



Bio 30+ Amino Acid Analyser System

The gold standard dedicated Amino Acid Analyser for *in vitro* diagnostic use



Amino acid analysis for clinical samples

“A relatively busy laboratory, we typically run approximately 1,000+ physiological samples. We have been very pleased with the performance of our Bio 30+ since installation over a decade ago and highly recommend it for the any analytical laboratory environment.”

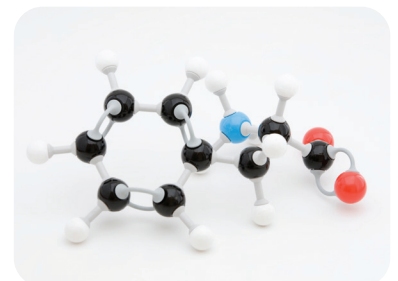
- Clinical Lab Scientist



Investigating metabolic disorders is a crucial and complex task. With over 42 amino acids and their derivatives implicated in Inborn Errors of Metabolism, including Phenylketonuria (PKU), clinical laboratories need an accurate and reliable analysis system that delivers unequivocal results.

A powerful tool...

- Accurate...Exceptional analysis quality with low-matrix interference
- Precise... Unequivocal peak identification and quantification even for rare and unusual markers
- Reliable...Trusted by hospitals and reference laboratories worldwide, and backed by expert scientific support
- Efficient...Complete system which includes the instrument, columns, software and ready-to-use reagents
- Easy to use and maintain



Bio 30+ System

The gold standard in amino acid analysis



Bio 30+ Amino Acid Analysis System

A Dedicated System

The Bio 30+ System is fully automated with an 84-position air cooled autosampler. It is designed to operate 24/7 and ideal for busy clinical labs. This compact instrument can handle plasma, with low matrix interference and without costly and time-consuming re-equilibration.

Configurable System

The Bio 30+ System offers a high-level of flexibility. Systems can be configured to suit laboratory needs. The system has pre-defined analytical, processing and reporting methods in the software. Analysis times can be tailored to meet specific requirements, with ready-to-use short methods.

Peace-of-mind

The Bio 30+ System is backed by a dedicated technical and engineering support team. Our applications team can help with full screening methods or specific short methods from our application database built over many years. Our service contract package** gives complete peace of mind and includes:

- Biochrom quality parts used for all maintenance and repairs
- Rapid service from our engineering team

**Please Note: Use of non-Biochrom approved columns, reagents, buffers, etc. may invalidate the warranty of the Biochrom Amino Acid Analyser.



Key Features

- Bio 30+ Analyser System with air-cooled autosampler
- Choice of column (with top-up resin)
- Starter pack of ready-to-use reagents
- Spare parts and consumables kit
- HP computer and monitor
- Biosys software and OpenLab EZChrom Edition data handling software
- On-site customer training

A Chromatographic System Specifically for Amino Acids

The Bio 30+ System is a cation exchange chromatography system coupled with a highly specific detection system using post column derivatisation with ninhydrin reagent. Amino acids are separated according to their net charge determined by the pKa of their ionized groups. The mobile phase is a finely tuned set of 5 lithium citrate buffers used in a stepwise elution profile of increasing pH and molarity. A temperature gradient on the column maximises resolution. Lithium hydroxide solution regenerates the resin bed online after each run cycle.

Highly Specific Detection System

The ninhydrin method is highly specific because it reacts only with amino groups giving a compound absorbing at 570nm wavelength (440nm for amino acids like proline). This response is a linear relationship between the absorbance and the amount of amino acid in the sample. The sensitivity of the ninhydrin reaction is optimized for physiological sample and the response is 100% linear within the expected amino acids concentration range encountered in clinical samples. The only sample preparation needed is a simple deproteinisation-filtration step. The continuous flow of reagent ensures a reproducible derivatisation giving high precision in the peak area.

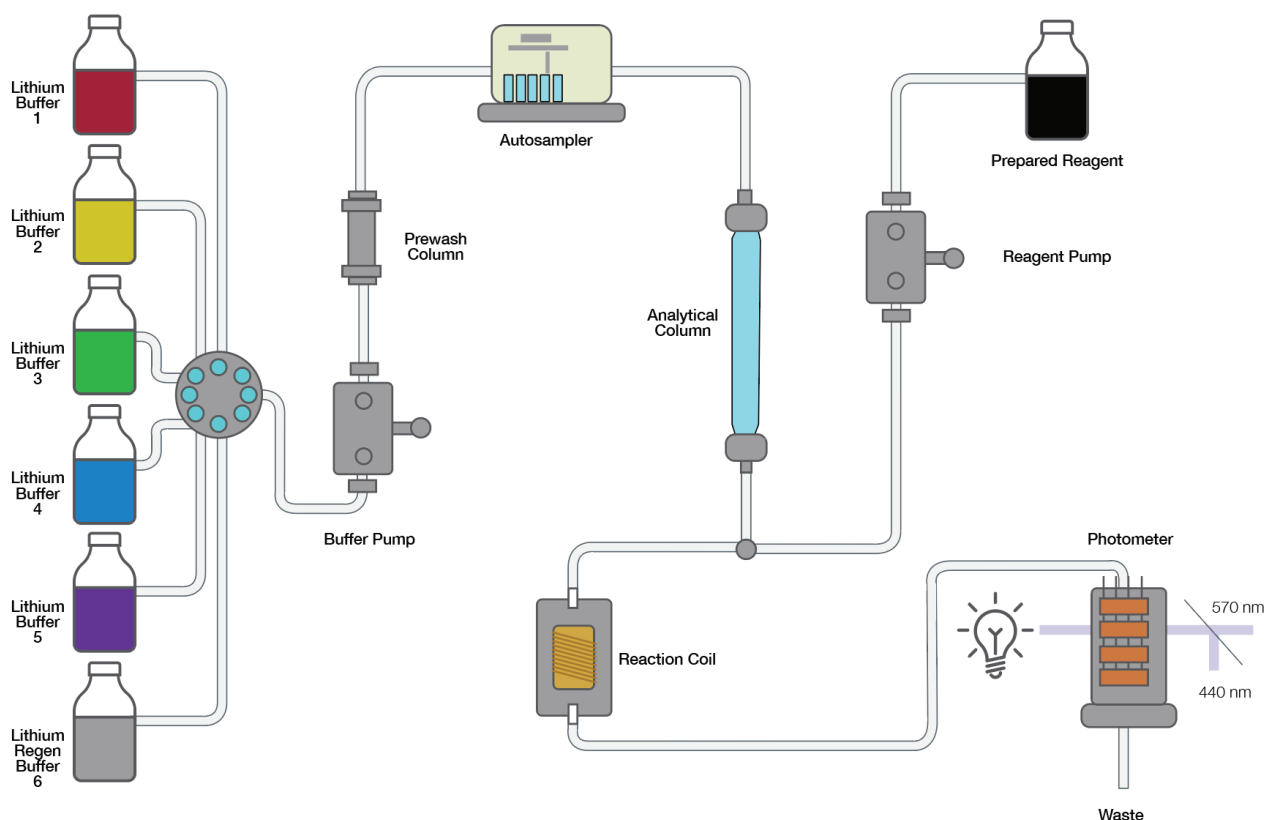
Robust and Stable Chemistry

Biochrom's patented EZ Nin solution is a unique form of Ninhydrin which needs no preparation or special conditions to remain stable long term, meaning less time to set up, and no more wasting the last few mL in the bottle. Chemicals and consumables are available either as complete kits or as individual buffers to enable continuity of analysis. All reagents are stable at room temperature and guaranteed to give accurate and reproducible results with a 3-year shelf life. On the instrument, buffers and reagents are stored under an inert gas to ensure stability.

Choice of Reusable Columns

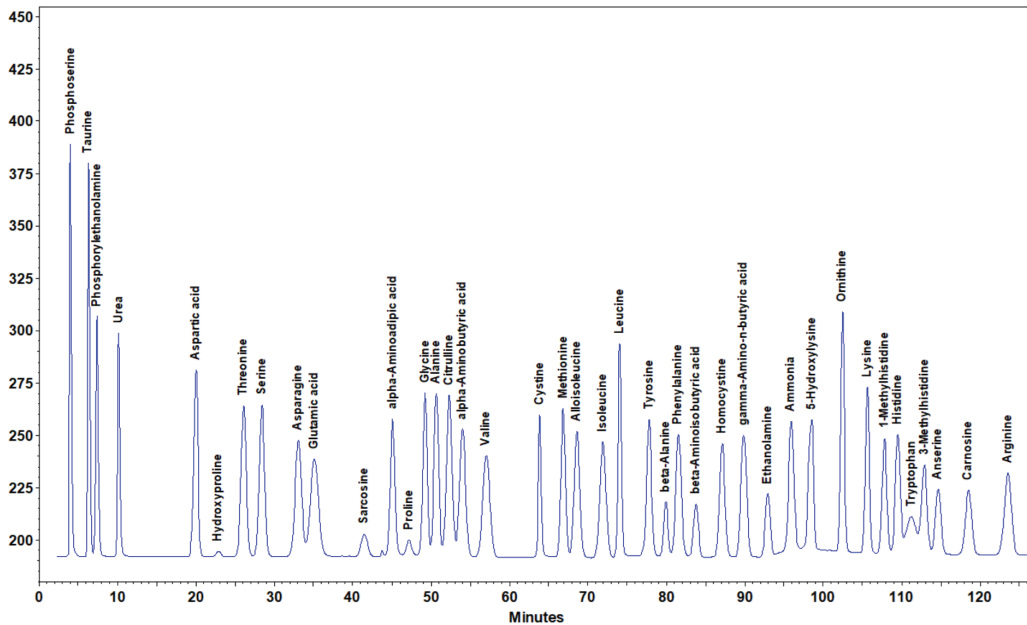
- Accelerated Column – for rapid full screening
- High-Performance Column – the standard reference
- High-Resolution Column – for maximum separation

Manufactured from PEEK material, the columns are free from corrosion and metal contamination and are packed with optimally sized cation exchange resin. The columns are attached with finger-tight fittings so no special spanners are required to ensure a leak-free seal. All our columns are fully tested and optimized under strict QC criteria. To minimize waste and reduce costs, our columns are fully recyclable at the end of their life thanks to our unique repacking and cleaning service.



Clinical Analysis

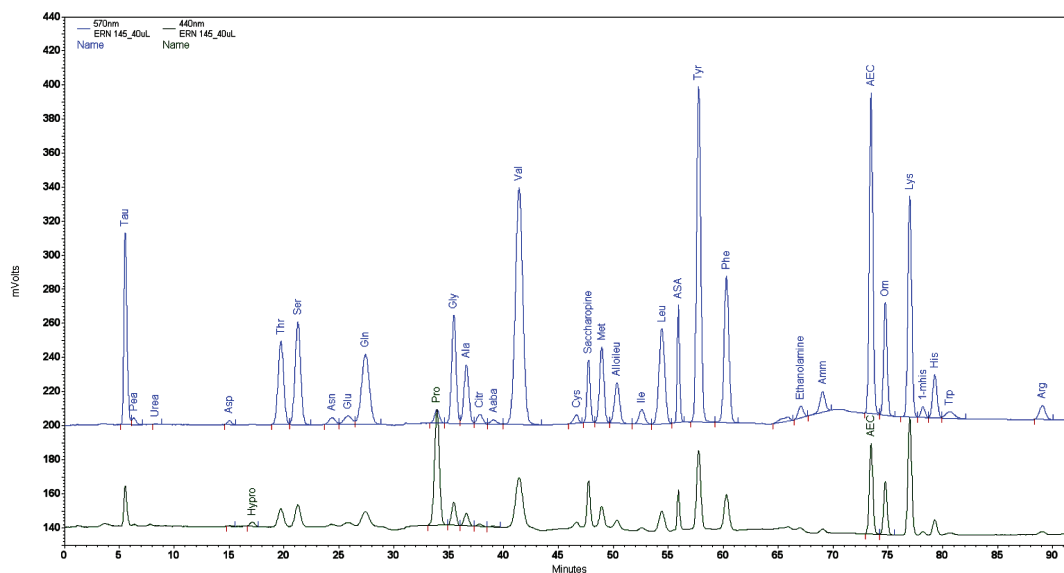
The Bio 30+ System enables you to recognize a characteristic amino acid chromatographic profile to aid in free amino acid analysis. The quantification of the amino acids may assist in investigating metabolic abnormalities. For reference purposes, chromatograms of reference material and normal de-proteinised plasma samples are shown.



Physiological Standard (Part Number 80-6002-80) analysed on the Bio 30+ High Performance method

Plasma Analysis

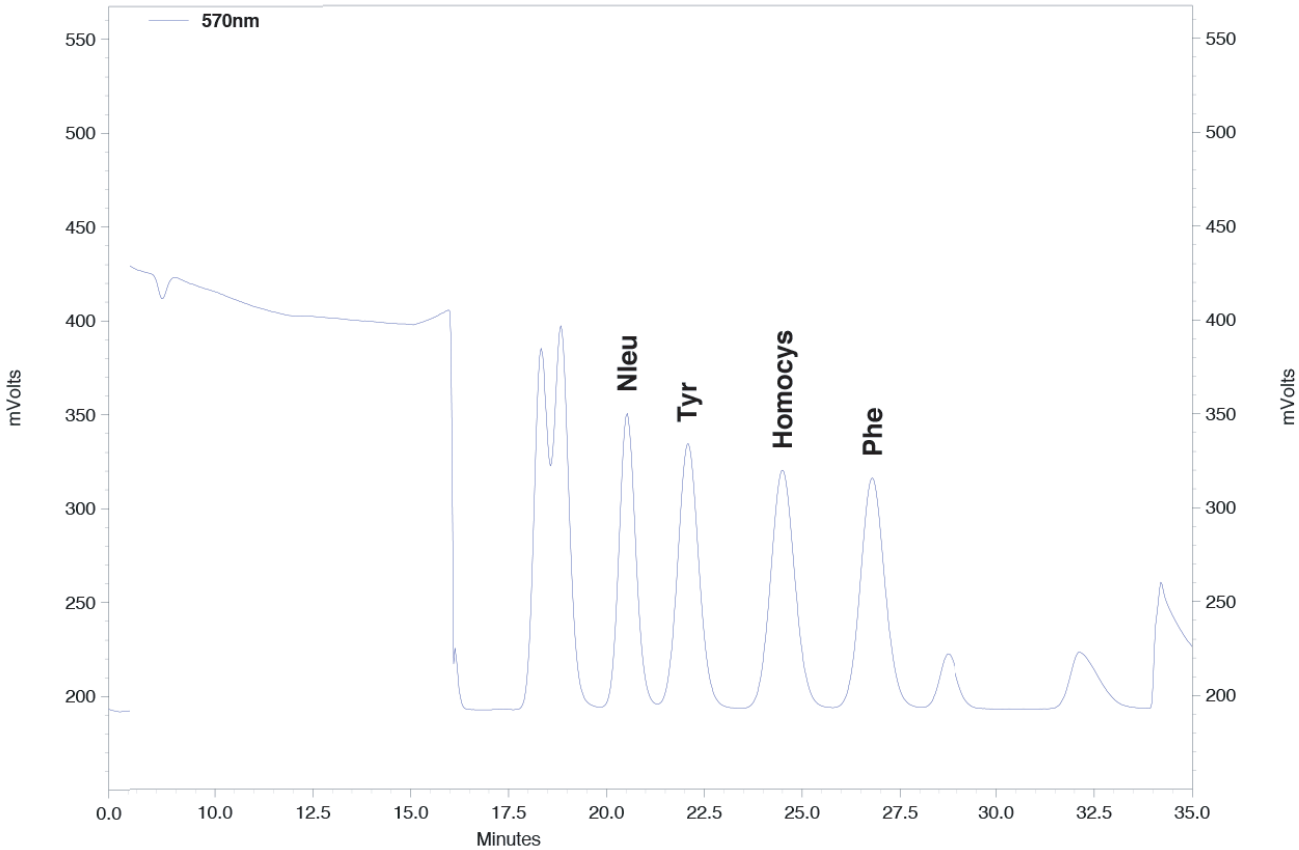
A full screening is achievable in less than two hours (injection to injection) in physiological samples with the Accelerated System. Rare key markers are clearly separated as shown in the plasma sample below.



Plasma sample containing unusual amino acids. 570nm and 440nm channel.

Phenylketonuria (PKU)

The PKU method is designed specifically for PKU newborn screening and to monitor patients' phenylalanine levels in plasma. Samples can be analysed within 30 min. with an injection-to-injection repeat time of 50 min.



Amino acid reference material analysed on a Bio 30+ equipped with the High Performance column. Norleucine used as the internal standard.

Bio 30+ System Technical Specifications

Reproducibility	Area: better than 1.5% RSD at 10 nanomoles Retention time: better than 0.5% RSD
Limit of Detection	9 - 15 pmoles (primary amino acids detection at 570nm)
Time of analysis (based on the separation of 45 physiological amino acids):	Accelerated analysis: 115 min injection to injection High Performance analysis: 170 min injection to injection
Analytical Column	High pressure PEEK column packed with Ultropac 8 cation exchange resin. Peltier heating/cooling system.
Eluent System	6 buffer system (5+1 regeneration solution) stored on the instrument at room temperature in graduated 1L glass bottles under nitrogen pressure. Ninhydrin reagent: Stored on the instrument at room temperature under nitrogen pressure in a 2L plastic coated glass bottle.
Temperature	Column temperature variable between 20°C and 99°C. Reaction Coil temperature adjustable between 40°C and 145°C (optimal temperatures: 135°C for UltraNin, 138°C for EZ Nin).
Photometric Detection	Single flow cell with optical beam splitter. Dual channel detection at 440nm and 570nm.
Sample Injection	3 injection modes (full loop, partial loop and micro), 84 position autosampler. Sample volumes from 1µL to 5000µL. 200µL loop supplied as standard.
Software	BioSys control software Biochrom Alias Manager autosampler control software OpenLAB CDS EZChrom Edition
Dimensions and Weights	Bench top fluidics cabinet: 48 x 59 x 57 cm, 19 x 23 x 22 inches (w x d x h) - Weight: 50 kg, 110 lbs - Autosampler: 30 x 57.5 x 36 cm, 12 x 23 x 14 inches (w x d x h) - Weight: 21 kg, 46 lbs
Operating Conditions	Operating temperature: 15°C to 25°C Maximum humidity: 80% at 25°C
Required Services	Oxygen free nitrogen gas (99.99%) or Argon regulated to 73.5 psi (5bar) Drainage facility 240V/100V, 50Hz/60Hz, 300 VA mains supply
Safety System	Automatic shut-down and reaction coil flushing in the event of: <ul style="list-style-type: none"> • photometer lamp failure • incorrect ninhydrin / buffer / coil / nitrogen pressures • incorrect coil and column temperatures • power failure

Elution order of amino acids and derivatives analysed by the Bio 30+ System

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|--------------------------------|-----------------------------------|-----------------------------------|
| 1. Sulfocysteine | 21. α -Aminobutyric acid | 41. β -Aminoisobutyric acid |
| 2. Phosphoserine | 22. Valine | 42. Homocystine |
| 3. Taurine | 23. Homocysteine | 43. γ -Aminobutyric acid |
| 4. Phosphoethanolamine | 24. Cystine | 44. Ethanolamine |
| 5. Urea | 25. Saccharopine | 45. Ammonia |
| 6. Aspartic acid | 26. Pípecolic acid | 46. Hydroxylysine |
| 7. Hydroxyproline | 27. Homocitrulline | 47. Amino ethyl cysteine |
| 8. Methionine sulfone | 28. Methionine | 48. Ornithine |
| 9. Threonine | 29. Cystathionine | 49. Lysine |
| 10. Serine | 30. Alloisoleucine | 50. 1-Methyl histidine |
| 11. Asparagine | 31. Isoleucine | 51. Histidine |
| 12. Glutamic acid | 32. Leucine | 52. Tryptophan |
| 13. Glutamine | 33. Argininosuccinic acid | 53. 3-Methyl histidine |
| 14. Sarcosine | 34. NorLeucine | 54. Anserine |
| 15. Cysteine | 35. Cysteine-homocysteine | 55. Carnosine |
| 16. α -Aminoadipic acid | 36. mixed disulfide | 56. Arginine |
| 17. Proline | 37. Tyrosine | 57. Homoarginine |
| 18. Glycine | 38. β -alanine | |
| 19. Alanine | 39. Phenylalanine | |
| 20. Citrulline | 40. δ -Aminolevulinic acid | |
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