



YL9100 HPLC

Think Smart Work Better



Young Lin's HPLC is built to provide an exceptional cost/performance ratio.

Continued research and development provide high-end performance and features, whilst a state of the art manufacturing facility ensures that quality is not compromised.

With more than 20 years experience and development, we are proud to present our new generation of HPLC, **YL9100 HPLC**.

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When the time came to replace the ageing HPLC equipment in my laboratory, the YL9100 exceeded my expectations, but not my budget. We now have great looking, modern HPLCs, with the performance and functionality I required, yet at a fraction of the price I expected. The Windows XP/Vista based CDS has proved to be a great success with my analysts.

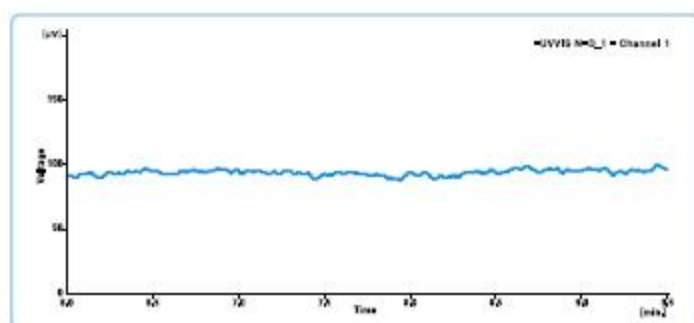
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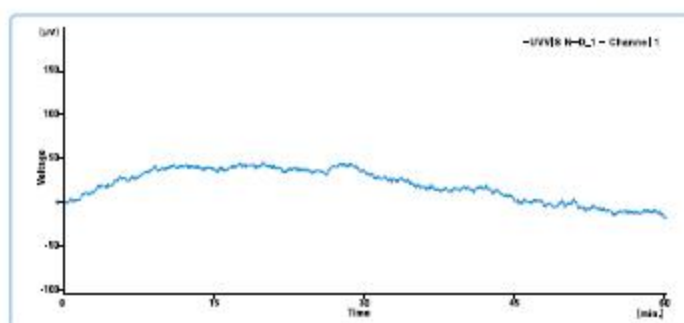
Remarkable Stability

Analysts can waste their time waiting for excessive baseline noise and drift to stabilize.

The YL9100 HPLC delivers a very stable baseline to maximize analysis up-time.

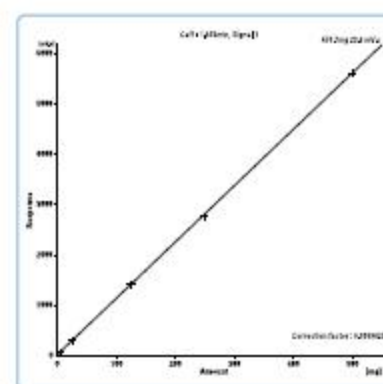
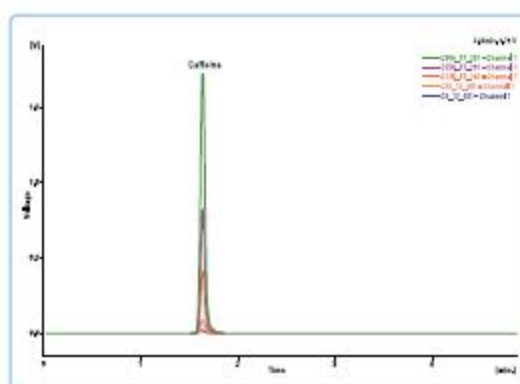


Noise



Drift

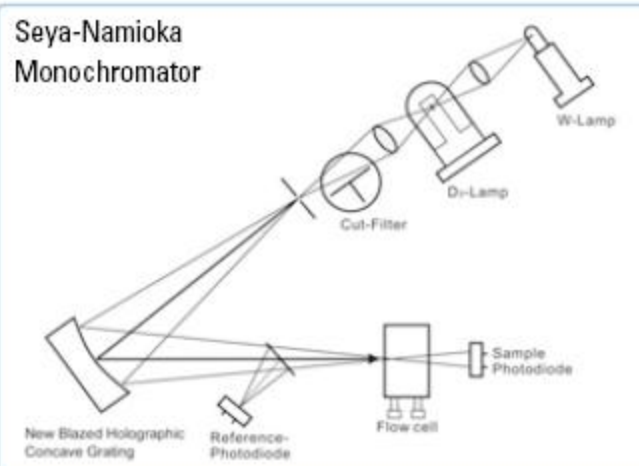
With automatic compressibility compensation minimising back-flow in the pump, the YL9100 HPLC provides accurate and precise flow rates.



Superior Sensitivity

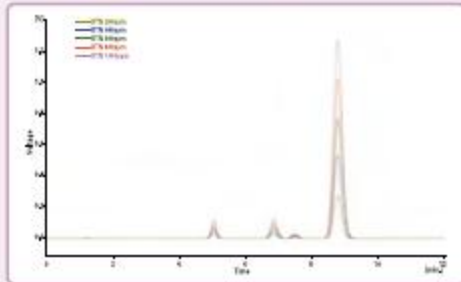
One of many innovative features of the YL9100 HPLC is shielded optic design, which protects the optical components from dangerous contaminants such as fine dust or harmful gases, providing high detection sensitivity.

In addition, the Seya-Namioka Monochromator and a new Blazed Holographic Concave Grating enhance light intensity, ensuring high sensitivity over the entire wavelength range.



Outstanding Reliability

Reliability is an essential feature of the modern HPLC and the YL9100 absolutely meets this demand.

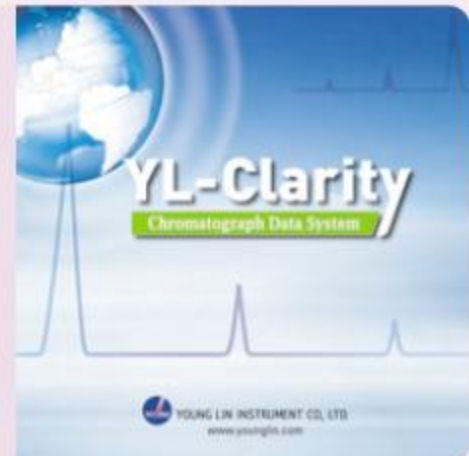


- YL9101 vacuum degasser perfectly removes dissolved gases and air bubbles, with the added convenience of an integrated tray to safely house solvent bottles.
- Automatic rinsing extends the life of the pump seals.
- YL9130 Column Compartment with Peltier cooling providing a wide range of temperature from 4°C up to 90°C. Effective temperature control ensures retention time reproducibility and reliable data. Column temperature can also be used to improve separation performance and analysis times.

Powerful and Intuitive Control

Features

The sophisticated YL-Clarity data system is easy to use and offers extensive data management plus full control of the entire YL9100 HPLC product. The software is designed for 21 CFR Part 11 Compliance and through full compatibility with MS Windows XP and Vista seamlessly handles data processing and instrument control using an ultra-reliable LAN interface.



21 CFR Part 11 compliance

User accounts

YL-Clarity sets up access rights and passwords (including their parameters e.g., minimum length, validity, etc.). Each user can define the appearance of their own station.

Audit trail

It records selected events and operations into a special file and selected operations directly into a chromatogram.

Electronic signature

Each chromatogram can be signed electronically. Signature selection is based on the username or the signature certificate.

Data Acquisition

Overlay

YL-Clarity simultaneously displays a virtually unlimited number of chromatograms and their mathematical modification; for example, mutual deductions or derivations of any order.

Measuring

Simultaneous data acquisition from up to four independent chromatographs, each chromatogram can acquire data from up to 12 detectors.

Reliable and Convenient Data Management

Integration

There are extensive possibilities to optimize integration. The integration parameters can be changed by entering global parameters or interactively, through direct graphic modification of the baseline.

Calibration

Internal and external standard calculation methods, calibration of groups of peaks and reference peaks method for better identification.

Optional Module

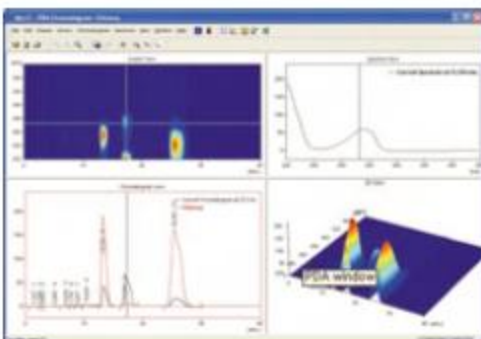
SST (System Suitability Test)

The program compares up to 12 selected parameters calculated according to one of three pre-selected methods (USP, EP, and JP). These calculated values are either compared to the users set limit values for each chromatogram separately or together for the selected series.



PDA Extension

This is to process data that has been acquired from selected photo diode array detectors. The spectral data, together with chromatograms, adds a third dimension to analytical data analysis.



Postrun

YL-Clarity automatically displays, prints, exports and starts other programs after the completion of a measurement.

User calculations

Users can define custom calculations in the Result and Summary tables. Using the integrated editor you can create your own columns from original columns and individual mathematical functions.

GPC Extensions

This provides interactive and automated GPC analysis, including recalibration and GPC reporting, as well as simplifies the retrieval of GPC data



Specifications

Solvent Delivery Pump



YL9110 Quaternary Pump

- Operating principle : Parallel dual-plunger pump, Low-pressure gradient
- Number of Solvent : up to 4 solvents
- Gradient formation : 4-channel mixing valve
- Composition Precision : <0.1%
- Composition Accuracy : <0.5%



YL9111 Binary Pump

- Operating principle : Double Parallel dual-plunger pump, High-pressure gradient
- Number of Solvents : 2



YL9112 Isocratic Pump

- No mixing valve
- Operating principle : Parallel dual-plunger pump
- Easily upgraded to YL9110 Quaternary pump

In Common

- Compressibility compensation : Automatic
- Flow range: 0.001-10ml/min
- Flow rate accuracy : $\leq \pm 1\%$ at 1ml/min
- Flow rate precision : 0.1% RSD at 1ml/min
- Maximum pressure : 6000 psi
 - > Operating range : 0-6000 psi up to 5ml/min
 - > Operating range : 0-3000 psi up to 10ml/min
- Semi-automatic prime/purge
- Safety & maintenance : Leak detection, Diagnostics, Error detection

Detector



YL9120 UV/Vis Detector

- Wavelength Range : 190-900 nm
- Data collection rate : up to 50Hz
- Light Source : Deuterium lamp & tungsten lamp
- Noise level : $< \pm 0.5 \times 10^{-5}$ AU , 254nm, dry cell
- Drift : $< 1 \times 10^{-4}$ AU/hr
- Bandwidth : 5.5 nm
- Wavelength Accuracy : ± 1 nm
- Wavelength Precision : ± 0.1 nm
- Linearity : $> 99.5\%$ for 2.5 AU (acetone, 254nm)
- Path Length : 10 mm (Analytical cell)
- Cell Volume : 10 μ L (Analytical cell)



YL9160 PDA Detector

- Slit Bandwidth : 1.7 nm
- No. of PDA Channel : 1024
- Pixel Resolution : 0.9 nm
- Wavelength : 190-950 nm
- Analytical Cell
 - Path-length : 10 mm
 - Pressure : > 1500 psi
 - Volume : 13 μ l
- Noise Level : $< \pm 2 \times 10^{-5}$ AU (Empty Cell, 1sec Rise Time, 254nm)
- Drift : $< 2 \times 10^{-4}$ AU/hr (Baseline Correction), 0.001AU/hr (Room Temp)
- Wavelength Accuracy : < 1 nm (HY-1 Holmium Oxide Filter)
- GLP Compliance:
 - Photometric Accuracy, Linearity, Noise Level, Drift
 - System Check



YL9170 Refractive Index Detector

- RI Range : 1.00 ~ 1.75 RIU
- Noise : $\leq 1.3 \times 10^{-8}$ RIU
- Drift : 0.8×10^{-7} RIU/hr
- Linear dynamic range : 80×10^5 RIU
- Cell pressure : 6 kg/cm² (84 psi)



Vacuum Degasser



YL9101 Vacuum Degasser

- Number of channel : 4 Channels
- Maximum flow rate : 10 ml/min per channel
> 0 ~ 2.0ml/min per channel for 70% Gas Removed from Methanol
- Internal volume per channel : 925 ul per channel
- Materials in contact with solvent
: Teflon AF, PEEK and Glass-filled PTFE

Column Compartment



YL9130 Column Compartment

- Temperature range : 4° C (Cooling) - 90° C
- Temperature stability : $\pm 0.05^\circ$ C
- Temperature accuracy : $\pm 0.5^\circ$ C
- Temperature programs : 40 Steps
- Column capacity : Total 3 columns
(max. 2ea of 25cm column + 1ea of 15cm column)
- Heat-up time : 16 minutes from 4° C to 90° C
- Cool-down time : 13 minutes from 90° C to 4° C
- Line frequency : 50/60Hz, $\pm 5\%$
- Column switching : max. two automatic 6-port valve (optional)



Autosampler

YL9150 Autosampler (Alias)

The YL9150 is a high-throughput autosampler with state of the art injection technology, fast injection and wash cycles, and an optional Peltier chiller/heater for samples. Full or partial loop injection along with Pressure-Assisted-Sample-Aspiration (PASA™) is possible.

The highly efficient needle and internal capillary wash virtually eliminates sample carry-over. Cycle time, including wash, is less than one minute.

96 standard 2ml vials (32mm x 12mm) or well plates (96 or 384 capacity, deep or shallow) can be used.

- Sample capacity :
2 Micro Well Plates according to SBS standards ; 96-well high/low
- Loop volume : 1 - 5000 μl programmable, 10 mL loop optional
- Reproducibility :
RSD \leq 0.3% for full loop injections
RSD \leq 0.5% for partial loopfill injections
RSD \leq 1.0% for μl pickup injections
- Carry-over : < 0.05 %



Manual Sample Injector



Rheodyne 7725i / 9725i

- Industry standard manual injector
- Analytical : 7725i(SUS) and 9725i(PEEK)
- semi-prep available

Other Detectors

Evaporative Light Scattering Detector(ELSD)

ELSD can detect any compound less volatile than the mobile phase to low nanogram levels offering universal detection at an affordable price. It can be used to analyse components that do not have UV absorption, or those that need to be separated using gradient elution and therefore preclude the use of Refractive Index Detection.

Electrochemical Detector(ECD)

ECD is a detector for HPLC applied to variable analyses such as biogenic amines, phenols, vitamins, DNA adducts, inorganic ions and amino acids.

Fluorescence Detector(FLD)

FLD is a highly sensitive, scanning fluorescence detector for liquid chromatography. It provides exceptional optical performance and operational flexibility for routine and trace analysis.

Optimized HPLC Post-Column Derivatization system

Pickering Laboratories, Inc., California, USA, a leading company of post-column derivatization chemistries and technology, has made a contract to supply the post-column derivatization system based on our YL9100 HPLC system. The PINNACLE PCX combined with YL9100 HPLC system offers the complete package of chemicals, columns, methods and post-column systems and reflects the ease of use, reliability and ruggedness you have come to expect.

- Powerful Software Control
- Electronic Syringe Pump & Valve
- Flexible Reactor
- Column Heater Fast & Stable
- Usability Design
- Special Columns & Chemistries



Chromatograms

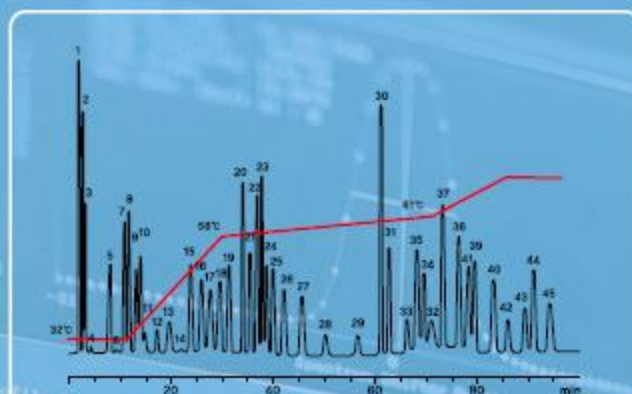


Figure 1. High-efficiency Lithium for Physiological samples using temperature gradient

- | | |
|---|--|
| 1. Phosphoserine | 24. Isoleucine |
| 2. Taurine | 25. Leucine |
| 3. Phosphoethanolamine | 26. Tyrosine |
| 4. Urea | 27. Phenylalanine |
| 5. Aspartic acid | 28. β -Alanine |
| 6. Hydroxyproline | 29. β -Amino- <i>i</i> -butyric acid |
| 7. Threonine | 30. Homocystine |
| 8. Serine | 31. γ -Aminobutyric acid |
| 9. Asparagine | 32. Tryptophan |
| 10. Glutamic acid | 33. Ethanolamine |
| 11. Glutamine | 34. Hydroxylysines |
| 12. Sarosine | 35. Ammonia |
| 13. α -Aminoadipic acid | 36. Creatinine |
| 14. Proline | 37. Ornithine |
| 15. Glycine | 38. Lysine |
| 16. Alanine | 39. Histidine |
| 17. Citrulline | 40. 3-Methylhistidine |
| 18. α -Amino- <i>n</i> -butyric acid | 41. 1-Methylhistidine |
| 19. Valine | 42. Anserine |
| 20. Cystine | 43. Carnosine |
| 21. Methionine | 44. Homocarnosine |
| 22. Allo-isoleucine | 45. Arginine |
| 23. Cystathionine | |

Specifications

Reagent Pump

- Pulse free syringe pump
- Single piece ceramic barrel
- Programmable flow rate
- Flow range : 50 - 1500 μ l/min
- Automatic piston wash
- Automatic reagent flush cycle

Reactor

- Heated reactor for temperature from 5° C above ambient to 130° C
- Easy replacement coil cartridges
- Range of reactor dwell volumes; 0.1 mL to 3mL

Column Heater

- Programmable temperature gradient
- Easy Column access

Safeguards

- In line check valve : prevent reagent back flow
- Replaceable column & reagent filters
- Post column system over pressure
- Back-pressure regulator: Applies 7 bar (100 psi) to the detector flow cell outlet (waste) to prevent detector noise and precipitation due to out-gassing or boiling

Versatile Dedicated Analyzers

We provide customized systems with analysis methods and application that completely meet analysis purpose and requirement for convenience in your lab.

Formaldehyde Analyzer

It delivers the optimum solution for derivatization analysis of formaldehyde with the appropriate system configuration according to Indoor Air Quality Management which is getting interested in recent years.

Amino Acid Analyzer

With the Post-Column derivatization method, it can analyze natural amino acid or hydrolyzed amino acid with a supreme sensitivity.

Carbamate Analyzer

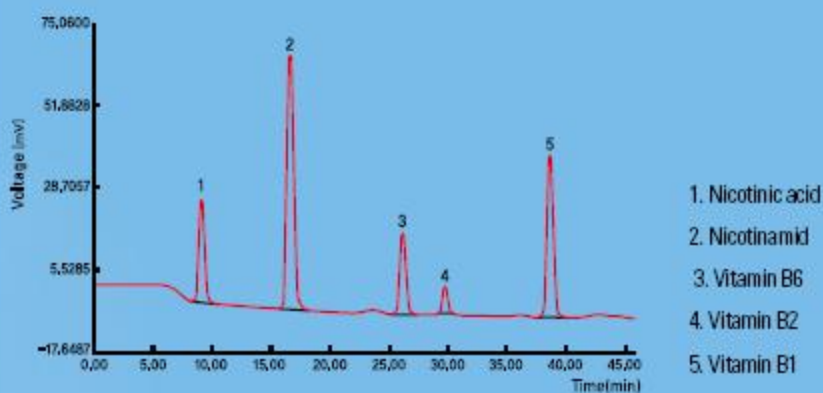
The analysis of pesticide using Post-Column derivatization gives analysis and quantitative analysis by automatic sample preparation at the same time.

Catecholamine Analyzer

It provides all the solutions such as a sample preparation, a short time to stabilize the ECD (Electrochemical detector), setting for optimum condition, keeping the sensitivity and replacement and cleaning of cell.

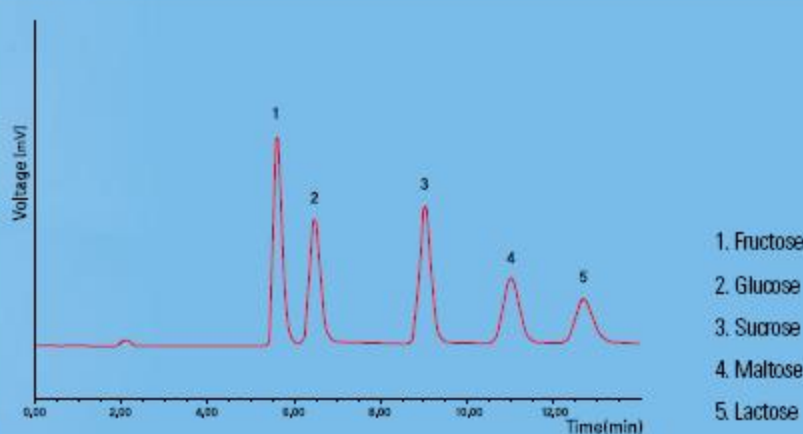
Vitamin Analyzer

Vitamins are unstable compounds, which are easily oxidized and destroyed during sample preparation procedures. This specified vitamin analyzer is optimized for the analysis of both water-soluble and fat-soluble vitamins by supplying entire solutions.



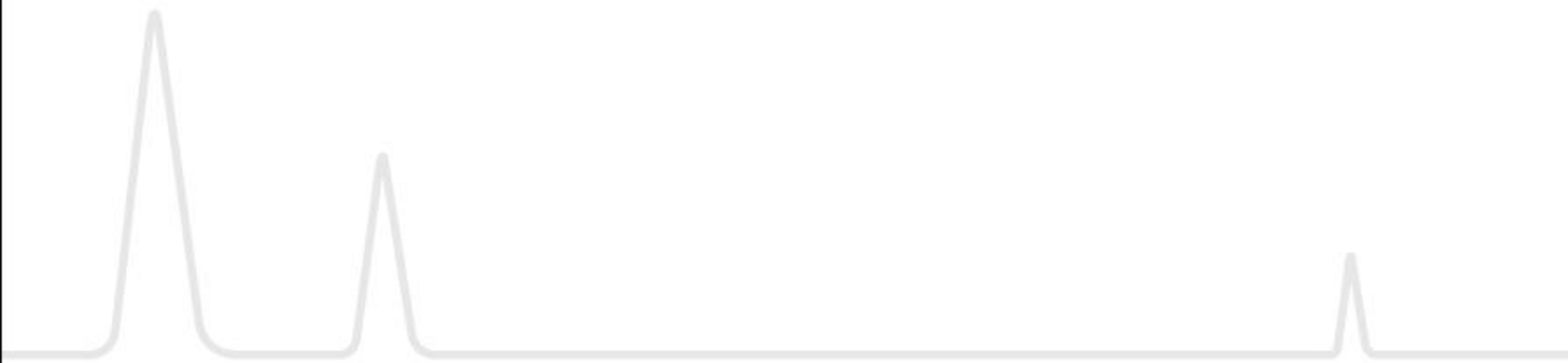
Sugar Analyzer

This system provides a simple, easy and highly sensitive method of detecting sugars.





These Products are manufactured by Young Lin
ISO 9001-certified facility that is periodically
audited by the registering body to ensure compliance



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