biochrom

THE BIOCHROM 30+ AMINO ACID ANALYZER SYSTEM

For Amino Acid Analysis in Beverages, Foods and Feedstuffs

Quality Composition Analysis

Ascertaining the protein content of food, feedstuffs and beverages is of increasing importance, largely driven by increasing global legislation and regulations covering the nutritional and composition labeling of food. The development of "functional foods" and an understanding of the potentially devastating consequences of food adulteration have influenced this.

Consumers are becoming more concerned about the role of nutrition in maintaining health, and are interested in the origins of food and the production environment.

Many laboratories are responsible for the nutritional and compositional analysis of a wide range of foods, feedstuffs and beverages for both human and animals to both inform research and for quality control.

Amino acid analysis is a powerful tool that can:

- Determine the amino acid composition of a protein or peptide
- Evaluate protein quality of a food by determining the quantities of (essential) amino acids
- Identify proteins and peptides based on their amino acid profile
- Detect odd amino acids and corroborate synthetic or recombinant proteins
- Determine free amino acids in foods and feedstuffs
- Determine the results of experimental feeding trials or novel nutrients/formulas by analysing the physiological fluids (such as plasma or urine) of both animals and humans

APPLICATIONS OF AMINO ACID ANALYSIS IN THE NUTRITION AND COMPOSITIONAL ANALYSIS OF FOOD AND FEEDSTUFFS

- Identifying the source and quality of proteins and raw materials
- Indicating spoilage, adulteration or microbial contamination e.g. analysis of amine in fish products
- Research into optimum feed and diet formulations
- Monitoring production processes and quality control
- Providing proof of nutritional quality and data for nutritional labeling
- Helping producers meet legal requirements for records of total consumption in relation to waste

Quality Nutrition Analysis

Of the 22 amino acids found in animals, eight are indispensible or "essential" amino acids that cannot be synthesized in the body and must be supplied by diet. The amino acid requirement also differs with species e.g., taurine is an essential amino acid for felines. Other amino acids are "conditionally essential" as they cannot be synthesized in sufficient quantities or are rapidly metabolized to meet the body's requirements for growth and repair.[1] For example arginine is "essential" for many young mammals but not adults.[2]

Amino acid analysis can accurately identify and quantify the "true" protein content of a sample without the interference of other nitrogen containing compounds. The UN recommends [3] that only amino acid analysis is used to analyze the protein content of:

- Foods used as the sole source of nourishment, such as infant formula
- Foods/formulas designed specifically for special dietary conditions
- Novel foods

For humans, infant formula feeds, sports nutrition products and therapeutic diets are routinely analyzed for not just protein content and quality, but also to ensure adequate quantities of essential amino acids.

In animals there are four main amino acids that need to be added to the diet: lysine, methionine, threonine and tryptophan. Limiting any of these will affect growth, development and weight gain.

Supplemental amino acids added to feedstuff can increase efficiency of animal production and achieve a "least cost feed" formulation. Optimizing animal growth rate through the protein content of feedstuffs has environmental benefits as well as economic. Controlling nitrogen excretion by livestock relies on optimal protein nutrition. For example in pigs the use of synthetic lysine allows an increase in feed consumption and in body weight gain. This improvement in feed conversion and in nitrogen retention results in an improvement of the carcass quality.

The "Gold Standard" Method

Unlike other methods, the Biochrom 30+ meets the requirements of the standard methods from the AOAC and the EU Commission Directive 98/64/EC based on the Gold standard reference method of ion exchange chromatography with post-column derivatization of samples using ninhydrin[4].

After optimal sample preparation using the reference methods Biochrom instruments can accurately identify and quantify amino acids. This enables the estimation of the amino acid composition of proteins and peptides in solid food and feedstuffs, purified peptides, or proteins/peptides in solution.

In some cases the estimation of a single amino acid needs to be performed to obtain accurate values. One example is the measurement of phenylalanine in specific diet formula in order to minimize the phenylalanine intake of patients suffering from the inherited metabolic disease called phenylketonuria (PKU).

The Biochrom amino acid analysis system puts you in control of the major factors that commonly cause variability in amino acid analysis. Optimized methods and instrumentation control the analysis conditions with high quality reagents to control the chemistry, plus reporting and qualification tools including 21CFR part 11, IQ/OQ documentation and Biochrom Support add up to a system that provides both rugged and reliable analysis of every sample.

WITHOUT INTERFERENCE

Unlike generic methods, the system can withstand both complex sample matrices and high salt concentrations. High salt concentrations can cause peak broadening and affect the resolution of methionine sulfone, aspartic acid, threonine, and serine hence giving rise to reproducibility errors.

FLEXIBILITY

Biochrom Amino Acid Analyzers offer flexibility. Two systems are available suitable for different applications in the food and drink industry.

- Better separation: typically 90% separation between each amino acid
- Reproducibility of peak area and retention time <0.5%CV
- High sample throughput due to long column life (more than 1200 samples)
- Amino and imino acid detection
- Low interference
- Flexible system- rapid runs and complete control
- Support from application scientists and engineers dedicated to amino acid analysis.

Instrument	Reagent System	Ideal for
Biochrom 30+	5 buffer lithium based system	■ Native samples - 40+ amino acids and derivatives. ■ Free amino acids ■ Milk products, cheese or formula feed e.g. baby milk ■ Analysis of soft drinks and beverages. ■ Analysis of human and animal physiological fluids ■ Applications that need to resolve asparagine (Asn) and glutamine (Gln) from the amino acids threonine (Thr) and serine (Ser). ■ Dedicated short programs of single amino acids e.g. phenylalanine and tyrosine, or the branched chain amino acids valine, leucine and isoleucine ■ Separation of the methylated histidines, gamma-aminobutyric acid (GABA), beta-alanine and beta-aminoisobutyric acid
Biochrom 32+	4 buffer sodium accelerated system	■ Rapid run times ■ Analysis of protein or peptides hydrolysates in a variety of samples ■ Estimation of cysteic acid and methionine sulfone in oxidized protein or peptide hydrolysates ■ Tailored short programs for the analysis of single amino acids as e.g. taurine or lysine, and of natural sulfur amino acids

The Biochrom Amino Acid Analysis System

A DEDICATED CHROMATOGRAPHIC SYSTEM

SPECIFICALLY FOR AMINO ACIDS

The Biochrom 30+ series Amino Acid Analyzer is a cation exchange chromatography system coupled with a highly specific detection system using post column derivatization 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 buffers used in a stepwise elution profile of increasing pH and molarity. A temperature gradient on the column maximizes resolution. The resin bed is regenerated 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 and the response is 100% linear within the expected amino acids concentration range encountered. The continuous flow of reagent ensures a reproducible derivatization giving high precision in the peak area.

ROBUST AND STABLE CHEMISTRY

The chemical kit contains everything you need for routine analysis of up to 320 runs (oxidized protein hydrolysate method). 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.

RE-USABLE COLUMNS

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

COST EFFECTIVE

The Biochrom 30+ is a cost effective solution for amino acid analysis because it has a long column life designed to last the life of the instrument. With our unique column cleaning and re-packing service you can reduce costs further. There is a full range of competitively priced ready-to-use reagents that save preparation time and minimizes variation. All reagents are stable at room temperature, simplifying storage. The Biochrom 30+ is fully automated and designed to operate 24/7, ideal for busy laboratories that need to minimize hands-on time and maximize sample throughput.

EASY TO USE

Analysis times can be tailored to the laboratory's requirement, with ready-to-use short methods. The Biochrom 30+ has pre-defined analytical, processing and reporting methods in the software as well as dedicated technical support, training and installation to get your lab up and running quickly.

PEACE OF MIND

Biochrom instruments and reagents are manufactured from high quality materials under the ISO 9001:2008 Quality System and subjected to rigorous control procedures.

The Biochrom 30+ 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 support gives complete peace of mind and includes:

- Maintenance visits performed by trained and certified field service engineers.
- Biochrom quality parts used for all maintenance and repairs.
- Rapid service from our engineering team.

SOFTWARE

Biochrom BioSys V. 3.0 software controls the system via an advanced graphical user interface showing real time operational information and is fully integrated with the data-handling software EZChrom Elite™ from Agilent. This powerful, advanced software is easily networked for secure data storage and includes special tools for compliance with regulatory demands,

e.g. FDA 21CFR11 part 11. It offers a wide variety of functions to set up methods and sequences, process and visualize data and compile custom reports. Data can be exported easily to other programs or other Windows® applications. Other chromatography systems use this software so its familiarity may increase efficiency and help to reduce user-training costs.

THE BIOCHROM SYSTEM

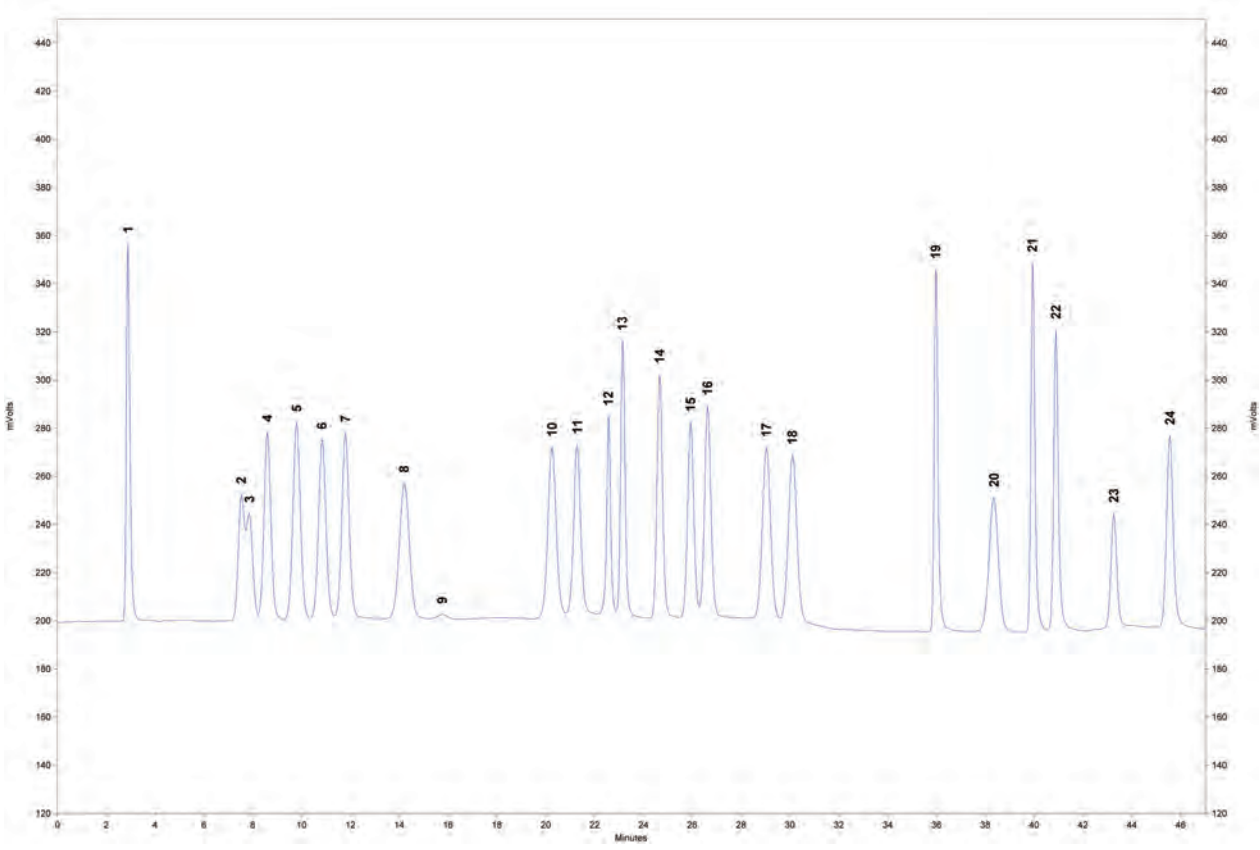
- Biochrom 30+ Series Analyzer with 84 position air cooled autosampler
- Choice of column (with top-up resin)
- Starter pack of ready-to-use reagents
- Spare parts and consumables kit
- HP computer and monitor, HP printer, Windows® operating system and all cables
- Biosys software and Ezchrom Elite data handling software
- Manuals and Qualification & Performance Verification Logbook
- On-site customer training

Rapid Analysis System for Protein Hydrolysates and Oxidized Hydrolysates.

Speed of analysis is critical to increase sample throughput. Biochrom has developed the Sodium Accelerated Buffer System that reduces analysis time by 33% compared to the Oxidized Protein Hydrolysate System and is suitable for both hydrolysates and oxidized hydrolysates samples.

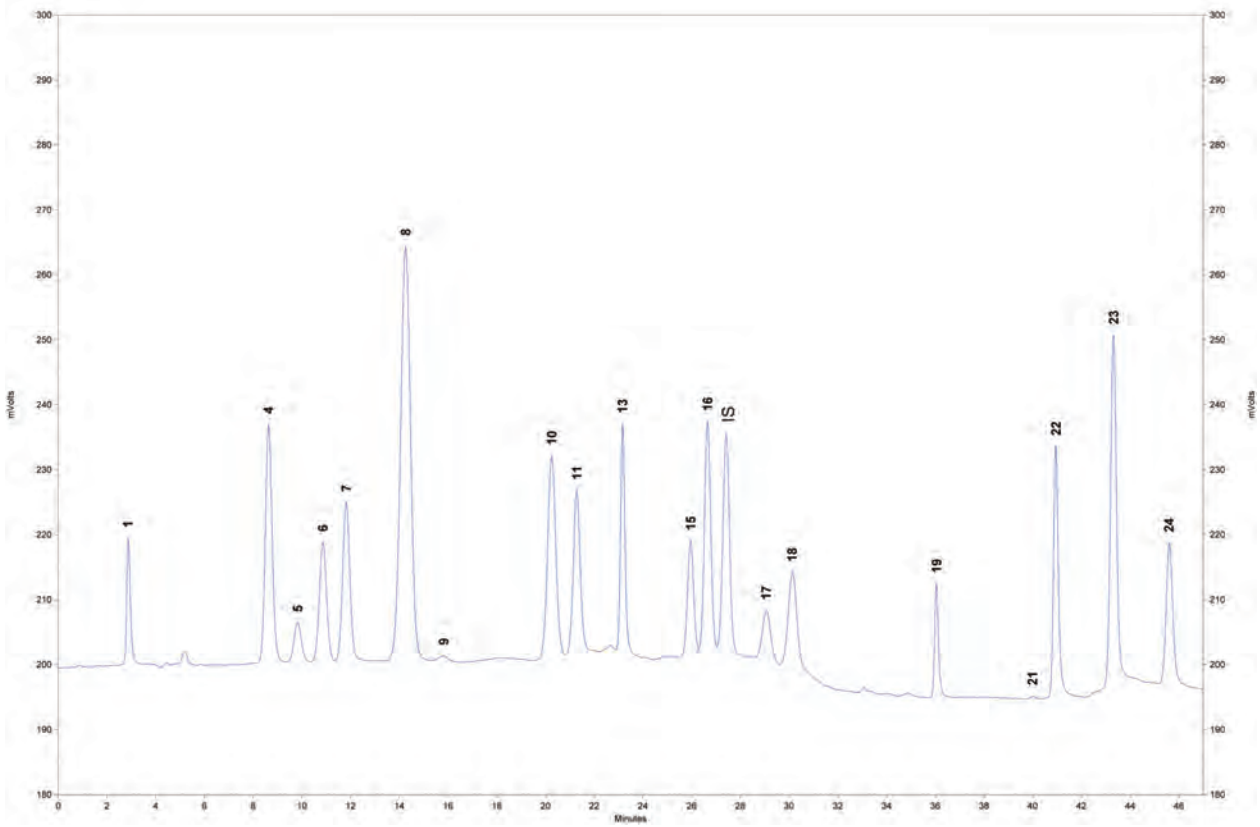
This system of 4 buffers reduces analysis time without compromising peak resolution and offers the possibility of creating short programs when only certain amino acids are required. Standard feedstuffs chromatograms of 24 amino acids are shown below. Figures 1 and 2 demonstrate the baseline free of artifact peaks.

Figure 1: Standard mixture containing the amino acids typically found in feedstuffs –Sodium Accelerated Buffer System



1 Cysteic acid, 2,3 Methionine sulfoxide, 4 Aspartic acid, 5 Methionine sulfone, 6 Threonine, 7 Serine, 8 Glutamic acid, 9 Proline, 10 Glycine, 11 Alanine, 12 Cystine, 13 Valine, 14 Methionine, 15 Isoleucine, 16 Leucine, 17 Tyrosine, 18 Phenylalanine, 19 Histidine, 20 Tryptophan, 21 Ornithine, 22 Lysine, 23 Ammonia, 24 Arginine

Figure 2: Oxidized hydrolysate sample prepared according to the EC directive –Sodium Accelerated Buffer System



1 Cysteic acid, 4 Aspartic acid, 5 Methionine sulfone, 6 Threonine, 7 Serine, 8 Glutamic acid, 9 Proline, 10 Glycine, 11 Alanine, 13 Valine, 15 Isoleucine, 16 Leucine, IS Norleucine Internal Standard 17 Tyrosine, 18 Phenylalanine, 19 Histidine, 21Ornithine, 22 Lysine, 23 Ammonia, 24 Arginine

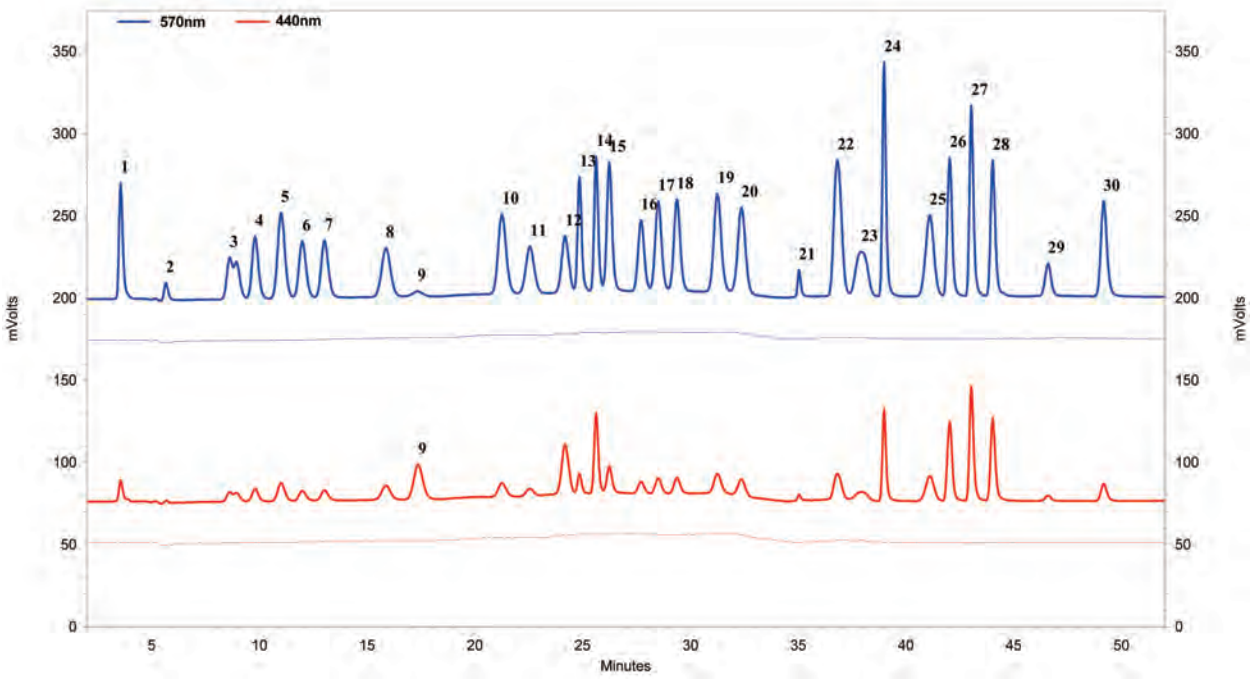
Additional amino acids such as Taurine, 2,6-diaminopimelic acid, beta-alanine, glucosamine and galactosamine can also be analyzed using the Accelerated Sodium Buffer System (Figure 3).

The 30 amino acids can be separated in less than 50 minutes (64 minutes injection to injection). A smooth baseline is observed at both wavelengths, particularly under Cystine, allowing small amounts of Cystine to be accurately quantified.

The chromatograms also show accurate quantitation of ornithine and hydroxylysine which in many existing ion-exchange buffer systems co-elute with lysine and histidine respectively and hence give rise to considerable quantitation errors.

The system can also be used for analyzing hydrolysates prepared from organic acids or alkaline hydrolysis where tryptophan may be preserved.

Figure 3: Chromatogram of a standard mixture containing 30 amino acid and blank (sodium citrate loading buffer), detection at 570 nm and 440 nm.



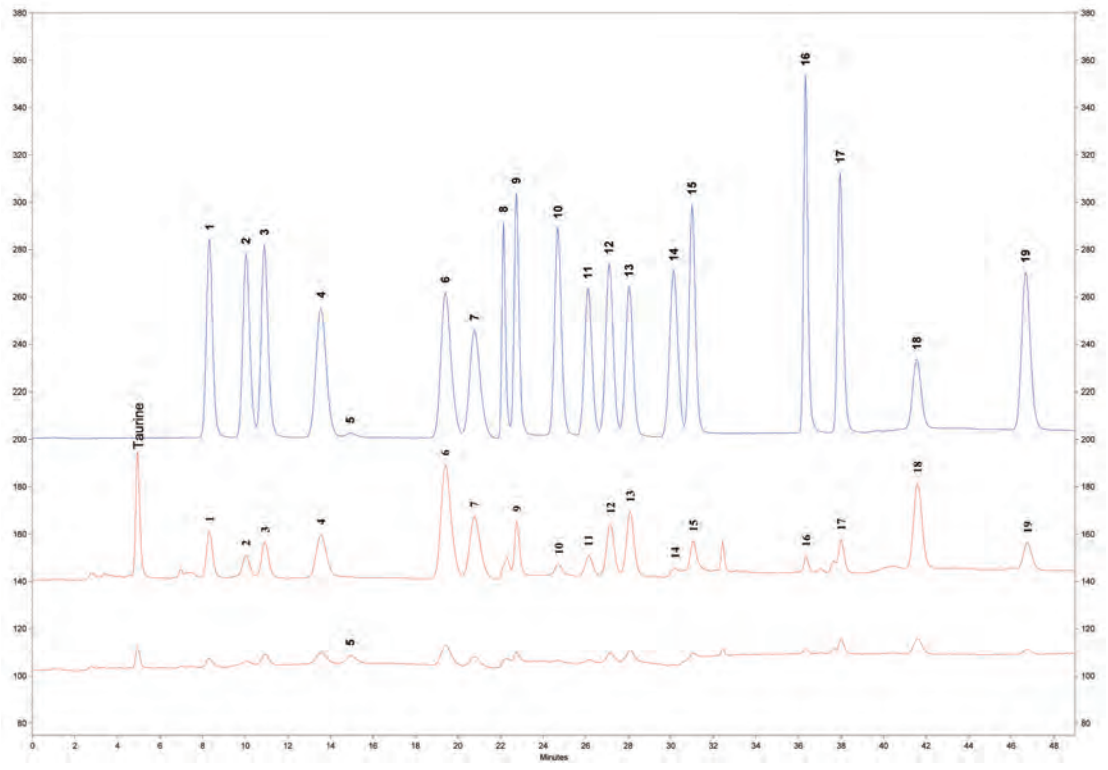
1 Cysteic acid, 2 Taurine, 3 Methionine sulfoxide, 4 Aspartic acid, 5 Methionine sulfone, 6 Threonine, 7 Serine, 8 Glutamic acid, 9 Proline, 10 Glycine, 11 Alanine, 12 Cystine, 13 Valine, 14 2,6-diaminopimelic acid, 15 Methionine, 16 Isoleucine, 17 Leucine, 18 Norleucine, 19 Tyrosine, 20 Phenylalanine, 21 β-alanine, 22 Glucosamine, 23 Galactosamine, 24 Histidine, 25 Tryptophan, 26 Hydroxylysine, 27 Ornithine, 28 Lysine, 29 Ammonia, 30 Arginine

Case Study 1

A Food Manufacturer using HPLC

A leading food manufacturer using HPLC to analyze amino acids suspected that an unknown peak was co-eluting with Arginine in their samples giving inaccurate results. Even optimizing the HPLC method by extending the analysis time could not fully resolve the peaks. The samples were analyzed on a Biochrom Amino Acid Analyzer using a sodium citrate based buffer system. This resolved Arginine from the co-eluting peak and identified the co-eluting compound as Taurine (Figure 4). The method developed on the Biochrom AAA offered both more accurate separation of the amino acids and a shorter analysis time than the optimized HPLC method. This shows that dedicated amino acid analysis is the technique of choice for the analysis of complex mixtures found in food and feedstuffs. Amino Acid Analysis gives better separation and shorter analysis time than the HPLC method.

Figure 4: Chromatograms from Biochrom 30+



Shown with standard (blue) at 570 nm, sample at 570 nm (top red) and sample at 440 nm (bottom red) 1 Aspartic acid, 2 Threonine, 3 Serine, 4 Glutamic acid, 5 Proline, 6 Glycine, 7 Alanine, 8 Cystine, 9 Valine, 10 Methionine, 11 Isoleucine,12 Leucine,13 Internal Standard Norleucine, 14 Tyrosine, 15 Phenylalanine, 16 Histidine,17 Lysine,18 Ammonia,19 Arginine

Case Study 2

A Feedstuffs Manufacturer Requiring Rapid Analysis of Lysine in Feedstuff Samples

Lysine is a limiting amino acid in cereal grains and in some vegetable protein sources, therefore often requiring synthetic supplementing to meet the needs of the animal diet. The optimal lysine content in the diet prevents lysine deficiency and improves the animal's performance through better amino acid balance. Rapid analysis of lysine enable adjustments to the formulation of feedstuff to be made.

The samples tested were supplied by an external laboratory. They were prepared according to the EC official method and analyzed using the full program. These were compared to the Biochrom 30+ Sodium Accelerated Buffer System, using the short lysine method. This accurately quantified lysine in less than 10 minutes (Figure 5). Three replicates were tested for each sample.

Dietary Protein Source	Limiting Amino Acid
Wheat	Lysine
Rice	Lysine and Threonine
Maize	Tryptophan and Lysine
Pulses	Methionine
Beef	Methionine and Cysteine

Table 1.
Limiting amino acids in some protein sources: the essential amino acid found in the smallest quantity in the foodstuff.

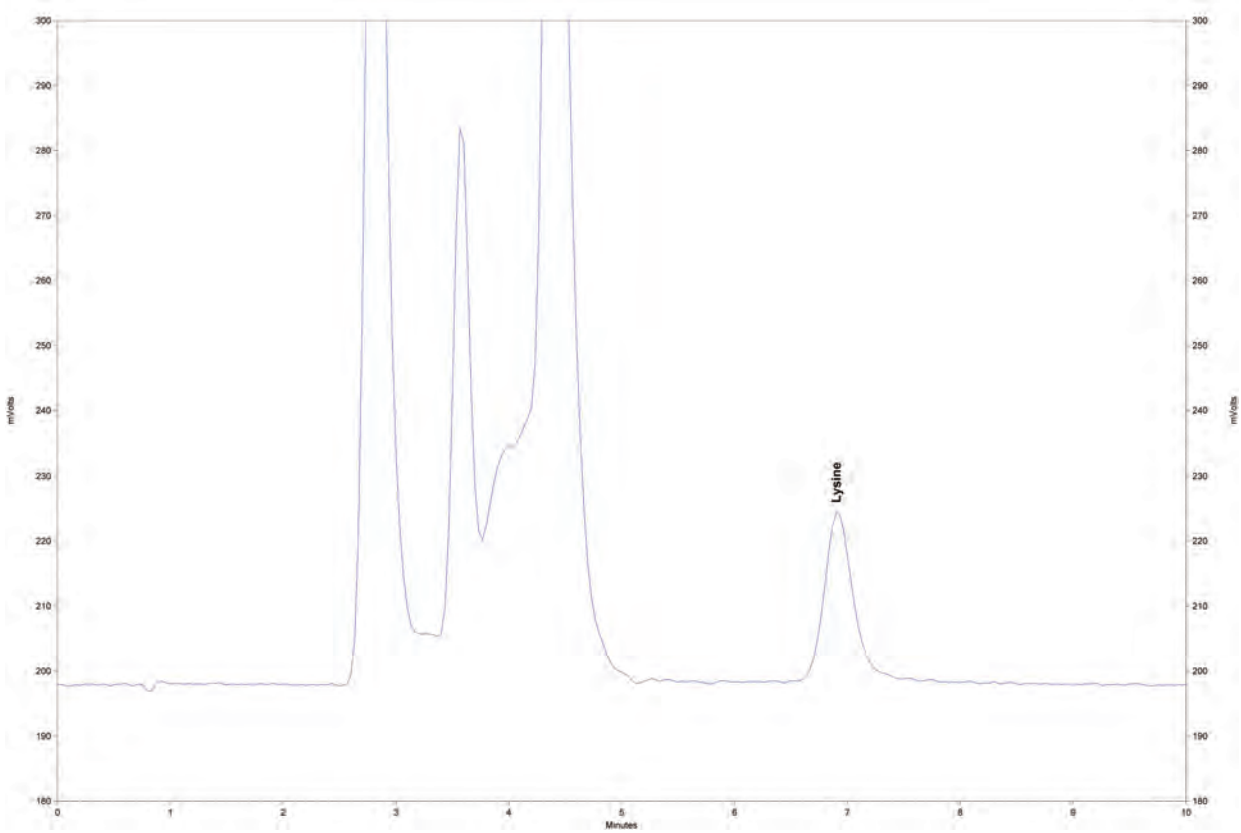
Samples (hydrolysates)	Lysine (% of raw material)	
	Biochrom Short Method	External laboratory Full program
Feedstuff 60 989 H	1.14	1.13
Pig feed 60 354 H	0.83	0.86
Feedstuff 60 287 H	1.06	1.05
Piglet feed control 29/11 H	1.29	1.28

Table 2: Results obtained with the short program on hydrolysate samples

Run time (injection to injection)	20 min
Intermediate precision	0.9% (5 nmol / 20 µL injection)
Detection limit	14 pM / 20 µL
Quantification limit	48 pM / 20 µL

Table 3: Analytical performance short method

Figure 5: Hydrolysate sample (pig feed) obtained with the short program (Lysine retention time: 6.9 min compared to 41.6 min using the full program)



The results obtained on the feedstuff samples with the short program showed a good correlation with the results obtained with the full program as well as with the results obtained when tested by an external laboratory. The program also gave very good analytical performance with good repeatability and low detection and quantification limits.

The short program for the analysis of lysine allows more than 70 analyses to be performed per day, making it a critical tool for busy quality control labs.

Case Study 3

Rapid Analysis of Sulfur Amino Acids in Food & Feedstuffs

Sulfur containing amino acids (i.e. methionine and cystine) are critical limiting components of the feed proteins. Although methionine can meet the total need for sulfur amino acids in the absence of cystine, it cannot be synthesized from cystine, and therefore it is classified as essential.

The hydrolysis procedure to determine the amino acids partially oxidizes methionine into methionine sulfoxide and methionine sulfone. Cysteine is also partially oxidized to cystine and cysteic acid. These reactions are non-reproducible and can result in quantitation errors.

To determine the sulfur amino acids accurately, samples must be first oxidized with performic acid to quantitatively convert methionine and cyst(e)ine to methionine sulfone and cysteic acid, respectively. If methionine sulfoxide was present in the sample protein prior to performate oxidation and hydrolysis it would also be converted to methionine sulfone. Performic oxidation prior to hydrolysis is a widely used method and it is also the method recommended by the EU Commission Directive 98/64/EC.

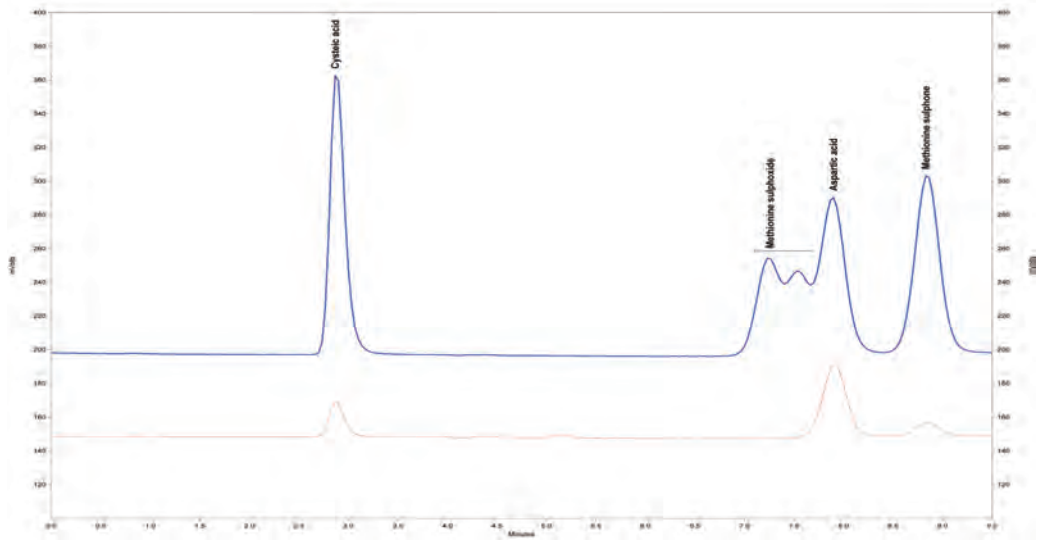
Biochrom has developed a short program to quantify sulfur containing amino acids in oxidized protein hydrolysates

Using this program with the Accelerated Buffers, methionine sulfone is well resolved from aspartic acid and any methionine sulfoxide that could remain from incomplete oxidation. Cysteic acid and methionine sulfoxide elute in less than 10 minutes with a total cycle time of less than 20 minutes injection to injection (Figure 6).

The results showed very good reproducibility of areas and retention times as well as good general analytical performance. This program can be modified to accommodate the use of an internal standard if required (Table 4).

Not all amino acids can be quantified using oxidized material. Tyrosine must be determined on unoxidized samples. Thanks to the flexibility of the Biochrom 30+, this program can be easily included within a sequence of hydrolyzed samples for the determination of the amino acid profile. As both methods are using the same column and buffers, the analysis of sulfur containing amino acids becomes even more straightforward.

Figure 6: Oxidized protein standard spiked with methionine sulphoxide compared with feed sample hydrolysate after performic acid oxidation



Run time (injection to injection)	19 min
Typical retention time	Cysteic acid: 2.9 min Methionine sulphone: 8.9 min
Intermediate precision	<0.5% (5 nmol / 20 µL injection)
Detection limit	10 pmol / 20 µL
Quantification limit	30 pmol / 20 µL
Linearity range	10 pmol to 5 nmol per 20 µL injection

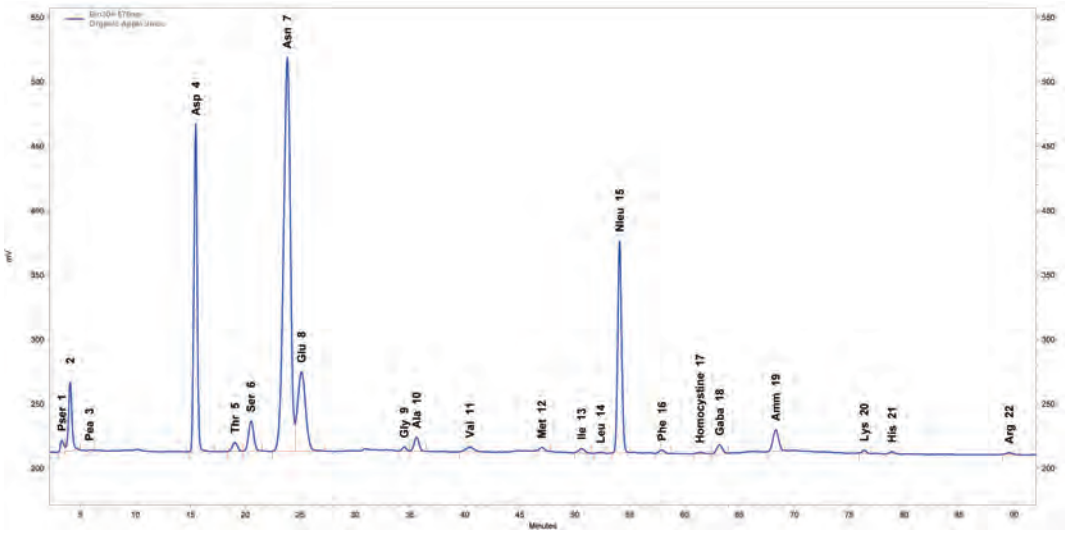
Table 4: Analytical performances using the short program

Case Study 4

Chromatography using Lithium citrate buffers to determine free amino acid content of organic apple Juice

Amino acid analysis of free amino acid by ion exchange chromatography is specified as one of the standard tests for commercial production by the International Federation of Fruit Juice Producers.[5] Fruit and fruit juices have their own characteristic profiles depending predominately on genetic factors, enabling an unknown sample to be compared with a standard of known compositional analysis to establish authenticity and as an indicator of quality. Figure 7 shows analysis of free amino acids in organic cold-pressed pasteurized apple juice from mixed species on the Biochrom 30+ using the Lithium system. Sample preparation was a simple centrifugation step at 10,000 g.

Figure 7: Analysis of organic cold-pressed pasteurized apple juice on the Biochrom 30+ using the Lithium system. Norleucine (Peak 15) is used as an internal standard.



Peak 2 comprises of carbohydrates but is clearly separated from all amino acids in the sample. No matrix interferences are seen and the amide asparagine is separated from glutamic acid.This analysis shows that the Biochrom 30+ can be used for detailed quantification of amino acids enabling decisions on quality and purity.

Biochrom 30+ Technical Specifications

Reproducibility	Area: Better than 0.5% RSD at 10 nanomoles. Retention time: Better than 0.1%RSD
Detection Limit	9 - 15 pmoles Ninhydrin (depending on individual response of amino acid)
Analysis Time	Biochrom 30+ : Lithium System 115 minutes injection to injection Biochrom 32+ : Sodium Accelerated Buffer System 60 minutes injection to injection Biochrom 32+ : Short method up to 10 minute run times
Analytical Column:	High pressure PEEK column packed with Ultropac 8 cation exchange resin. Peltier heating/cooling system.
Eluent System:	Up to 6 buffers (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 (135°C is optimum).
Photometric Detection:	Single flow cell with optical beam splitter. Dual channel detection at 440 nm and 570 nm
Sample Injection	3 injection modes (full loop, partial loop and micro), 84 position autosampler (cooling optional) Sample volumes from 1 µL to 5000 µL. 200 µL loop supplied as standard.
Software:	BioSys v3.0 control software Biochrom Alias Manager autosampler control software Latest version of EZChrom Elite Data Handling (21 CFR part 11 compliant)
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: ▪ photometer lamp failure ▪ incorrect ninhydrin / buffer / coil / nitrogen pressures ▪ incorrect coil and column temperatures power failure

Ordering Information

Order Code	Instrument System
80-6000-50	Biochrom 30+ Lithium System
80-6000-78	Biochrom 32+ Sodium Accelerated System
80-2116-25	Application set-up charge (per application)

Other instrument configurations are available. For these and details of service contracts available please contact Biochrom or your local dealer for more information.

Due the flexible setup of the instrument and Biochrom's commitment to customer service, all customers may have their instrument tailored to their specific application. Please contact us for specific requirements.

Order Code	Chemical Kits	Instrument
80-2118-30	Ultra Ninhydrin Reagent Kit 2 litre	All
80-2117-76	Ultra Ninhydrin Reagent Kit 8 litre	All
80-2117-77	Ultra Physiological Fluid Chemical Kit (Lithium based)	Biochrom 30+
80-2115-26	Sodium Accelerated Buffer Kit	Biochrom 32+

Individual buffers and reagents are also available.

Order Code	Column Cleaning Service
80-2112-17	Analytical Column Cleaning, Repacking and Testing service
80-2117-34	Prewash Column Cleaning, Repacking and Testing service

References

1. Reeds, P.J. (2000) Dispensable and Indispensable Amino Acids for Humans. Journal of Nutrition. 2000;130:1835S-1840S
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3. Food energy – methods of analysis and conversion factors. FAO food and nutrition paper 77.Food and Agriculture Organization of the United Nations Rome, 2003
4. Commission Directive 98/64/EC of 3 September 1998 establishing Community methods of analysis for the determination of amino-acids, crude oils and fats, andolaquindox in feeding stuffs and amending Directive 71/393 (OJ L257, 19.9.1998, p.14)
5. Determination of free amino acids. International Federation of Fruit Juice Producers. IFU analysis No. 57 (Revised. 2005). Download from http://www.ifu-fruitjuice.com/ifu-methods

About Biochrom

Biochrom is a world leader in amino acid analysis. The Biochrom 30+ series is recognized as the gold standard dedicated amino acid analyzer used by hospitals, pharmaceutical and industrial labs worldwide. Applications are available both for clinical analysis and screening of metabolic disorders, for drug synthesis, infusion fluids and for industrial applications in food, beverage and feedstuffs.

Biochrom is a leading manufacturer of scientific instruments with over 40 year's experience. The Biochrom Group consists of five well-known instrument brands covering amino acid analysis, UV/Vis spectroscopy, and microplate instrumentation. Hospitals and laboratories worldwide trust our products and we are a valued OEM partner of many of the world's finest scientific instrumentation companies. The Biochrom spectroscopy range includes the Novaspec, Ultrospec®, and GeneQuant®, plus the Biochrom Libra and Biochrom WPA brands. Biochrom also manufactures two major brand names in the microplate instrumentation market - Biochrom Asys and Biochrom Anthos.

All our instruments are available through a growing global network of independent distributors, backed by our commitment to customer support

Distributors worldwide

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