

 **metametrix**  
Clinical Laboratory  
3425 Corporate Way  
Duluth, GA 30096  
770.446.5483 Fax 770.441.2237

Ordering Physician:

Metametrix

1234 Main St

Anywhere, GA 30096

*Accession Number:* **A1202070019**

*Reference Number:*

*Patient:* **Sample Report**

*Age:* **50** *Sex:* **Female**

*Date of Birth:* **02/05/1962**

*Date Collected:* **2/6/12**

*Date Received:* **2/7/12**

*Report Date:* **2/13/12**

*Telephone:* **(770) 446-4583**

*Fax:* **(770) 441-2237**

*Reprinted:* **5/8/12**

*Comment:*

**0290 Cardio/ION Profile**

**Cardiovascular Health Profile**

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

Results

Reference Limits

Lipoprotein Factors

Total Cholesterol	251	H		< 200	mg/dL
HDL Cholesterol	58			>= 50	mg/dL
LDL Cholesterol (Direct)	195	H		< 130	mg/dL
Triglycerides	113			< 150	mg/dL
Lipoprotein (a)	11			<= 37	mg/dL

Lipoprotein Ratios

LDL/HDL	3.4	H	<= 3.3
Total/HDL	4.3		<= 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	100		6 - 159	ng/mL
Fibrinogen	375		175 - 425	mg/dL
c-Reactive Protein (HS)	2.5		<= 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	

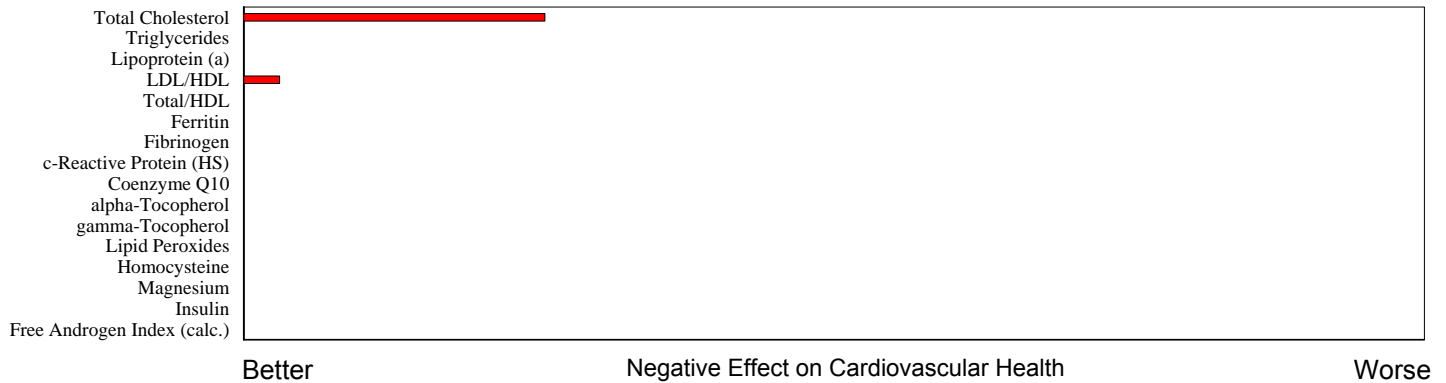
Other Important Indicators

Insulin	6.2		2.0 - 12.0	uIU/mL
Testosterone	44		<= 51	ng/dL
Sex Hormone Binding Globulin	50		18 - 114	nmol/L
Free Androgen Index (calc.)	3.1		<= 4.6	
Magnesium	52		34 - 63	ppm packed cells

Oxidant Stress Factors

		Quintile Ranking					95% Reference Interval	
		1st	2nd	3rd	4th	5th		
Homocysteine	5.1	4.0				10.0	3.0 - 14.0	nmol/mL
Coenzyme Q10	0.98	0.64				2.16	0.48 - 3.04	mg/L
alpha-Tocopherol	13.0	9.8				25.1	6.8 - 31.7	mg/L
gamma-Tocopherol	0.30	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 = 3.9**



- 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	165	117         203	99 - 234
2 Methionine	20	16         26	14 - 30
3 Tryptophan	44	35         59	30 - 67

**Branched Chain Amino Acids**

4 Isoleucine	58	40         72	33 - 89
5 Leucine	106	80         137	68 - 161
6 Valine	181	143         240	123 - 282

**Other Essential Amino Acids**

7 Phenylalanine	58	43         64	39 - 74
8 Histidine	60	48         72	41 - 82
9 Threonine	110	76         151	63 - 181

**Conditionally Essential Amino Acids**

10 Arginine	50	48         96	37 - 114
11 Taurine	44	31         73	26 - 100
12 Glycine	182	162         348	136 - 430
13 Serine	72	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	50	48         96	37 - 114
15 Taurine	44	31         73	26 - 100

**Neurotransmitters and Precursors**

16 Phenylalanine	58	43         64	39 - 74
17 Tyrosine	35 L	38         70	29 - 80
18 Tryptophan	44	35         59	30 - 67
19 Glutamic Acid	53	29         95	23 - 136
20 Taurine	44	31         73	26 - 100

**Sulfur Amino Acids (Glutathione - related)**

21 Methionine	20	16         26	14 - 30
22 Taurine	44	31         73	26 - 100

**Urea Cycle and Ammonia Detoxification**

23 Arginine	50	48         96	37 - 114
24 Citrulline	17 L	20         38	15 - 44
25 Ornithine	34	32         81	23 - 109
26 Glutamine	368 L	397         585	338 - 630
27 Asparagine	41	30         49	26 - 56
28 Aspartic Acid	7.3	4.8         9.7	4.2 - 12.5

**Ratios**

29 Phenylalanine/Tyrosine	1.66 H	1.44	<= 1.44
30 Glutamic Acid/Glutamine	0.14	0.06         0.21	0.05 - 0.35
31 Tryptophan/LNAA*	0.100	0.100         0.106	0.095 - 0.106

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

Ordering Physician:

Date Received: 2/7/2012

A1202070019

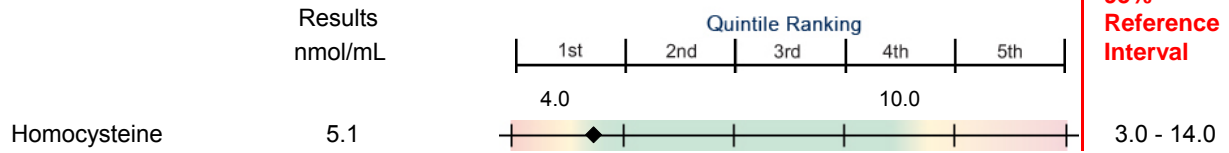
Metamatrix

Date Reported: 2/13/2012

Sample Report

### Homocysteine

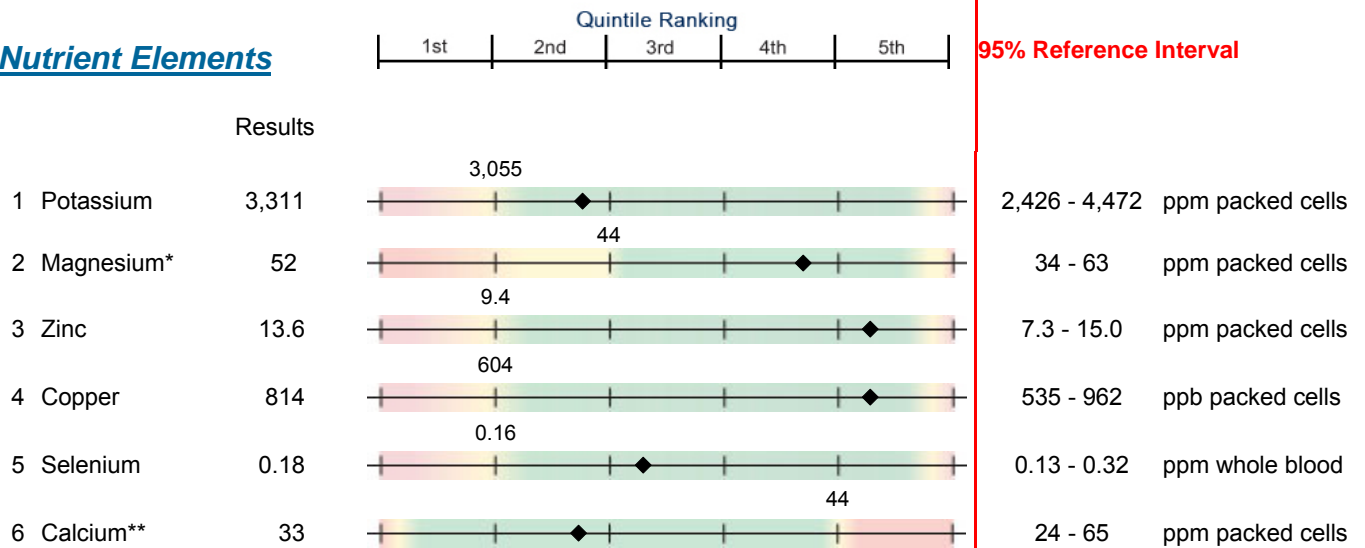
Methodology: Competitive Immunoassay



**Element - Erythrocytes and Whole Blood**

Methodology: Inductively Coupled Plasma /Mass Spectroscopy

**Nutrient Elements**



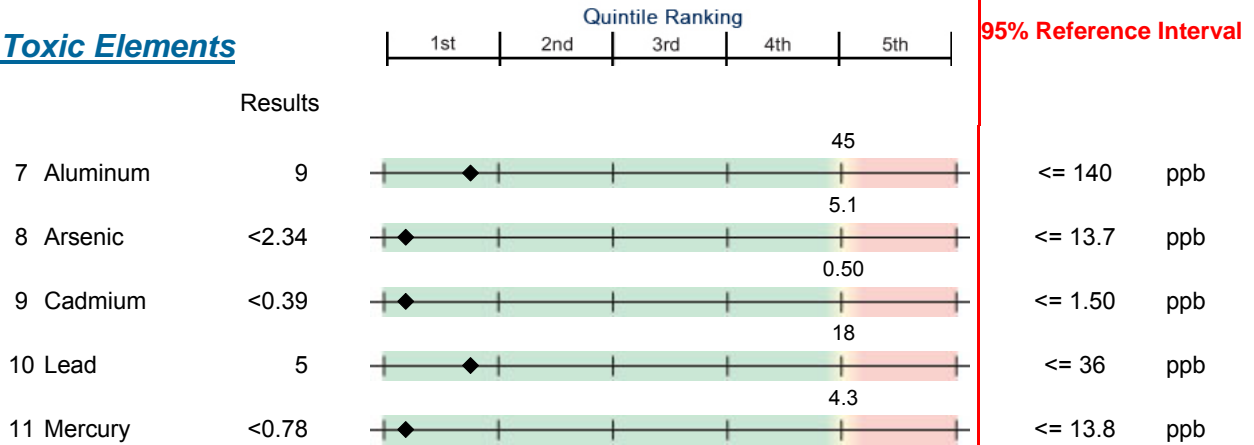
\*The expanded abnormal range approximates the population at risk for magnesium insufficiency disorders. See: Johnson S, *Med Hypotheses*. Feb 2001;56(2):163-170.

\*\*Relevant to membrane permeability, not nutritional status.

**Element - Erythrocytes and Whole Blood**

Methodology: Inductively Coupled Plasma /Mass Spectroscopy

**Toxic Elements**



Toxic metals are flagged high when the result is above the 95% Reference Interval. 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)

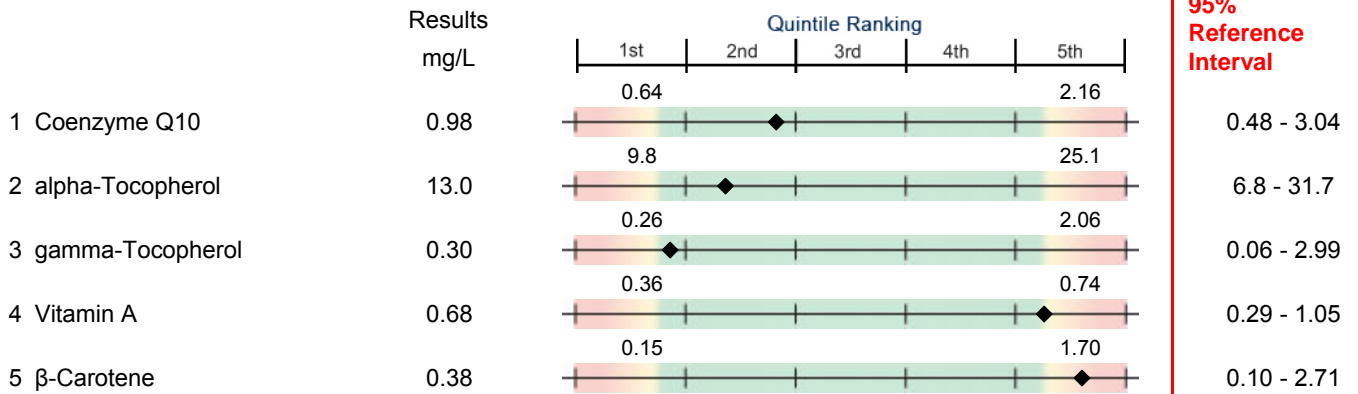
(1) Lead Exposure in Adults. A Guide for Health Care Providers, State of New York, Department of Public Health.

(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 the NHANES IV 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**

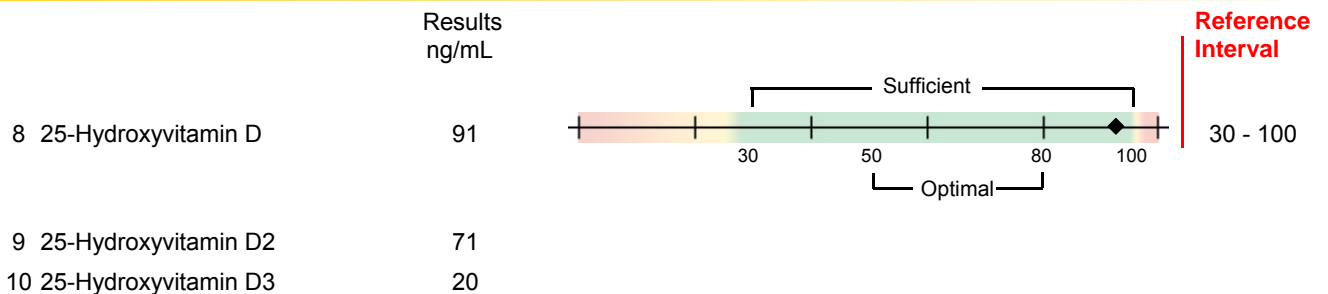
Methodology: LC/Tandem Mass Spectroscopy, Colorimetric

Ranges are for ages 13 and over.



**Vitamin D - Serum**

Methodology: LC/Tandem Mass Spectroscopy



Total 25-Hydroxyvitamin D is considered the best assessment of vitamin D status. The test reflects vitamin D from all sources (diet, supplements, and sun exposure). A 2011 Endocrine Society Clinical Practice Guideline suggested vitamin D deficiency be defined as < 20 ng/ml, insufficiency as 21-29 ng/ml, and sufficiency as 30-100 ng/ml.<sup>1</sup> The Vitamin D Council has proposed 50-80 ng/ml as optimal, and 100 ng/ml as an upper limit.<sup>2</sup> 25-Hydroxyvitamin D3 is from sun exposure, vitamin D-rich foods, or vitamin D3 supplements. 25-Hydroxyvitamin D2 is only from fortified foods or supplements.

- Holick MF, Binkley, NC, Bischoff-Ferrari, HA, et al. Evaluation, treatment, and prevention of vitamin D deficiency: an Endocrine Society clinical practice guideline. *J Clin Endocrinol Metab.* July 2011, 96(7):1911-1930.
- Vitamin D Council <http://www.vitamindcouncil.org>.

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**

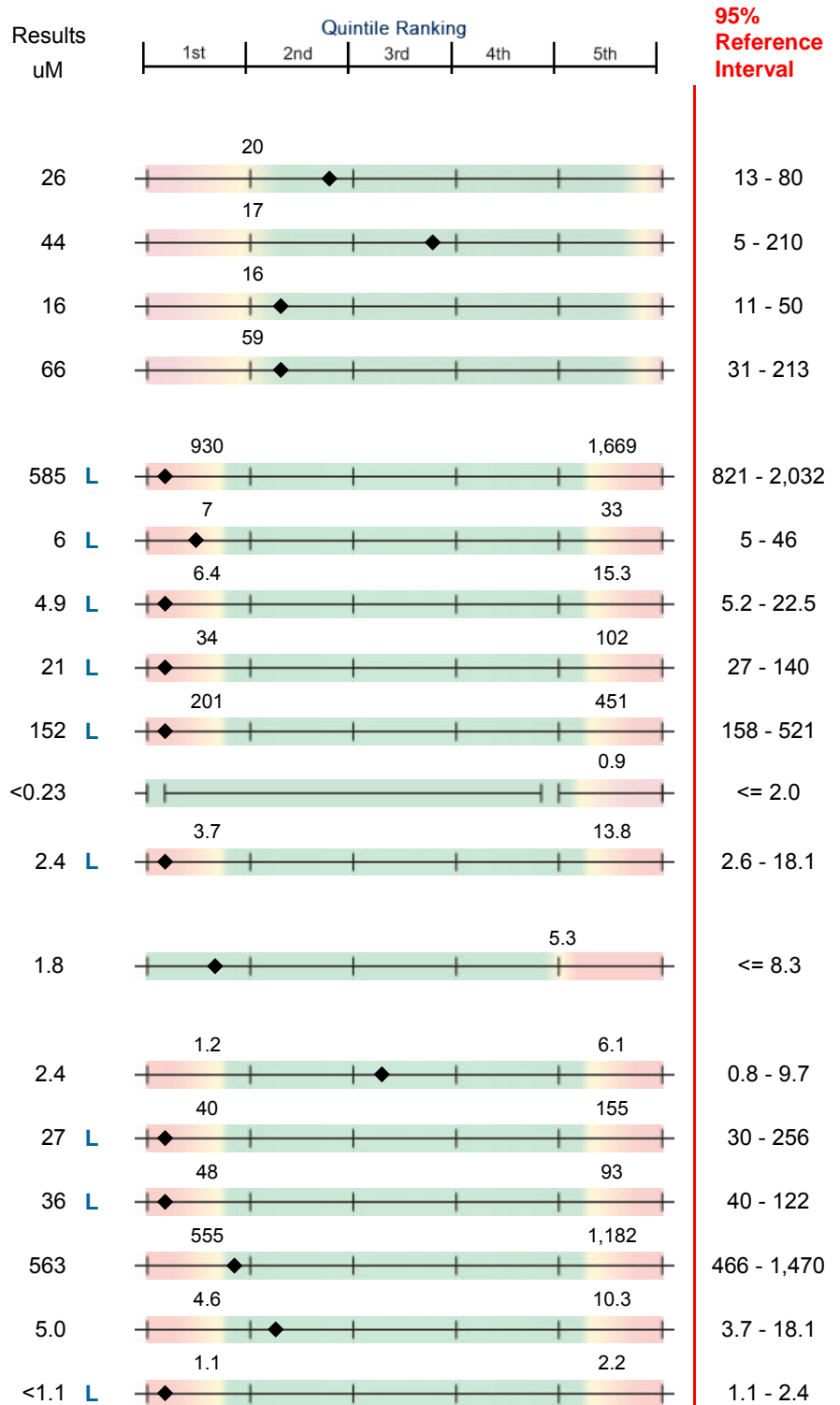
- 5 Linoleic (18:2n6)
- 6 Gamma Linolenic (18:3n6)
- 7 Eicosadienoic (20:2n6)
- 8 Dihomogamma Linolenic (20:3n6)
- 9 Arachidonic (20:4n6)
- 10 Docosadienoic (22:2n6)
- 11 Docosatetraenoic (22:4n6)

**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)



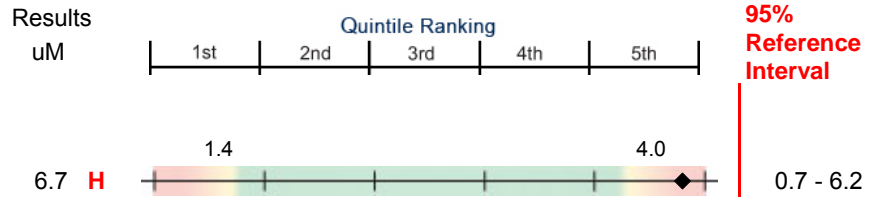
**Fatty Acids - Plasma**

Methodology: Capillary Gas Chromatography/Mass Spectrometry

Ranges: Ages 13 and over.

**Saturated**

19 Capric (10:0)



20 Lauric (12:0)



21 Myristic (14:0)



22 Palmitic (16:0)



23 Stearic (18:0)



24 Arachidic (20:0)



25 Behenic (22:0)



26 Lignoceric (24:0)



27 Hexacosanoic (26:0)

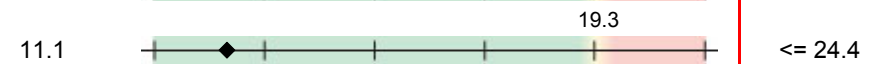


**Odd Chain**

28 Pentadecanoic (15:0)



29 Heptadecanoic (17:0)



30 Nonadecanoic (19:0)



31 Heneicosanoic (21:0)

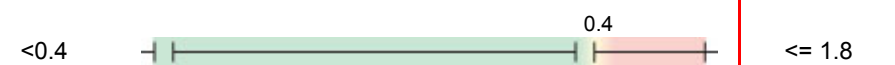


32 Tricosanoic (23:0)



**Trans**

33 Palmitelaidic (16:1n7t)



34 Total C:18 Trans



**Ratios**

35 LA/DGLA



36 EPA/DGLA



37 AA/EPA



38 Triene/Tetraene



**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 Ranking	Reference Interval
1 Adipate	6.0	4th	<= 11.1
2 Suberate	0.3	1st	<= 4.6
3 Ethylmalonate	0.4	1st	<= 6.3

**Carbohydrate Metabolism**

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

Item	Value	Quintile Ranking	Reference Interval
4 Pyruvate	<DL*	4th	<= 6.4
5 L-Lactate	3.3	2nd	1.6 - 57.1
6 β-Hydroxybutyrate	<DL*	4th	<= 9.9

**Energy Production (Citric Acid Cycle)**

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

Item	Value	Quintile Ranking	Reference Interval
7 Citrate	249	2nd	56 - 987
8 Cis-Aconitate	57 <b>H</b>	4th	18 - 78
9 Isocitrate	74	1st	39 - 143
10 α-Ketoglutarate	4.2	3rd	<= 35.0
11 Succinate	18.3 <b>H</b>	4th	<= 20.9
12 Fumarate	0.71 <b>H</b>	4th	<= 1.35
13 Malate	0.4	3rd	<= 3.1
14 Hydroxymethylglutarate	0.9	1st	<= 5.1

**B-Complex Vitamin Markers**

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

Item	Value	Quintile Ranking	Reference Interval
15 α-Ketoisovalerate	0.12	4th	<= 0.49
16 α-Ketoisocaproate	<DL*	1st	<= 0.52
17 α-Keto-β-Methylvalerate	<DL*	4th	<= 1.10
18 Xanthurenate	0.61 <b>H</b>	4th	<= 0.46
19 β-Hydroxyisovalerate	2.5	1st	<= 11.5

**Methylation Cofactor Markers**

(B12, Folate)

Item	Value	Quintile Ranking	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)

Marker	Value	Quintile Ranking	95% Reference Interval
22 Vanilmandelate	1.2 L	1.6 - 3.9	1.2 - 5.3
23 Homovanillate	1.1 L	1.9 - 5.7	1.4 - 7.6
24 5-Hydroxyindoleacetate	2.1	2.1 - 5.6	1.6 - 9.8
25 Kynurenate	0.4	1.0	<= 1.5
26 Quinolinate	1.0	4.0	<= 5.8
27 Picolinate	3.0	8.0	2.8 - 13.5

**Oxidative Damage and Antioxidant Markers**

(Vitamin C and other antioxidants)

28 p-Hydroxyphenyllactate	0.13	0.39	<= 0.66
29 8-Hydroxy-2-deoxyguanosine *	1.3	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	0.085 H	0.084	<= 0.192
31 Orotate	<DL*	0.69	<= 1.01
32 Glucarate	0.8	6.3	<= 10.7
33 a-Hydroxybutyrate	0.2	0.3	<= 0.9
34 Pyroglutamate	34	59	28 - 88
35 Sulfate	2,102	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	93	548					<= 1,070
38	Phenylacetate	<DL*	0.11					<= 0.18
39	Phenylpropionate	<DL*						<= 0.06
40	p-Hydroxybenzoate	0.2	1.1					<= 1.8
41	p-Hydroxyphenylacetate	<DL*	19					<= 34
42	Indican	10	64					<= 90
43	Tricarballoylate	0.16	0.73					<= 1.41

**L. acidophilus / general bacterial**

44	D-Lactate	0.6	1.9					<= 4.3
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**Clostridial species**

45	3,4-Dihydroxyphenylpropionate	<DL*						<= 0.05
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**Yeast / Fungal**

46	D-Arabinitol	39 <b>H</b>	36					<= 73
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Creatinine = 185 mg/dL

\* <DL = less than detection limit

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	Valine
Magnesium	CoQ10	Adipate	Suberate
AKG	Succinate <b>H</b>	Malate	Xanthurenate <b>H X</b>
MeMalonate	FIGLU		

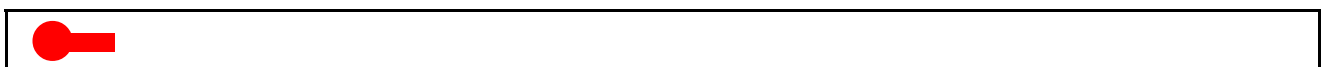


Low significance

High significance

## Metabolic Syndrome (Syndrome X)

Magnesium	Zinc	Palmitic	Stearic
AHB	BHB	BHiVal	

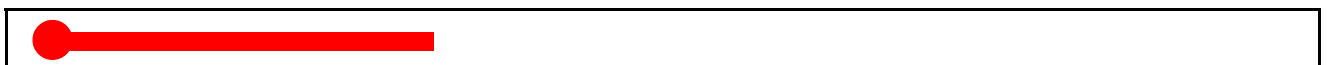


Low significance

High significance

## Mental/Emotional

Tryptophan	Tyrosine <b>L</b>	Magnesium	EPA
DHA	Xanthurenate <b>H X</b>	MeMalonate	FIGLU
VMA <b>L</b>	5-HIA		

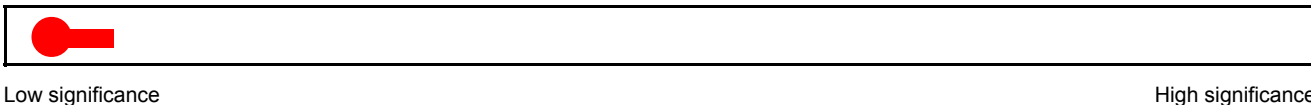


Low significance

High significance

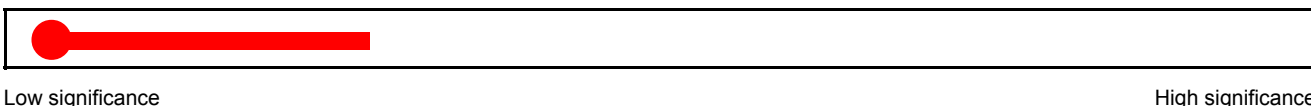
## Intestinal Bacterial Metabolites

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



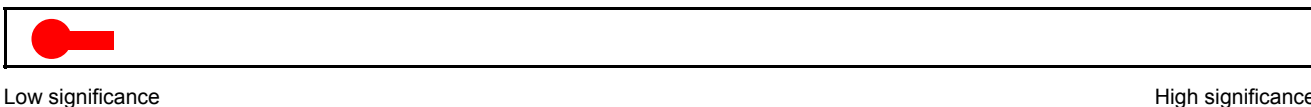
## Intestinal Yeasts / Fungal Metabolites

D-Arabinitol **H**



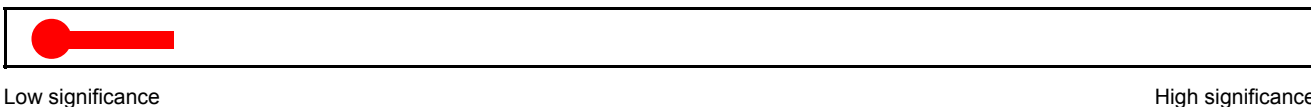
## Digestion/Absorption

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



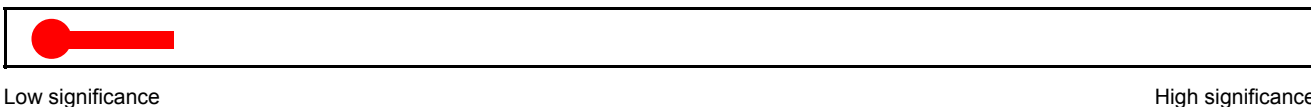
## Toxic Exposure

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



## Detoxification Impairment

Methionine	Glycine	Serine	Taurine
Glutamine <b>L</b>	Pyroglutamate	Sulfate	Benzoate



## Oxidative Stress/Antioxidant Insufficiency

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

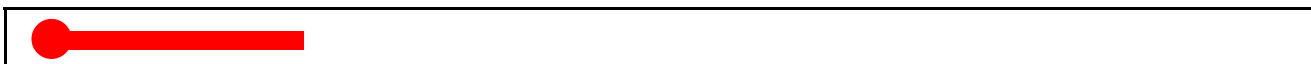


Low significance

High significance

## Mitochondrial Functional Impairment

Magnesium	CoQ10	Adipate	Suberate
Ethylmalonate	Pyruvate	L-Lactate	AHB
BHB	Succinate <b>H</b>	Fumarate <b>H</b>	Malate

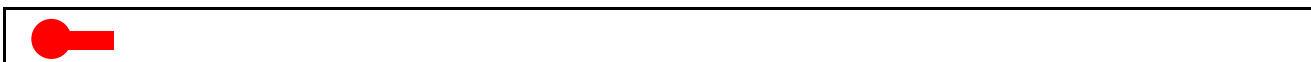


Low significance

High significance

## Amino Acid Insufficiency

Arginine	Histidine	Isoleucine	Leucine
Lysine	Methionine	Phenylalanine	Threonine
Tryptophan	Valine	AKG	Succinate <b>H</b>
Sulfate			

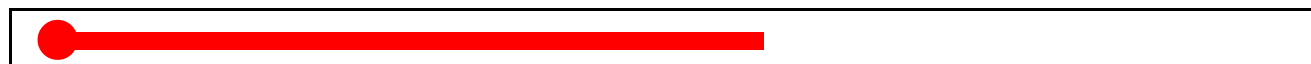


Low significance

High significance

## Essential Fatty Acid Insufficiency

AA	<b>L</b> X	ALA	EPA	DHA
LA	<b>L</b> X	GLA	DGLA	Palmitoleic
Triene/Tetraen				



Low significance

High significance

## Disordered Methyl Group (Single carbon) Transfer

Homocysteine	Pentadeca	Heptadeca	Nonadecanoic
Tricosanoic	Xanthurenate <b>H</b> X	MeMalonate	FIGLU
Kynurenate			



Low significance

High significance



## 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	600 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.

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**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.

<b>Item</b>	<b>Amount</b>
<b>Antifungals</b>	As needed
<b>Arginine</b>	500 mg
<b>Black Currant Oil</b>	5 gm
<b>Coenzyme Q10</b>	60 mg
<b>Glycine</b>	1000 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)	8	12.99	1,039
L-Histidine HCl (74% active)	0	11.99	887
L-Isoleucine	0	8.25	825
L-Leucine	0	11.33	1,133
L-Lysine HCl (80% active)	0	10.32	826
L-Methionine	0	6.76	676
L-Phenylalanine	0	11.33	1,133
Taurine	0	0.00	0
L-Threonine	0	7.11	711
L-Tryptophan	1	2.27	227
L-Valine	0	9.92	992
Pyridoxal-5-phosphate	0	0.27	26
Alpha-ketoglutaric acid	0	7.69	746

Total grams added	9
Base Formula amount	291
Total Weight	300

<input checked="" type="checkbox"/> <input type="checkbox"/>	L-5-Hydroxytryptophan	0	0.65	39
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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.