

Analysis of Performic Acid Oxidation Hydrolyzed Amino Acids

When quantifying the amino acids that make up proteins, acid hydrolysis is performed as a pretreatment before analysis. However, sulfur-containing amino acids such as cysteine, cystine, and methionine are easily oxidized during the acid hydrolysis process. Therefore, in order to accurately quantify these components, it is necessary to completely oxidize them with performic acid before performing hydrochloric acid hydrolysis treatment. This pretreatment oxidizes cysteine and cystine to cysteic acid (CySO₃H) and methionine to methionine sulfone (MetSON). Analyzing these compounds can quantify the total amount of cysteine and cystine, as well as methionine.

In this report, we will introduce the simultaneous measurement of CySO₃H, taurine (Tau), MetSON, tryptophan (Trp), and amino acid mixed standard solution using LA8080 HIGH SPEED AMINO ACID ANALYZER (AminoSAAYA) and the standard column (#2622PH 4.6 mm I.D. × 60 mm).



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

Analysis of CySO₃H, Tau, MetSON, Trp, and Amino Acid Standard Solution

✓ CySO₃H, Tau, MetSON, Trp, and amino acid mixed standard solution can be analyzed at the same time, and all peaks can be separated well.

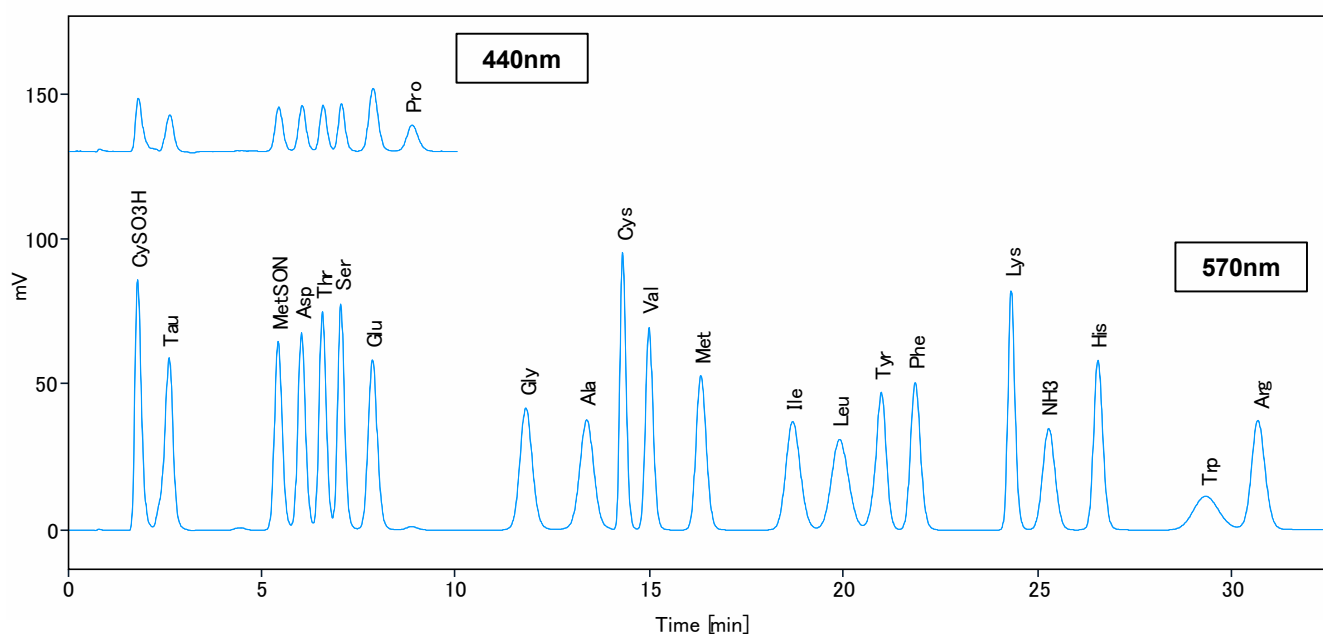


Fig. 1 Analysis of Amino Acid Standard Solution

Table 1 Analytical Conditions

Column	#2622PH 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	0.35 mL/min
Eluent	MCI buffer PH-Kit (*) (PH-1 1L + citric acid monohydrate 3.0 g)	Reaction temperature	135 °C
Flow rate	0.40 mL/min	Detection wavelength	VIS 440 nm, 570 nm
Column temperature	57 °C	Injection volume	20 µL

The standard solution is Amino Acid Mixture Standard Solution, (*) FUJIFILM Wako Pure Chemical Corporation Type H (*) with CySO₃H, Tau, MetSON, Trp added.

List of Amino Acids

Abbrev.	Amino acid	Molecular Weight	Std. concentration (nmol/ 20 μ L)
CySO ₃ H	Cysteic acid	169.2	2
Tau	Taurine	125.2	2
MetSON	Methioninesulfone	181.2	2
Asp	Aspartic acid	133.1	2
Thr	Threonine	119.1	2
Ser	Serine	105.1	2
Glu	Glutamic acid	147.1	2
Pro	Proline	115.1	2
Gly	Glycine	75.1	2
Ala	Alanine	89.1	2
Cys	Cystine	240.3	2
Val	Valine	117.1	2
Met	Methionine	149.2	2
Ile	Isoleucine	131.2	2
Leu	Leucine	131.2	2
Tyr	Tyrosine	181.2	2
Phe	Phenylalanine	165.2	2
Lys	Lysine	146.2	2
NH ₃	Ammonia	17.0	2
His	Histidine	155.2	2
Trp	Tryptophan	204.1	2
Arg	Arginine	174.2	2