MetAmino®

Sample Preparation Kit

CHROMSERVIS

MetAmino® kits offer an easy sample preparation method for your LC-MS or GC-MS analysis. MetAmino® kits include derivatization reagences and all clean-up accessories to prepare your sample for injection. They eliminate time consuming sample preparation procedures. The new clean-up procedure uses a special material as the end-step including filtration (no need to use a syringe filter prior injection). The other advantage is that the derivatization procedure enables you to **extend the analyte list**. Contact us for further details.

Easy sample preparation using MSPE

75 amino acids, polyamines, biogen amines and coenzymes in 7 to 12 minutes

FAST

EASY

CLEAN

Unique clean-up step

LC-MS and GC-MS kit

COMPACT

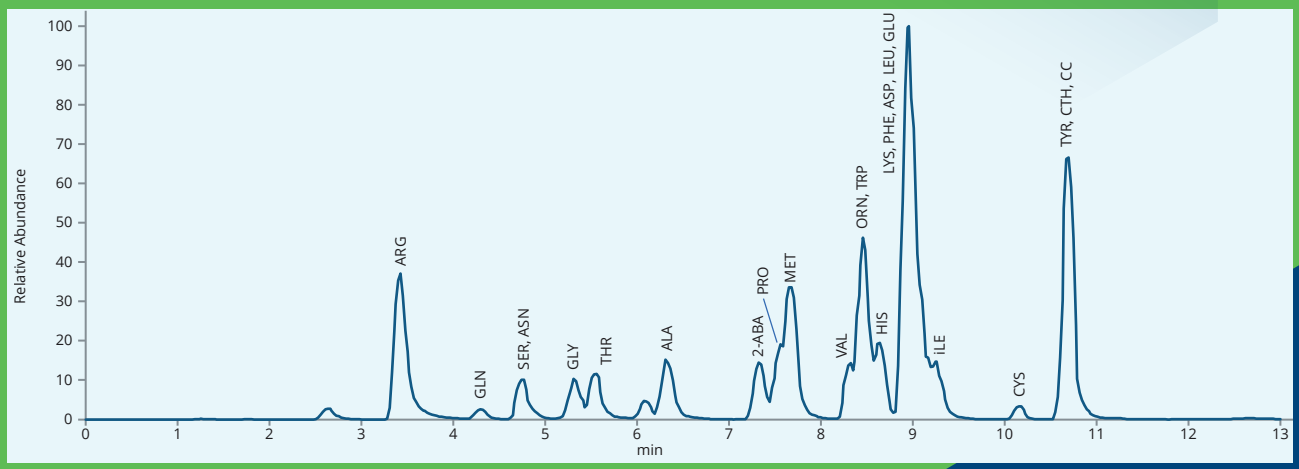
CLEAR

NIST library for GC-MS available

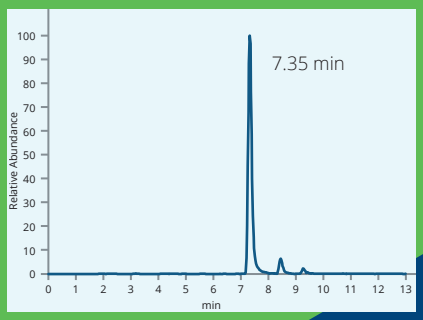
METAMINO®

LC-MS separation

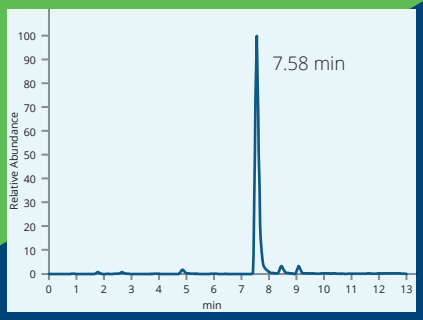
The chromatogram shown below displays TIC and some of the analyte's MRMs.



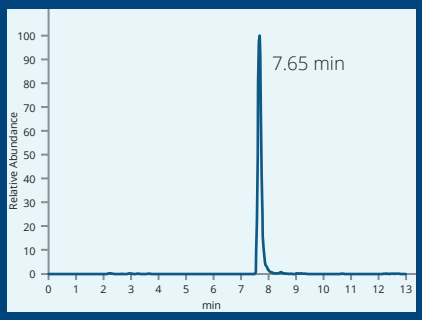
Chromatogram of 24 amino acids



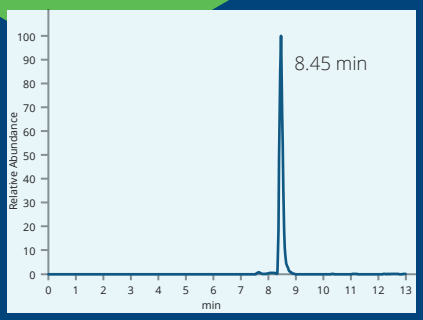
2-ABA (259.7–260.7)



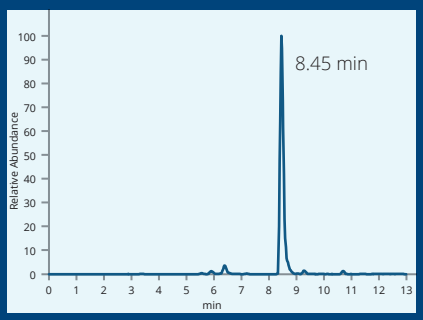
PRO (271.7–272.7)



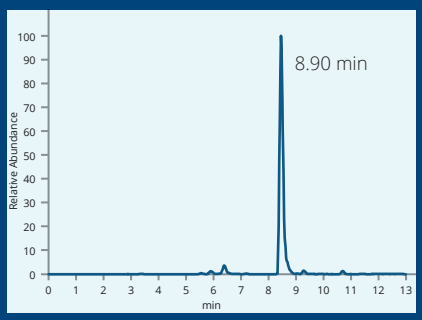
MET (305.7–306.7)



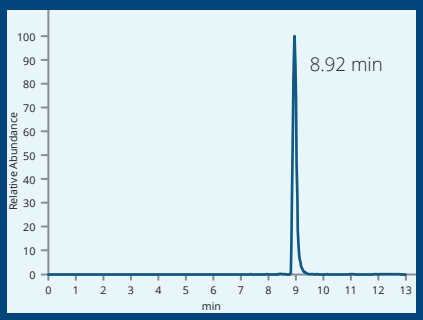
ORN (388.7–389.7)



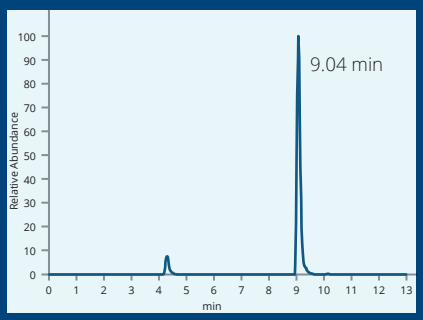
TRP (360.7–361.7)



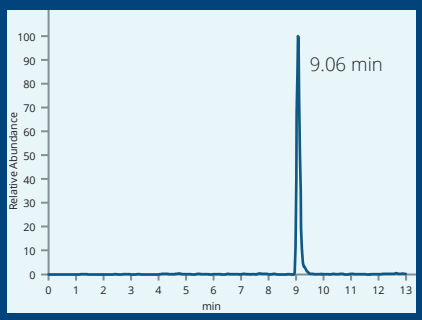
HIS (411.7–412.7)



LYS (420.7–403.7)



PHE (321.7–322.7)



ASP (345.7–346.7)

METAMINO®

LC-MS kit

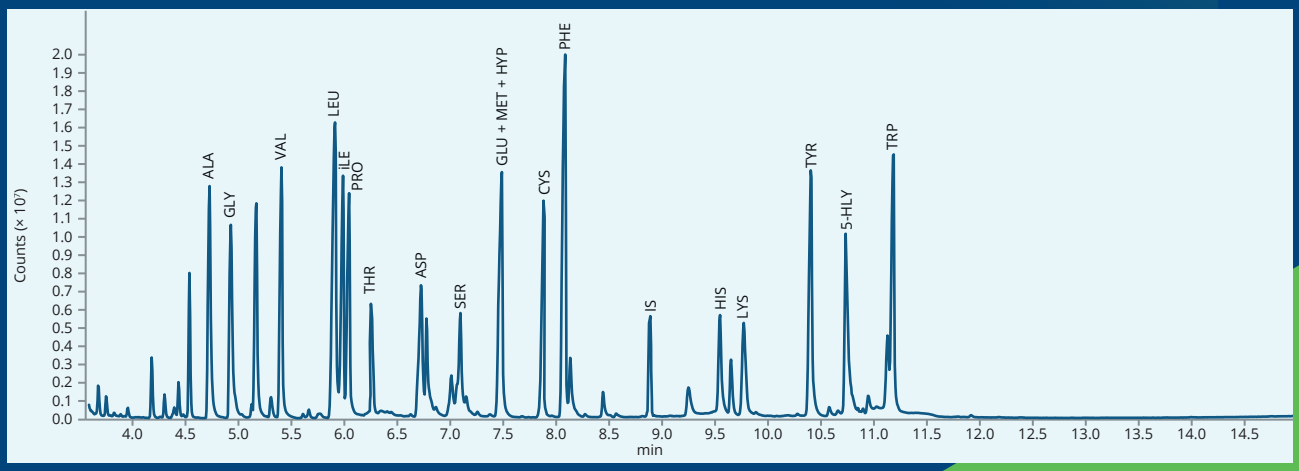
No.	Name	Synonyms	Quantification	[min]	$[M+H]^+$	Precursor	Quantifier	CE	Qualifier	CE
1	Cotinine	Syringe standard		1.15	177.1024	177.1	98	24	80	28
2	Putrescine			1.40	189.1599	189.2	72.1	16	115.9	12
3	Cadaverine			1.48	203.1755	203.2	86	20	69.2	28
4	Homoserine	HSER		1.67	202.1074	202.1	146	4	102	8
5	Pyroglutamic acid	PGLU		1.86	186.1125	186.1	84	20	130	8
6	Arginine	ARG	✓	3.35	331.2341	331.2	70.1	48	115.9	32
7	Homoarginine	Internal standard		3.63	345.2497	345.2	84	52	125.9	24
8	Glutamine	GLN	✓	4.12	303.1916	303.2	186	12	84	44
9	Anserine	ANS		4.20	397.2447	397.2	109.1	52	226.2	28
10	Citrulline	CIT	✓	4.20	332.2181	332.2	70.2	36	215	16
11	Methionine sulfoxide	MET-SO		4.29	322.1683	322.2	248	12	100	32
12	Methionine sulfone	MET-SO2		4.30	338.1632	338.2	238	12	182	16
13	5-Hydroxylysine	HLY	✓	4.40	345.2021	345.2	82	48	128.1	28
14	1-Methylhistidine	1MHIS	✓	4.52	326.2075	326.2	124	36	224	20
15	3-Methylhistidine	3MHIS	✓	4.55	326.2075	326.2	95.7	52	270.1	24
16	Prolylhydroxyproline	PHP	✓	4.71	385.2333	385.2	170.1	16	114, 70.2	36, 56
17	Serine	SER	✓	4.73	262.1615	262.2	106	16	60.1	40
18	Asparagine	ASN	✓	4.78	271.1649	271.2	240.1	16	254.1	16
19	4-Hydroxyproline	HYP	✓	5.23	288.1807	288.2	86.1	32	188	12
20	Glycine	GLY	✓	5.23	232.1544	232.2	76	12	132	4
21	N-Acetyaspartic acid			5.36	288.1807	288.2	88	28	144.1, 158	20, 8
22	Glycylproline	GPR	✓	5.39	329.2072	329.2	70.1	52	172.1, 115.9	16, 36
23	Threonine	THR	✓	5.45	276.1806	276.2	74.2	28	176.1	12
24	5-Aminolevulinic acid	5-ALA		5.63	288.1807	288.2	158	8	86.1	32
25	Ethanolamine	EAM		6.09	262.1649	262.2	88	16	144.1	4
26	Beta-Alanine	3-ALA		6.22	246.1701	246.2	116	12	90	12
27	Alanine	ALA	✓	6.25	246.1701	246.2	90	16	146	8
28	Spermine			6.39	503.3804	503.4	102	44	229.2	32
29	Histamine	HTA		6.52	312.1919	312.2	212	12	95, 112	40, 20
30	Indoleacetic acid	IAA		6.65	232.1333	232.1	130	24	176	8
31	gamma-Aminobutyric acid	GABA	✓	6.75	260.1857	260.2	87.1	24	86	24
32	Sarcosine	SAR	✓	6.75	246.1701	246.2	90	12	146.1	8
33	4-Aminobenzoic acid	PABA		7.00	294.1701	294.2	134.1	20	91	56
34	β-aminoisobutyric acid	BAIBA	✓	7.05	260.1857	260.2	130	12	112	20
35	2-aminobutyric acid	2-ABA	✓	7.35	260.1857	260.2	160.2	8	104	12
36	Proline	PRO	✓	7.58	272.1857	272.2	70.1	36	172	12
37	Methionine	MET	✓	7.65	306.1735	306.2	204	8	104	20
38	Methionine-d3	Internal standard		7.65	309.1922	309.2	207	8	107	16
39	Thiaproline	TPR	✓	8.03	290.1422	290.1	88	28	134, 190.1	16, 8
40	Asparatame			8.15	451.2439	451.2	120	48	88	44
41	Serotonine			8.22	377.2072	377.2	160	32	303.1	8
42	2,4-diaminobutyric acid	DABA		8.25	375.2490	375.2	201.3	16	245	12
43	Valine	VAL	✓	8.30	274.2014	274.2	72	32	116	12
44	Norvaline			8.35	274.2014	274.2	72.1	24	174	8
45	Alanyl-lysine	ALA-LYS		8.36	474.3174	474.3	84.1	60	400.2	12
46	Carnosine	CAR		8.36	483.2814	483.3	110.1	40	212.1	24
47	Ornithine	ORN	✓	8.45	389.2647	389.3	70.1	60	315.2	8
48	Tryptophan	TRP	✓	8.45	361.2123	361.2	259	12	159	28
49	Ethionine	ETH		8.60	320.1890	320.2	218.1	8	75.1	44
50	Histidine	HIS	✓	8.90	412.2443	412.2	110	44	312.1	16
51	Lysine	LYS	✓	8.92	403.2804	403.3	84.1	56	329.1	8
52	Phenylalanine	PHE	✓	9.04	322.2014	322.2	120	36	164	16
53	Leucine	LEU	✓	9.06	288.2170	288.2	86.1	20	188.2, 130.1	8, 12
54	Aspartic acid	ASP	✓	9.06	346.2225	346.2	88.1	24	159.9	12
55	Spermidine			9.11	446.3226	446.3	198.1	28	298.1	12
56	Glutamic acid	GLU	✓	9.17	360.2382	360.2	163	16	105	36
57	Allo-isoleucine	aiLE		9.22	288.2169	288.2	130.1	12	86.1	24
58	Isoleucine	iLE	✓	9.24	288.2170	288.2	130.1	16	86.1	24
59	Norleucine	NLEU		9.40	288.2170	288.2	86.2	24	130.1	12
60	Pipecolic acid	PIP		9.45	286.2013	286.2	128.1	12	84.1	40
61	Homophenylalanine	Internal standard		9.67	336.2170	336.2	91	56	117	32
62	2-Aminoadipic acid	AAA	✓	9.67	374.2538	374.3	98	32	172	16
63	Adrenaline	ADN		10.15	484.2541	484.3	166	36	466.2	4
64	Cysteine	CYS		10.16	378.1946	378.2	120.1	32	278	12
65	2-Aminoheptanedioic acid	APA	✓	10.20	388.2695	388.3	112	36	186.1	20
66	Glutathione	GSH		10.27	620.3213	620.3	186.1	28	130.2	44
67	Dopamine	DAM		10.27	454.2435	454.2	196.1	24	152	40
68	Glutamyl-lysine	GLU-LYS		10.44	588.3855	588.4	84.1	56	128.1, 157.9	52, 32
69	Homocysteine	HCYS		10.48	392.2103	392.2	292.2	12	118.1	16
70	Diaminopimelic acid			10.54	503.3328	503.3	82.1	60	127.9	48
71	Tyrosine	TYR	✓	10.61	438.2487	438.2	136	44	179.9	28
72	Cystathionine	CTH	✓	10.68	535.3049	535.3	201.9	24	88.1	56
73	Cystine	C-C	✓	10.76	553.2613	553.3	276.1	16	219.9	24
74	Kynurenic acid			10.78	346.1649	346.2	246	8	144, 190	52, 24
75	Selenocystine	Se-C-C		11.12	649.1501	649.2	323.9	20	575	12
76	Kynurenine			11.17	465.2596	465.3	146	44	274.2	12
77	Homocystine	HC-CH		11.28	581.2926	581.3	290	16	190	20
78	3,4-dihydroxyphenylalanine	DOPA		11.55	554.2961	554.3	152.1	44	454.1	12
79	Theanine	THE			331.2228	331.2	On request			

Note: CE = Collision energy

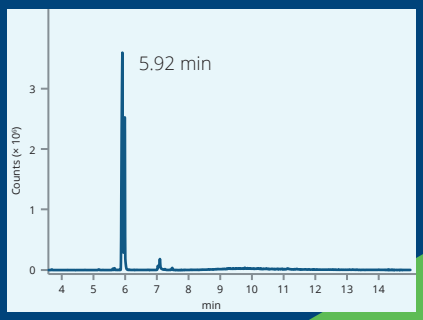
METAMINO®

GC-MS separation

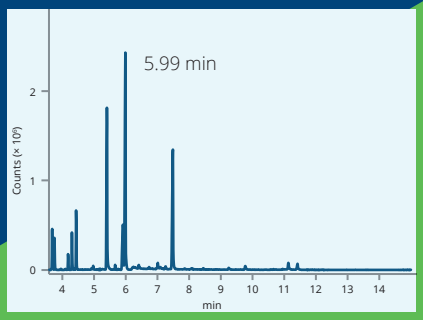
A typical chromatogram of the amino acid standard solution included in this kit.



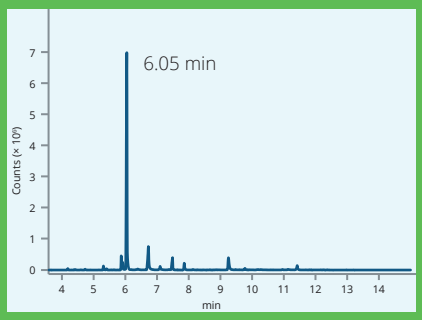
Chromatogram of standard solution (above)



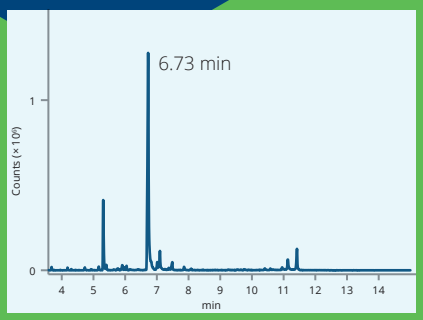
LEU (EIC 312)



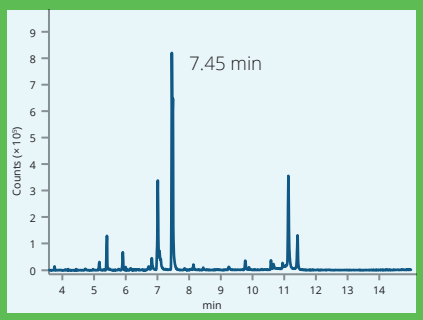
ILE (EIC 283)



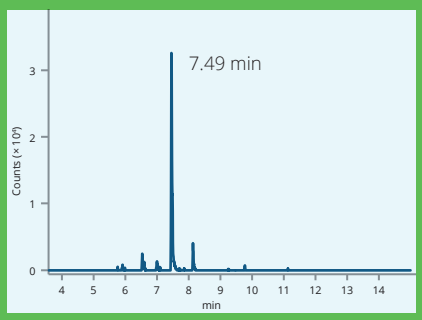
PRO (EIC 296)



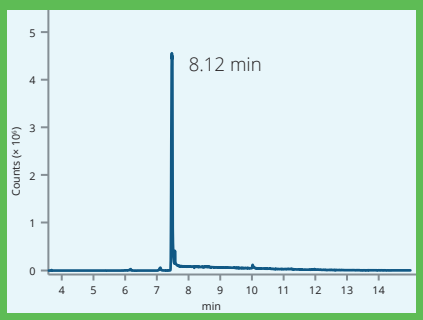
ASP (EIC 254)



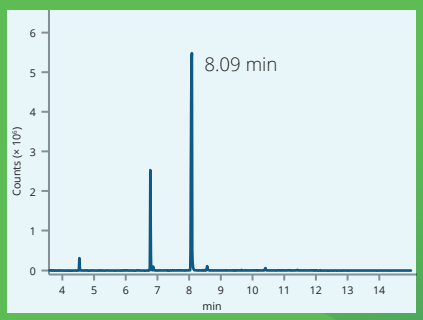
GLU (EIC 282)



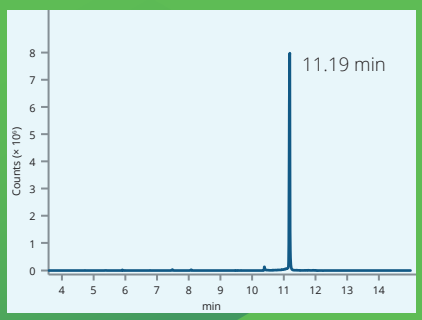
MET (EIC 538)



HYP (EIC 312)



PHE (EIC 91)



TRP (EIC 130)

Note: EIC = Extracted Ion Chromatogram.

METAMINO®

GC-MS kit

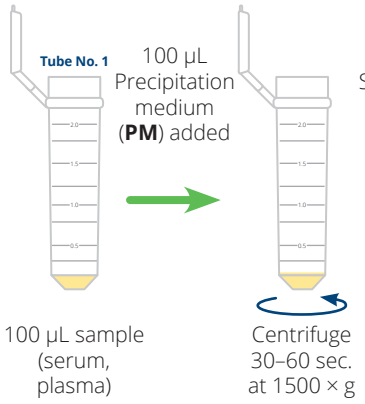
Peak No.	Name	Synonyms	Quantification	[min]	Mmi*	Diagnostic ions		
						m/z	m/z	m/z
1	Sarcosine	SAR		4.62	497.0308	270	226	69
2	Alanine	ALA	✓	4.73	497.0308	270	70	69
3	N-Acetylglycine			4.92	299.0392	256	113	212
4	Glycine	GLY	✓	4.93	483.0151	256	212	56
5	3-Methylglutaric acid			4.97	510.0512	311	282	227
6	2-Aminobutyric acid	ABA		5.17	511.0465	284	84	113
7	3-Hydroxymethylglutaric acid			5.34	752.0325	285	311	85
8	3-Alanine			5.36	497.0308	269	256	98
9	Valine	VAL	✓	5.41	525.0621	298	283	98
10	N-Acetylcysteine			5.46	571.0134	282	309	509
11	3-Aminoisobutyric acid	BAIBA		5.47	511.0465	256	112	113
12	3-amino-n-butyric acid			5.52	511.0465	270	227	283
13	Norvalin	NVAL		5.69	525.0621	298	256	98
14	Leucine	LEU	✓	5.92	539.0778	312	270	256
15	Ethanolamine	EAM		5.98	513.0257	256	269	270
16	Isoleucine	iLE	✓	5.99	539.0778	283	312	256
17	Allo-isoleucine	aiLE		6.02	539.0778	312	283	256
18	Homoserine	HSER		6.04	753.0278	100	283	128
19	Proline	PRO	✓	6.05	523.0465	296	297	69
20	4-Aminobutyric acid	GABA		6.20	511.0465	112	256	69
21	Threonine	THR	✓	6.24	527.0415	100	283	483
22	Norleucine	NLEU		6.28	539.0778	312	256	112
23	Pipecolic acid	PIP		6.41	537.0621	310	518	407
24	N-Acetylaspartic acid			6.46	539.0414	270	312	228
25	Asparagine	ASN		6.70	522.0261	295	496	113
26	Aspartic acid	ASP	✓	6.73	723.0173	254	496	296
27	3-Methylcysteine			6.76	543.0185	61	300	316
28	Thioproline	TPR		6.78	541.0029	314	287	86
29	2-Hydroxyglutaric acid			6.78	738.0169	283	239	511
30	Serine	SER	✓	7.07	739.0122	268	295	51
31	Acetylserine			7.09	555.0363	268	312	113
32	Pyroglutamic acid			7.43	537.0000	282	310	510
33	N-Acetylglutamic acid			7.44	567.0727	282	310	510
34	Glutamatic acid	GLU	✓	7.45	737.0329	282	310	510
35	4-Hydroxyproline	HYP	✓	7.47	539.0414	312	294	68
36	Methionine	MET	✓	7.49	557.0342	538	294	494
37	Cysteine	CYS	✓	7.84	754.9895	328	285	113
38	Selenomethionine			7.88	604.9786	282	510	405
39	Ethionine	ETH		7.90	571.0498	282	311	571
40	2-Aminoadipic acid	AAA		8.09	751.0486	124	282	324
41	Phenylalanine	PHE	✓	8.09	573.0621	91	330	92
42	3-Hydroxyproline	HYP		8.12	539.0414	312	129	256
43	2,4-Diaminobutyric acid	DABA		8.52	752.0438	282	256	325
44	S-carboxymethyl-cysteine			8.55	769.0050	213	259	314
45	Homocysteine	HCYS		8.59	769.0045	282	342	82
46	2-Aminopimelic acid	APA		8.66	765.0642	338	138	95
47	Homophenylalanine	Internal standard		8.83	587.0778	283	117	483
48	Histamine	HTA		8.78	563.0526	308	320	113
49	Glutamine	GLN		8.86	554.0523	84	282	327
50	4-Aminobenzoic acid	PABA		9.05	545.0308	146	345	346
51	1-Methylhistidine			9.06	577.0682	95	150	350
52	Chloro-phenylalanine			9.16	607.0231	125	364	180
53	Methionine sulfone	MET-SO2		9.18	589.0240	282	82	189
54	Ornithine	ORN		9.25	766.0595	296	256	69
55	Acetyltyrosine			9.49	871.0489	333	289	188
56	Histidine	HIS	✓	9.55	789.0391	307	362	113
57	Glycylproline	GPR		9.69	580.0679	70	153	296
58	Lysine	LYS	✓	9.77	780.0751	310	256	153
59	Tyramine			9.85	589.0570	346	333	289
60	2,6-Diaminopimelic acid (isomers)			10.28	1006.0616	308	536	
61	Tyrosine	TYR	✓	10.41	815.0435	333	289	113
62	5-Hydroxylysine (isomers)	HLY	✓	10.76	1022.0565	269	256	69
63	Cystathionine	CTH		11.12	1038.0337	328	282	69
64	Dopamine	DAM		11.12	831.0000	256	531	113
65	Tryptophan	TRP	✓	11.19	612.0730	130	131	385
66	3,4-Dihydroxyphenylalanine	DOPA		11.32	1057.0249	149	531	575
67	Prolylhydroxyproline	PHP		11.52	862.0806	296	297	294
68	3-Nitrotyrosine			11.68	860.0286	334	113	378
69	Selenocystine	Se-C-C		11.93	1151.879	496	295	268

* Mmi = monoisotopic mass of the derivative of the relevant metabolite.

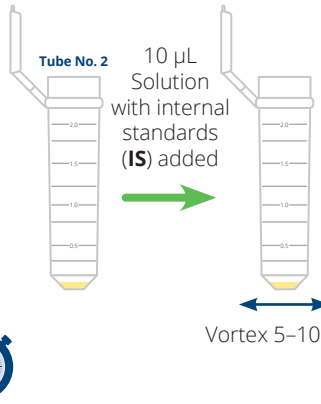
METAMINO®

Sample preparation protocol

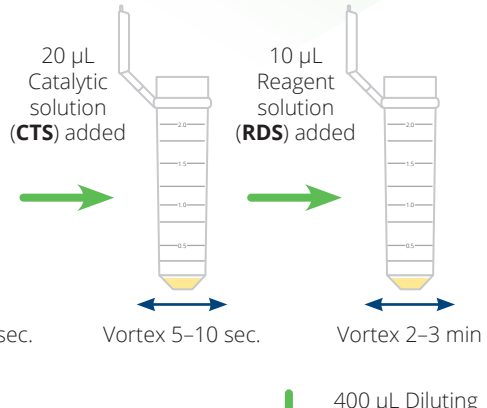
Sample precipitation (serum, plasma, tissue)



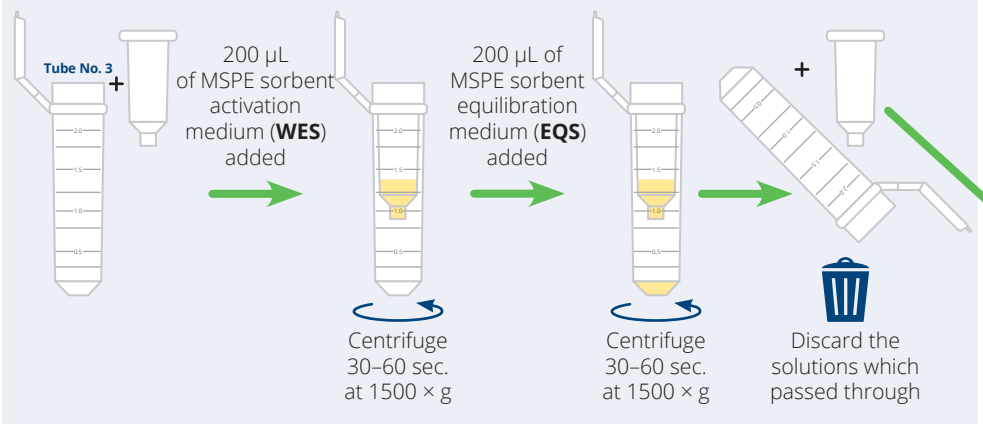
Desalted/precipitated sample (Urine)

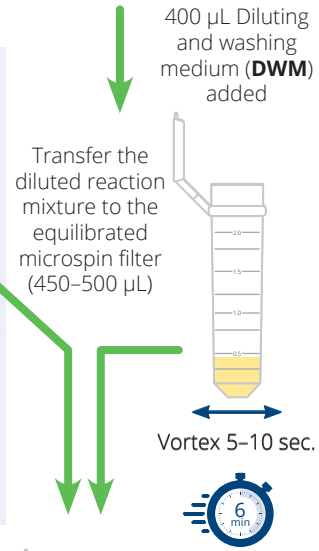


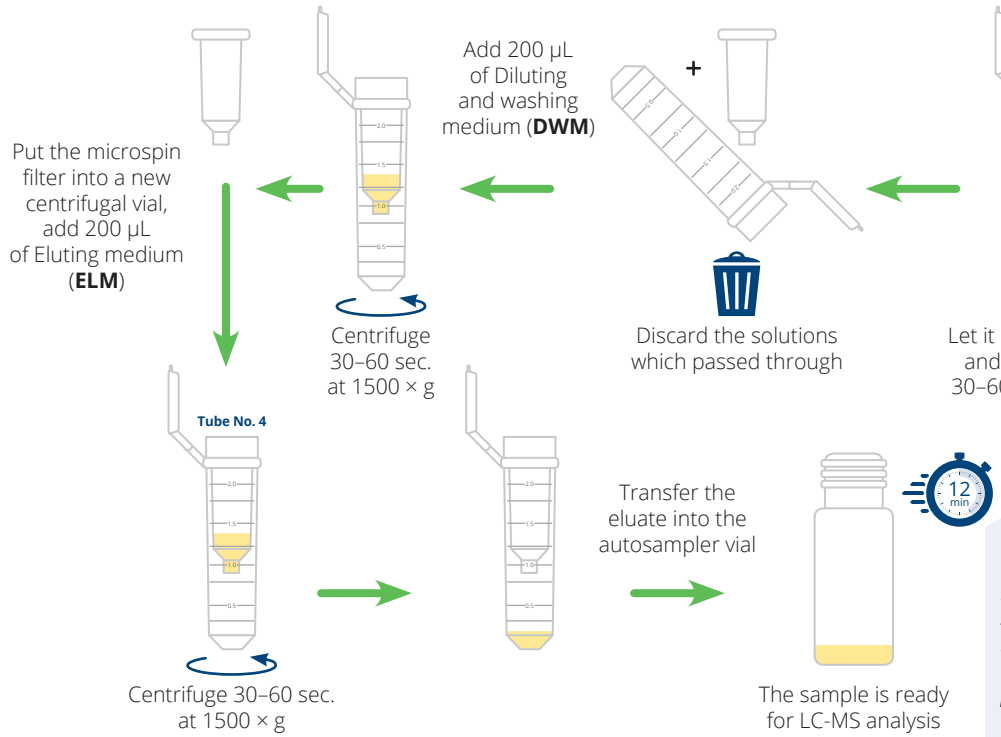
Derivatization



Microspin filter solid phase activation







Note:
The sample preparation time can be reduced to 6–8 minutes per sample if all steps are performed in parallel for 3–6 samples.
The detailed sample preparation procedure can be found in the User manual.

METAMINO®

Ordering information

Sample preparation kit (CF)	Part number	Samples
MetAmino® sample preparation LC-MS start-up kit, CF	MAK-5857-AA01	100
MetAmino® sample preparation GC-MS start-up kit, CF	MAK-5857-BA01*	100
MetAmino® sample preparation LC-MS basic kit, CF	MAK-5857-CA04	400
MetAmino® sample preparation GC-MS basic kit, CF	MAK-5857-DA04*	400
MetAmino® sample preparation LC-MS reagents kit	MAK-5857-L002	100

* Coming soon.

Metabolite sample preparation kit (CF)

Derivatization reagences
Derivatization centrifugal filters
(set of 100/400 pcs)
2ml screw top vials (set of 100/400 pcs)
Micro tube rack
LC-MS or GC-MS column
Sample preparation manual

Sample preparation kit (SPE)	Part number	Samples
MetAmino® sample preparation LC-MS kit, SPE	MAK-5857-CS01*	100

* Coming soon.

Metabolite sample preparation kit (SPE)

- Derivatization reagences
- Derivatization SPE MetAmino® columns (set of 100 pcs)
- 2ml screw top vials (set of 100 pcs)
- Micro tube rack
- LC-MS column
- Sample preaparation manual

Note: The SPE metabolite kit has been developed for users who prefer the SPE technique and do not have the option to use the much easier MetAmino® centrifugal filters.

Recommended accessories

Ohaus centrifuge FC5306

Ohaus Mini Vortex Mixer

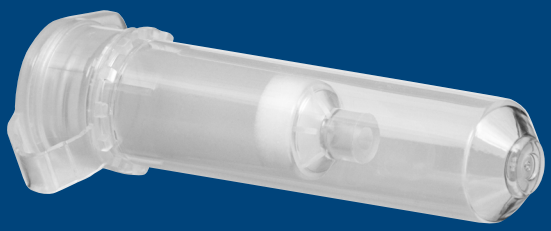
MAK-5857-AA01

MAK-5857-CA04

MAK-5857-L002

Benefits

- No need to heat up the sample
- Reagent storage at 4 °C (no freezer required)
- SPE pipetting step replaced by MSPE
- Further extension according to requests from labs
- Ready-to-inject sample after preparation protocol
- Short sample preparation time



Centrifugal tube (OuterTube)
Microspin Filter (Inner Tube)
MetAmino® sorbent bed (inc. 0.22 µm membrane)

Application areas

- Biotechnology
- Clinical/toxicology
- Environmental research
- Food and beverages
- QC of feed production

MSPE – unique technology

- Sample filtration inlcuded
- Simplified technique saving your time
- SPE manifold replaced by use of centrifugal filters
- Evaporation step removed

Matrices

Distributor:

CHROMSERVIS

Please contact your local distributor for more information.
info@chromservis.eu
www.chromservis.eu