

Organic Acids

Chemical

2-hydroxy-3-methylvaleric
 2-hydroxyadipic
 2-hydroxybutyric
 2-hydroxybutyric d3
 2-hydroxydecanedioic
 2-hydroxyglutaric
 2-hydroxyisocaproic
 2-hydroxyisovaleric
 2-hydroxyphenylacetic acid
 2-Methyl-3-hydroxybutyric acid
 2-methylacetoacetic
 2-methylcitric
 2-octenedioic
 2-oxo-3-methylvaleric
 2-oxoadipic
 2-oxobutyric
 2-oxoglutaric
 2-oxoisocaproic
 2-oxoisocaproic d3
 2-oxoisovaleric
 2-oxoisovaleric 13C
 3-hydroxy-2-ethylpropionic
 3-hydroxy-3-methylglutaric
 3-hydroxy-3-methylglutaric d3
 3-hydroxyadipic
 3-hydroxybutyric
 3-hydroxybutyric 13C
 3-hydroxybutyric d3
 3-Hydroxydecanedioic acid
 3-hydroxyglutaric
 3-hydroxyglutaric d5
 3-hydroxyisobutyric
 3-hydroxyisovaleric
 3-hydroxyisovaleric d8
 3-hydroxypropionic
 3-hydroxyvaleric
 3-methyladipic
 3-methylcrotonylglycine
 3-methylglutaconic
 3-methylglutaric acid
 3-methylglutaric acid d4
 4-hydroxy-3-methoxyphenylglycol sulfate
 3-oxoadipic
 3-oxovaleric
 4-hydroxybutyric
 4-Hydroxycyclohexylacetate
 4-hydroxyisovaleric
 4-hydroxyphenylacetic acid
 4-hydroxyphenylacetic acid d2
 4-hydroxyphenyllactic
 4-hydroxyphenylpyruvic
 4-pyridoxic
 5-hydroxyhexanoic
 5-hydroxyindole-3-acetic
 5-hydroxyindole-2-carboxylic
 5-Methoxytryptophol
 5-oxoproline
 7-hydroxyoctanoic
 acetoacetic
 aconitic
 adipic
 adipic 13C
 ascorbic
 ascorbic-2-sulfate
 azelaic

Company

Sigma Aldrich
 UAM
 Sigma Aldrich
 CDN Isotopes
 UAM
 Sigma Aldrich
 Sigma Aldrich
 Sigma Aldrich
 Sigma Aldrich
 UAM
 Sigma Aldrich
 UAM
 UAM
 Sigma Aldrich
 Sigma Aldrich
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 CDN Isotopes
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 Cambridge Isotopes
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 Fluka Chemika
 Fluka Chemika
 UAM
 Sigma Aldrich
 Sigma Aldrich
 Sigma Aldrich
 Cambridge Isotopes
 Sigma Aldrich
 Sigma Aldrich
 Sigma Aldrich

Reference

H2752
 OA 101-OH SC
 H1253
 D-7002
 OA 123 SC
 H8253
 H9251
 55454
 H4980
 OA 105 SC
 537365
 OA 102
 OA 130 SC
 K7125
 K5875
 K0875
 K2000
 68255
 D-2914
 198994
 CDLM-8100
 OA 104 SC
 H1752
 MD3772
 OA 106 SC
 H6501
 C3320
 MD2480
 OA 120 SC
 OA 107
 D6391
 OA 108 SC
 OA 109
 DLM-10603
 H55006
 OA 111
 M27409
 AG 110 SC
 OA 119
 66990
 D-6723
 H8759
 K-0500
 OA 131 SC
 H3635
 OA 113 SC
 OA 114 SC
 H4377
 MD2146
 H3253
 H4880
 P9630
 OA 115
 H0355
 143510
 M4126
 83170
 OA 129 SC
 A8509
 A3412
 A5252
 CLM-4723
 A5960
 A9659
 246379

azelaic d14	CDN Isotopes	D-3280
benzoic	Sigma Aldrich	B3250
butyrylglycine	UAM	AG 103 SC
cinnamoylglycine	UAM	ukn
citric acid	Sigma Aldrich	251275
citric acid d4	CDN Isotopes	D3745
decanoic acid	Fluka Chemika	21409
decanoic d3	Cambridge Isotopes	DLM-2006
dehydroascorbic	Sigma Aldrich	261556
dodecanedioic	Sigma Aldrich	D-9630
ethylmalonic	Sigma Aldrich	102687
ethylmalonic d3	CDN Isotopes	D-5145
Fumaric	Sigma Aldrich	240745
fumaric d2	CDN Isotopes	D-1106
furan-2,5-dicarboxylic	UAM	OA 117
glutaconic	Fluka Chemika	49360
glutaric	Sigma Aldrich	G3407
glutaric d4	CDN Isotopes	MD1197
glyceric	Sigma Aldrich	G8766
glycolic	Sigma Aldrich	G8284
glycolic d2	Cambridge Isotopes	DLM-399
glyoxylic	Sigma Aldrich	G4502
hexanoylglycine	UAM	AG 105 SC
hexanoylglycine d2	CDN Isotopes	D-5992
hippuric	Sigma Aldrich	112003
hippuric d2	MSD Isotopes	MD-1707
homogentisic	Sigma Aldrich	H0751
homovanillic	Sigma Aldrich	H1252
homovanillic d3	Cambridge Isotopes	DLM-2738
indole-3-acetic	Sigma Aldrich	I5148
indole-3-butyric	Sigma Aldrich	I7512
indole-3-carboxaldehyde	Sigma Aldrich	129445
indole-3-carboxylic	Sigma Aldrich	284734
indole-3-lactic	Sigma Aldrich	I5508
indole-3-propionic	Sigma Aldrich	57400
indole-3-pyruvic	Sigma Aldrich	I7017
indolelactic	Sigma Aldrich	I2875
indoxylacetic	Sigma Aldrich	I3500
indoxyl-beta-glucuronide	Sigma Aldrich	I7638
isobutyrylglycine	UAM	AG 103 SC
isobutyrylglycine d7	CDN Isotopes	D-7636
isocitric	Sigma Aldrich	I-1252
isovalerylglucine	UAM	AG 107
kynurenic	Sigma Aldrich	K8625
lactic	Sigma Aldrich	L-1500
lactic 13C	isotech	T8362033
maleic	Sigma Aldrich	63180
malic	Sigma Aldrich	M6773
malic d3	CDN Isotopes	D-2122
malonic 13C	Cambridge Isotopes	CLM-1248
methylbutyrylglycine	UAM	AG 117 SC
methylbutyrylglycine d9	CDN Isotopes	D-6709
methylmalonic	Sigma Aldrich	M54058
methylmalonic d3	Cambridge Isotopes	DLM-387
methylsuccinic	Sigma Aldrich	415596
mevalonic	UAM	OA 342
N-acetyl-aspartic	Sigma Aldrich	920
N-acetylneuraminic	Sigma Aldrich	19023
N-acetyl-tyrosine	Calbiochem	11116
orotic	Sigma Aldrich	O1756
oxalic	Fluka Chemika	4621
oxalic 13C	Cambridge Isotopes	CLM-2002
p-acetamidophenyl β-D-glucuronide	Sigma Aldrich	92564
pantothenic	Sigma Aldrich	P2250
phenylacetic	Sigma Aldrich	P4514
phenyllactic	Sigma Aldrich	P7251
phenylpyruvic	Sigma Aldrich	P8001
pimelic	Sigma Aldrich	P45001

pimelic d4/ heptanedioic d4
 propionylglycine
 pyruvic
 pyruvic 13C
 quinolinic
 sebacic
 sebacic d4
 suberic
 suberic d4
 suberylglycine
 succinic
 succinic 13C
 succinylacetone
 tetradecanedioic
 tiglylglycine
 tiglylglycine d2
 tridecanedioic
 undecanedioic
 uracil
 uracil 15N
 uric
 uric 15N
 valerylglycine
 vanylglycol (MHPG)
 vanylmandelic
 vanylmandelic d3
 xanthurenic

CDN Isotopes	D-2004
UAM	AG 112 SC
Sigma Aldrich	P2256
Cambridge Isotopes	CLM-3507
Sigma Aldrich	P63204
Sigma Aldrich	28325
CDN Isotopes	Md1065
Sigma Aldrich	S5200
CDN Isotopes	D-2008
UAM	AG 113 SC
Sigma Aldrich	134384
Cambridge Isotopes	CLM-1571
Sigma Aldrich	D-1415
Sigma Aldrich	D221201
UAM	AG 114
CDN Isotopes	D-6615
Sigma Aldrich	U601
Sigma Aldrich	177962
Sigma Aldrich	U-0750
Cambridge Isotopes	NLM-637
Sigma Aldrich	U2875
Cambridge Isotopes	NLM-1697
UAM	AG 115
Sigma Aldrich	H1377
Sigma Aldrich	H0131
CDN Isotopes	D3919
Calbiochem	68388

Amino Acids

1-methylhistidine²
 2-amino adipic¹
 2-aminobutyric
 3-methylhistidine²
 5-aminolevulinic
 5-hydroxypipicolinic
 5-hydroxytryptophan
 alanine¹
 alanine d4
 alpha amino gamma guanidinobutyric
 anserine¹
 arginine²
 argininosuccinic
 asparagine
 asparagine 15N
 aspartic
 aspartic acid d3
 beta-alanine¹
 cadaverine
 canavanine
 carnosine²
 citrulline
 creatine
 creatine
 creatine d3
 creatinine
 creatinine d3
 cystathionine¹
 cysteine
 cysteine d2
 cysteinyl-glycine
 cystine¹
 cystine d4
 dimethylarginine
 dimethylglycine
 4-Aminobutyric²
 4-Aminobutyric d2

Sigma Aldrich	67520
Sigma Aldrich	A7275
Sigma Aldrich	162663
Sigma Aldrich	M9005
Sigma Aldrich	A3785
Calbiochem	396212
Sigma Aldrich	H8127
Sigma Aldrich	5129
Cambridge Isotopes	DLM-1276
Calbiochem	1548
Wako	011-14463
Sigma Aldrich	A5131
Sigma Aldrich	A5707
Sigma Aldrich	A0884
Cambridge Isotopes	NLM-3286
Sigma Aldrich	A9256
Cambridge Isotopes	DLM-546
Sigma Aldrich	5160
Sigma Aldrich	33220
Calbiochem	2090
Sigma Aldrich	2180
MP Biomedical	101394
Sigma Aldrich	MET-250A
Calbiochem	2380
CDN Isotopes	D-1972
Sigma Aldrich	C4255
CDN Isotopes	D-3689
Sigma Aldrich	C-3633
Sigma Aldrich	30120
Cambridge Isotopes	DLM-769
Sigma Aldrich	C-0166
Sigma Aldrich	C8755
Cambridge Isotopes	DLM-1000
Calbiochem	311201
Sigma Aldrich	D1156
Calbiochem	1370
CDN Isotopes	D-6846

gamma-butyrobetaine	Sigma Aldrich	403245
glucosamine	Calbiochem	3462
glutamic ¹	Sigma Aldrich	G1251
glutamic d3	Cambridge Isotopes	DLM-3725
glutamine	Sigma Aldrich	49419
glutamine d5	Cambridge Isotopes	CLM-1826
glycine ¹	Sigma Aldrich	G-7126
glycine 2-13C-15N	Cambridge Isotopes	CNLM-508
glycylglycine	Sigma Aldrich	G-1002
glycylproline	Sigma Aldrich	G-3002
Guanidinoacetic	Sigma Aldrich	G11608
Guanidinoacetic d2	CDN Isotopes	D-6320
histidine ²	Sigma Aldrich	H8125
histidine d3	CDN Isotopes	D-6679
homoarginine	Calbiochem	U382125
homocitrulline	Toronto Research	H590900
homocysteine	Sigma Aldrich	H-4628
homocystine	Sigma Aldrich	H-0501
homocystine d8	Cambridge Isotopes	DLM-3619
hydroxyproline ¹	Sigma Aldrich	H-6002
isoleucine ¹	Sigma Aldrich	I-2752
kynurenine	Sigma Aldrich	K8625
leucine ¹	Sigma Aldrich	L-8000
leucine d3	Cambridge Isotopes	DLM-1259
lysine ²	Sigma Aldrich	L5626
lysine d4	Cambridge Isotopes	DLM-2640
methionine ¹	Sigma Aldrich	M-9625
methionine 13C d3	Cambridge Isotopes	CDLM-760
N6,N6,N6-Trimethyllysine	Sigma Aldrich	T1660
ornithine ²	Sigma Aldrich	O-2375
ornithine-d2	Cambridge Isotopes	DLM-4261
phenylalanine ¹	Sigma Aldrich	P-2126
phenylalanine d5	Cambridge Isotopes	DLM-1258
pipecolic	Sigma Aldrich	P2519
pipecolic d9	Sigma Aldrich	P2520
proline ¹	Sigma Aldrich	81709
proline d7	Cambridge Isotopes	DLM-487
putrescine	Sigma Aldrich	51799
S-adenosylhomocysteine	Sigma Aldrich	A9384
S-adenosylmethionine	Sigma Aldrich	A7007
sarcosine ¹	Sigma Aldrich	S7672
serine ¹	Calbiochem	5650
serine d3	Cambridge Isotopes	DLM-582
spermidine	Calbiochem	56766
taurine ¹	Fluka	86329
taurine d4	CDN Isotopes	D-1971
threonine ¹	Sigma Aldrich	T-8625
threonine d2	CDN Isotopes	D-6362
trimethylamine N-oxide	Sigma Aldrich	317594
trimethylamine N-oxide d9	Cambridge Isotopes	DLM-603
tryptophan	Sigma Aldrich	T-0254
tryptophan d5	Cambridge Isotopes	DLM-1092
tyrosine ¹	Sigma Aldrich	T-3754
tyrosine d4	Cambridge Isotopes	DLM-451
valine ¹	Sigma Aldrich	V0500
valine d8	Cambridge Isotopes	DLM-311

¹ Also part fuifilm wako pure chemical pure amino acids mix AN-II (011-14483).

² Also part fuifilm wako pure chemical pure amino acids mix Type B (012-08643).

Purines and Pyrimidines

1-methyladenosine	Sigma Aldrich	47310-U
2'-O-methylcytidine	Sigma Aldrich	47310-U
2-thiocytidine	Sigma Aldrich	47310-U
3-aminoisobutyric	Sigma Aldrich	217794
3-methylcytidine	Sigma Aldrich	47310-U

3also part of Sigma Aldrich 47310-U

Sigma Aldrich	47310-U
Sigma Aldrich	47310-U
Sigma Aldrich	D5011
Sigma Aldrich	67073
Sigma Aldrich	M0627
Sigma Aldrich	M8382
Sigma Aldrich	A9126
Cambridge Isotopes	CLM-1654
Calbiochem	116801
Cambridge Isotopes	CLM-7674
Sigma Aldrich	A-8129
Fluka	5670
Sigma Aldrich	27600
Sigma Aldrich	C4654
Sigma Aldrich	D7400
Sigma Aldrich	D8006
Sigma Aldrich	D7145
Sigma Aldrich	D5287
Sigma Aldrich	D5412
Sigma Aldrich	D7628
Sigma Aldrich	51030
Cambridge Isotopes	CLM-1019
Santa Cruz	SC-218575
Cambridge Isotopes	NLM-3798
Sigma Aldrich	H9377
Cambridge Isotopes	DLM-2923
Sigma Aldrich	I4125
Cambridge Isotopes	NLM-4264
Sigma Aldrich	O-6129
Sigma Aldrich	D5385
Toronto Research	S688790
Toronto Research	S688825
Sigma Aldrich	T4500
Sigma Aldrich	T1633
Fluka	89270
Cambridge Isotopes	CLM-3647
Sigma Aldrich	T0376
Cambridge Isotopes	DLM-1089
Sigma Aldrich	94295
Sigma Aldrich	U6381
CDN Isotopes/MSD Iso	D-5291
Sigma Aldrich	X2502
Cambridge Isotopes	NLM-1698
Sigma Aldrich	47310-U

Acylcarnitines

carnitine
carnitine d3
acetylcarnitine (C2)
acetylcarnitine d3 (C2)
propionylcarnitine (C3)
propionylcarnitine d5 (C3)
butyrylcarnitine (C4)
isobutyrylcarnitine (isoC4)
isobutyrylcarnitine d7 (isoC4)
2-methylbutyrylcarnitine (C5)
valerylcarnitine (C5)
isovaleryl carnitine (isoC5)
isovaleryl carnitine d9 (isoC5)
hexanoylcarnitine (C6)
octanoylcarnitine (C8)
octanoylcarnitine d3 (C8)
decanoylcarnitine (C10)
lauroyl carnitine (C12) / dodecanoylcarnitine
myristoylcarnitine (C14)/ tetradecanoyl-L-carnitine

[illegible]

palmitoylcarnitine d3(C16)/ hexadecanoyl-L-carnitine
stearoylcarnitine (C18) / octadecanoylcarnitine

AMC
AMC

n/a
n/a

Sugars

glucose
glucose d2
N-Acetylgalactosamine

Sigma Aldrich
Cambridge Isotopes
Sigma Aldrich

G8270
DLM-349
A-4016

Vitamins

choline
5-methyltetrahydrofolic
9-cis-retinoic
alpha-tocopherol
betaine
biopterin
dihydrobiopterin
dihydroneopterin
folic
gamma-tocopherol
neopterin
pantothenic/ vitamin B5
pyridoxal
riboflavin/vitamin B2
tetrahydrofolic
thiamine/ vitamin B1
trans-retinoic Acid

Sigma Aldrich
Sigma Aldrich
Sigma Aldrich
Sigma Aldrich
Sigma Aldrich
Dr. Schircks
Dr. Schircks
Dr. Schircks
Sigma Aldrich
Sigma Aldrich
Dr. Schircks
Sigma Aldrich
Sigma Aldrich
Sigma Aldrich
Sigma Aldrich
MP Biomedicals
Sigma Aldrich
Calbiochem

C7017
M0132
R4643
47783
B2629
11.203
11.206
11.306
F7876
47785
11.303
P2250
P9130
R4500
101131
T4625
554720

Neurotransmitters

3,4-dihydroxyphenylacetic acid (DOPAC) ring-d3 d2
acetylcholine
DOPA/3,4-dihydroxyphenylalanine
dopamine d3
dopamine/ 3-hydroxytyramine
octopamine
norepinephrine
serotonin

Cambridge Isotopes
Sigma Aldrich
Sigma Aldrich
Cambridge Isotopes
Sigma Aldrich
Sigma Aldrich
Sigma Aldrich
Sigma Aldrich

DLM-2499
A6625
D9628
DLM-2181
H8502
68631
A7256
H7752

Bile Acids

glycochenodeoxycholic
glycocholic
glycodeoxycholic
taurochenodeoxycholic
taurocholic
taurodeoxycholic

Sigma Aldrich
Calbiochem
Calbiochem
Sigma Aldrich
Calbiochem
Calbiochem

G0759
360512
361311
T6260
580217
580221

AMC: Herman Ten Brink, PhD. Amsterdam University Medical Center. Amsterdam, Netherlands.

<https://www.vumc.com/departments/clinical-chemistry/metabolic-laboratory/organic-synthesis-laboratory.htm>

Cambridge Isotopes. Tewksbury, MA, USA. <https://www.isotope.com>

CDN Isotopes. Pointe-Claire, Quebec, Canada. <https://cdnisotopes.com>

Dr. Schircks Laboratories. Bauma, Switzerland. http://www.schircks.ch/company/schircks_info_frame1.htm

FUJIFILM Wako Chemicals USA Co., Richmond, VA, USA. <https://labchem-wako.fujifilm.com/us/category/00439.html>

Millipore Sigma (Sigma Aldrich, Fluka, calbiotech). St. Louis, MO, USA. <https://www.sigmaaldrich.com>

MP Biomedicals (formerly ICN). Irvine, CA, USA. <https://www.mpbio.com/>

Santa Cruz Biotechnology. Dallas, TX, USA. <https://www.scbt.com/home>

Toronto Research Chemicals. Ontario, Canada. <https://www.trc-canada.com/>

UAM: Ernesto Brunet, PhD. Universidad Autónoma de Madrid. Madrid, Spain. <http://qorganica.com/lumila/standards/standards.htm>