



Ordering Physician:

Metametrix

3425 Corporate Way

Duluth, GA 30096

Accession Number: **A1101170257**

Reference Number:

Patient: **Sample Report**

Age: 48 *Sex:* Female

Date of Birth: 02/05/1962

Date Collected: 1/16/11

Date Received: 1/17/11

Report Date: 1/18/11

Telephone: (770) 446-4583

Fax: (770) 441-2237

Reprinted: 3/2/11

Comment:

0290 Cardio/ION Profile

Chromium and manganese have been temporarily eliminated from the RBC element profiles. Other methods are being evaluated to assess these elements.

Cardiovascular Health Profile

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

Results

Reference Limits

Lipoprotein Factors

Total Cholesterol	200		<= 200	mg/dL
HDL Cholesterol	35		30 - 85	mg/dL
LDL Cholesterol (Direct)	145 H		<= 130	mg/dL
Triglycerides	140		35 - 160	mg/dL
Lipoprotein (a)	35		<= 37	mg/dL

Lipoprotein Ratios

LDL/HDL	4.1 H	<= 3.3
Total/HDL	5.7 H	<= 4.5

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

*Adapted from the Framingham Heart Study

Chronic Inflammatory Markers

Ferritin	69		6 - 159	ng/mL
Fibrinogen	415		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	

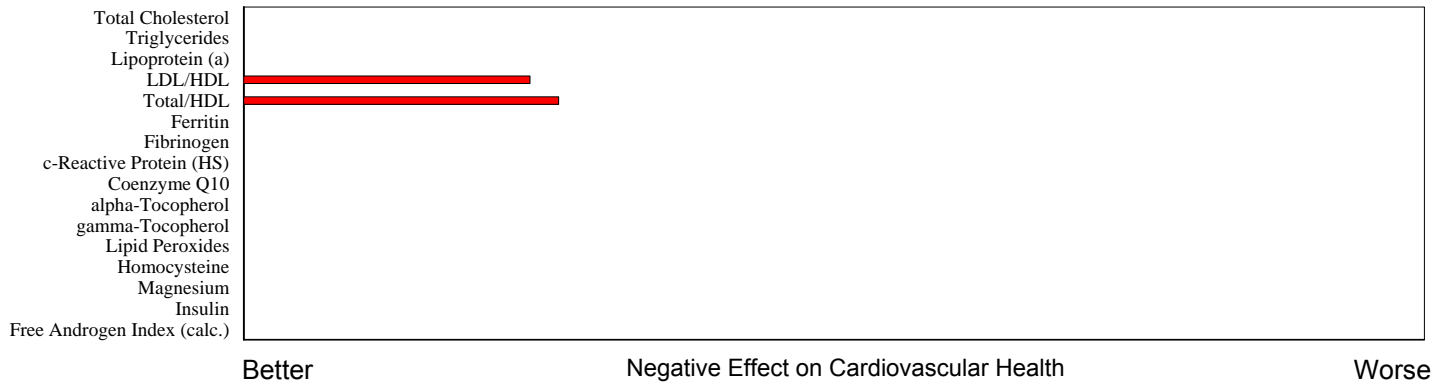
Other Important Indicators

Insulin	6.4		2.0 - 12.0	uIU/mL
Testosterone	50		<= 51	ng/dL
Sex Hormone Binding Globulin	65		18 - 114	nmol/L
Free Androgen Index (calc.)	2.7		<= 4.6	
Magnesium	52		36 - 70	ppm packed cells

Oxidant Stress Factors

		Quintile Ranking					95% Reference Interval	
		1st	2nd	3rd	4th	5th		
Homocysteine	7.2	4.0				10.0	3.0 - 14.0	nmol/mL
Coenzyme Q10	2.04	0.64				2.16	0.48 - 3.04	mg/L
alpha-Tocopherol	14.3	9.8				25.1	6.8 - 31.7	mg/L
gamma-Tocopherol	1.01	0.26				2.06	0.06 - 2.99	mg/L
Lipid Peroxides	0.46					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 = 3.3



- 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: Ages 13 and over.

Essential Amino Acids

Limiting Amino Acids

	Results umol/L	Quintile Ranking	95% Reference Interval
		1st 2nd 3rd 4th 5th	
1 Lysine	147	117 203	99 - 234
2 Methionine	23	16 26	14 - 30
3 Tryptophan	40	35 59	30 - 67

Branched Chain Amino Acids

4 Isoleucine	43	40 72	33 - 89
5 Leucine	83	80 137	68 - 161
6 Valine	135 L	143 240	123 - 282

Other Essential Amino Acids

7 Phenylalanine	40 L	43 64	39 - 74
8 Histidine	49	48 72	41 - 82
9 Threonine	108	76 151	63 - 181

Conditionally Essential Amino Acids

10 Arginine	53	48 96	37 - 114
11 Taurine	50	31 73	26 - 100
12 Glycine	264	162 348	136 - 430
13 Serine	104	66 115	57 - 133

Amino Acid Analysis - 20 Plasma

Methodology: ION Exchange HPLC

Ranges are for ages 13 and over.

Functional Categories

Vascular Function

	Results umol/L	Quintile Ranking	95% Reference Interval
		1st 2nd 3rd 4th 5th	
14 Arginine	53	48 96	37 - 114
15 Taurine	50	31 73	26 - 100

Neurotransmitters and Precursors

16 Phenylalanine	40 L	43 64	39 - 74
17 Tyrosine	44	38 70	29 - 80
18 Tryptophan	40	35 59	30 - 67
19 Glutamic Acid	46	29 95	23 - 136
20 Taurine	50	31 73	26 - 100

Sulfur Amino Acids (Glutathione - related)

21 Methionine	23	16 26	14 - 30
22 Taurine	50	31 73	26 - 100

Urea Cycle and Ammonia Detoxification

23 Arginine	53	48 96	37 - 114
24 Citrulline	29	20 38	15 - 44
25 Ornithine	45	32 81	23 - 109
26 Glutamine	500	397 585	338 - 630
27 Asparagine	31	30 49	26 - 56
28 Aspartic Acid	6.7	4.8 9.7	4.2 - 12.5

Ratios

29 Phenylalanine/Tyrosine	0.91	1.44	<= 1.44
30 Glutamic Acid/Glutamine	0.09	0.05 0.35	0.05 - 0.35
31 Tryptophan/LNAA*	0.098	0.061 0.127	0.061 - 0.127

*Large neutral amino acids (Leu+Ile+Val+Phe+Thr)

Ordering Physician:

Date Received: 1/17/2011

A1101170257

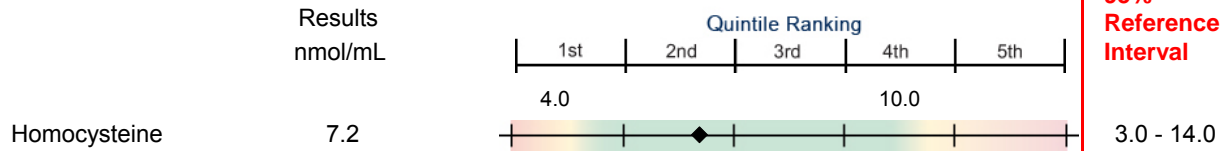
Metametrix

Date Reported: 1/18/2011

Sample Report

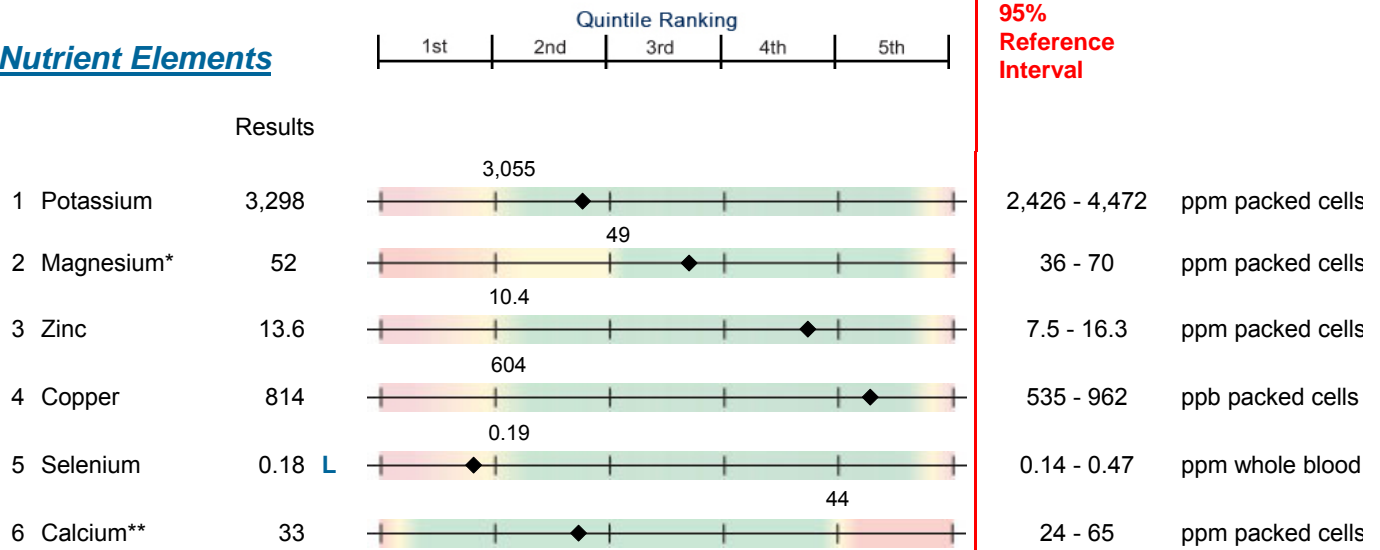
Homocysteine

Methodology: Competitive Immunoassay



Element - Erythrocytes and Whole Blood *Methodology: Inductively Coupled Plasma /Mass Spectroscopy*

Nutrient Elements



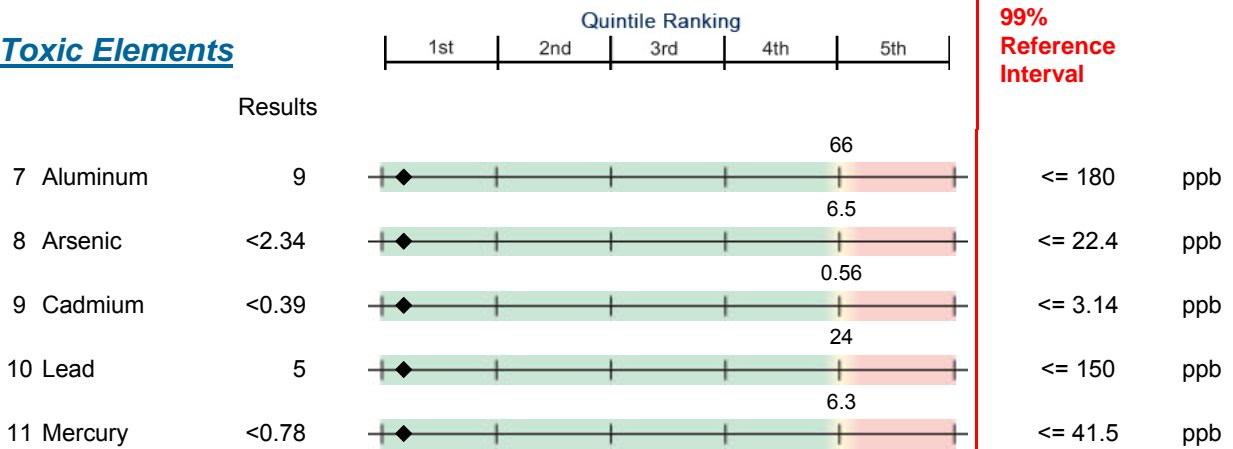
*The expanded abnormal range approximates the population at risk for magnesium insufficiency disorders. See: Johnson S, *Med Hypotheses*. Feb 2001;56(2):163-170.

**Relevant to membrane permeability, not nutritional status.

Element - Erythrocytes and Whole Blood

Methodology: Inductively Coupled Plasma /Mass Spectroscopy

Toxic Elements



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.
- ◆ Between 400 and 800 ppb serious health damage may be occurring, even if there are no symptoms.
- ◆ Between 250 and 400 ppb regular exposure is occurring. There is some evidence of potential physiological problems.
- ◆ Between 100 and 250 ppb exposure is occurring and may be building up in the body .

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 teh NHANES IV Mortality Study. *Environmental Health Perpect.* Oct 2006; 114(10):1538-1541.

CoEnzyme Q10 Plus Vitamin Panel - Serum

Methodology: High Performance Liquid Chromatography

	Results mg/L	Quintile Ranking	95% Reference Interval
		1st 2nd 3rd 4th 5th	
1 Coenzyme Q10	2.04	0.64 2.16	0.48 - 3.04
2 alpha-Tocopherol	14.3	9.8 25.1	6.8 - 31.7
3 gamma-Tocopherol	1.01	0.26 2.06	0.06 - 2.99
4 Vitamin A	0.70	0.36 0.74	0.29 - 1.05
5 β-Carotene	0.42	0.15 1.70	0.10 - 2.71

Lipid Peroxide - Serum

Methodology: High Performance Liquid Chromatography

	Results nmol/mL	Reference Interval
6 Lipid Peroxides	0.46	1.72 ≤ 2.60

8-Hydroxy-2 deoxyguanosine - Urine

Methodology: LC/Tandem Mass Spectroscopy, Colorimetric

Ranges are for ages 13 and over.

	Results ng/mg creatinine	Reference Interval
7 8-Hydroxy-2-deoxyguanosine	1.6	5.3 ≤ 7.6

Vitamin D - Serum

Methodology: Chemiluminescent immunoassay (CLIA)

	Results ng/mL	Reference Interval
8 25-Hydroxyvitamin D	54	19 33 12 - 83

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 wherein stores are depleted and PTH levels may begin to rise. Current research indicates the optimal range of vitamin D as 50-80 ng/mL. Extremely high levels of vitamin D may be toxic.

Current research points towards Vitamin K as an important nutrient affected by vitamin D status and supplementation. Both Vitamin D and K levels should be analyzed regularly.

- 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.
- Bischoff-Ferrari H, Giovannucci E, Willett W, Dietrich T, Dawson-Hughes B. Estimation of optimal serum concentrations of 25-hydroxyvitamin D for multiple health outcomes. *Am J Clin Nutr* 2006; 84:18-28.

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: Ages 13 and over.

Polyunsaturated Omega-3

- 1 Alpha Linolenic (18:3n3)
- 2 Eicosapentaenoic (20:5n3)
- 3 Docosapentaenoic (22:5n3)
- 4 Docosahexaenoic (22:6n3)

Polyunsaturated Omega-6

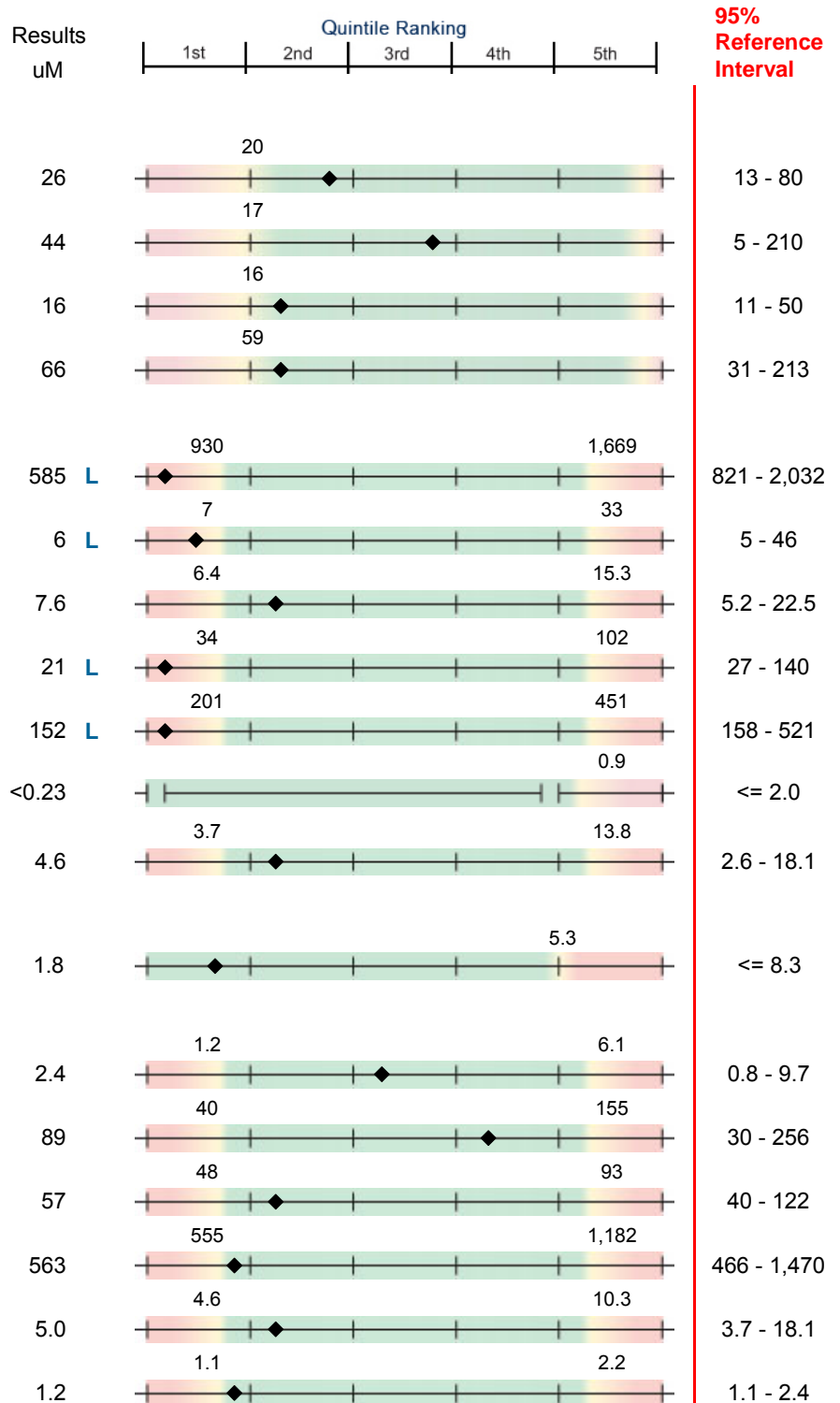
- 5 Linoleic (18:2n6)
- 6 Gamma Linolenic (18:3n6)
- 7 Eicosadienoic (20:2n6)
- 8 Dihomogamma Linolenic (20:3n6)
- 9 Arachidonic (20:4n6)
- 10 Docosadienoic (22:2n6)
- 11 Docosatetraenoic (22:4n6)

Polyunsaturated Omega-9

- 12 Mead (20:3n9)

Monounsaturated

- 13 Myristoleic (14:1n5)
- 14 Palmitoleic (16:1n7)
- 15 Vaccenic (18:1n7)
- 16 Oleic (18:1n9)
- 17 11-Eicosenoic (20:1n9)
- 18 Nervonic (24:1n9)



Fatty Acids - Plasma

Methodology: Capillary Gas Chromatography/Mass Spectrometry

Ranges: Ages 13 and over.



Organix™ Comprehensive - Urine

Methodology: LC/Tandem Mass Spectroscopy, Colorimetric

Results are expressed as mcg/mg creatinine.

Ranges: Ages 13 and over.



**95%
Reference
Interval**

Nutrient Markers

Results

Fatty Acid Metabolism

(Carnitine & B2)

Item	Value	Quintile	Reference Interval
1 Adipate	6.2 H	5th	<= 8.3
2 Suberate	1.3	4th	<= 3.2
3 Ethylmalonate	0.3	1st	<= 6.3

Carbohydrate Metabolism

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

Item	Value	Quintile	Reference Interval
4 Pyruvate	<DL*	5th	<= 6.4
5 L-Lactate	2 L	1st	3 - 46
6 β-Hydroxybutyrate	<DL*	5th	<= 9.9

Energy Production (Citric Acid Cycle)

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

Item	Value	Quintile	Reference Interval
7 Citrate	231	2nd	56 - 987
8 Cis-Aconitate	34	3rd	18 - 78
9 Isocitrate	68	3rd	39 - 143
10 α-Ketoglutarate	3.9	3rd	<= 35.0
11 Succinate	17.0 H	5th	<= 20.9
12 Fumarate	0.66 H	5th	<= 1.35
13 Malate	0.3	2nd	<= 3.1
14 Hydroxymethylglutarate	0.8	1st	<= 5.1

B-Complex Vitamin Markers

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

Item	Value	Quintile	Reference Interval
15 α-Ketoisovalerate	0.11	4th	<= 0.49
16 α-Ketoisocaproate	<DL*	5th	<= 0.52
17 α-Keto-β-Methylvalerate	<DL*	5th	<= 1.10
18 Xanthurenate	0.62 H	5th	<= 0.74
19 β-Hydroxyisovalerate	2.4	1st	<= 11.5

Methylation Cofactor Markers

(B12, Folate)

Item	Value	Quintile	Reference Interval
20 Methylmalonate	0.2	1st	<= 2.3
21 Formiminoglutamate	0.1	1st	<= 2.2

Organix™ Comprehensive - Urine

Methodology: LC/Tandem Mass Spectroscopy, Colorimetric

Ranges: Ages 13 and over.

Cell Regulation Markers

Neurotransmitter Metabolism Markers

(Tyrosine, Tryptophan, B6, antioxidants)

Item	Value	Unit	Quintile Ranking	95% Reference Interval
22 Vanilmandelate	1.3	L	1.8 - 3.9	1.3 - 4.9
23 Homovanillate	1.4	L	2.1 - 6.3	1.6 - 10.9
24 5-Hydroxyindoleacetate	2.0	L	2.1 - 5.6	1.6 - 9.8
25 Kynurenate	0.6		1.9	<= 2.7
26 Quinolinate	0.9		4.0	<= 5.8
27 Picolinate	2.8		8.0	2.8 - 13.5

Oxidative Damage and Antioxidant Markers

(Vitamin C and other antioxidants)

28 p-Hydroxyphenyllactate	0.14		0.79	<= 1.45
29 8-Hydroxy-2-deoxyguanosine *	1.6		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	0.079		0.084	<= 0.192
31 Orotate	<DL*		0.69	<= 1.01
32 Glucarate	0.7		6.3	<= 10.7
33 a-Hydroxybutyrate	0.2		0.3	<= 0.9
34 Pyroglutamate	31		59	28 - 88
35 Sulfate	2,004		958 - 2,347	690 - 2,988

Organix™ Comprehensive - Urine

Methodology: LC/Tandem Mass Spectroscopy, Colorimetric

Ranges: Ages 13 and over.

Compounds of Bacterial or Yeast/Fungal Origin

Bacterial - general

		Quintile Ranking						
		1st	2nd	3rd	4th	5th		
36	Benzoate	<DL*	0.6					<= 9.3
37	Hippurate	59	594					<= 1,150
38	Phenylacetate	<DL*	0.04					<= 0.15
39	Phenylpropionate	<DL*	0.4					<= 0.4
40	p-Hydroxybenzoate	0.03	0.99					<= 2.08
41	p-Hydroxyphenylacetate	16	19					<= 34
42	Indican	20	40					<= 74
43	Tricarballic acid	0.15	0.73					<= 1.41

L. acidophilus / general bacterial

44	D-Lactate	0.4	2.3					<= 7.0
----	-----------	-----	-----	--	--	--	--	--------

Clostridial species

45	3,4-Dihydroxyphenylpropionate	0.09	0.12					<= 0.12
----	-------------------------------	------	------	--	--	--	--	---------

Yeast / Fungal

46	D-Arabinitol	36	36					<= 73
----	--------------	----	----	--	--	--	--	-------

Creatinine = 199 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.

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
CoQ10	a-Tocopherol	Lipid Peroxide	8-OHdG
AA/EPA			



Low significance

High significance

Fatigue

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



Low significance

High significance

Metabolic Syndrome (Syndrome X)

Magnesium	Zinc	Palmitic	Stearic
AHB	BHB	BHiVal	



Low significance

High significance

Mental/Emotional

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



Low significance

High significance

Intestinal Bacterial Metabolites

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

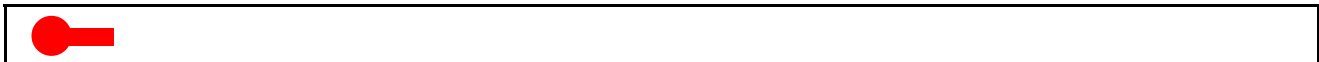


Low significance

High significance

Intestinal Yeasts / Fungal Metabolites

D-Arabinitol

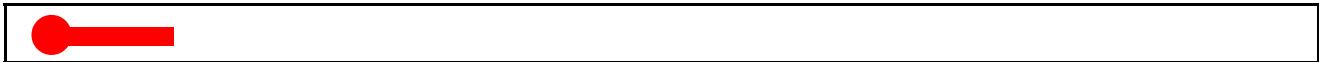


Low significance

High significance

Digestion/Absorption

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



Low significance

High significance

Toxic Exposure

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



Low significance

High significance

Detoxification Impairment

Methionine	Glycine	Serine	Taurine
Glutamine	Pyroglutamate	Sulfate	Benzoate



Low significance

High significance

Oxidative Stress/Antioxidant Insufficiency

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



Low significance

High significance

Mitochondrial Functional Impairment

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

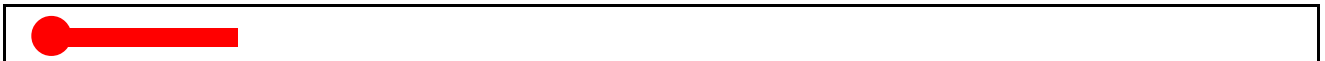


Low significance

High significance

Amino Acid Insufficiency

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



Low significance

High significance

Essential Fatty Acid Insufficiency

ALA	EPA	DHA	LA L X
GLA L	DGLA L X	Palmitoleic	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 **L** Kynurenate
 Quinolinate Indican



Low significance

High significance

Abbreviation	Analyte Name	Abbreviation	Analyte Name
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.

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.

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

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

MM02

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
Black Currant Oil	6 gm
Carnitine	400 mg
Coenzyme Q10	60 mg

Customized Free-Form Amino Acids

The table below shows a customized amino acid formula based on the results of your laboratory profile. The formula is optimized by adding amounts shown in the Grams Added column according to the relative positions of results found.

Directions: Adults mix 1 and 1/2 measuring teaspoon (5g) in juice or water 2 times daily between meals as a dietary supplement, or as directed by a health care provider. Children under 12 years old: 3/4 teaspoon 1-2 times daily between meals. Children under 5 years old: Use 1/4 teaspoon, 1-3 times daily; adjust for body weight.

	Grams Added	% of Formula	Active mg/day
L-Arginine HCl (80% active)	6	11.29	903
L-Histidine HCl (74% active)	5	12.46	922
L-Isoleucine	3	8.43	843
L-Leucine	4	11.53	1,153
L-Lysine HCl (80% active)	1	9.63	770
L-Methionine	0	6.09	609
L-Phenylalanine	9	13.20	1,320
Taurine	0	0.00	0
L-Threonine	0	6.40	640
L-Tryptophan	2	2.41	241
L-Valine	8	11.60	1,160
Pyridoxal-5-phosphate	0	0.27	24
Alpha-ketoglutaric acid	0	7.69	672

Total grams added	38
Base Formula amount	262
Total Weight	300

✓ <input type="checkbox"/>	L-5-Hydroxytryptophan	0	0.72	48
----------------------------	-----------------------	---	------	----

This formula is intended to optimize essential and conditionally essential amino acid intake. Other non-essential amino acids can be produced in human tissues. Pyridoxal-5-phosphate (an active form of vitamin B6) and alpha-ketoglutaric acid 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.

This formula is provided as a starting point that may guide decisions about medical treatment based on the test results. It is derived only from the laboratory results included in this report. Final recommendations should be based on consideration of the patient's medical history and current clinical condition.

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.