

Reference Material: Tandem MS 1

Product ID: MSMS1QC-15

Expiration Date: February 2026

Analysis Method: Non-derivatized – MS/MS non-kit

Material Storage: -20°C ± 10°C

Units: µmol/L blood

Lot	Analyte	Enrichment	Mean Value	95% LL	95% UL
F2415	Alanine (Ala)	0.00	181.2	146.4	216.0
F2415	Arginine (Arg)	0.00	5.2	3.6	6.8
F2415	Citrulline (Cit)	0.00	11.7	9.1	14.2
F2415	Glycine (Gly)	0.00	166.5	133.3	199.7
F2415	Leucine (Leu)	0.00	49.9	39.6	60.3
F2415	Methionine (Met)	0.00	5.8	3.0	8.5
F2415	Ornithine (Orn)	0.00	54.1	40.3	68.0
F2415	Phenylalanine (Phe)	0.00	19.8	13.6	26.0
F2415	Creatine (CRE)	0.00	166.1	136.1	196.2
F2415	Guanidinoacetic Acid (GUAC)	0.00	1.2	0.8	1.7
F2415	Creatinine (CRN)	0.00	20.5	17.2	23.8
F2415	Succinylacetone (SUAC)	0.00	0.25	0.18	0.33
F2415	Tyrosine (Tyr)	0.00	23.8	15.5	32.2
F2415	Valine (Val)	0.00	45.8	38.7	53.0
F2415	Free carnitine (C0)	0.00	15.12	12.34	17.91
F2415	Acetylcarnitine (C2)	0.00	0.42	0.00	1.84
F2415	Propionylcarnitine (C3)	0.00	0.45	0.27	0.63
F2415	Malonylcarnitine (C3DC) + Hydroxybutyrylcarnitine (C4OH)	0.00	0.05	0.03	0.07
F2415	Butyrylcarnitine (C4)	0.00	0.08	0.03	0.14
F2415	Isovalerylcarnitine (C5)	0.00	0.05	0.02	0.08
F2415	Tiglyl carnitine (C5:1)	0.00	0.02	0.01	0.03
F2415	Glutarylcarnitine (C5DC)	0.00	0.03	0.01	0.05
F2415	Hydroxyisovalerylcarnitine (C5OH)	0.00	0.51	0.42	0.60
F2415	Hexanoylcarnitine (C6)	0.00	0.02	0.00	0.03
F2415	Octanoylcarnitine (C8)	0.00	0.02	0.01	0.03
F2415	Decanoylcarnitine (C10)	0.00	0.11	0.06	0.17
F2415	Dodecanoylcarnitine (C12)	0.00	0.02	0.02	0.03
F2415	Myristoylcarnitine (C14)	0.00	0.06	0.04	0.07
F2415	Tetradecenoyl carnitine (C14:1)	0.00	0.00	0.00	0.00
F2415	Palmitoylcarnitine (C16)	0.00	0.71	0.59	0.82
F2415	Hydroxypalmitoylcarnitine (C16OH)	0.00	0.01	0.01	0.02
F2415	Stearoylcarnitine (C18)	0.00	0.43	0.35	0.51
F2415	Hydroxystearoylcarnitine (C18OH)	0.00	0.01	0.00	0.02
F2415	Adenosine (Ado)	0.00	0.34	0.24	0.45

F2415	Deoxyadenosine (dAdo)	0.00	0.10	0.03	0.16
F2415	C20:0-lysophosphatidylcholine (C20-LPC)	0.00	0.10	0.08	0.12
F2415	C22:0-lysophosphatidylcholine (C22-LPC)	0.00	0.02	0.01	0.03
F2415	C24:0-lysophosphatidylcholine (C24-LPC)	0.00	0.05	0.03	0.07
F2415	C26:0-lysophosphatidylcholine (C26-LPC)	0.00	0.04	0.00	0.12
G2415	Alanine (Ala)	200.0	325.5	272.9	378.1
G2415	Arginine (Arg)	100.0	62.6	51.2	74.0
G2415	Citrulline (Cit)	25.0	30.6	24.3	36.9
G2415	Glycine (Gly)	300.0	372.8	313.7	431.9
G2415	Leucine (Leu)	150.0	157.9	131.4	184.4
G2415	Methionine (Met)	50.0	35.2	29.4	41.0
G2415	Ornithine (Orn)	100.0	111.6	88.2	135.1
G2415	Phenylalanine (Phe)	150.0	134.5	111.0	157.9
G2415	Creatine (CRE)	50.0	202.1	170.8	233.4
G2415	Guanidinoacetic Acid (GUAC)	5.0	4.7	3.9	5.6
G2415	Creatinine (CRN)	50.0	59.9	49.3	70.5
G2415	Succinylacetone (SUAC)	2.50	1.04	0.80	1.28
G2415	Tyrosine (Tyr)	300.0	194.2	161.8	226.7
G2415	Valine (Val)	200.0	179.2	150.3	208.1
G2415	Free carnitine (C0)	10.00	22.50	19.29	25.71
G2415	Acetylcarnitine (C2)	10.00	8.57	6.99	10.15
G2415	Propionylcarnitine (C3)	4.00	3.63	2.97	4.29
G2415	Malonylcarnitine (C3DC) + Hydroxybutyrylcarnitine (C4OH)	1.00	0.28	0.23	0.34
G2415	Butyrylcarnitine (C4)	1.00	0.83	0.68	0.98
G2415	Isovalerylcarnitine (C5)	0.59	0.41	0.33	0.49
G2415	Tiglyl carnitine (C5:1)	0.66	0.32	0.25	0.38
G2415	Glutaryl carnitine (C5DC)	0.50	0.41	0.34	0.48
G2415	Hydroxyisovalerylcarnitine (C5OH)	1.00	1.26	1.06	1.46
G2415	Hexanoylcarnitine (C6)	0.50	0.38	0.30	0.46
G2415	Octanoylcarnitine (C8)	0.50	0.64	0.52	0.75
G2415	Decanoylcarnitine (C10)	0.50	0.59	0.49	0.70
G2415	Dodecanoylcarnitine (C12)	1.00	0.77	0.64	0.90
G2415	Myristoylcarnitine (C14)	0.50	0.46	0.38	0.53
G2415	Tetradecenoyl carnitine (C14:1)	0.50	0.27	0.23	0.32
G2415	Palmitoylcarnitine (C16)	4.00	3.75	3.13	4.36
G2415	Hydroxypalmitoylcarnitine (C16OH)	0.25	0.23	0.20	0.27
G2415	Stearoylcarnitine (C18)	1.00	1.19	0.99	1.39
G2415	Hydroxystearoylcarnitine (C18OH)	0.25	0.17	0.14	0.20
G2415	Adenosine (Ado)	1.00	1.15	0.94	1.37
G2415	Deoxyadenosine (dAdo)	0.50	0.51	0.39	0.62
G2415	C20:0-lysophosphatidylcholine (C20-LPC)	0.25	0.31	0.26	0.37
G2415	C22:0-lysophosphatidylcholine (C22-LPC)	0.25	0.19	0.15	0.22
G2415	C24:0-lysophosphatidylcholine (C24-LPC)	0.25	0.28	0.22	0.34
G2415	C26:0-lysophosphatidylcholine (C26-LPC)	0.25	0.27	0.19	0.36

H2415	Alanine (Ala)	400.0	479.2	390.1	568.3
H2415	Arginine (Arg)	200.0	122.6	96.8	148.3
H2415	Citrulline (Cit)	100.0	85.1	68.7	101.5
H2415	Glycine (Gly)	600.0	573.7	460.8	686.6
H2415	Leucine (Leu)	300.0	267.8	212.3	323.3
H2415	Methionine (Met)	150.0	98.4	83.9	112.9
H2415	Ornithine (Orn)	200.0	179.2	140.7	217.7
H2415	Phenylalanine (Phe)	300.0	249.3	198.7	300.0
H2415	Creatine (CRE)	200.0	308.9	260.9	356.9
H2415	Guanidinoacetic Acid (GUAC)	10.0	8.4	6.7	10.0
H2415	Creatinine (CRN)	100.0	99.3	78.6	119.9
H2415	Succinylacetone (SUAC)	10.00	3.18	2.37	4.00
H2415	Tyrosine (Tyr)	600.0	454.8	367.1	542.6
H2415	Valine (Val)	350.0	279.2	234.7	323.7
H2415	Free carnitine (C0)	20.00	30.42	25.83	35.00
H2415	Acetylcarnitine (C2)	20.00	16.77	13.66	19.88
H2415	Propionylcarnitine (C3)	8.00	7.02	5.51	8.52
H2415	Malonylcarnitine (C3DC) + Hydroxybutyrylcarnitine (C4OH)	2.50	0.56	0.45	0.67
H2415	Butyrylcarnitine (C4)	2.00	1.61	1.28	1.95
H2415	Isovalerylcarnitine (C5)	1.76	1.16	0.96	1.36
H2415	Tiglyl carnitine (C5:1)	1.97	0.93	0.71	1.15
H2415	Glutaryl carnitine (C5DC)	1.00	0.79	0.63	0.94
H2415	Hydroxyisovalerylcarnitine (C5OH)	2.00	2.05	1.67	2.43
H2415	Hexanoylcarnitine (C6)	1.00	0.75	0.58	0.91
H2415	Octanoylcarnitine (C8)	1.00	1.24	1.04	1.44
H2415	Decanoylcarnitine (C10)	1.00	1.06	0.89	1.24
H2415	Dodecanoylcarnitine (C12)	2.00	1.60	1.36	1.84
H2415	Myristoylcarnitine (C14)	1.50	1.26	1.07	1.45
H2415	Tetradecenoyl carnitine (C14:1)	1.50	0.76	0.62	0.89
H2415	Palmitoylcarnitine (C16)	8.00	6.74	5.58	7.91
H2415	Hydroxypalmitoylcarnitine (C16OH)	1.00	0.88	0.72	1.03
H2415	Stearoylcarnitine (C18)	3.00	2.78	2.37	3.20
H2415	Hydroxystearoylcarnitine (C18OH)	1.00	0.64	0.55	0.73
H2415	Adenosine (Ado)	5.00	4.86	3.91	5.81
H2415	Deoxyadenosine (dAdo)	2.50	2.31	1.96	2.65
H2415	C20:0-lysophosphatidylcholine (C20-LPC)	0.50	0.53	0.44	0.63
H2415	C22:0-lysophosphatidylcholine (C22-LPC)	0.50	0.39	0.32	0.47
H2415	C24:0-lysophosphatidylcholine (C24-LPC)	0.50	0.60	0.48	0.72
H2415	C26:0-lysophosphatidylcholine (C26-LPC)	0.50	0.52	0.41	0.63
I2415	Alanine (Ala)	600.0	624.1	523.4	724.8
I2415	Arginine (Arg)	300.0	179.6	144.3	214.8
I2415	Citrulline (Cit)	250.0	193.9	159.2	228.6
I2415	Glycine (Gly)	900.0	780.8	652.6	909.0
I2415	Leucine (Leu)	600.0	490.8	401.6	580.1

I2415	Methionine (Met)	250.0	166.0	139.2	192.7
I2415	Ornithine (Orn)	300.0	242.2	190.0	294.5
I2415	Phenylalanine (Phe)	450.0	367.5	300.0	434.9
I2415	Creatine (CRE)	400.0	457.7	391.5	523.9
I2415	Guanidinoacetic Acid (GUAC)	20.0	15.9	13.2	18.6
I2415	Creatinine (CRN)	200.0	179.6	147.8	211.3
I2415	Succinylacetone (SUAC)	20.00	6.53	4.88	8.19
I2415	Tyrosine (Tyr)	900.0	675.5	577.6	773.4
I2415	Valine (Val)	500.0	379.5	322.1	436.9
I2415	Free carnitine (C0)	30.00	38.42	32.31	44.54
I2415	Acetylcarnitine (C2)	30.00	25.03	20.96	29.11
I2415	Propionylcarnitine (C3)	12.00	10.34	8.53	12.15
I2415	Malonylcarnitine (C3DC) + Hydroxybutyrylcarnitine (C4OH)	5.50	1.32	1.06	1.57
I2415	Butyrylcarnitine (C4)	4.00	3.18	2.62	3.74
I2415	Isovalerylcarnitine (C5)	3.51	2.32	1.92	2.71
I2415	Tiglyl carnitine (C5:1)	3.93	1.85	1.47	2.22
I2415	Glutaryl carnitine (C5DC)	2.50	1.95	1.63	2.27
I2415	Hydroxyisovalerylcarnitine (C5OH)	3.00	2.85	2.40	3.29
I2415	Hexanoylcarnitine (C6)	2.50	1.91	1.57	2.25
I2415	Octanoylcarnitine (C8)	2.50	3.15	2.60	3.69
I2415	Decanoylcarnitine (C10)	2.50	2.54	2.07	3.01
I2415	Dodecanoylcarnitine (C12)	3.00	2.40	1.98	2.81
I2415	Myristoylcarnitine (C14)	3.00	2.43	2.02	2.85
I2415	Tetradecenoyl carnitine (C14:1)	3.00	1.53	1.17	1.88
I2415	Palmitoylcarnitine (C16)	12.00	9.79	8.09	11.48
I2415	Hydroxypalmitoylcarnitine (C16OH)	1.50	1.32	1.11	1.54
I2415	Stearoylcarnitine (C18)	5.00	4.23	3.49	4.98
I2415	Hydroxystearoylcarnitine (C18OH)	1.50	0.94	0.77	1.11
I2415	Adenosine (Ado)	10.00	8.73	7.29	10.17
I2415	Deoxyadenosine (dAdo)	5.00	4.25	3.49	5.00
I2415	C20:0-lysophosphatidylcholine (C20-LPC)	2.00	1.74	1.49	1.99
I2415	C22:0-lysophosphatidylcholine (C22-LPC)	2.00	1.50	1.23	1.77
I2415	C24:0-lysophosphatidylcholine (C24-LPC)	2.00	2.21	1.77	2.65
I2415	C26:0-lysophosphatidylcholine (C26-LPC)	2.00	2.00	1.58	2.43