

# Bio 30+ Amino Acid Analyzer System

The gold standard dedicated Amino Acid Analyzer for physiological fluids



# Amino acid analysis in physiological fluids

“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.”

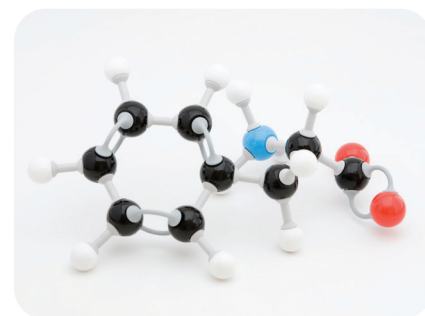
- Laboratory Manager



This compact instrument allows users to accurately detect and quantify amino acids and their derivatives in complex physiological samples.

## 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

## 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

## Highly flexible meeting research needs—Now and in the future

The Bio 30+ System offer a high-level of flexibility. Systems can be configured based on particular amino acids of interest today, and then easily modified as a lab's research focus changes.

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.





## Key Features

- Bio 30+ Analyzer 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.

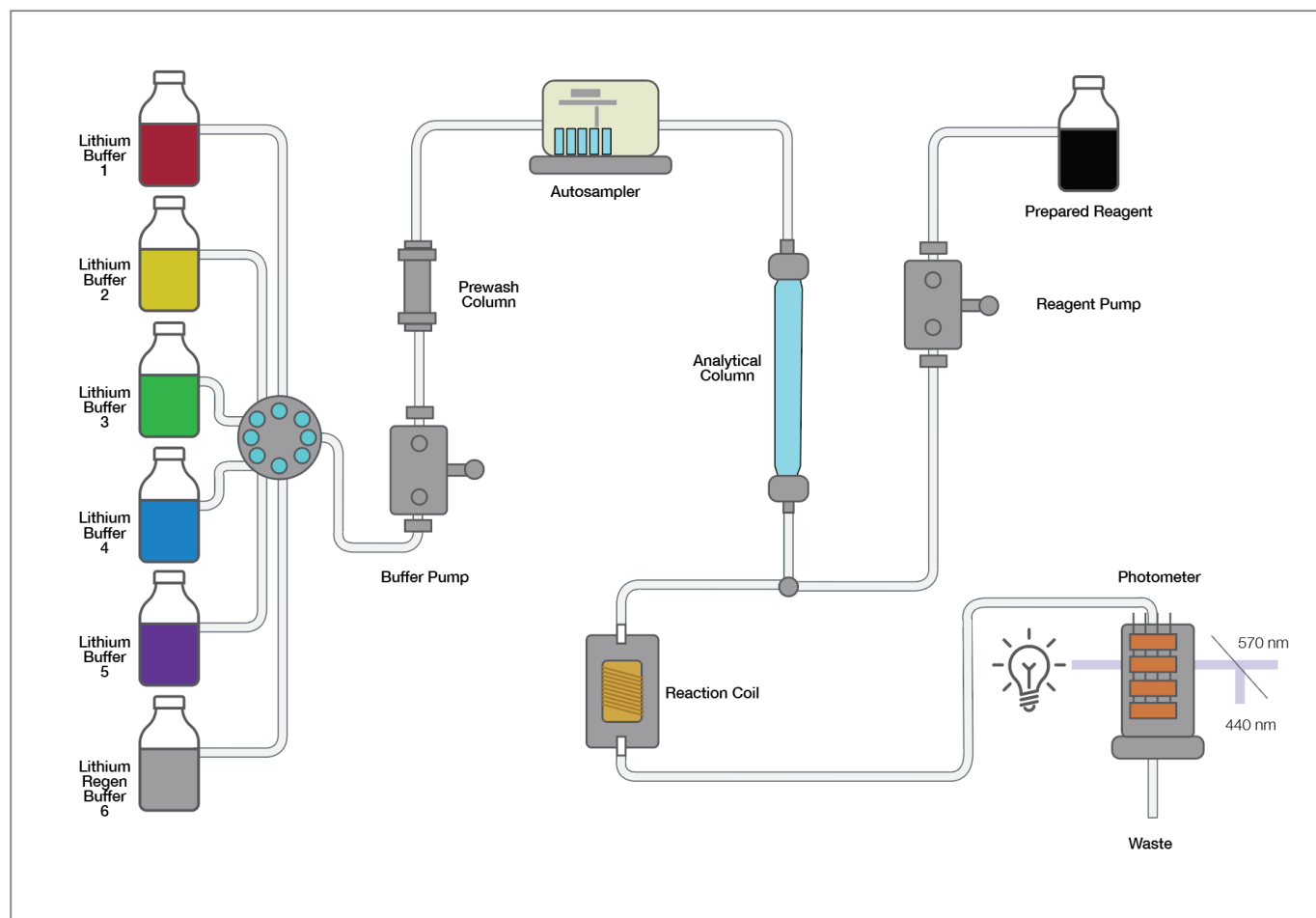
## Robust and stable chemistry

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

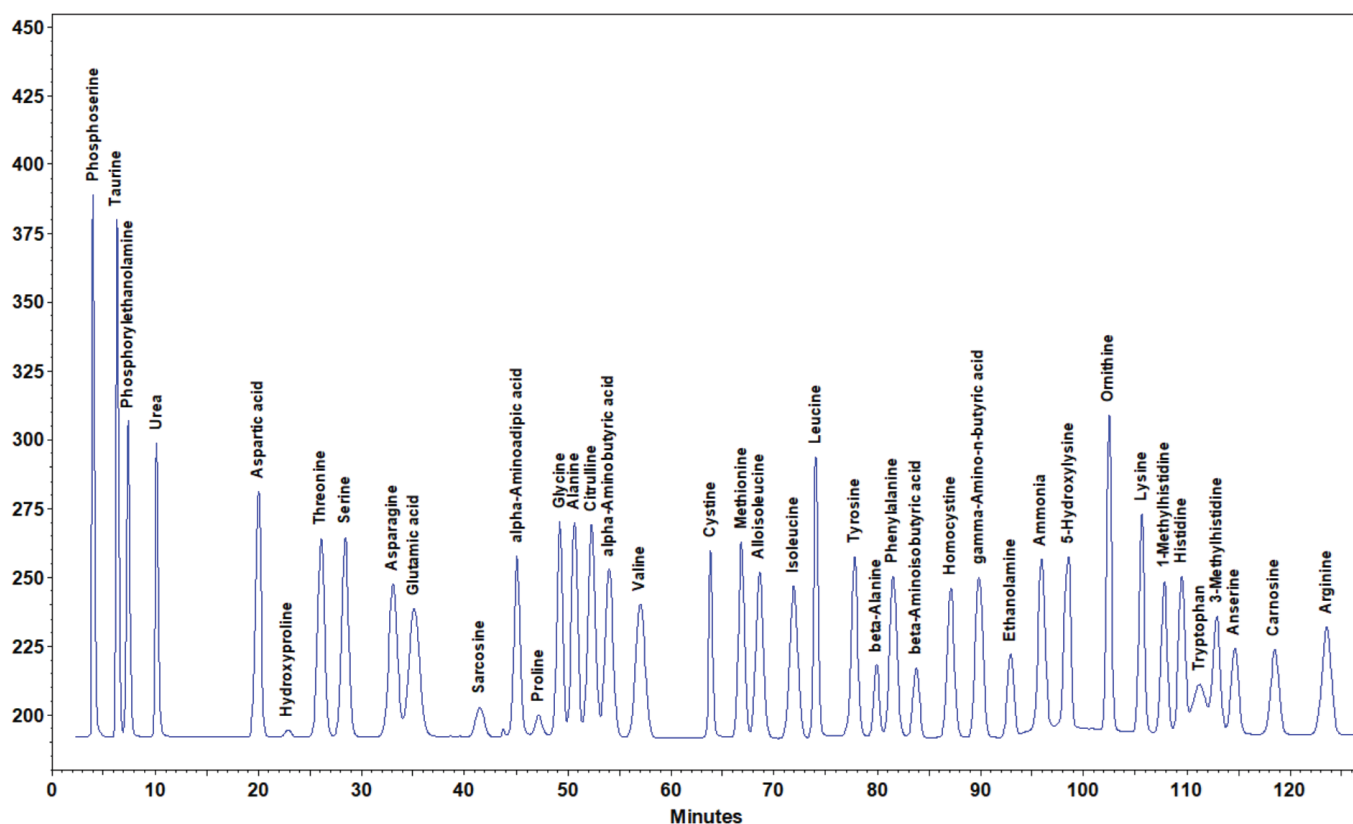
Manufactured from PEEK material, the columns are free from corrosion and metal contamination and are packed with optimally sized cation exchange resin. The columns are attached with finger-tight fittings so no special spanners are required to ensure a leak-free seal. All our columns are fully tested 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.



Fluidic Schematic of Bio 30+ Lithium System for Physiological Samples

# Free Amino Acid Analysis in Physiological Samples

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 are shown.



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

# Bio 30+ System Technical Specifications

<b>Reproducibility</b>	Area: better than 1.5% RSD at 10 nanomoles. Retention time: better than 0.5% RSD.
<b>Limit of Detection</b>	9 - 15 pmoles (primary amino acids detection at 570nm)
<b>Time of analysis (based on the separation of 45 physiological amino acids):</b>	Accelerated analysis: 115 min injection to injection High Performance analysis: 170 min injection to injection
<b>Analytical Column</b>	High pressure PEEK column packed with Ultropac 8 cation exchange resin. Peltier heating/cooling system.
<b>Eluent System</b>	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.
<b>Temperature</b>	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).
<b>Photometric Detection</b>	Single flow cell with optical beam splitter. Dual channel detection at 440nm and 570nm.
<b>Sample Injection</b>	3 injection modes (full loop, partial loop and micro), 84 position autosampler. Sample volumes from 1µL to 5000µL. 200µL loop supplied as standard.
<b>Software</b>	BioSys control software Biochrom Alias Manager autosampler control software OpenLAB CDS EZChrom Edition
<b>Dimensions and Weights</b>	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
<b>Operating Conditions</b>	Operating temperature: 15 °C to 25 °C Maximum humidity: 80% at 25 °C
<b>Required Services</b>	Oxygen free nitrogen gas (99.99%) or Argon regulated to 73.5 psi (5bar). Drainage facility. 240V/100V, 50Hz/60Hz, 300 VA mains supply.
<b>Safety System</b>	Automatic shut-down and reaction coil flushing in the event of: <ul style="list-style-type: none"> <li>• photometer lamp failure</li> <li>• incorrect ninhydrin / buffer / coil / nitrogen pressures</li> <li>• incorrect coil and column temperatures</li> <li>• power failure</li> </ul>

**For ordering information, please contact your local Biochrom representative or email: [enquiries@biochrom.co.uk](mailto:enquiries@biochrom.co.uk)**

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

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

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

1 Differential diagnosis of (inherited) amino acid metabolism or transport disorders. W. Blom & J.G.M.Huijmans, Amino Acids (1992) 2:25-67

2 Vademecum Metabolicum Manual of Paediatrics. J. Zschocke & G. Hoffmann, 2ed.Milupa GmbH 2004

3 Rapid Analysis of Homocysteine Levels. A.Lolia & S. Bee,



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