

# Анализаторы аминокислотные Bio 30+

## Технические характеристики

По вопросам продаж и поддержки обращайтесь:

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Тамбов (4752)50-40-97  
Тверь (4822)63-31-35

Тольятти (8482)63-91-07  
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Тула (4872)33-79-87  
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Улан-Удэ (3012)59-97-51  
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## Biochrom Bio 30+ General Lab Use Amino Acid Analyzer Systems

Biochrom's Bio 30+ Series is the gold standard in amino acid analysis trusted by diagnostic laboratories. It employs a classical method based on ion exchange chromatography with post-column derivatization using Ninhydrin. This system enables qualitative and quantitative analysis of 56 amino acids and derivatives, including argininosuccinic acid, alloisoleucine, and sulfocysteine. The Biochrom Bio 30+ Physiological System uses a combination of 5 lithium citrate buffers to achieve a full amino acid profile in under 2 hours using the new accelerated method.

**Why you need a dedicated instrument for amino acid analysis:**

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Conventional HPLC systems face challenges in amino acid analysis due to sample complexity and unique chemical properties. A dedicated AAA system provides a reliable, consistent, and reproducible solution without the need for method development. Its pre-set and extensively tested configuration allows 24/7 routine use with minimal user intervention. Efficient screening of numerous samples for specific amino acids can be swiftly conducted around the clock using concise methods.

### **System suitable for:**

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- Amino acid analysis for research and general lab use on various physiological sample matrices
- Quality control and compositional analysis in biosciences and pharmaceutical industries

### **Specific applications:**

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- Detection of up to 56 amino acids in physiological samples
- Protein and peptide analysis for pharmaceutical applications
- Food, beverages, plant extracts, fermentation products, culture media, nutraceuticals and infusion fluids

Biochrom 30+ Series of Amino Acid Analyzers are customizable.

Please contact your sales representative or distributor for system ordering information

Please contact your Biochrom representative for the service availability in your location.

## **A Dedicated Amino Acid Analysis System**

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### **Accurate:**

Superb separation, accurately identifies and quantifies free amino acids, as well as the amino acid composition of proteins and peptides.

<b>Reliable:</b>	Minimal matrix interference and near baseline separation. Automated derivatization of amino acids maximizes reproducibility.
<b>Fast:</b>	Rapid protocols that increase sample throughput by cutting analysis time.
<b>Economical:</b>	The column cleaning and repacking service, gives columns an almost indefinite life and cuts the cost of ownership.
<b>Fully Automated:</b>	Total PC control allows 24/7 operations.
<b>Versatile:</b>	Wide variety of sample types compatible: Protein hydrolysates from various food and feedstuff samples or synthetic drugs, nutraceuticals, beverages.
<b>Easy to implement:</b>	No lengthy method development is required as this well characterized system is established worldwide. All customers have their instrument optimized to their application directly from the factory.
<b>Convenient:</b>	Interchangeable sample trays allow samples to be prepared in advance and stored refrigerated.
<b>Robust:</b>	Advanced fluidics and robust hardware mean easy maintenance for users, backed by the reassurance of Biochrom's dedicated service and support team.
<b>Flexible:</b>	Integrated software, choice of different methods to adapt to the user's needs. Automatic sample set-up. Networking and exporting of data.
<b>Compact:</b>	Bench top design requiring minimum lab space.

## Screening Methods

Choose from 3 full screening methods according to your business needs:

CHOICE OF SCREENING METHODS		
SYSTEM	USE	MINUTES (TO ARGININE)
Biochrom Bio 30+ Physiological Accelerated LC System	When speed is a decisive factor, with little compromise on the peak resolution	120 min
Biochrom Bio 30+ Physiological High Performance LC System	The best compromise between speed, resolution and column life	170 min
Biochrom Bio 30+ Physiological High Resolution LC System	When 100% baseline separation and a maximum number of amino acids separated are required. Ideal for research and low sample throughputs	210 min

## Instrument Typical Package

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The instrument package consists of the Analyzer (electronics unit, pumps, and detection system) plus:

- Cooled Autosampler
- Column kit: analytical column and top-up ion exchange resin, prewash column and top-up ion exchange resin
- Ninhydrin
- Buffer Chemical Kit suitable for up to 170 analyses (high performance method)
- Spare parts and consumables kit
- Calibration Standard
- Hardware control and data handling software
- Desktop PC, Windows 10 64-bit Professional, LED widescreen monitor
- User Manual (PDF format)
- Power cables

For buffer and chemicals information, consult the Consumables tab below.

INSTRUMENT SPECIFICATIONS	
SPECIFICATION	DATA
Reproducibility	Area: <0.5% RSD at 10 nanomoles Retention time: <0.1% RSD
Pumps	Two dual piston pumps with integrated pressure transducer and drain valve Ceramic pump head, sapphire pistons and valves Electronically controlled piston wash
Operating Pressures	Buffer pressure: maximum 150 bar Ninhydrin pressure: maximum 24 bar
Analytical Column	High pressure PEEK column packed with Ultropac 8 cation exchange resin Peltier heating/cooling system
Sample Injection	3 injection modes (full loop, partial loop and micro), 84 position autosampler

INSTRUMENT SPECIFICATIONS	
SPECIFICATION	DATA
	Sample volumes from 1 µL to 5000 µL (200 µL loop supplied as standard)
Temperatures	Column temperature variable between 20°C and 99°C Reaction Coil temperature adjustable between 40°C and 145°C (135°C is optimum)
Software	Phoenix Integrated Control Software Data Apex Clarity or Agilent OpenLAB CDS EZChrom Edition
Photometer	Single flow cell with optical beam splitter with detection at 440 nm and 570 nm
Weight and Dimensions	Main System: 50 kg (110 lb.) 48 x 59 x 57 cm (19 x 23 x 22 in.) Autosampler: 21kg (46 lb.) 30 x 57.5 x 36 cm (12 x 23 x 14 in.)
Required Services	Oxygen free Nitrogen gas (99.99%) or Argon gas regulated to 5 bar Drainage facility 240V/100V, 50Hz/60Hz, 300VA mains supply
Safety Systems	Automatic shut down and reaction coil flushing in the event of: <ul style="list-style-type: none"> <li>• Power failure</li> <li>• Photometer lamp failure</li> <li>• Low ninhydrin, low buffer, low coil or low nitrogen pressures</li> <li>• High coil or column temperatures, high ninhydrin, high buffer or high coil pressures</li> </ul>

## ^ EZ Nin Reagent Kit 2L NC

ITEM #: 80-6003-12

Sufficient for up to 90 runs (Protein Hydrolysate System) or 45 runs (Physiological Fluid High Performance System)

Includes: EZ Nin Reagent ready-to-use 2L bottle, In-line filter, Quick Start Guide

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✓ **EZ Nin Reagent Kit 4L NC (2 x 2L)**

ITEM #: 80-6003-13

Sufficient for up to 180 runs (Protein Hydrolysate System) or 90 runs (Physiological Fluid High Performance System)

Includes: EZ Nin Reagent ready-to-use 2x 2L bottle, 2x In-line filter, Quick Start Guide

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✓ **EZ Nin Reagent Kit 8L NC (4 x 2L)**

ITEM #: 80-6003-14

Sufficient for up to 360 runs (Protein Hydrolysate System) or 180 runs (Physiological Fluid High Performance System)

Includes: EZ Nin Reagent ready-to-use 4x 2L bottle, 4x In-line filter, Quick Start Guide

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✓ **Ultra Ninhydrin Kit 2L NC**

ITEM #: 80-6003-10

Sufficient for up to 90 runs (Protein Hydrolysate System) or 45 runs (Physiological Fluid High Performance System)

Includes Ultra Ninhydrin Solution 2L, Ultrosolve Plus Solution, In-line Filter

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✓ **Ultra Ninhydrin Kit 8L NC (4 x 2L)**

ITEM #: 80-6003-11

Sufficient for up to 360 runs (Protein Hydrolysate System) or 180 runs (Physiological Fluid High Performance System)

Includes 4x Ultra Ninhydrin Solution 2L, 4x Ultrosolve Plus Solution, 4x In-line Filter

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✓ **Lithium Buffer 1 NC**

ITEM #: 80-6003-01

2 L, pH 2.80

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✓ **Lithium Buffer 2 NC**

ITEM #: 80-6003-02

2 L, pH 3.00

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✓ **Lithium Buffer 3 NC**

ITEM #: 80-6003-03

2 L, pH 3.15

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✓ **Lithium Buffer 4 NC**

ITEM #: 80-6003-04

2 L, pH 3.50

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✓ **Lithium Buffer 5 NC**

ITEM #: 80-6003-05

2 L, pH 3.55

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✓ **Lithium Buffer 6 NC**

ITEM #: 80-6003-06

1 L

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✓ **Lithium Loading Buffer NC**

ITEM #: 80-6003-07

2 L, Ph 2.20

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✓ **Physiological Fluid amino acid standard, 2.5mM**

ITEM #: 80-6002-80

This ISO 17034 Reference Material (RM) is manufactured and verified in accordance with system ISO 17034 and ISO 17025 requirements. The analyte concentrations are verified by a quality control laboratory and the true value and uncertainty values at the 95% confidence level are reported for each analyte.

This is supplied in a screw cap glass vial containing 5 mL of standard solution in a 0.1 N Hydrochloric Acid matrix. A Certificate of Analysis is provided with each vial. Store Refrigerated (2o to 8oC) Do Not Freeze

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✓ **Lithium Buffer Start-up Kit (no ninhydrin reagent included)**

ITEM #: 80-6003-17

Sufficient for up to 170 runs (High Performance System) Includes 2x Buffer 1, 1x Lithium Buffer 2, 1x Lithium Buffer 3, 1x Lithium Buffer 4, 2x Lithium Buffer 5, 1x Lithium Regeneration Buffer 6

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✓ **Lithium Buffer Routine Kit (no ninhydrin reagent included)**

ITEM #: 80-6003-18

Sufficient for up to 170 runs (High Performance System) Includes 3x Buffer 1, 1x Lithium Buffer 2, 1x Lithium Buffer 3, 1x Lithium Buffer 4, 2x Lithium Buffer 5, 1x Lithium Regeneration Buffer 6

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✓ **Lithium High Resolution Analytical Column**

ITEM #: 80-6002-47

20cm x 4.6mm ID

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✓ **Lithium High Performance Analytical Column**

ITEM #: 80-6002-48

20cm x 4.6mm ID

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✓ **Lithium Accelerated Analytical Column**

ITEM #: 80-6002-49

20cm x 4.6mm ID

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✓ **Lithium Prewash column**

ITEM #: 80-6002-50

10cm x 4.6mm ID

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✓ **Analytical Column Cleaning Service**

ITEM #: 80-2112-17

All analytical columns

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✓ **Prewash Column Cleaning Service**

ITEM #: 80-2117-34

All prewash columns

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## **US Service Plans for Bio30+ Series of Amino Acid Analyzers**

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✓ **Preventative maintenance for Bio30+ systems**

ITEM #: 80-2119-94US

✓ **Premier Service Plan for Bio30+ systems**

ITEM #: 80-2119-96US

✓ **Elite Service Plan for Bio30+ systems**

ITEM #: 80-2119-97US

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## **EMEA/UK Service Plans for Bio30+ Series of Amino Acid Analyzers**

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✓ **Preventative maintenance for Bio30+ systems**

ITEM #: 80-2116-06

✓ **Silver Service Plan for Bio30+ systems**

ITEM #: 80-6001-18

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✓ **Gold Service Plan for Bio30+ systems**

ITEM #: 80-2116-07

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✓ **Platinum Service Plan for Bio30+ systems**

ITEM #: 80-6000-08

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## **IQ/OQ Documentation for AAA Bio30+**

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✓ **IQ/OQ for AAA with Biosys software (EMEA/UK only)**

ITEM #: 90-6000-31

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✓ **IQ/OQ for AAA with Phoenix software**

ITEM #: 90-6003-40

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## 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.”

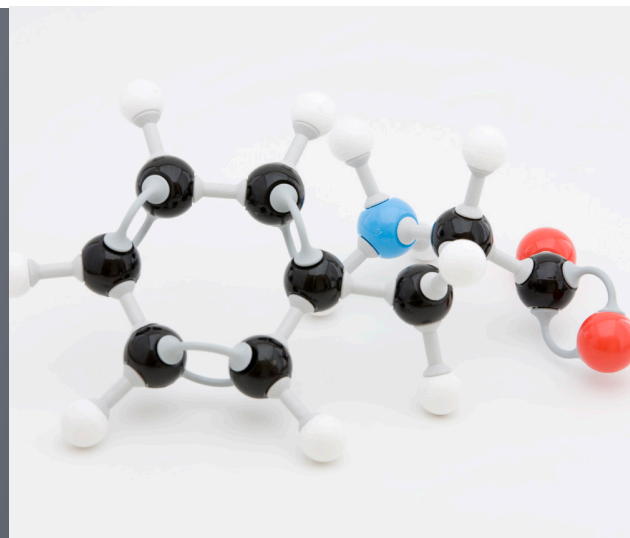
- Laboratory Manager

Investigating metabolic disorders is a crucial and complex task. With over 42 significant amino acids and their derivatives implicated in the accurate analysis of Inborn Errors of Metabolism<sup>1</sup>, including Phenylketonuria (PKU), laboratories need an accurate and reliable analysis system that delivers unequivocal results quickly.

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



## Accurate Analysis of Inborn Errors of Metabolism (IEM)

A proven instrument for the precise quantification and qualification of free amino acids in physiological fluids, the Bio 30+ System can aid in the quantitative analysis of amino acids for inborn errors of metabolism.

# 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 and research labs. This compact instrument can handle plasma, serum, urine, dried blood spots and CSF with low matrix interference and without costly and time-consuming re-equilibration.

## 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.

## 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

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.

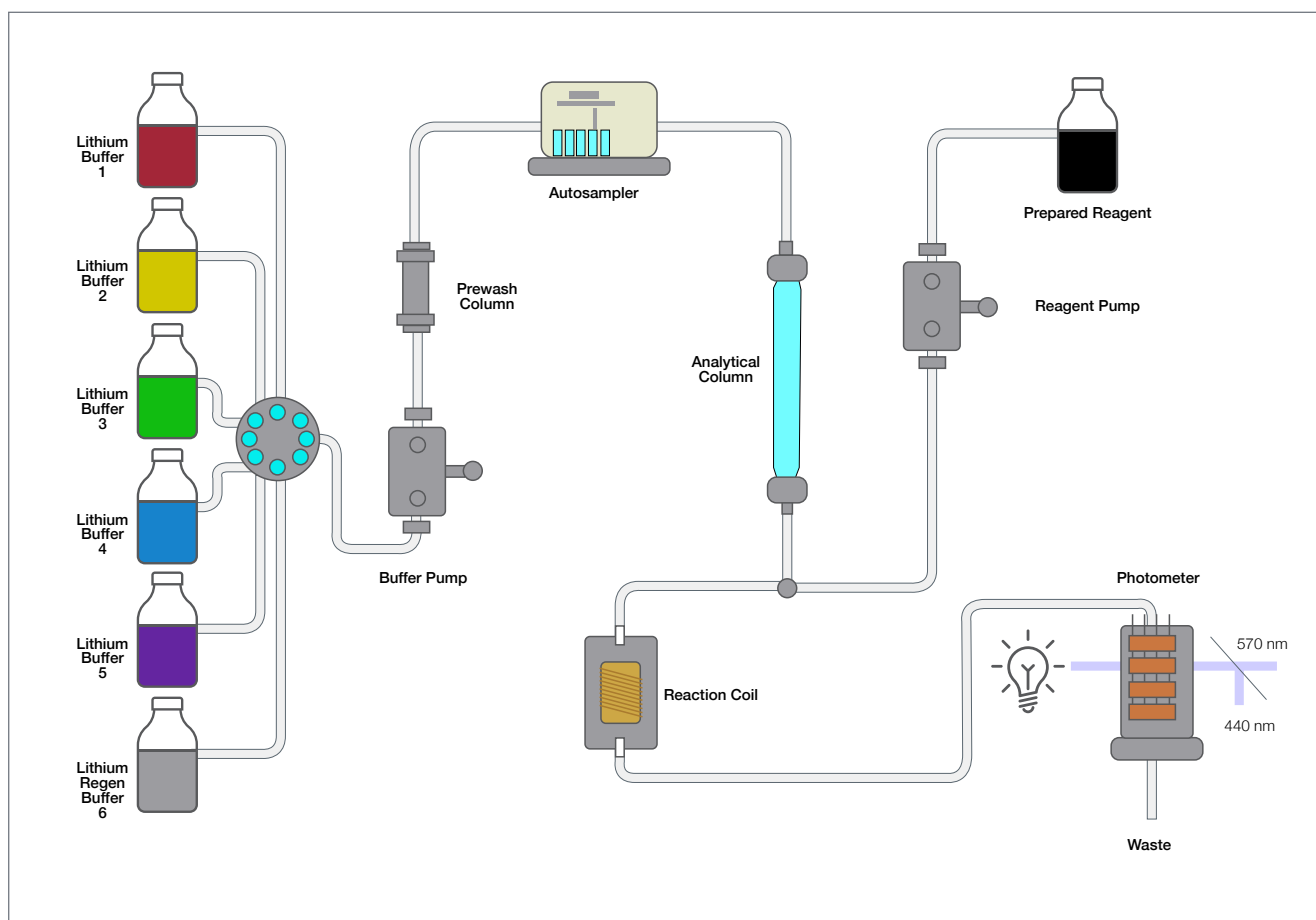
## Robust and stable chemistry

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

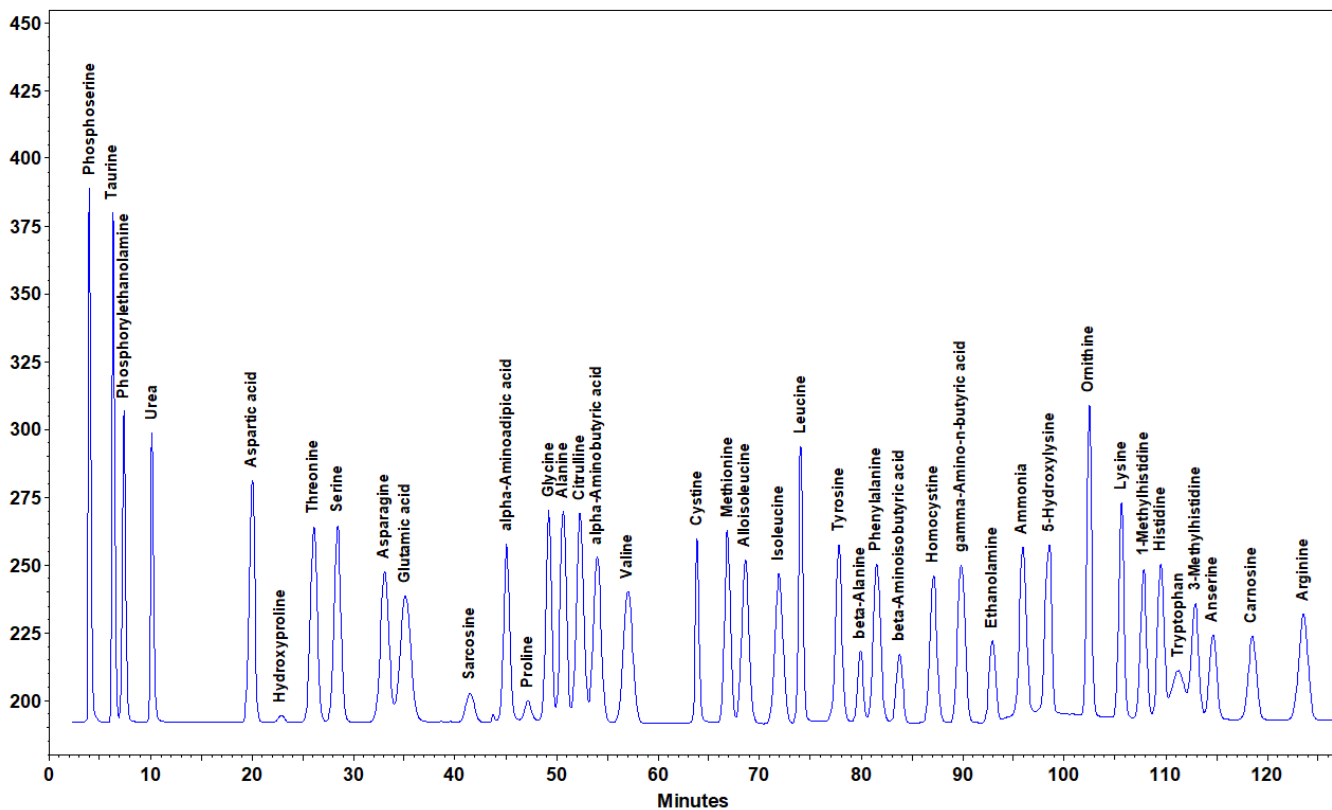
Manufactured from PEEK material, the columns are free from corrosion and metal contamination and are packed with optimally sized cation exchange resin. The columns are attached with finger-tight fittings so no special spanners are required to ensure a leak-free seal. All our columns are fully tested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

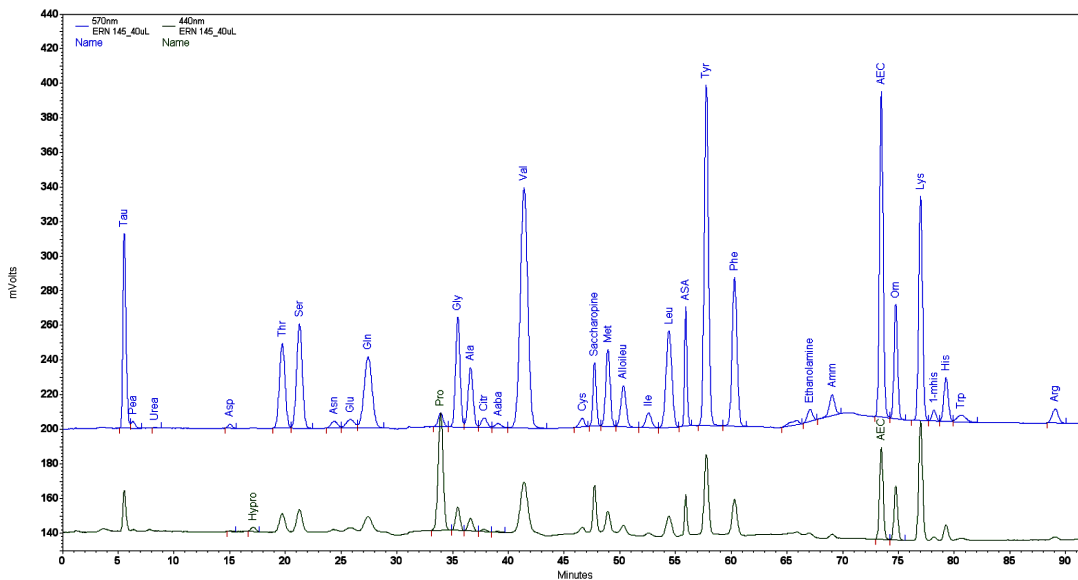
The Bio 30+ System enables you to recognize a characteristic amino acid chromatographic profile to aid in free amino acid analysis. The quantification of the amino acids may assist in investigating metabolic abnormalities. For reference purposes, chromatograms of reference material, normal plasma and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



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

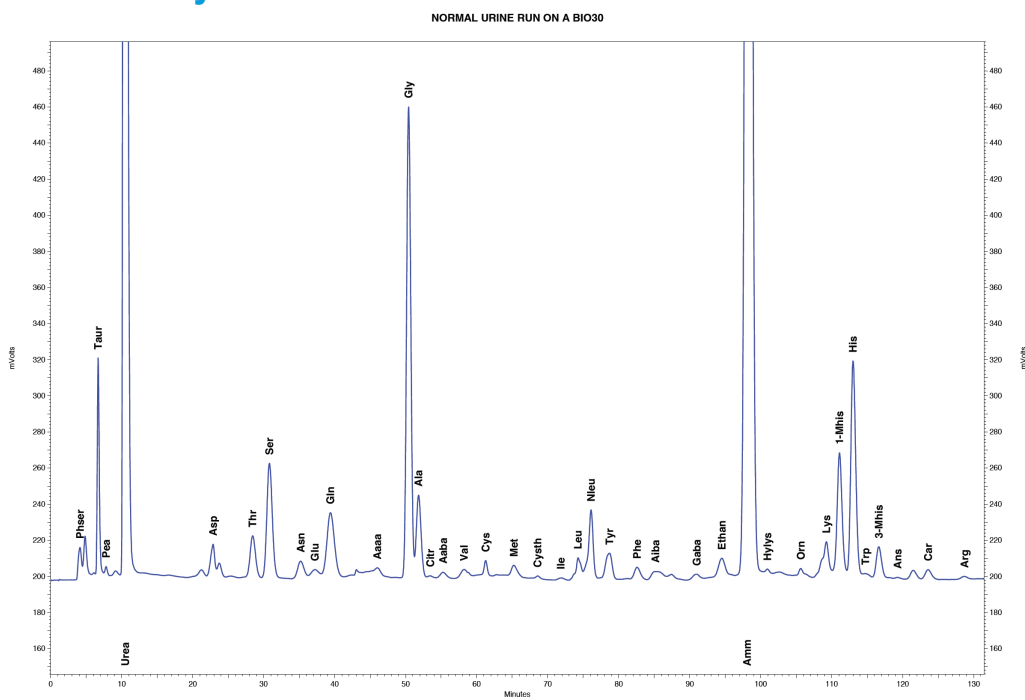
## Plasma Analysis

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.

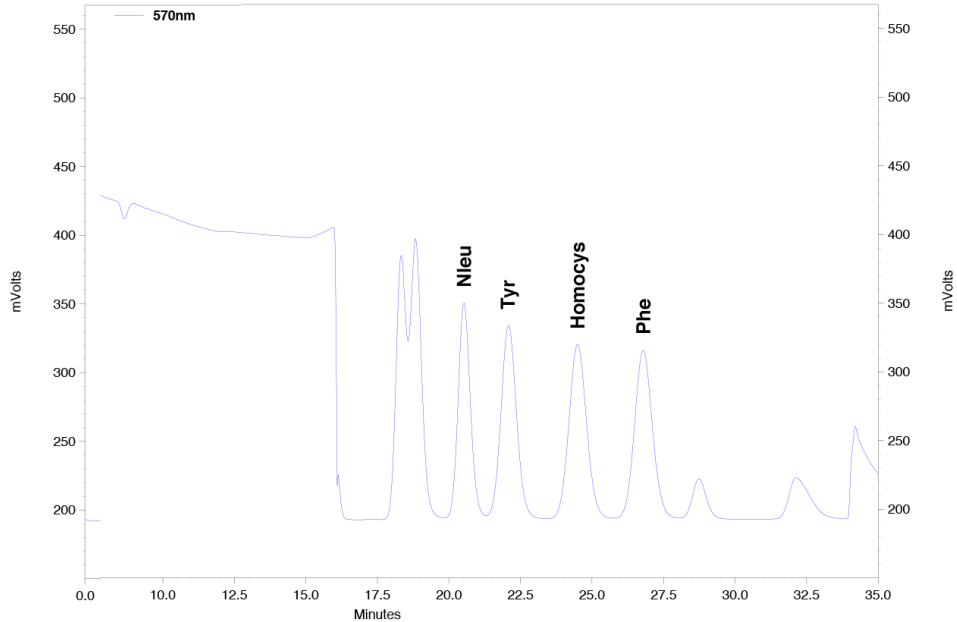
## Urine Analysis



Urine sample analyzed on the Bio 30+ High Performance System.

## Analysis of Tyrosine and Phenylalanine:

The phenylalanine short method allows a fast and accurate separation of tyrosine, phenylalanine and homocystine within a short single run. Samples can be analyzed within 30 minutes, with an injection to injection repeat time of 50 minutes.

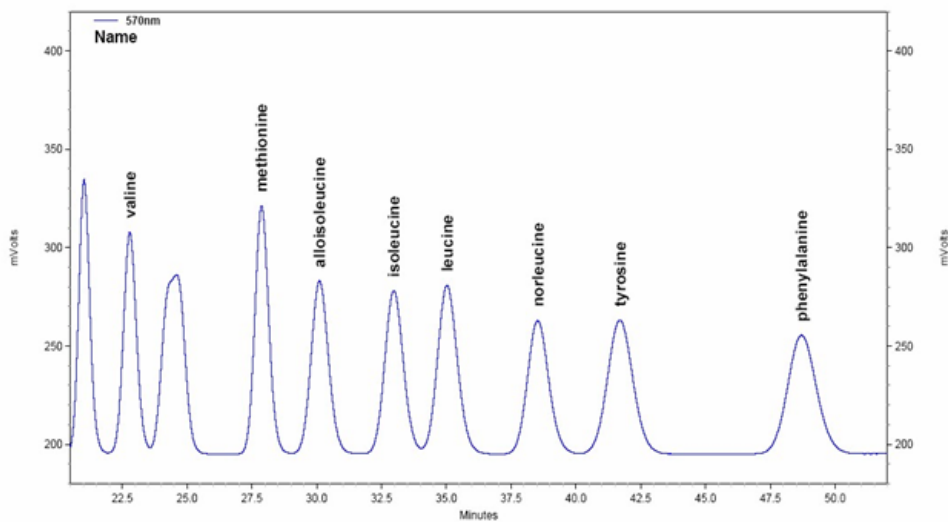


Amino acid reference material analyzed on a Bio 30+ equipped with the High Performance column. Norleucine used as the internal standard.

## Branched Chain Amino Acids Analysis:

Using the Bio 30+ System, the levels of the branched chain amino acids leucine, isoleucine, and valine, can be determined accurately, using norleucine as the internal standard. In addition, L-alloisoleucine and homocitrulline can be well resolved and quantified. A dedicated method for those amino acids allows their separation in 78 minutes injection to injection.

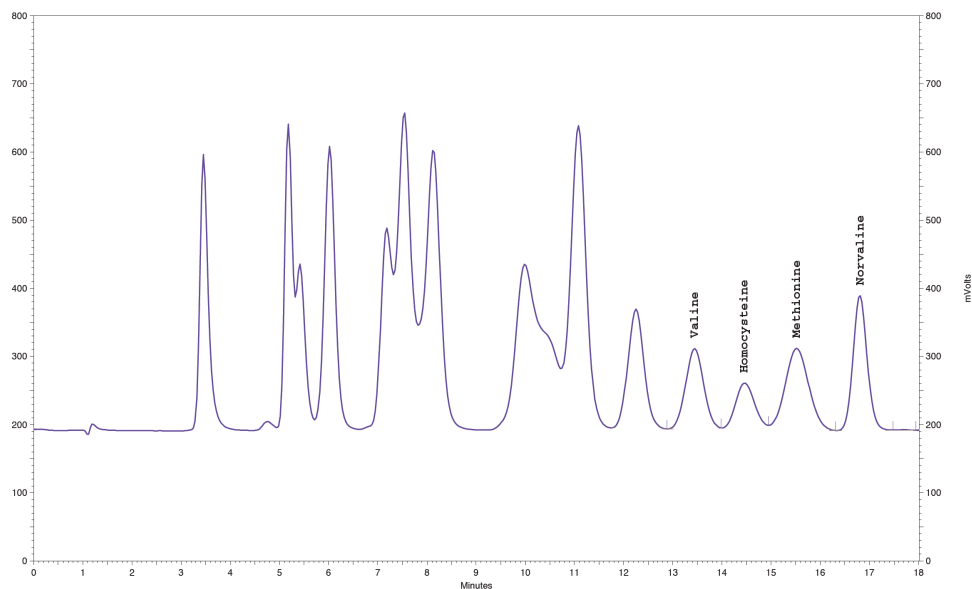
Physiological standard including L-alloisoleucine (10 nmol/20uL)



Physiological standard analyzed on the Bio 30+ System using the Branched Chain Amino Acids short method. Norleucine is used as the internal standard.

## Total Homocysteine Assay

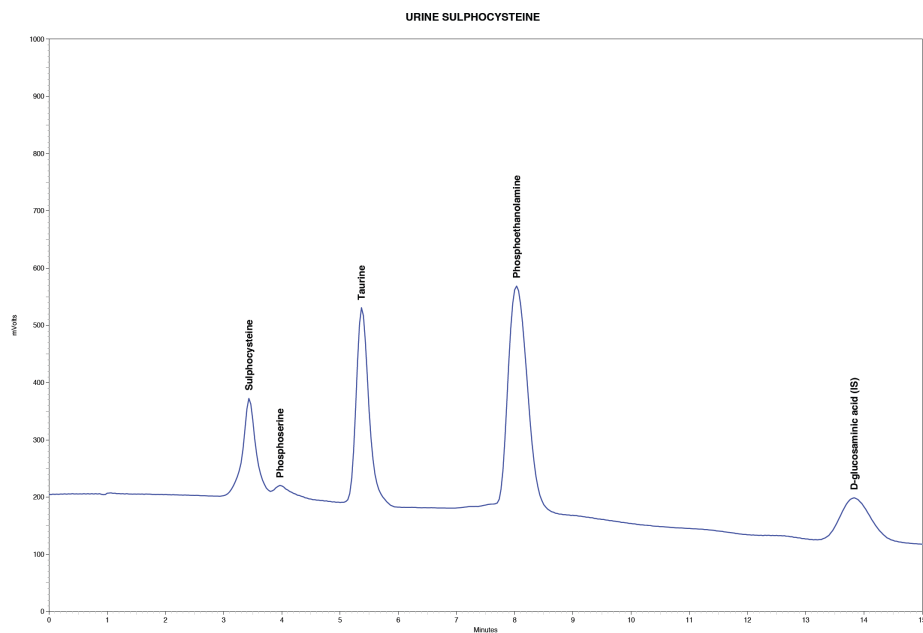
Elevated plasma total homocysteine has emerged as an important risk factor in the development of vascular disease<sup>3</sup>. The Bio 30+ System allows a rapid analysis of homocysteine levels in plasma with an analysis time of 24min injection to injection.



Physiological standard spiked with homocysteine. Norvaline is used as the internal standard.

## Sulfocysteine

Using the Bio 30+ System, a short program for the analysis of s-sulfocysteine has been developed that allow its separation from phosphoserine.



Analysis of sulfocysteine in urine sample

# 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: • photometer lamp failure • incorrect ninhydrin / buffer / coil / nitrogen pressures • incorrect coil and column temperatures • power failure

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

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