



**Test nr.** A1304040320  
**Patient Name** Sample Report  
**Patient nr.** G1234567  
**Age** 51 **Sex** Female  
**Collected** 4/3/13 **Received** 4/3/13  
**Tested** 4/3/13 **DOB** 02/05/1962

**Practitioner Name**  
**Practitioner Address**

## 0090 ION® Profile

### Amino Acids 20 Profile - Plasma

Methodology: ION Exchange HPLC

Ranges: Ages 13 and over.

#### Essential Amino Acids

##### Limiting Amino Acids



Testing performed by Metamatrix Inc. for Nordic Laboratories ApS.

Georgia Lab Lic. Code #067-007  
 CLIA ID# 11D0255349

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

Laboratory Director: Robert M. David, PhD

## Amino Acids 20 Profile - Plasma

Methodology: ION Exchange HPLC

Ranges: Ages 13 and over.

### Functional Categories

#### Vascular Function

Results	Quintile Ranking	95% Reference Interval
µmol/L	1st   2nd   3rd   4th   5th	
14 Arginine	62	37 - 114
15 Taurine	54	26 - 100

#### Neurotransmitters and Precursors

16 Phenylalanine	57	39 - 74
17 Tyrosine	57	29 - 80
18 Tryptophan	54	30 - 67
19 Glutamic Acid	41	23 - 136
20 Taurine	54	26 - 100

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

21 Methionine	20	14 - 30
22 Taurine	54	26 - 100

#### Urea Cycle and Ammonia Detoxification

23 Arginine	62	37 - 114
24 Citrulline	27	15 - 44
25 Ornithine	73	23 - 109
26 Glutamine	556	338 - 630
27 Asparagine	47	26 - 56
28 Aspartic Acid	6.2	4.2 - 12.5

#### Ratios

29 Phenylalanine/Tyrosine	1.00	<= 1.44
30 Glutamic Acid/Glutamine	0.07	0.05 - 0.35
31 Tryptophan/LNAA*	0.142 <b>H</b>	0.095 - 0.106

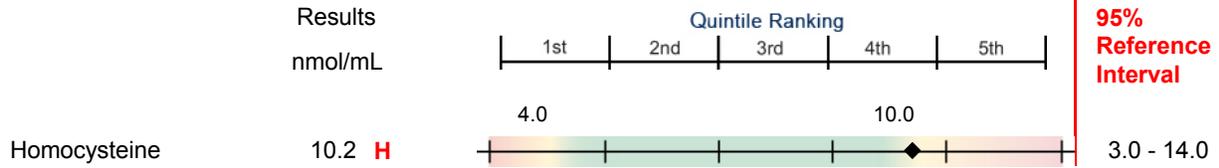
\*Large neutral amino acids (Leu+Ile+Val+Phe+Tyr)



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### Homocysteine Assay - Plasma

Methodology: Competitive Immunoassay



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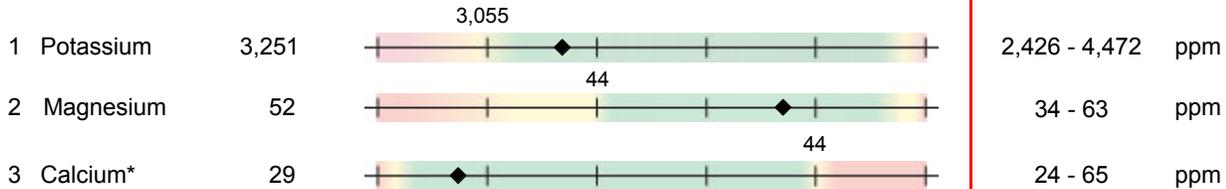
## Nutrient & Toxic Elements Profile - Blood

Methodology: Inductively Coupled Plasma /Mass Spectroscopy

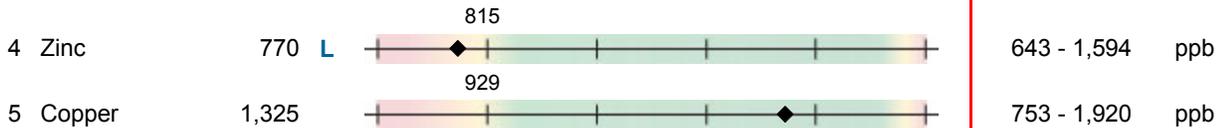


### Nutrient Elements

#### Erythrocytes (packed cells)



#### Plasma



#### Whole Blood



### Toxic Elements

#### Whole Blood



\*Relevant to membrane permeability, not nutritional status.

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 with urinary porphyrin or urine elements tests.

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### CoEnzyme Q10 Plus Vitamins Profile - Serum

Methodology: High Performance Liquid Chromatography

Ranges: Ages 13 and over.	Results	mg/L	Quintile Ranking	95% Reference Interval
			1st   2nd   3rd   4th   5th	
1 Coenzyme Q10	1.21		0.64         2.16	0.48 - 3.04
2 alpha-Tocopherol	19.8		9.8         25.1	6.8 - 31.7
3 gamma-Tocopherol	0.39		0.26         2.06	0.06 - 2.99
4 Vitamin A	0.51		0.36         0.74	0.29 - 1.05
5 β-Carotene	0.40		0.15         1.70	0.10 - 2.71

### Lipid Peroxide Assay - Serum

Methodology: High Performance Liquid Chromatography

Results	nmol/mL	Reference Interval
6 Lipid Peroxides	0.70	≤ 2.60

### DNA/Oxidative Stress Marker Assay - Urine

Methodology: LC/Tandem Mass Spectroscopy, Colorimetric

Ranges: Ages 13 and over.	Results	ng/mg creatinine	Reference Interval
7 8-Hydroxy-2-deoxyguanosine	3.5	5.3	≤ 7.6

### Vitamin D Profile - Serum

Methodology: LC/Tandem Mass Spectroscopy

Results	ng/mL	Reference Interval
8 25-Hydroxyvitamin D	35.7	30.0 - 100.0
9 25-Hydroxyvitamin D2	1.0	
10 25-Hydroxyvitamin D3	34.7	

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.

1. 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.

2. Vitamin D Council <http://www.vitaminDcouncil.org>.

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

\* <DL = less than detection limit

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## Fatty Acids Profile - Plasma

Methodology: Capillary Gas Chromatography/Mass Spectrometry

Ranges: Ages 13 and over.

Results  
µmol/L



**95%  
Reference  
Interval**

### Polyunsaturated Omega-3

Rank	Fatty Acid	Result (µmol/L)	Quintile Ranking	95% Reference Interval
1	Alpha Linolenic (18:3n3)	22	1st	13 - 80
2	Eicosapentaenoic (20:5n3)	5 L	1st	5 - 210
3	Docosapentaenoic (22:5n3)	8 L	1st	11 - 50
4	Docosahexaenoic (22:6n3)	24 L	1st	31 - 213

### Polyunsaturated Omega-6

5	Linoleic (18:2n6)	476 L	1st	821 - 2,032
6	Gamma Linolenic (18:3n6)	7	2nd	5 - 46
7	Eicosadienoic (20:2n6)	7.0	2nd	5.2 - 22.5
8	Dihomogamma Linolenic (20:3n6)	16 L	1st	27 - 140
9	Arachidonic (20:4n6)	150 L	1st	158 - 521
10	Docosadienoic (22:2n6)	<0.23	1st	<= 2.0
11	Docosatetraenoic (22:4n6)	7.6	2nd	2.6 - 18.1

### Polyunsaturated Omega-9

12	Mead (20:3n9)	1.3	1st	<= 8.3
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### Monounsaturated

13	Myristoleic (14:1n5)	2.6	2nd	0.8 - 9.7
14	Palmitoleic (16:1n7)	44	1st	30 - 256
15	Vaccenic (18:1n7)	55	1st	40 - 122
16	Oleic (18:1n9)	696	1st	466 - 1,470
17	11-Eicosenoic (20:1n9)	6.2	1st	3.7 - 18.1
18	Nervonic (24:1n9)	<1.1 L	1st	1.1 - 2.7

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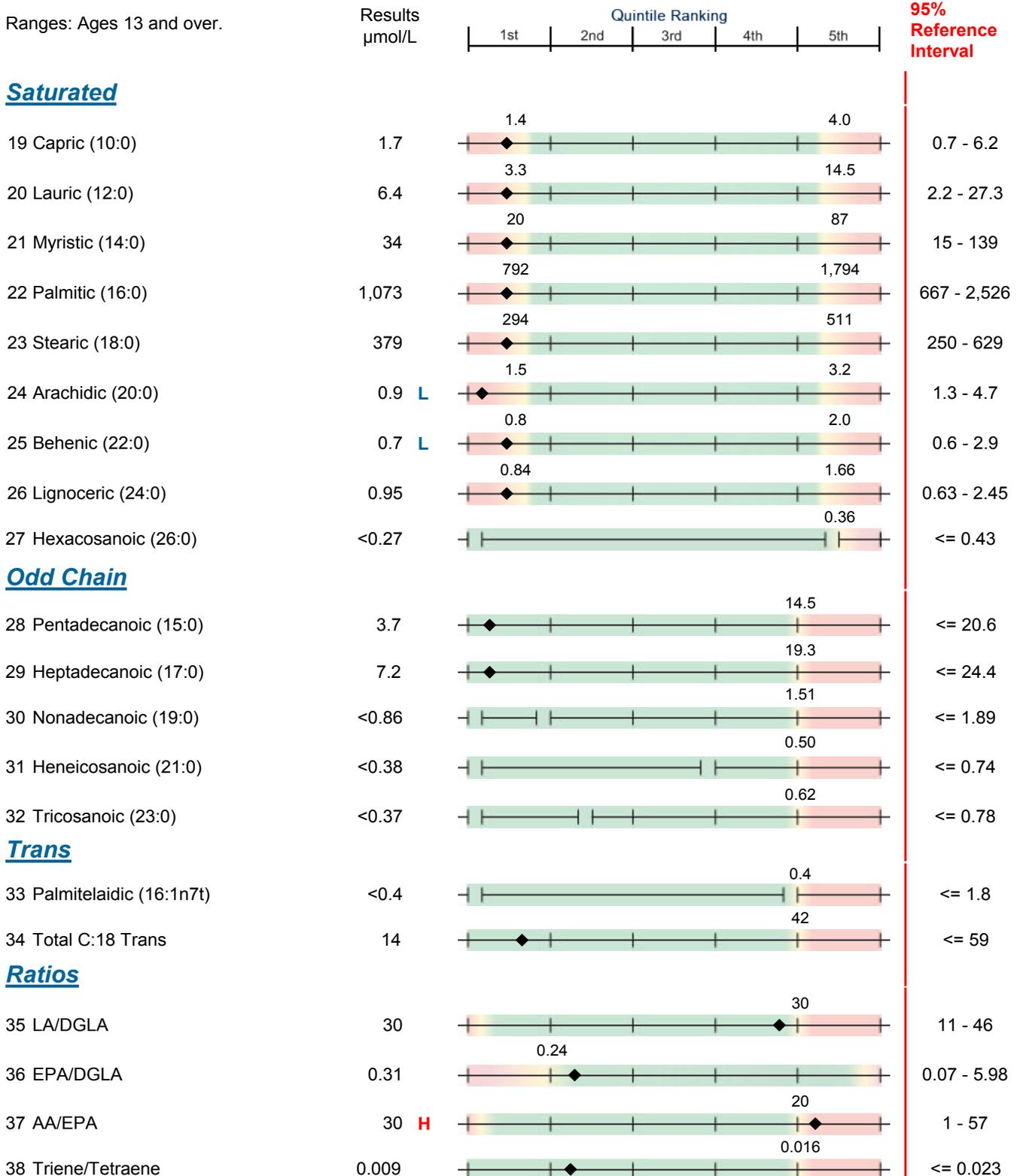
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## Organix® Comprehensive Profile - Urine

Methodology: LC/Tandem Mass Spectroscopy, Colorimetric

Ranges: Ages 13 and over.

**95%  
Reference  
Interval**



### Nutrient Markers

#### Fatty Acid Metabolism

##### (Carnitine & B2)

Item	Result	Quintile Ranking	95% Reference Interval
1 Adipate	7.3 <b>H</b>	6.2	<= 11.1
2 Suberate	2.8 <b>H</b>	2.1	<= 4.6
3 Ethylmalonate	2.6	3.6	<= 6.3

#### Carbohydrate Metabolism

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

Item	Result	Quintile Ranking	95% Reference Interval
4 Pyruvate	1.6	3.9	<= 6.4
5 L-Lactate	5.4	12.6	1.6 - 57.1
6 β-Hydroxybutyrate	<DL*	2.1	<= 9.9

#### Energy Production (Citric Acid Cycle)

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

Item	Result	Quintile Ranking	95% Reference Interval
7 Citrate	334	601	56 - 987
8 Cis-Aconitate	44	51	18 - 78
9 Isocitrate	90	98	39 - 143
10 α-Ketoglutarate	6.9	19.0	<= 35.0
11 Succinate	19.6 <b>H</b>	11.6	<= 20.9
12 Fumarate	0.86 <b>H</b>	0.59	<= 1.35
13 Malate	0.8	1.4	<= 3.1
14 Hydroxymethylglutarate	3.5	3.6	<= 5.1

#### B-Complex Vitamin Markers

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

Item	Result	Quintile Ranking	95% Reference Interval
15 α-Ketoisovalerate	0.16	0.25	<= 0.49
16 α-Ketoisocaproate	0.23	0.34	<= 0.52
17 α-Keto-β-Methylvalerate	<DL*	0.38	<= 1.10
18 Xanthurenate	1.03 <b>H</b>	0.34	<= 0.46
19 β-Hydroxyisovalerate	4.4	7.6	<= 11.5

#### Methylation Cofactor Markers

##### (B12, Folate)

Item	Result	Quintile Ranking	95% Reference Interval
20 Methylmalonate	0.4	1.7	<= 2.3
21 Formiminoglutamate	0.1	1.2	<= 2.2

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## Organix® Comprehensive Profile - Urine

Methodology: LC/Tandem Mass Spectroscopy, Colorimetric

Ranges: Ages 13 and over.



95%  
Reference  
Interval

### Cell Regulation Markers

#### Neurotransmitter Metabolism Markers

(Tyrosine, Tryptophan, B6, antioxidants)

Test nr.	Result	Flag	Quintile Ranking	95% Reference Interval	
22	Vanilmandelate	5.0	H	1.6 - 3.9	1.2 - 5.3
23	Homovanillate	7.5	H	1.9 - 5.7	1.4 - 7.6
24	5-Hydroxyindoleacetate	0.9	L	2.1 - 5.6	1.6 - 9.8
25	Kynurenate	1.4	H	1.0 - 4.0	<= 1.5
26	Quinolinat	3.3		4.0 - 8.0	<= 5.8
27	Picolinate	3.5		8.0	2.8 - 13.5

#### Oxidative Damage and Antioxidant Markers

(Vitamin C and other antioxidants)

28	p-Hydroxyphenyllactate	1.15	H	0.39	<= 0.66
29	8-Hydroxy-2-deoxyguanosine	3.5		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	0.016		0.084	<= 0.192
31	Orotate	0.22		0.69	<= 1.01
32	Glucarate	5.5		6.3	<= 10.7
33	a-Hydroxybutyrate	0.2		0.3	<= 0.9
34	Pyroglutamate	12	L	59	28 - 88
35	Sulfate	3,492	H	958 - 2,347	690 - 2,988

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Methodology: LC/Tandem Mass Spectroscopy, Colorimetric

Ranges: Ages 13 and over.



**95% Reference Interval**

**Compounds of Bacterial or Yeast/Fungal Origin**

**Bacterial - general**

Compound	Result	Quintile Ranking	95% Reference Interval
36 Benzoate	<DL*	0.6	<= 9.3
37 Hippurate	551 H	548	<= 1,070
38 Phenylacetate	<DL*	0.11	<= 0.18
39 Phenylpropionate	<DL*		<= 0.06
40 p-Hydroxybenzoate	<DL*	1.1	<= 1.8
41 p-Hydroxyphenylacetate	52 H	19	<= 34
42 Indican	60	64	<= 90
43 Tricarballylate	0.44	0.73	<= 1.41

**L. acidophilus / general bacterial**

44 D-Lactate	1.0	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	56 H	36	<= 73
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Creatinine = 159 mg/dL

\* <DL = less than detection limit

\*\* >LIN = greater than linearity limit



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## ION Analyte Pattern Analysis

A1304040320  
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	H	Calcium	Magnesium
CoQ10	a-Tocopherol		g-Tocopherol	Lipid Peroxide
8-OHdG	AA/EPA	H		



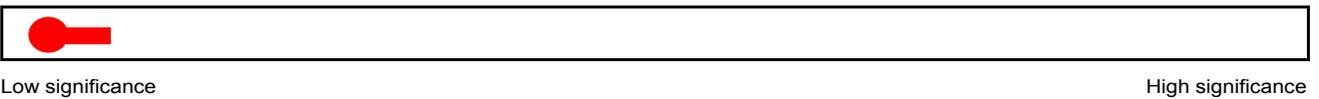
### Fatigue

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



### Metabolic Syndrome (Syndrome X)

Magnesium	Palmitic	Stearic	AHB
BHB	BHiVal		



### Mental/Emotional

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



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## ION Analyte Pattern Analysis

A1304040320

Sample Report

### 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 H



Low significance

High significance

### Digestion/Absorption

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



Low significance

High significance

### Toxic Exposure

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



Low significance

High significance

### Detoxification Impairment

Methionine	Glycine	Serine	Taurine
Glutamine	Pyroglutamate X L	Sulfate	Benzoate



Low significance

High significance

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## ION Analyte Pattern Analysis

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Sample Report

### Oxidative Stress/Antioxidant Insufficiency

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



Low significance

High significance

### Mitochondrial Functional Impairment

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

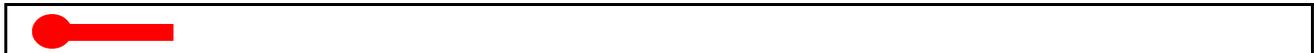


Low significance

High significance

### Amino Acid Insufficiency

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

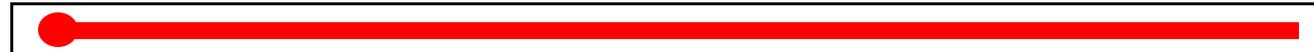


Low significance

High significance

### Essential Fatty Acid Insufficiency

AA X L	ALA	EPA L	DHA X L
LA X L	GLA	DGLA X L	Palmitoleic
Triene/Tetraene			



Low significance

High significance

### Disordered Methyl Group (Single carbon) Transfer

Homocysteine H	Pentadeca	Heptadeca	Nonadecanoic
Tricosanoic	Xanthurenate X H	MeMalonate	FIGLU
Kynurenate H			



Low significance

High significance

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## ION Analyte Pattern Analysis

A1304040320

Sample Report

### Disordered Tryptophan Metabolism

Tryptophan Xanthurenate **X** H 5-HIA **X** L Kynurenate H  
 Quinolinolate 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
aKbMeVal	a-Keto-β-Methylvalerate	HVA	Homovanillate
aKiCap	a-Ketoisocaproate	HMG	Hydroxymethylglutarate
aKiVal	a-Ketoisovalerate	LA	Linoleic (18:2n6)
AKG	a-Ketoglutarate	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	pHPAc	p-Hydroxyphenylacetate
CoQ10	Coenzyme Q10	pHPPhLac	p-Hydroxyphenyllactate
DGLA	Dihomogamma Linolenic (20:3n6)	Total C:18	Total c:18 Trans
DHA	Docosahexanoic (22:6n3)	Tricarb	Tricarballylate
3,4-DHPP	3,4-Dihydroxyphenylpropionate	Triene/Tetraene	Mead/Arachidonic Ratio
EPA	Eicosapentaenoic (20:5n3)	VMA	Vanilmandelate

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## 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 to ensure 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	2000 mg
Vitamin D	400 IU	
Vitamin E (Mixed Tocopherols)	100 IU	400 IU
Vitamin K*	100 mcg	
Thiamin (B1)	5 mg	
Riboflavin (B2)	5 mg	10 mg
Niacin (B3)	25 mg	
Pyridoxine (B6)	15 mg	100 mg
Folic Acid (or 5-Methyl-THF)	400 mcg	500 mcg
Vitamin B12	50 mcg	800 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	15 mg
Selenium	100 mcg	100 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.

MM03

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Florida Clinical Lab Lic. #800008124

Laboratory Director: Robert M. David, PhD



<b>Test nr.</b>	<b>A1304040320</b>		
<b>Patient Name</b>	Sample Report	<b>Practitioner Name</b>	
<b>Patient nr.</b>	G1234567	<b>Practitioner Address</b>	
<b>Age</b>	51	<b>Sex</b>	Female
<b>Collected</b>	4/3/13	<b>Received</b>	4/3/13
<b>Tested</b>	4/3/13	<b>DOB</b>	02/05/1962

### 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
<b>Potential to Benefit from Probiotics</b>	Low
<b>Antifungals</b>	As needed
<b>Black Currant Oil</b>	4 gm
<b>Carnitine</b>	800 mg
<b>Coenzyme Q10</b>	60 mg
<b>Fish Oil</b>	6 gm
<b>Need for Other Antioxidants</b>	Moderate

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<b>Patient nr.</b>	G1234567	<b>Practitioner Address</b>
<b>Age</b>	51	<b>Sex</b>
<b>Collected</b>	4/3/13	Female
<b>Tested</b>	4/3/13	<b>Received</b>
		4/3/13
		<b>DOB</b>
		02/05/1962

## 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)	2	10.46	836	
L-Histidine HCl (74% active)	1	11.70	866	
L-Isoleucine	3	8.83	883	
L-Leucine	4	12.08	1,208	
L-Lysine HCl (80% active)	5	11.46	916	
L-Methionine	0	6.41	641	
L-Phenylalanine	0	10.75	1,075	
Taurine	0	0.00	0	
L-Threonine	3	7.74	774	
L-Tryptophan	0	1.84	184	
L-Valine	6	11.41	1,141	
Pyridoxal-5-phosphate	0	0.27	25	
Alpha-ketoglutaric acid	0	7.69	707	
<b>Total grams added</b>	<b>24</b>			
<b>Base Formula amount</b>	<b>276</b>			
<b>Total Weight</b>	<b>300</b>			
<input checked="" type="checkbox"/> <input type="checkbox"/>	L-5-Hydroxytryptophan	0	0.61	37

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.

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