methanol solution

As shown in Diagram 1, baseline noise ＜100 μV, baseline drift ＜200 μV/30 min.
According to calculation method of minimum detection concentration, the minimum detection concentration of cholesterol is 0.12 μg / mL as calculated based on the data in Diagram 2. National Measurement and Verification Procedure stipulates that baseline noise ≤1 mV, baseline drift ≤5 mV /30 min, quantitative repeatability ≤4.0%, and minimum cholesterol detection concentration ≤5 μg / mL.

Aqua 800

Package Product

PCRM-120 Post Column Reaction Module features

- Easy connection to LC.
- Modular design, number of derivatization pump is configurable, and derivatization pump can be used as a LC infusion pump.
- Temperature controller and derivatization device adopt standing integrated structure, noiseless and high precision.
- Sealed system, high pressure resistance.
- Built-in high-efficiency pulse damper, low pressure pulse.
- Specially designed mixer, ensures full mixing of derivatization reagent with target substance, for complete derivatization.
- LCD screen displays pressure and system flow rate, can set flow rate and pressure directly on control panel.
- Derivatization pump equipped with automatic over-pressure shut down function.

PCRM-120 Post Column Reaction Module

PCRM-120 Post Column Reaction Module	
Operating temperature	Room temp +5℃-120℃
Setting precision	0.1℃
Temperature precision (full range)	≤0.5℃
Temperature repeatability (full range)	±0.5℃
Volume of derivatization tube	Derivatization tube with different volume can be selected

Derivatization pump	
Working pressure	0-42 Mpa
Flow range	0.001-15.0 mL/min
Flow accuracy	RSD<0.1%
Setting error of pump flow rate	±0.2%
Setting error of flow value	±0.5%
Flow stability error	≤0.5%

AS-405
Automatic Sampler

Specifications	
Sample positions	2×60 positions, 1.8 mL vials
Minimum injection volume	0.1 µL (250 µL standard sample pump)
Injection pump	100 µL, 250 µL (standard), 1 mL
Sampling loop volume	100 µL (standard), 20 µL, 50 µL, 200 µL (options)
Switching rate of sampling valve	< 100 ms
Position accuracy	< 0.3 mm
Motion control method	XYZ 3-dimension coordinate system
Injector cleaning method	Inside and outside rinse, no restrictions on rinse times
Number of replicates	No restrictions on replicates
Dimensions	300 (W) × 230 (H) × 505 (D) mm
Power	AC 220 V, 50 Hz
Compatibility	Compatible with all commercial HPLC / IC systems
Temperature range	10 - 40℃
pH range	1-14

AS-405 HPLC Autosampler

DM-100/DM-101 Online Degasser

Application
Compatible with all HPLC, easy to install.

Features
High degassing efficiency, smooth baseline, no drift, and low noise.

Basic Configuration
Single-channel, three-channel or four-channel degassing systems are available.

Degasser is available in a horizontal or vertical orientation according to customer requirements.

DM-100/DM-101 Online Degasser

Application

Determination of Astragaloside IV by EL-100

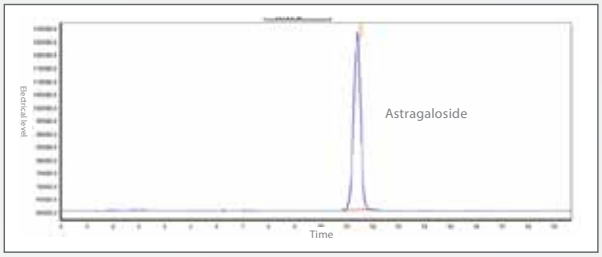

Diagram 1. Chromatogram for analysis of 250 ppm Astragaloside standard sample

Column: Inertsil C18 4.6×250 mm
Mobile phase: 35% ACN
Flow rate: 1 mL/min Injection volume: 20 μL
Drift tube temperature: 70℃ Gas flow rate: 900 mL/mim

EL-100 Determination of oleanolic acid, ursolic acid

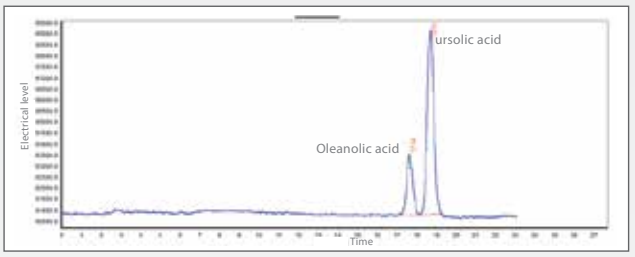

Diagram 2. Chromatogram for analysis of 50 ppm oleanolic acid and 100 ppm ursolic acid standard sample

Column: Inertsil C18 4.6×250 mm
Mobile phase: methanol-0.2% acetic acid (88:12)
Flow rate: 1 mL/min
Injection volume: 20 μL
Drift tube temperature: 60℃ Gas flow rate: 900 mL/mim

Determination of Ginkgo leaf extract by EL-100

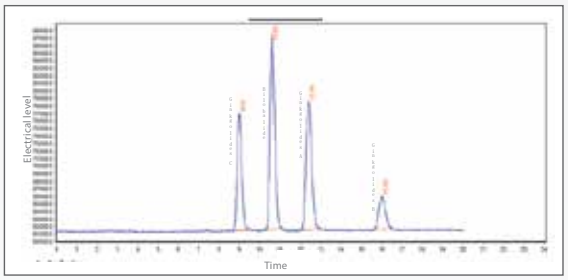

Diagram 3. Chromatogram for analysis of Ginkgo leaf extract

Mobile phase: Methanol-Tetrahydrofuran-Water (25:10:65)
Column: Inertsil C18 4.6×250 mm
Sample:
Ginkgolides A 236 ppm Ginkgolides B 92 ppm
Ginkgolides C 176 ppm Bilobalide 252 ppm
Drift tube temperature: 65℃ Gas flow rate: 900 mL/mim

Determination of polycyclic aromatic hydrocarbons by UV detector

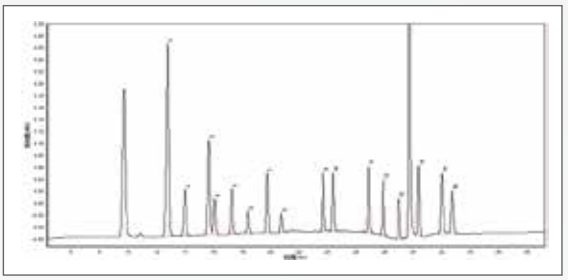

Diagram 4. Chromatogram for analysis of 16 polycyclic aromatic hydrocarbons standard sample (3μg/mL)

Column: Inertsil C18 4.6×250 mm
Mobile phase: Acetonitrile and Water (gradient elution)
UV detector: multiband time programming

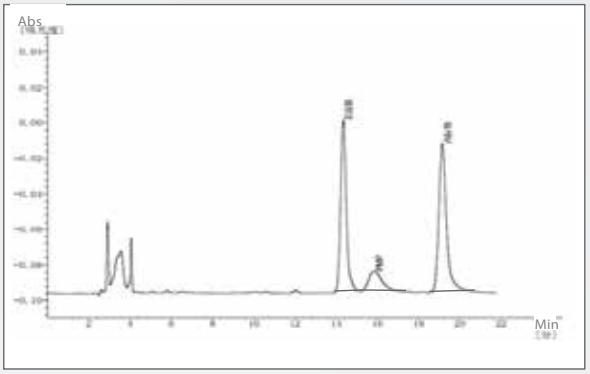

Diagram 5. Chromatogram for analysis of Mannose in Dendrobium candidum

Column: Inertsil C18 4.6×250 mm

Mobile phase: Acetonitrile-0.02 mol/L ammonium acetate (2:8)

UV detector: 250 nm

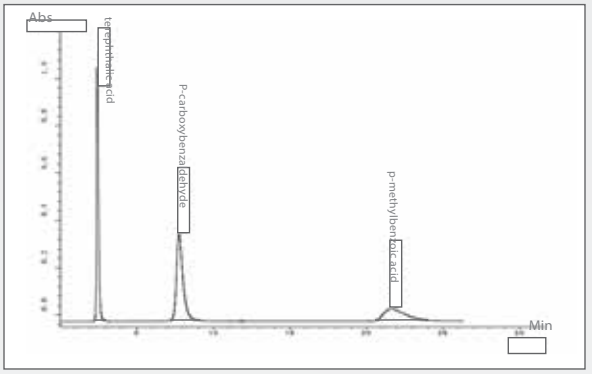

Diagram 6. Chromatogram for analysis of P-carboxybenzaldehyde and p-methylbenzoic acid in purified terephthalic acid for industrial use

Column: Inertsil C18 4.6×250 mm

Mobile phase: Methanol-0.02 mol/L acetic acid: 1:9

UV detector: 254 nm

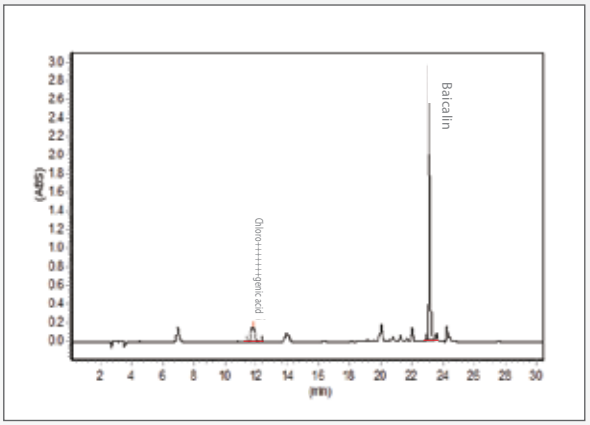

Diagram 7. Chromatogram for analysis of Chlorogenic acid and Baicalin In Shuanghuanglian Koufuye

Column: Inertsil C18 4.6×250 mm

Mobile phase: Acetonitrile-0.4% phosphoric acid solution (gradient elution)

UV detector: 324 nm

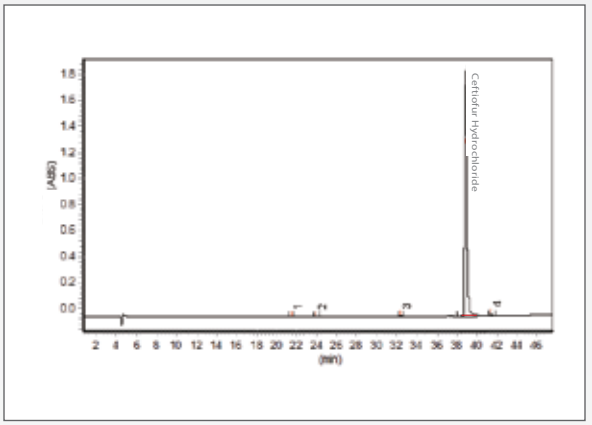

Diagram 8. Chromatogram for analysis of Ceftiofur Hydrochloride In injection solution

Column: Inertsil C18 4.6×250 mm

Mobile phase: Acetonitrile-0.4% phosphoric acid solution (gradient elution) Water-Acetonitrile-Trifluoroacetic acid (950:50:1)-Water-Acetonitrile-Trifluoroacetic (200:800:1) (gradient elution)

UV detector: 254 nm

Ordering Information

Each Aqua 800 HPLC system is supplied with UV-Vis detector, 6-way valve, quadruple pump, vertical column oven, precolumn, C18 column, and software.

99-0800-00	**Aqua 800 HPLC System**

Accessories

99-0801-00	EL-100 evaporative light scattering detector
99-0802-00	DM-101 online degassing unit
99-0803-00	AS-5150A ultrasonic cleaner
99-0804-00	AS-405 automatic sampler, capacity: 120 positions
99-0112-00	PCRM-120 post-column derivative device (single flow path)
99-0113-00	PCRM-120 post-column derivative device (dual flow path)
91-0110-00	AAK specific column for amino acid (4.6 mm x 250 mm)
91-0111-00	C18 column, 5 µm, 4.6 mm x 250 mm
75-0062-00	AP-01P vacuum pump
76-0044-00	FB-10T solvent filter (1000 mL filter bottle, 300 mL filter cup, without filter membrane)
76-0045-00	Needle filter (organic, 0.45 µm) pkt of 100
76-0046-00	Needle filter (drainage, 0.45 µm) pkt of 100
14-0319-00	Filtration membrane (organic 0.45 µm, 50 mm) pkt of 100
14-0320-00	Filtration membrane (drainage, 0.45 µm, 50 mm) pkt of 100

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GBC Scientific Equipment
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