

## Analysis of Amino Acid Standards by AminoSAAYA (Physiological Fluid Analysis Method)

There are about 500 kinds of amino acids that exist in nature. Of these, the amino acids (standard amino acids) that constitute the protein are about 20 components. In addition, there are many known amino acids that exist as simple substances and are produced by chemical changing standard amino acids in the body.

These amino acids, including amino acid metabolites and precursors, are referred to as biological liquid amino acids (free amino acids), and in recent years has been attracting attention as components that affect taste and flavor. There are many kinds of free amino acids than standard amino acids, mainly about 40 components are known.

The amino acids have low UV absorption, so are usually derivatized before measuring. In the post-column ninhydrin method, amino acids are separated by an ion-exchange column, mixed with ninhydrin reagent, and the derivatives (free amino acids) are detected via absorption in the visible range. The method has been widely used for many years as a reliable and highly stable analytical method.

In this report, we will introduce the measurement of simultaneous analysis of free amino acids using LA8080 HIGH SPEED AMINO ACID ANALYZER (AminoSAAYA). The eluents and reaction reagents are available as commercial kits and are suitable for routine analysis such as quality control.



**LA8080 HIGH SPEED  
AMINO ACID ANALYZER  
(AminoSAAYA)**

## Analysis of Amino Acid Standard Solution

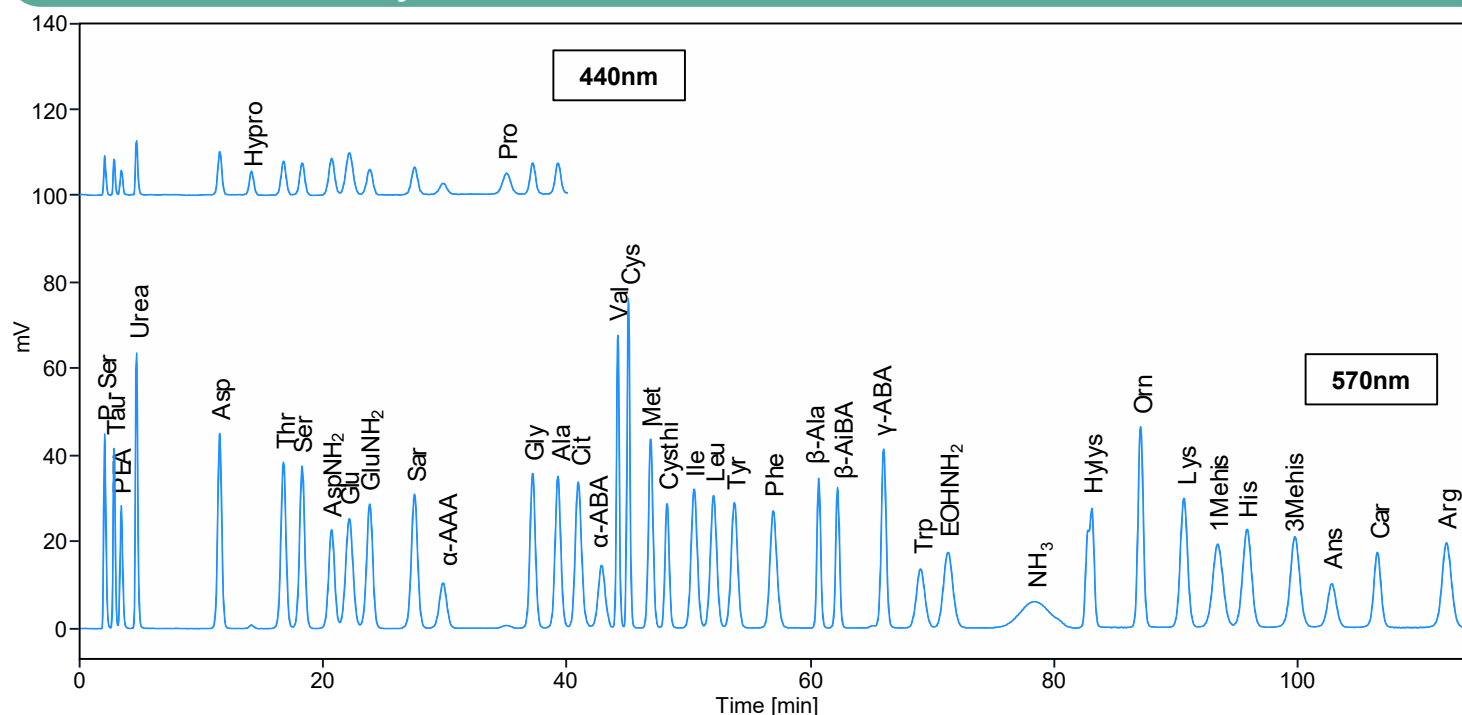


Fig. 1 Analysis of Amino Acid Standard Solution

Table 1 Analytical Conditions

Column	#2622PF 4.6 mm I.D. × 60 mm	Reaction reagent	Ninhydrin Reagent Wako Amino Acid Automated Analyzer Kit (ID code: For Hitachi) (*)
Ammonia filter column	#2650L 4.6 mm I.D. × 40 mm	Reaction reagent flow rate	0.30 mL/min
Eluent	MCI buffer PF-Kit (*)	Reaction temperature	135 °C
Flow rate	0.35 mL/min	Detection wavelength	VIS 440 nm, 570 nm
Column temperature	30~70 °C	Injection volume	20 µL

The standard solution is Amino Acid Mixture Standard Solution, Type AN II (\*) and Type B(\*) with Trp, AsnH2 and GluNH2 added. (\*) FUJIFILM Wako Pure Chemical Corporation

## List of Amino Acids

Abbrev.	Amino acid	Molecular weight	Std. concentration (nmol/ 20 $\mu$ L)
P-Ser	Phosphoserine	185.1	1
Tau	Taurine	125.2	1
PEA	Phosphoethanolamine	141.1	1
Urea	Urea	60.1	40
Asp	Aspartic acid	133.1	2
Hypro	Hydroxyproline	131.1	2
Thr	Threonine	119.1	2
Ser	Serine	105.1	2
AspNH <sub>2</sub>	Asparagine	132.1	2
Glu	Glutamic acid	147.1	2
GluNH <sub>2</sub>	Glutamine	146.2	2
Sar	Sarcosine	89.1	5
$\alpha$ -AAA	$\alpha$ -Amino adipic acid	161.2	1
Pro	Proline	115.1	2
Gly	Glycine	75.1	2
Ala	Alanine	89.1	2
Cit	Citrulline	175.2	2
$\alpha$ -ABA	$\alpha$ -Amino-n-butyric acid	103.1	1
Val	Valine	117.1	2
Cys	Cystine	240.3	2
Met	Methionine	149.2	2
Cysthi	Cystathionine	222.3	1
Ile	Isoleucine	131.2	2
Leu	Leucine	131.2	2
Tyr	Tyrosine	181.2	2
Phe	Phenylalanine	165.2	2
$\beta$ -Ala	$\beta$ -Alanine	89.1	2
$\beta$ -AiBA	$\beta$ -Aminoisobutyric acid	103.1	2
GABA	$\gamma$ -Amino-n-butyric acid	103.1	2
Trp	Tryptophan	204.1	2
EOH NH <sub>2</sub>	Ethanolamine	61.1	2
NH <sub>3</sub>	Ammonia	17.0	2
Hylys	Hydroxylysine	162.2	2
Orn	Ornithine	132.2	2
Lys	Lysine	146.2	2
1Mehis	1-Methylhistidine	169.2	2
His	Histidine	155.2	2
3Mehis	3-Methylhistidine	169.2	2
Ans	Anserine	240.3	2
Car	Carnosine	226.2	2
Arg	Arginine	174.2	2