



Accession Number: **A0907280003**
Reference Number:
Patient: **Sample Report**
Age: 47 *Sex:* Male
Date of Birth: 02/05/1962
Date Collected: 7/27/09
Date Received: 7/28/09
Report Date: 7/28/09
Telephone: (770) 446-4583
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Reprinted: 9/4/09
Comment:

Ordering Physician:

Metametrix

3425 Corporate Way
Duluth, GA 30096

0290 Cardio/ION Profile

This report contains reference range adjustments on the Amino Acid and Organix™ profiles from routine revalidation procedures. It also contains the following three upgrades:

- 1) The amino acids have been reorganized so that they appear in functional categories that can convey more relevant information at a glance. The order is consistent with that found in the newly released Metametrix Handbook.
- 2) Three calculated ratios have been added: Phenylalanine/Tyrosine, Glutamic Acid/Glutamine, and Tryptophan/LNAA.
- 3) The recommended individualized amino acid powder has been reformulated. The table will now show small amounts added when patient results fall below the middle of the third quintile rather than only when they are below the second quintile. The amounts added increase exponentially as levels fall to lower levels, giving more accurately adjusted amounts according to the levels of physiological demand. Also, rather than showing the constant percentages in the base, the table shows the more useful calculated percentages in each patient formula. The hydrochloride (HCl) forms of arginine, histidine and lysine that have always been used in the formulas are now specified in the table.

Cardiovascular Health Profile

Methodology: Automated Chemistry, Immunometric Assay, Competitive Immunology, HPLC, ICP-MS

Results

Reference Limits

Lipoprotein Factors

Total Cholesterol	225	H		<= 200	mg/dL
HDL Cholesterol	120	H		30 - 85	mg/dL
LDL Cholesterol (Direct)	135	H		<= 130	mg/dL
Triglycerides	145			35 - 160	mg/dL
Lipoprotein (a)	35			<= 37	mg/dL

Lipoprotein Ratios

LDL/HDL	1.1	<= 3.3
Total/HDL	1.9	<= 4.5

Male		Female		Total/HDL	Risk (*)
LDL/HDL	Total/HDL	LDL/HDL	Total/HDL		
1.0	3.4	1.5	3.3	3.3	0.5xAverage
3.6	5.0	3.2	4.4	4.4	1.0xAverage
6.3	9.6	5.0	7.1	7.1	2.0xAverage
8.0	23.4	6.1	11.0	11.0	3.0xAverage

*Adapted from the Framingham Heart Study

Chronic Inflammatory Markers

Ferritin	97		28 - 397	ng/mL
Fibrinogen	368		175 - 425	mg/dL
c-Reactive Protein (HS)	1.8		<= 3.0	mg/L

Cardio CRP value (mg/L)	CHD Risk Level	* If the cardio CRP concentration exceeds 10 mg/L after repeat testing, the patient should be evaluated for noncardiovascular etiologies.
<1	Low	
1-3	Average	
>3 (up to 10)*	High	

Other Important Indicators

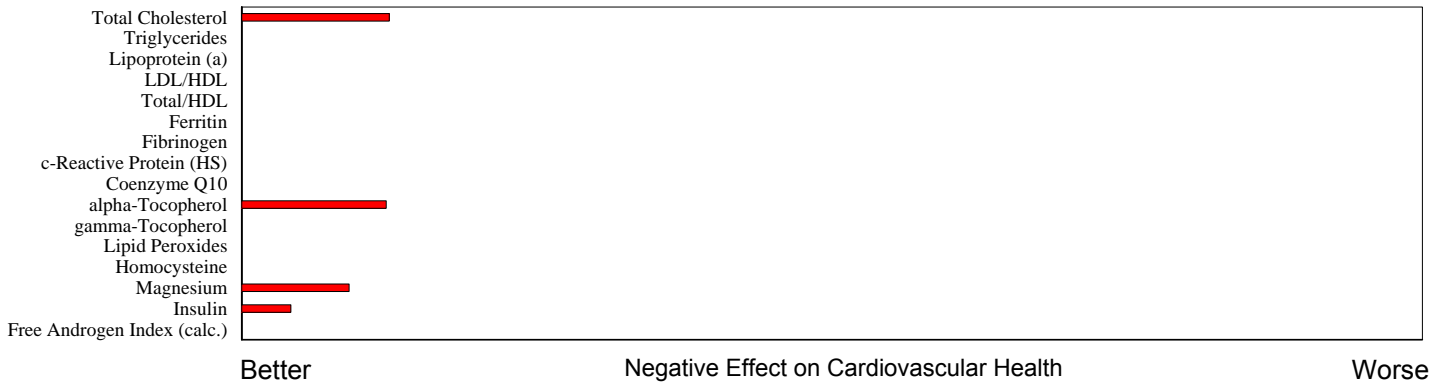
Insulin	12.5	H		2.0 - 12.0	uIU/mL
Testosterone	845			184 - 1,171	ng/dL
Sex Hormone Binding Globulin	55			13 - 71	nmol/L
Free Androgen Index (calc.)	53.3			30.0 - 95.0	
Magnesium	20	L		16 - 32	ppm packed cells

Oxidant Stress Factors

Percentile Ranking by Quintile

	1st	2nd	3rd	4th	5th	95% Reference Interval
	20%	40%	60%	80%		
Homocysteine	4.0			10.0		3.0 - 14.0 nmol/mL
Coenzyme Q10	0.64			2.16		0.48 - 3.04 mg/L
alpha-Tocopherol	9.8			25.1		6.8 - 31.7 mg/L
gamma-Tocopherol	0.26			2.06		0.06 - 2.99 mg/L
Lipid Peroxides				1.72		<= 2.60 nmol/mL

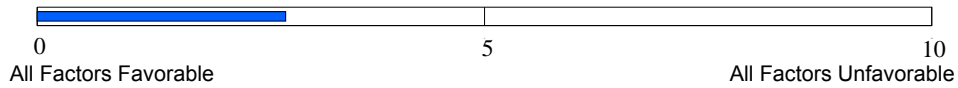
Fibrinogen performed by Southern Clinical Laboratory
405 West Pike St., Suite A Lawrenceville, GA 30045
Lab Director: Dr. Robert David



Most of the nutritional and metabolic measurements included in the Cardio/ION profile are associated to some degree with your cardiovascular health. However, those shown on the previous page of this report are ones that most strongly and specifically affect your cardiovascular health. Some factors are favorable for cardiac health when they are high, while others should be low. The chart above helps you to see where the most significant abnormalities are; the longest bars on the chart show the most abnormal results on a scale of increasing negative effects on cardiovascular health.

The "Cardiovascular Index" chart below shows your test results with all of the factors summarized as a single index. Depending on your results, some steps that your doctor may want you to take to improve your cardiovascular health are shown in the tables of recommendations at the end of these pages. It is important that you follow your doctor's instructions to achieve the lowest index.

Cardiovascular Index = 2.8



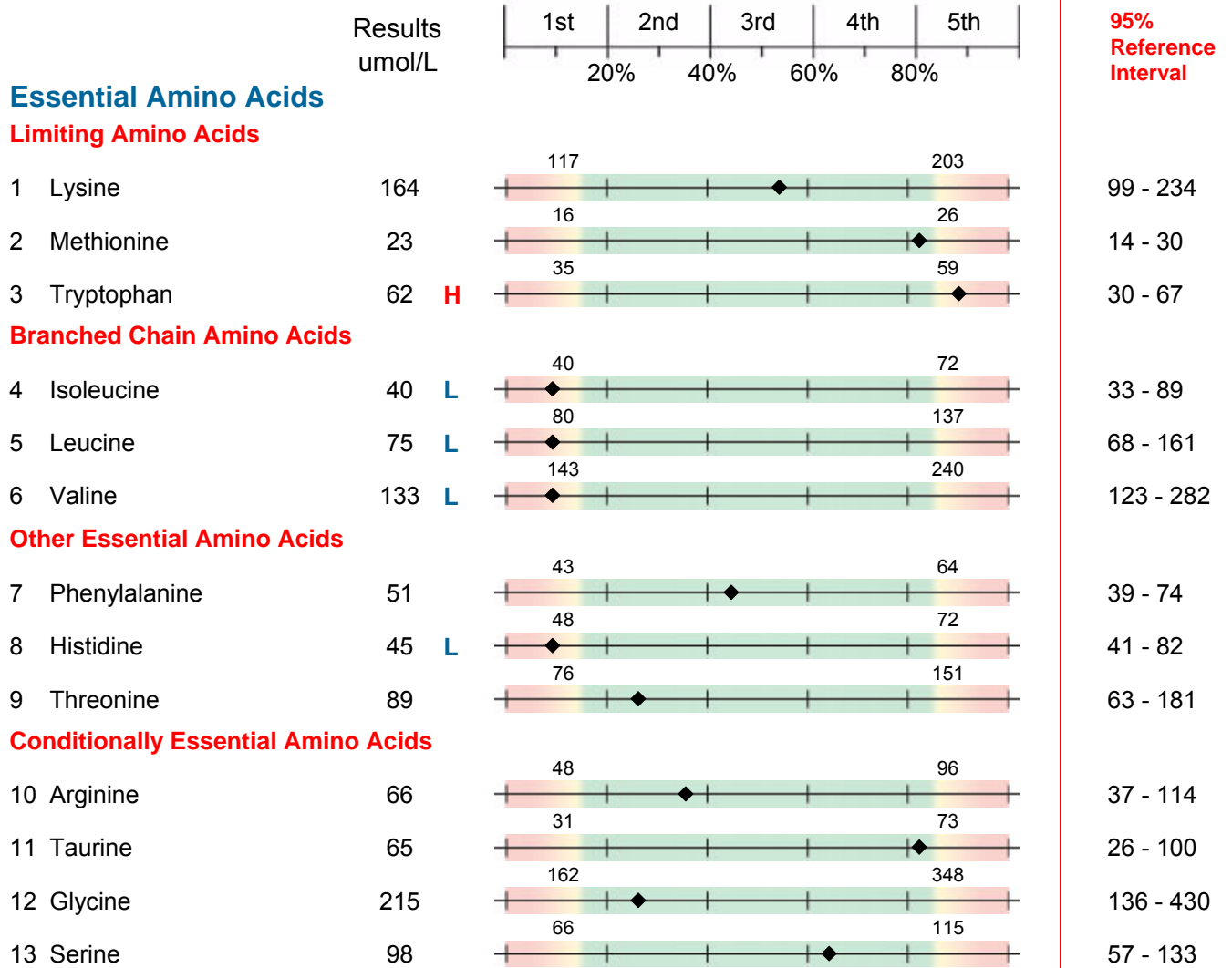
- These guidelines are intended as a starting point for the clinician who requested the test and are based only on the laboratory results included in this report. Final recommendations should be implemented by the clinician with consideration of medical history and current clinical observations.
- These tests are not intended for the diagnosis of specific disorders.

Amino Acid Analysis - 20 Plasma

Methodology: ION Exchange HPLC

Ranges are for ages 13 and over.

Percentile Ranking by Quintile

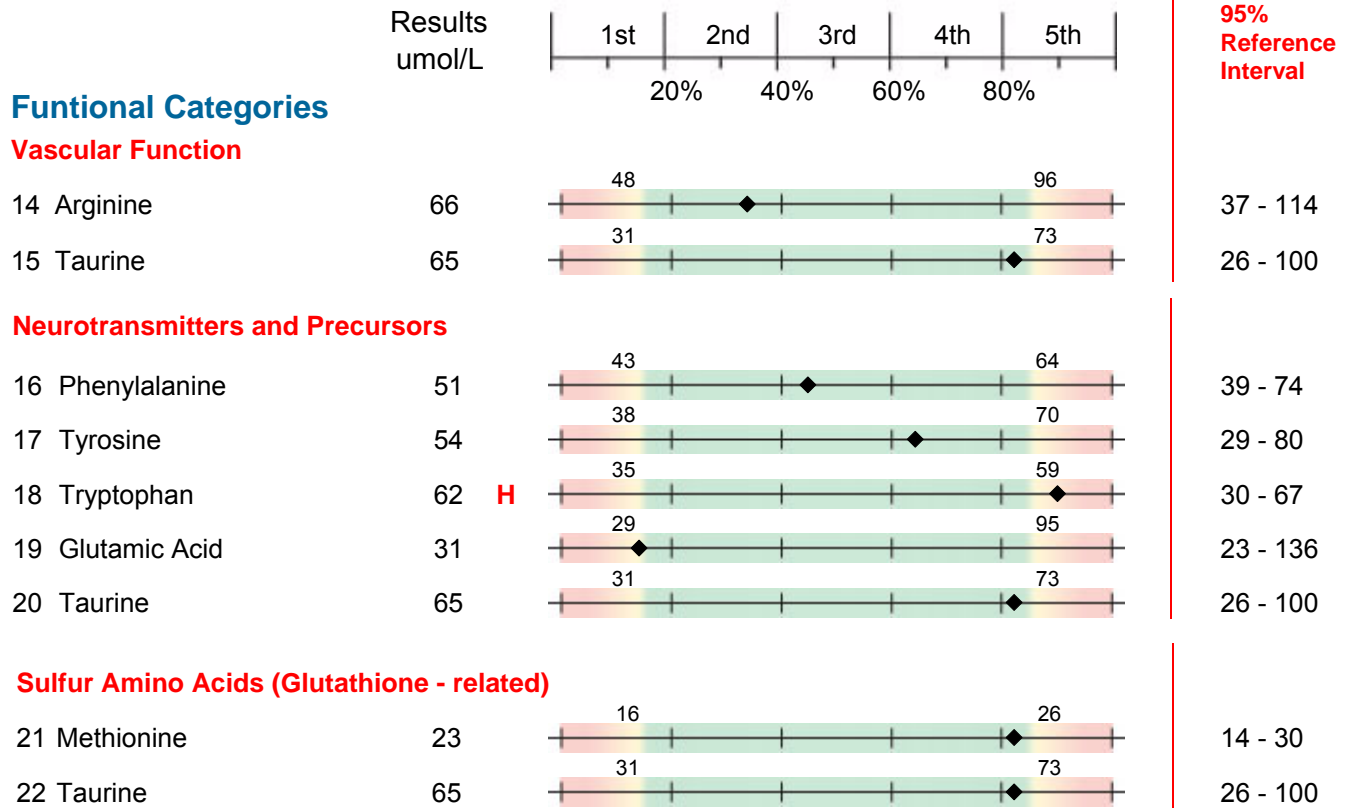


Amino Acid Analysis - 20 Plasma

Methodology: ION Exchange HPLC

Ranges are for ages 13 and over.

Percentile Ranking by Quintile



Urea Cycle and Ammonia Detoxification

23 Arginine	66	48 - 96	37 - 114
24 Citrulline	33	20 - 38	15 - 44
25 Ornithine	56	32 - 81	23 - 109
26 Glutamine	486	397 - 585	338 - 630
27 Asparagine	37	30 - 49	26 - 56
28 Aspartic Acid	5.2	4.8 - 9.7	4.2 - 12.5

Ratios

29 Phenylalanine/Tyrosine	0.94	0.06 - 1.19	<= 1.44
30 Glutamic Acid/Glutamine	0.06	0.06 - 0.21	0.05 - 0.35
31 Tryptophan/LNAA* *Large neutral amino acids	0.159 H	0.071 - 0.113	0.061 - 0.12

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CLIA ID# 11D0255349

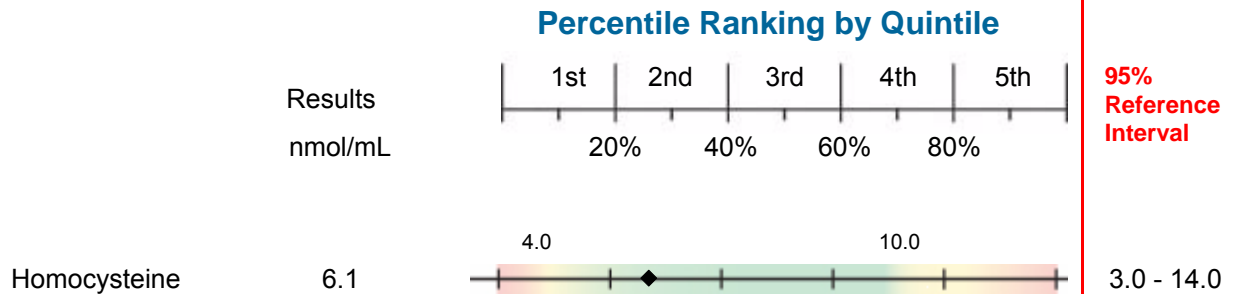
New York Clinical Lab PFI #4578
Florida Clinical Lab Lic. #800008124

Laboratory Directors: J. Alexander Bralley, PhD
Robert M. David, PhD

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Homocysteine

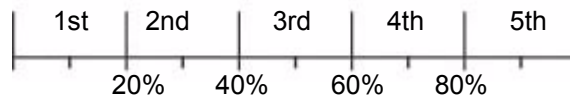
Methodology: Competitive Immunoassay



Element - Erythrocytes and Whole Blood

Methodology: Inductively Coupled Plasma /Mass Spectroscopy

Percentile Ranking by Quintile



95%
Reference
Interval

Results

Reference Limits

Nutrient Elements

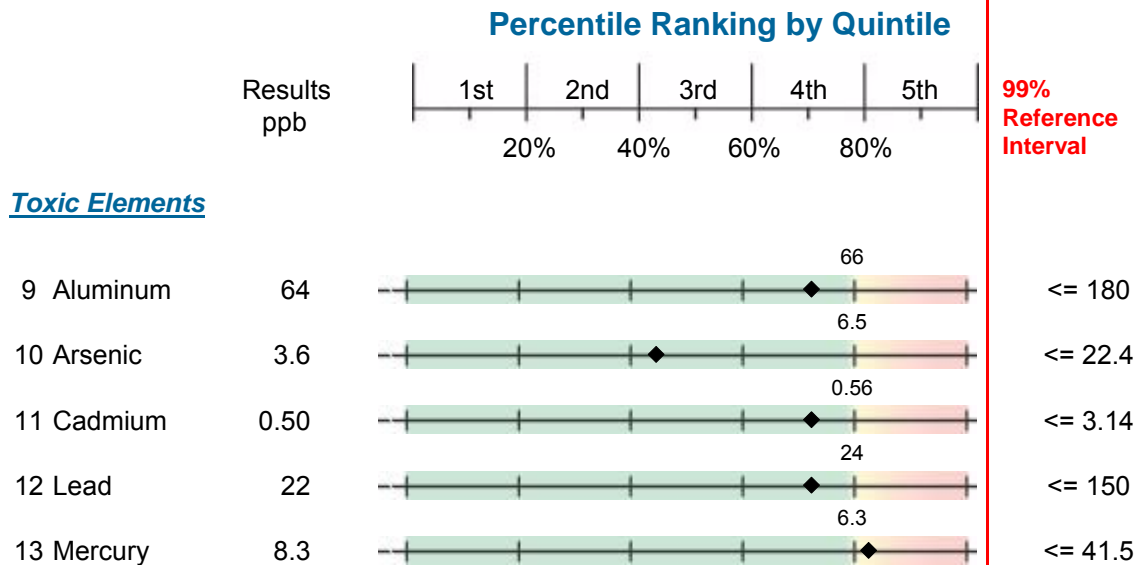
Element	Value	Percentile	Reference Limits	Units
1 Potassium	1,610	1,421	1,012 - 2,199	ppm packed cells
2 Magnesium *	20 L	22	16 - 32	ppm packed cells
3 Zinc	4.3 L	4.5	3.3 - 7.7	ppm packed cells
4 Copper	301 L	306	257 - 500	ppb packed cells
5 Manganese	26	24	19 - 41	ppb packed cells
6 Chromium	3.4	2.2	1.4 - 7.9	ppb packed cells
7 Selenium	0.20	0.19	0.14 - 0.47	ppm whole blood
8 Calcium	22	29	10 - 43	ppm packed cells

Relevant to membrane permeability, not nutritional status.

*The expanded abnormal range approximates the population at risk for magnesium insufficiency disorders. See: Johnson S, Med Hypotheses. Feb 2001;56(2):163-170.

Element - Erythrocytes and Whole Blood

Methodology: Inductively Coupled Plasma /Mass Spectroscopy



Results for whole blood toxic elements that are within normal limits do not rule out metal accumulation in other tissues. This can be evaluated by urinary porphyrin or 24-hour urine chelation challenge tests.

Lead Levels Considered Elevated in Adults (1)

- ◆ At levels above 800 ppb, serious, permanent health damage may occur (extremely dangerous).
- ◆ Between 400 and 800 ppb, serious health damage may be occurring, even if there are no symptoms (seriously elevated).
- ◆ Between 250 and 400 ppb, regular exposure is occurring. There is some evidence of potential physiological problems (elevated).
- ◆ Between 100 and 250 ppb, lead is building up in the body and exposure is occurring.

In children, lead levels even below 100 ppb are associated with IQ deficits.(2), and, in adults, levels as low as 50-90 ppb cause an increased risk of death from all causes, cardiovascular disease and cancer.(3)

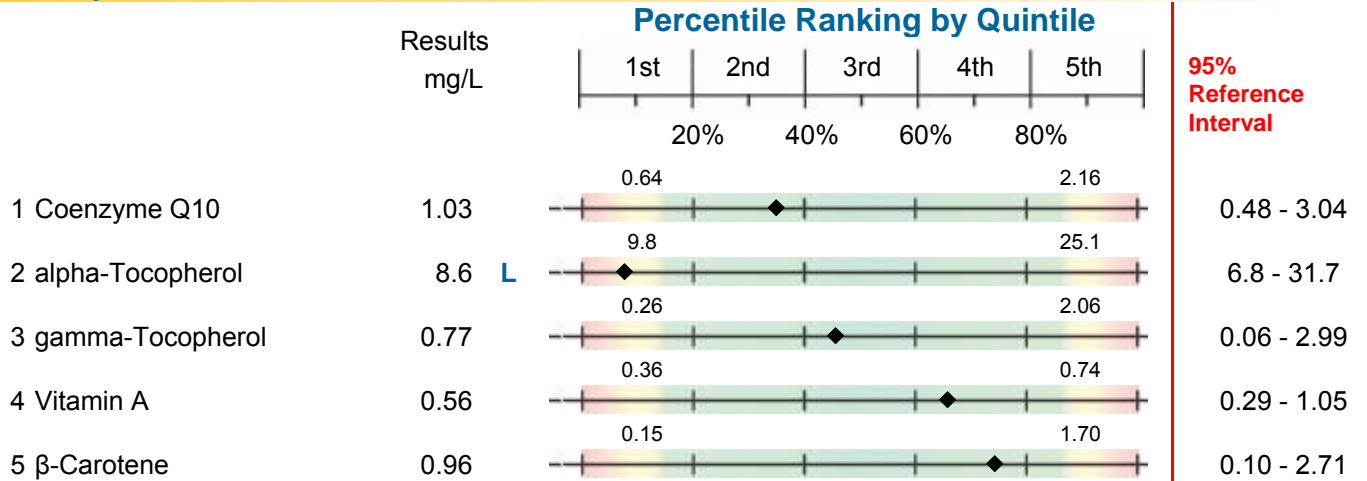
(1)Lead Exposure in Adults. A Guide for Health Care Providers, State of New York, Department of Public Health.

(2) Lanphear BP, Hornung R, Khoury J, et al. Low-level environmental lead exposure and children's intellectual function: an international pooled analysis. Environ Health Perspect. Jul 2005;113(7):894-899.

(3) Schober, Susan et al. Blood Lead Levels and Death from All Causes, Cardiovascular Disease, and Cancer: Results from the NHANES III Mortality Study. Environmental Health Perspect. Oct 2006; 114(10):1538-1541.

CoEnzyme Q10 Plus Vitamin Panel - Serum

Methodology: High Performance Liquid Chromatography



Lipid Peroxide - Serum

Methodology: High Performance Liquid Chromatography



8-Hydroxy-2 deoxyguanosine - Urine

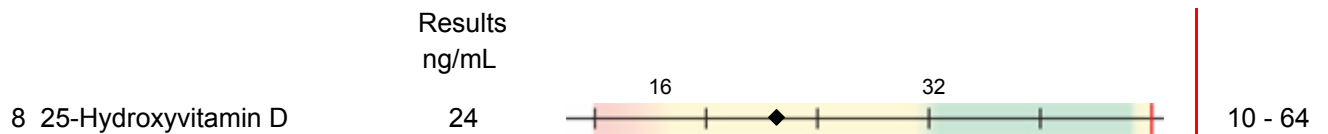
Methodology: LC/Tandem Mass Spectroscopy, Colorimetric

Ranges are for ages 13 and over.



Vitamin D - Serum

Methodology: Chemiluminescent immunoassay (CLIA)



Levels of 25-hydroxyvitamin D that fall below 20 ng/mL (50 nmol/L) reflect frank vitamin D deficiency. Studies based on functional markers have identified levels below 30 ng/mL (75 nmol/L) as hypovitaminosis D where stores are depleted and PTH levels may begin to rise. Optimal values lie in the 30-60 ng/ml range (4th and 5th quintiles) for the Metamatrix reference population that comes largely from North America. Extremely high levels may be toxic.

- Holick MF. Vitamin D deficiency. *N Engl J Med.* 2007;357(3):266-281.
- Hollis BW. Circulating 25-hydroxyvitamin D levels indicative of vitamin D sufficiency: implications for establishing a new effective dietary intake recommendation for vitamin D. *J Nutr.* Feb 2005;135(2):317-322.

Conversion factors: nmol/L = ng/mL x 2.5 | ng/mL = nmol/L x 0.4

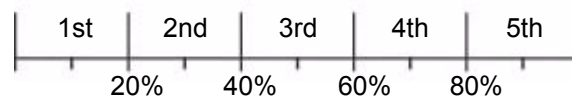
Fatty Acids - Plasma

Methodology: Capillary Gas Chromatography/Mass Spectrometry

Ranges are for ages 13 and over.

Results

Percentile Ranking by Quintile



**95%
Reference
Interval**

Polyunsaturated Omega-3

Item	Value (uM)	Percentile	95% Reference Interval
1 Alpha Linolenic (18:3n3)	21	15	10 - 70
2 Eicosapentaenoic (20:5n3)	12 L	14	8 - 225
3 Docosapentaenoic (22:5n3)	14	13	9 - 47
4 Docosahexaenoic (22:6n3)	43 L	54	32 - 184

Polyunsaturated Omega-6

Item	Value (uM)	Percentile	95% Reference Interval
5 Linoleic (18:2n6)	905	530 / 1,068	431 - 1,278
6 Gamma Linolenic (18:3n6)	11.2	5.1 / 23.4	3.1 - 31.9
7 Eicosadienoic (20:2n6)	8.6	4.9 / 13.5	3.5 - 15.9
8 Dihomogamma Linolenic (20:3n6)	59	26 / 85	18 - 99
9 Arachidonic (20:4n6)	646 H	186 / 454	137 - 560
10 Docosadienoic (22:2n6)	0.4	0.4	<= 0.6
11 Docosatetraenoic (22:4n6)	6.7	3.5 / 10.9	2.1 - 15.4

Polyunsaturated Omega-9

Item	Value (uM)	Percentile	95% Reference Interval
12 Mead (20:3n9)	6.4 H	3.7	<= 7.4

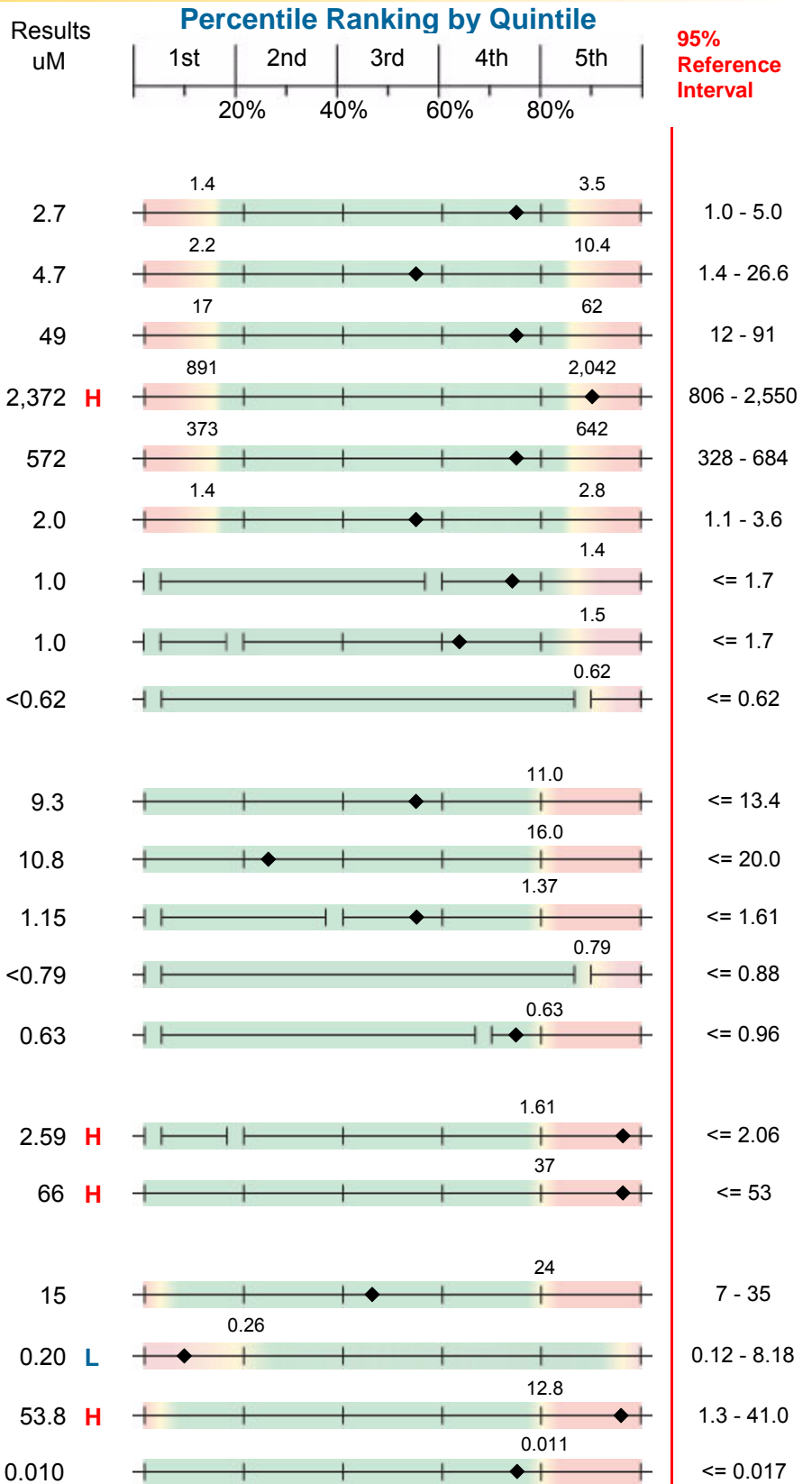
Monounsaturated

Item	Value (uM)	Percentile	95% Reference Interval
13 Myristoleic (14:1n5)	1.8	0.8 / 4.8	0.8 - 6.8
14 Palmitoleic (16:1n7)	176 H	28 / 110	21 - 164
15 Vaccenic (18:1n7)	55	36 / 74	29 - 85
16 Oleic (18:1n9)	872	640 / 1,292	501 - 1,579
17 11-Eicosenoic (20:1n9)	4.4	3.1 / 7.9	2.4 - 9.1
18 Nervonic (24:1n9)	<1.06	1.4	<= 1.6

Fatty Acids - Plasma

Methodology: Capillary Gas Chromatography/Mass Spectrometry

Ranges are for ages 13 and over.



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CLIA ID# 11D0255349

New York Clinical Lab PFI #4578
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Laboratory Directors: J. Alexander Bralley, PhD
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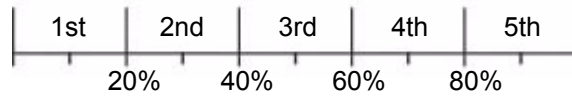
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Organix™ Comprehensive - Urine

Methodology: LC/Tandem Mass Spectroscopy, Colorimetric

Results are expressed as mcg/mg creatinine.
Ranges are for ages 13 and over.

Percentile Ranking by Quintile



**95%
Reference
Interval**

NUTRIENT MARKERS

Results

Fatty Acid Metabolism

(Carnitine & B2)

1 Adipate	5.8 H	5.2	<= 8.3
2 Suberate	9.0 H	1.7	<= 3.2
3 Ethylmalonate	1.4	3.6	<= 6.3

Carbohydrate Metabolism

(B1, B3, Cr, Lipoic Acid, CoQ10)

4 Pyruvate	<DL*	3.9	<= 6.4
5 L-Lactate	4	14	3 - 46
6 β-Hydroxybutyrate	6.1 H	2.1	<= 9.9

Energy Production (Citric Acid Cycle)

(B comp., Q10, Amino acids, Mg)

7 Citrate	130	601	56 - 987
8 Cis-Aconitate	23	51	18 - 78
9 Isocitrate	47	98	39 - 143
10 a-Ketoglutarate	<DL*	19.0	<= 35.0
11 Succinate	3.1	11.6	<= 20.9
12 Fumarate	<DL*	0.59	<= 1.35
13 Malate	0.2	1.4	<= 3.1
14 Hydroxymethylglutarate	4.2 H	3.6	<= 5.1

B-Complex Vitamin Markers

(B1, B2, B3, B5, B6, Biotin)

15 a-Ketoisovalerate	<DL*	0.25	<= 0.49
16 a-Ketoisocaproate	0.41 H	0.34	<= 0.52
17 a-Keto-β-Methylvalerate	<DL*	0.38	<= 1.10
18 Xanthurenate	0.63 H	0.47	<= 0.74
19 β-Hydroxyisovalerate	2.3	7.6	<= 11.5

Methylation Cofactor Markers

(B12, Folate)

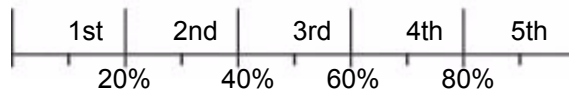
20 Methylmalonate	0.5	1.7	<= 2.3
21 Formiminoglutamate	0.1	1.2	<= 2.2

Organix™ Comprehensive - Urine

Methodology: LC/Tandem Mass Spectroscopy, Colorimetric

Ranges are for ages 13 and over.

Percentile Ranking by Quintile



**95%
Reference
Interval**

CELL REGULATION MARKERS

Neurotransmitter Metabolism Markers

(Tyrosine, Tryptophan, B6, antioxidants)

22 Vanilmandelate	2.8	1.8 - 3.9	1.3 - 4.9
23 Homovanillate	3.8	2.1 - 6.3	1.6 - 10.9
24 5-Hydroxyindoleacetate	0.7 L	2.1 - 5.6	1.6 - 9.8
25 Kynurenate	1.8	1.9	<= 2.7
26 Quinolinate	1.3	4.0	<= 5.8
27 Picolinate	2.6 L	8.0	2.8 - 13.5

Oxidative Damage and Antioxidant Markers

(Vitamin C and other antioxidants)

28 p-Hydroxyphenyllactate	0.68	0.79	<= 1.45
29 8-Hydroxy-2-deoxyguanosine *	3.4	5.3	<= 7.6

* Units for 8-Hydroxy-2-deoxyguanosine are ng/mg creatinine.

TOXICANTS AND DETOXIFICATION

Detoxification Indicators

(Arg, NAC, Met, Mg and antioxidants)

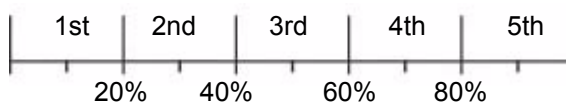
30 2-Methylhippurate	0.012	0.084	<= 0.192
31 Orotate	0.08	0.69	<= 1.01
32 Glucarate	10.6 H	6.3	<= 10.7
33 a-Hydroxybutyrate	0.3	0.3	<= 0.9
34 Pyroglutamate	45	59	28 - 88
35 Sulfate	623 L	958 - 2,347	690 - 2,988

Organix™ Comprehensive - Urine

Methodology: LC/Tandem Mass Spectroscopy, Colorimetric

Ranges are for ages 13 and over.

Percentile Ranking by Quintile



COMPOUNDS OF BACTERIAL OR YEAST/FUNGAL ORIGIN

Bacterial - general

36 Benzoate	<DL*	0.6	<= 9.3
37 Hippurate	1,019 H	594	<= 1,150
38 Phenylacetate	<DL*	0.04	<= 0.15
39 Phenylpropionate	<DL*	0.4	<= 0.4
40 p-Hydroxybenzoate	0.11	0.99	<= 2.08
41 p-Hydroxyphenylacetate	>200 H	19	<= 34
42 Indican	21	40	<= 74
43 Tricarballoylate	0.45	0.73	<= 1.41

L. acidophilus / general bacterial

44 D-Lactate	0.4	2.3	<= 7.0
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Clostridial species

45 3,4-Dihydroxyphenylpropionate	<DL*	0.12	<= 0.12
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Yeast / Fungal

46 D-Arabinitol	20	36	<= 73
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Creatinine = 215 mg/dL

* <DL = less than detection limit

These test results in this report are not for the diagnosis of disease. They are intended to provide nutritional guidelines to qualified healthcare professionals with full knowledge of patient history and concerns to assist in their design of an appropriate healthcare program.

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ION Analyte Pattern Analysis

A0907280003

Sample Report

A multi-analyte report can provide greater insight about health risks and special nutrient needs. Patterns of abnormalities can reinforce the degree of significance indicated by a single measurement. Analytes from the various profiles in the ION report are combined below into categories associated with clinical/metabolic conditions.

The categories included cover the most common areas of concern relevant to these profiles. Above each thermometer are listed the analytes used to calculate the *degree of significance*. An H or L appears when the patient result is in the fifth quintile (80%) of the population. An additional **X** next to an analyte indicates that the patient result is outside the 95% reference interval for that analyte.

The thermometer advances to the right as the number and severity of relevant abnormalities increases. The longer the filled bar, the greater the degree of significance or likelihood that a health threat may exist in that category. The preceding laboratory reports provide the detail upon which these thermometers are based.

Cardiovascular System

Arginine		Homocysteine		Calcium		Magnesium	L
CoQ10		a-Tocopherol	L	Lipid Peroxide		8-OHdG	
AA/EPA	X H						



Low significance

High significance

Fatigue

Isoleucine	L	Leucine	L	Phenylalanine		Valine	L
Magnesium	L	CoQ10		Adipate	H	Suberate	X H
AKG		Succinate		Malate		Xanthurenate	H
MeMalonate		FIGLU					



Low significance

High significance

Metabolic Syndrome (Syndrome X)

Chromium		Magnesium	L	Zinc	L	Palmitic	H
Stearic		AHB		BHB	H	BHlVal	

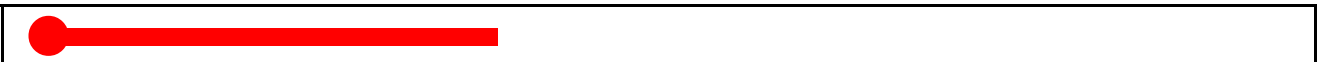


Low significance

High significance

Mental/Emotional

Tryptophan		Tyrosine		Magnesium	L	EPA	L
DHA	L	Xanthurenate	H	MeMalonate		FIGLU	
VMA		5-HIA	X L				



Low significance

High significance

Intestinal Bacterial Metabolites

PhAc	PhProp	pOHBenz	pOHPhAc	X H
Indican	Tricarb	D-Lactate	3,4-DHPP	

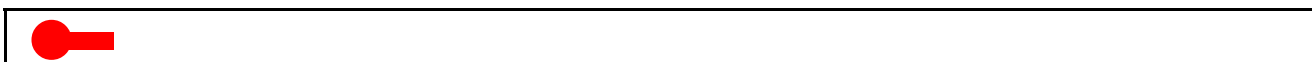


Low significance

High significance

Intestinal Yeasts / Fungal Metabolites

D-Arabinitol



Low significance

High significance

Digestion/Absorption

Arginine	Histidine	L	Isoleucine	L	Leucine	L
Lysine	Methionine		Phenylalanine		Threonine	
Tryptophan	Valine	L	Chromium		Copper	L
Manganese	Selenium		Zinc	L		



Low significance

High significance

Toxic Exposure

Aluminum	Cadmium	Lead	Mercury	H
Palmitelaidic	X H	C18TrFa	X H	Citrate
Isocitrate	Quinolate	2-MeHipp	Cis-Aconitate	Orotate
Glucarate	H			



Low significance

High significance

Detoxification Impairment

Methionine	Glycine	Serine	Taurine
Glutamine	Pyroglutamate	Sulfate	X L
			Benzoate



Low significance

High significance

Oxidative Stress/Antioxidant Insufficiency

Taurine		Copper	L	Manganese		Selenium	
Zinc	L	Lead		Mercury	H	a-Tocopherol	L
g-Tocopherol		Vitamin A		b-Carotene		Lipid Peroxide	
8-OHdG		pOHPHlac		Sulfate	X L		



Low significance

High significance

Mitochondrial Functional Impairment

Magnesium	L	CoQ10		Adipate	H	Suberate	X H
Ethylmalonate		Pyruvate		L-Lactate		AHB	
BHB	H	Succinate		Fumarate		Malate	

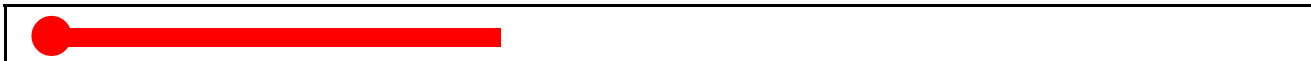


Low significance

High significance

Amino Acid Insufficiency

Arginine		Histidine	L	Isoleucine	L	Leucine	L
Lysine		Methionine		Phenylalanine		Threonine	
Tryptophan		Valine	L	AKG		Succinate	
Sulfate	X L						

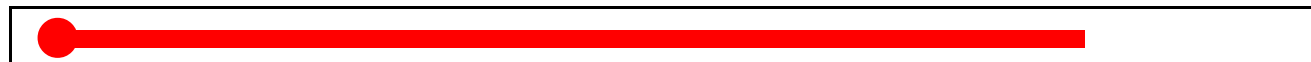


Low significance

High significance

Essential Fatty Acid Insufficiency

ALA		EPA	L	DHA	L	LA	
GLA		DGLA		Palmitoleic	X H	Mead	H
Triene/Tetraer							



Low significance

High significance

Disordered Methyl Group (Single carbon) Transfer

Homocysteine		Pentadeca		Heptadeca		Nonadecanoic	
Tricosanoic		Xanthurenate	H	MeMalonate		FIGLU	
Kynurenate							

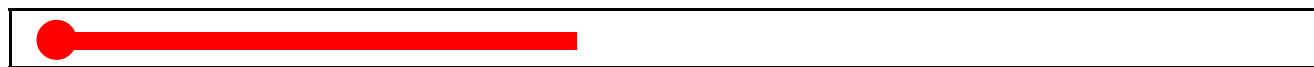


Low significance

High significance

Disordered Tryptophan Metabolism

Tryptophan	Xanthurenate	H	5-HIA	X L	Kynurenate
Quinolinate	Indican				



Low significance

High significance

<u>Abbreviation</u>	<u>Analyte Name</u>	<u>Abbreviation</u>	<u>Analyte Name</u>
2-MeHipp	2-Methylhippurate	FIGLU	Formiminoglutamate
5-HIA	5-Hydroxyindoleacetate	g-Tocopherol	gamma-Tocopherol
8-OhdG	8-Hydroxy-2-deoxyguanosine	GLA	Gamma Linoleic (18:3n6)
AA/EPA	Arachidonic (20:4n6)/Eicosapentaenoic (20:5n3)	Heptadeca	Heptadecanoic (17:0)
AHB	a-Hydroxybutyrate	Hcys	Homocysteine
AKG	a-ketoglutarate	HVA	Homovanillate
aKbMeVal	a-Keto-β-Methylvalerate	HMG	Hydroxymethylglutarate
aKiCap	a-Ketoisocaproate	LA	Linoleic (18:2n6)
aKiVal	a-Ketoisovalerate	MeMalonate	Methylmalonate
ALA	Alpha Linolenic (18:3n3)	Pentadeca	Pentadecanoic (15:0)
a-Tocopherol	alpha-Tocopherol	PhAc	Phenylacetate
BHB	β-Hydroxybutyrate	PhProp	Phenylpropionate
BHiVal	β-Hydroxyisovalerate	pHBenz	p-Hydroxybenzoate
C18TrFa	Total C:18 Trans	pHPhAc	p-Hydroxyphenylacetate
CoQ10	Coenzyme Q10	pHPhLac	p-Hydroxyphenyllactate
DGLA	Dihomogamma Linolenic (20:3n6)	Total C:18	Total c:18 Trans
DHA	Docosahexanoic (22:6n3)	Tricarb	Tricarallylate
3,4-DHPP	3,4-Dihydroxyphenylpropionate	Triene/Tetraene	Mead/Arachidonic Ratio
EPA	Eicosapentaenoic (20:5n3)	VMA	Vanilmandelate

Supplement Recommendation Summary

With knowledge of a patient's full medical history and concerns, the ION Profile laboratory results may be used to help create an individually optimized nutritional support program. Based strictly on the results from this test, the summary table below shows estimates of nutrient doses that may help to normalize nutrient-dependent metabolic functions. All amounts are adult doses that should be reduced for children according to body weight.

Customized Vitamin and Mineral Formulation

Nutrients listed in this section are normally contained in a multi-vitamin preparation. "Base" amounts may be used for insurance of health even when no abnormalities are found.

Customized preparations of the multi-vitamin/mineral formula shown below may be produced by compounding pharmacies. If such a product is made according to these specifications each dose should be thoroughly stirred into a few ounces of water or diluted fruit juice to fully release carbonates and avoid stomach bloating effects.

	Daily Amounts	
	Base	Units Added
Vitamin A	2500 IU	
B-Carotene	5500 IU	
Vitamin C	250 mg	2000 mg
Vitamin D	400 IU	200 IU
Vitamin E (Mixed Tocopherols)	100 IU	200 IU
Vitamin K*	100 mcg	
Thiamin (B1)	5 mg	5 mg
Riboflavin (B2)	5 mg	10 mg
Niacin (B3)	25 mg	20 mg
Pyridoxine (B6)	15 mg	80 mg
Folic Acid	400 mcg	
Vitamin B12	50 mcg	
Biotin	100 mcg	
Pantothenic Acid (B5)	25 mg	25 mg
Calcium	500 mg	500 mg
Iodine*	75 mcg	
Magnesium	250 mg	200 mg
Zinc	15 mg	15 mg
Selenium	100 mcg	100 mcg
Copper	1 mg	2 mg
Manganese	5 mg	2 mg
Chromium	200 mcg	200 mcg
Molybdenum*	25 mcg	
Boron*	1 mg	
Citric Acid*	200 mg	
Malic Acid*	200 mg	

* Nutrients with an asterisk are not modified based on the ION test results.

MM03

Other Items Indicated for individual supplementation

Various conditionally essential nutrients and other potentially beneficial interventions appear in this section only if relevant abnormalities are present. These ingredients are not included in the customized vitamin formula on the previous page.

Amino acids listed on this page result from functional markers of individual amino acid insufficiency and do not reflect amino acids measured in plasma.

Item	Amount
Potential to Benefit from Probiotics	Mild
Alpha-Ketoglutarate	700 mg
Carnitine	800 mg
Coenzyme Q10	30 mg
Fish Oil	6 gm
Lipoic Acid	100 mg
N-Acetylcysteine	750 mg
Need for Other Antioxidants	Moderate
Vanadium	200 mcg

Customized Free-Form Amino Acids

The table below shows the recommended custom amino acid formula based on the results of your laboratory test for fasting plasma amino acid levels. The Base Formula contains a constant percentage of the essential amino acids. To achieve your optimal formula, additional amounts of individual amino acids ("Grams Added") are added and the "Base Formula amount" is adjusted to assure the total appropriate amount of powder. The final percentage in your powder will be different from those in the table because of the addition of specific amounts of each essential amino acid.

Directions: Adults mix 1 and 1/2 measuring teaspoon (5g) into juice or water 2 times daily between meals as a dietary supplement, or as directed by a health care practitioner. Children under 12 years old: 1 teaspoon 1-2 times daily between meals.

Base Formula amount:	276 gm	% of Base	Grams Added	mg per day	
		5-Hydroxytryptophan*	0.00 % +	0	0
		Arginine	9.40 % +	0	865
		Histidine	10.10 % +	4	1063
		Isoleucine	9.40 % +	1	898
		Leucine	12.90 % +	4	1320
		Lysine	9.40 % +	0	865
		Methionine	7.70 % +	0	708
		Phenylalanine	12.90 % +	0	1187
		Taurine	0.00 % +	10	333
		Threonine	8.10 % +	0	745
		Valine	11.10 % +	5	1188
		Pyridoxal-5-phosphate	.3 % +	0	28
		Alpha-ketoglutaric acid	8.5 % +	0	782
		* ...or L-Tryptophan (Requires doctor's order)		5	167

Only the essential amino acids are included in this formula because from these all of the other amino acids can be formed, raising the levels of any that might be low. Pyridoxal-5-phosphate (an active form of B6) and alpha-ketoglutaric acid cofactor nutrients are key factors needed for the body's utilization of amino acids. The formula may be ordered as a powder that dissolves easily in beverages or may be added to foods such as applesauce. Other forms of supplemental dietary protein or amino acids may need to be restricted while using your customized formula. If enhanced energy levels prevent sleep, avoid bedtime use.

In addition to the above customized amino acid formula, this patient may benefit from further use of single amino acids, as evidenced by profiles other than plasma amino acids. See the category, "Other Indicated Nutrients" on your Supplement Recommendation Summary Page.