



Accession Number: **A1304040319**

Order Number:

Reference Number:

Patient: Child Doe

Age: 11 Sex: Female

Date of Birth: 07/04/2001

Date Collected: 4/3/13

Date Received: 4/4/13

Report Date: 4/5/13

Telephone: 7704464583

Fax: 7704412237

Reprinted: 7/17/13

Comment:

Ordering Physician:

John Doe MD

1234 Main St.

Anywhere, GA 30096

**0090 ION® Profile**

## Amino Acids 20 Profile - Plasma

Methodology: ION Exchange HPLC

Ranges: Ages 12 and under.

### Essential Amino Acids

#### Limiting Amino Acids

		Results μmol/L	Quintile Ranking					95% Reference Interval
			1st	2nd	3rd	4th	5th	
1	Lysine	164	91				164	70 - 189
2	Methionine	22	14				25	11 - 32
3	Tryptophan	46	30				55	23 - 65

#### Branched Chain Amino Acids

4	Isoleucine	74	H	34				66	27 - 83
5	Leucine	123		66				123	54 - 147
6	Valine	257	H	125				218	107 - 254

#### Other Essential Amino Acids

7	Phenylalanine	62	H	38				59	33 - 73
8	Histidine	60		46				70	39 - 82
9	Threonine	137	H	62				128	47 - 154

#### Conditionally Essential Amino Acids

10	Arginine	76		44				93	31 - 110
11	Taurine	62		33				80	27 - 112
12	Glycine	256		162				315	122 - 400
13	Serine	127		78				128	64 - 153

## Amino Acids 20 Profile - Plasma

Methodology: ION Exchange HPLC

Ranges: Ages 12 and under.

### Functional Categories

#### Vascular Function

	Results μmol/L	Quintile Ranking	95% Reference Interval
		1st   2nd   3rd   4th   5th	
14 Arginine	76	44         93	31 - 110
15 Taurine	62	33         80	27 - 112

#### Neurotransmitters and Precursors

16 Phenylalanine	62	H 38         59	33 - 73
17 Tyrosine	47	35         70	30 - 87
18 Tryptophan	46	30         55	23 - 65
19 Glutamic Acid	69	30         90	24 - 162
20 Taurine	62	33         80	27 - 112

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

21 Methionine	22	14         25	11 - 32
22 Taurine	62	33         80	27 - 112

#### Urea Cycle and Ammonia Detoxification

23 Arginine	76	44         93	31 - 110
24 Citrulline	29	18         34	12 - 40
25 Ornithine	47	27         74	21 - 104
26 Glutamine	494	361         584	292 - 629
27 Asparagine	45	26         45	21 - 55
28 Aspartic Acid	6.1	5.1         10.9	4.0 - 13.2

#### Ratios

29 Phenylalanine/Tyrosine	1.32	1.38	<= 1.38
30 Glutamic Acid/Glutamine	0.14	0.06         0.23	0.05 - 0.47
31 Tryptophan/LNAA*	0.082	L 0.100         0.109	0.090 - 0.109

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

Ordering Physician:

John Doe MD

Date Received: 4/4/2013

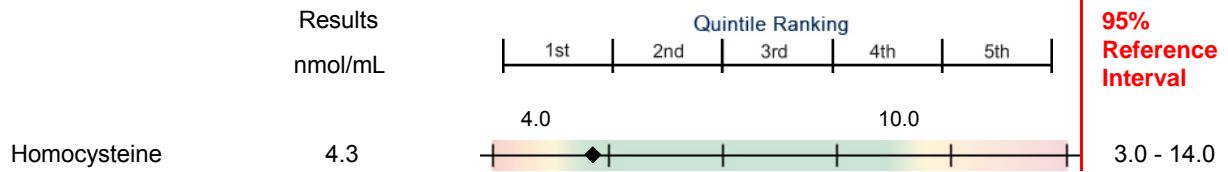
Date Reported: 4/5/2013

A1304040319

Child Doe

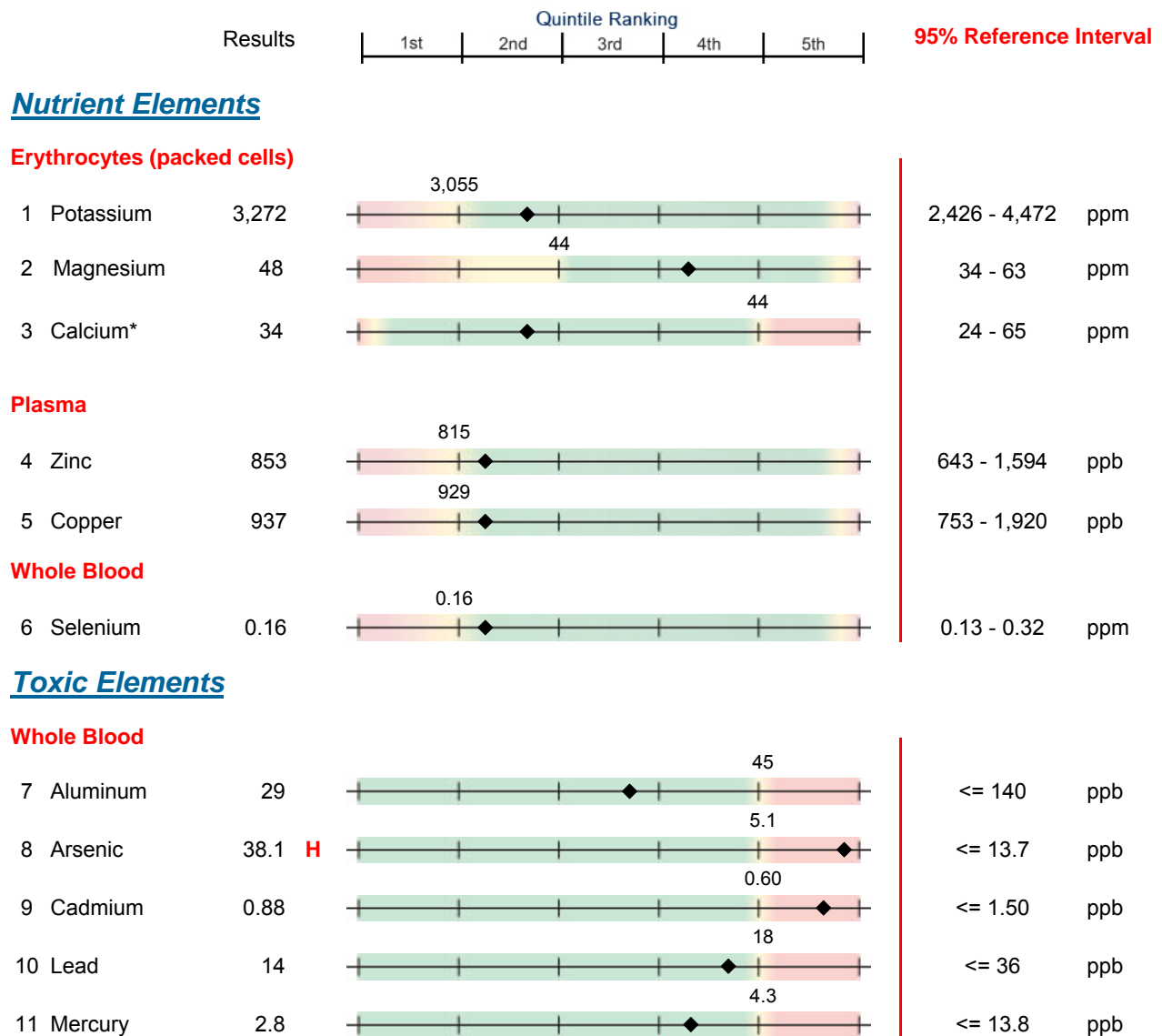
## Homocysteine Assay - Plasma

Methodology: Competitive Immunoassay



## Nutrient & Toxic Elements Profile - Blood

Methodology: Inductively Coupled Plasma /Mass Spectroscopy



\*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.

Ordering Physician:  
John Doe MD

Date Received: 4/4/2013  
Date Reported: 4/5/2013

A1304040319  
Child Doe

### CoEnzyme Q10 Plus Vitamins Profile - Serum

Methodology: High Performance Liquid Chromatography

Ranges: Ages 12 and under.

	Results mg/L	Quintile Ranking					95% Reference Interval
		1st	2nd	3rd	4th	5th	
1 Coenzyme Q10	1.07	0.49				2.02	0.26 - 4.33
2 alpha-Tocopherol	10.3	5.5				18.9	3.5 - 24.4
3 gamma-Tocopherol	1.62 H	0.06				1.49	0.02 - 2.20
4 Vitamin A	0.60 H	0.25				0.51	0.21 - 0.90
5 β-Carotene	0.07	0.07				1.30	0.03 - 2.01

### Lipid Peroxide Assay - Serum

Methodology: High Performance Liquid Chromatography

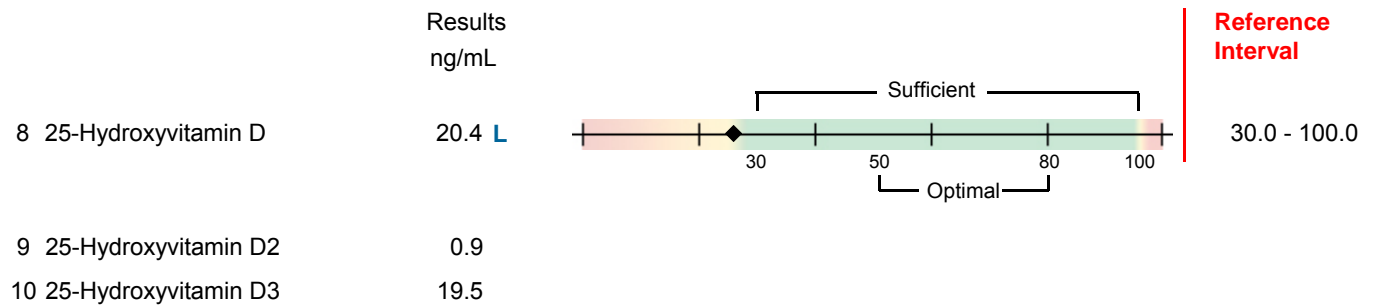
	Results nmol/mL		
6 Lipid Peroxides	1.25	1.72	<= 2.60

### DNA/Oxidative Stress Marker Assay - Urine

Methodology: LC/Tandem Mass Spectroscopy, Colorimetric

Ranges: Ages 12 and under.

	Results ng/mg creatinine		
7 8-Hydroxy-2-deoxyguanosine	1.3	5.9	<= 8.7



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

## Fatty Acids Profile - Plasma

Methodology: Capillary Gas Chromatography/Mass Spectrometry

Ranges: Ages 12 and under.

Results  
μmol/L

Quintile Ranking

95%  
Reference  
Interval

### Polyunsaturated Omega-3

1	Alpha Linolenic (18:3n3)	13 L	18		12 - 82
2	Eicosapentaenoic (20:5n3)	23	7		4 - 165
3	Docosapentaenoic (22:5n3)	14	12		6 - 43
4	Docosahexaenoic (22:6n3)	55	39		24 - 191

### Polyunsaturated Omega-6

5	Linoleic (18:2n6)	655 L	812	1,560	773 - 1,786
6	Gamma Linolenic (18:3n6)	13	6	28	4 - 47
7	Eicosadienoic (20:2n6)	6.3	6.1	14.4	4.7 - 17.9
8	Dihomogamma Linolenic (20:3n6)	32	30	85	26 - 100
9	Arachidonic (20:4n6)	342	158	375	122 - 532
10	Docosadienoic (22:2n6)	<0.23		0.6	<= 1.9
11	Docosatetraenoic (22:4n6)	7.4	4.3	12.9	1.2 - 15.3

### Polyunsaturated Omega-9

12	Mead (20:3n9)	2.8		4.5	<= 7.7
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### Monounsaturated

13	Myristoleic (14:1n5)	3.9	1.1	4.5	0.8 - 11.3
14	Palmitoleic (16:1n7)	48	38	102	22 - 169
15	Vaccenic (18:1n7)	36 L	40	72	33 - 80
16	Oleic (18:1n9)	893	510	1,020	416 - 1,271
17	11-Eicosenoic (20:1n9)	4.5	4.3	10.9	3.3 - 13.3
18	Nervonic (24:1n9)	<1.1		1.9	<= 2.1



## Fatty Acids Profile - Plasma

Methodology: Capillary Gas Chromatography/Mass Spectrometry

Ranges: Ages 12 and under.

Results  
μmol/L

Quintile Ranking

95%  
Reference  
Interval

### Saturated

		1st	2nd	3rd	4th	5th	
19 Capric (10:0)	1.8	1.6				8.8	0.7 - 68.8
20 Lauric (12:0)	15.5	3.4				22.9	2.1 - 52.5
21 Myristic (14:0)	61	20				61	15 - 97
22 Palmitic (16:0)	1,294 H	674				1,255	644 - 1,717
23 Stearic (18:0)	406	295				470	260 - 566
24 Arachidic (20:0)	1.5 L	1.6				4.6	1.5 - 6.7
25 Behenic (22:0)	0.6 L	0.8				2.2	0.6 - 6.2
26 Lignoceric (24:0)	0.76 L	0.77				1.91	0.68 - 3.92
27 Hexacosanoic (26:0)	<0.27					0.43	<= 0.76

### Odd Chain

28 Pentadecanoic (15:0)	7.9					10.8	<= 15.6
29 Heptadecanoic (17:0)	11.6					16.5	<= 21.4
30 Nonadecanoic (19:0)	0.89					1.54	<= 1.97
31 Heneicosanoic (21:0)	<0.38					0.39	<= 0.52
32 Tricosanoic (23:0)	<0.37					0.64	<= 0.80

### Trans

33 Palmitelaidic (16:1n7t)	<0.4					0.4	<= 1.0
34 Total C:18 Trans	42 H					35	<= 48

### Ratios

35 LA/DGLA	20					29	11 - 44
36 EPA/DGLA	0.72	0.12					0.09 - 4.57
37 AA/EPA	15					34	1 - 54
38 Triene/Tetraene	0.008					0.018	<= 0.025

## Organix® Comprehensive Profile - Urine

Methodology: LC/Tandem Mass Spectroscopy, Colorimetric

Ranges: Ages 12 and under.

Results  
mcg/mg creatinine

Quintile Ranking

95%  
Reference  
Interval

### Nutrient Markers

#### Fatty Acid Metabolism

(Carnitine & B2)

1 Adipate	5.8		<= 12.5
2 Suberate	9.7 <b>H</b>		<= 8.9
3 Ethylmalonate	1.5		<= 9.4

#### Carbohydrate Metabolism

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

4 Pyruvate	<DL*		<= 7.5
5 L-Lactate	4.7		1.4 - 38.5
6 β-Hydroxybutyrate	<DL*		<= 7.9

#### Energy Production (Citric Acid Cycle)

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

7 Citrate	280		59 - 1,276
8 Cis-Aconitate	50		27 - 119
9 Isocitrate	51 <b>L</b>		63 - 232
10 α-Ketoglutarate	<DL*		<= 82.0
11 Succinate	16.4		<= 61.0
12 Fumarate	0.65		<= 1.56
13 Malate	0.4		<= 4.6
14 Hydroxymethylglutarate	4.5		<= 13.9

#### B-Complex Vitamin Markers

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

15 α-Ketoisovalerate	<DL*		<= 0.54
16 α-Ketoisocaproate	0.06		<= 0.63
17 α-Keto-β-Methylvalerate	<DL*		<= 1.12
18 Xanthurenate	0.92 <b>H</b>		<= 0.46
19 β-Hydroxyisovalerate	2.5		<= 22.5

#### Methylation Cofactor Markers

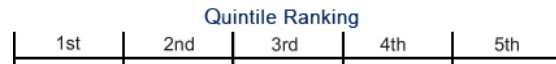
(B12, Folate)

20 Methylmalonate	0.5		<= 3.3
21 Formiminoglutamate	0.2		<= 3.2

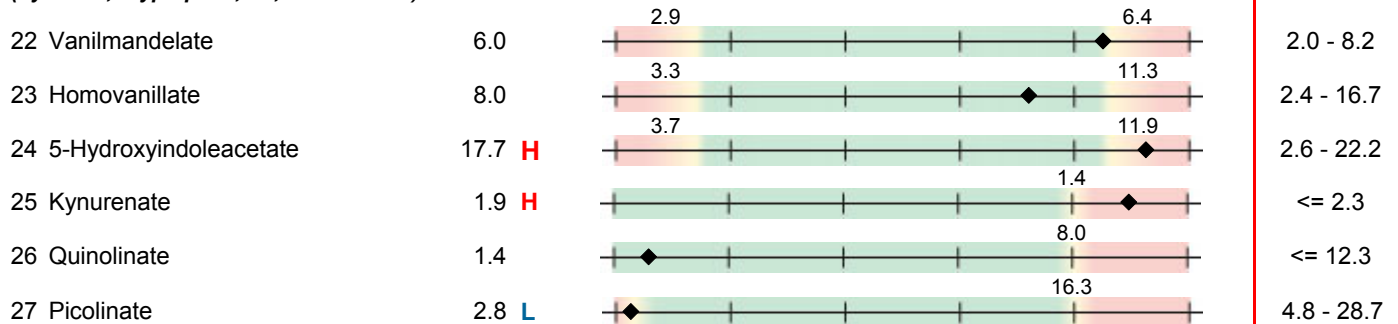
**Organix® Comprehensive Profile - Urine**

Methodology: LC/Tandem Mass Spectroscopy, Colorimetric

Ranges: Ages 12 and under.

Results  
mcg/mg creatinine**95%  
Reference  
Interval****Cell Regulation Markers****Neurotransmitter Metabolism Markers**

(Tyrosine, Tryptophan, B6, antioxidants)

**Oxidative Damage and Antioxidant Markers**

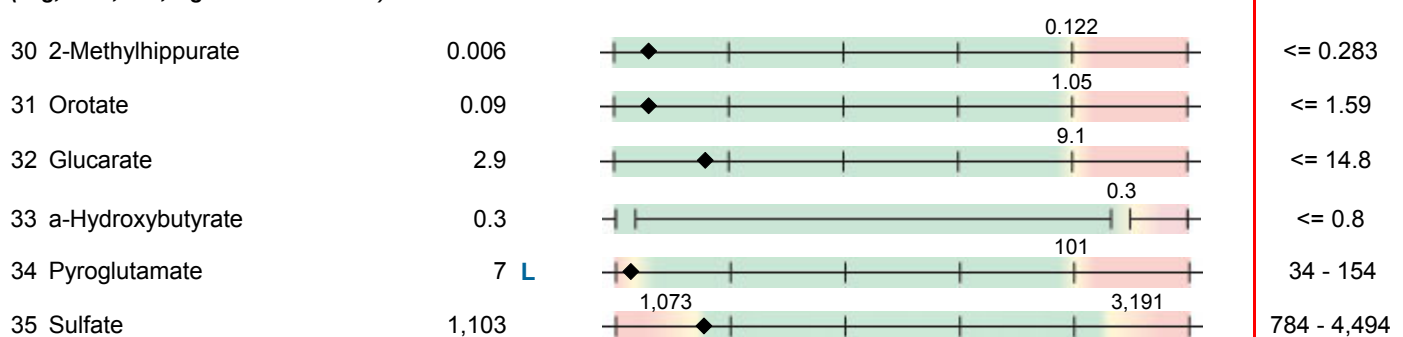
(Vitamin C and other antioxidants)



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

**Toxicants and Detoxification****Detoxification Indicators**

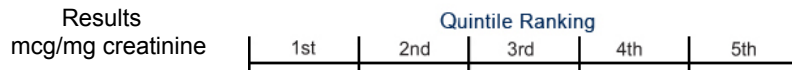
(Arg, NAC, Met, Mg and antioxidants)



**Organix® Comprehensive Profile - Urine**

Methodology: LC/Tandem Mass Spectroscopy, Colorimetric

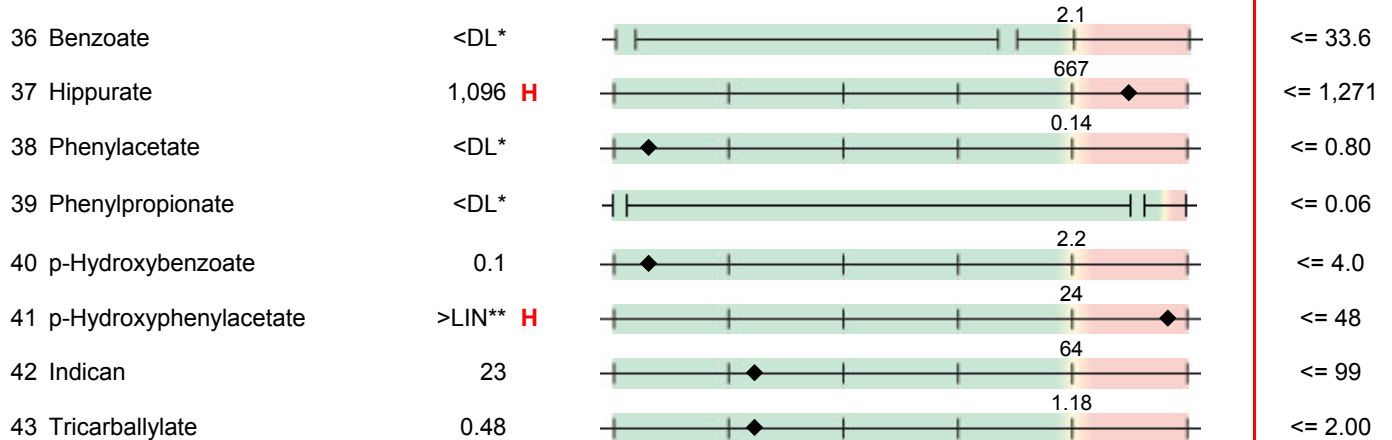
Ranges: Ages 12 and under.



95%  
Reference  
Interval

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

**Bacterial - general**



**L. acidophilus / general bacterial**



**Clostridial species**



**Yeast / Fungal**



Creatinine = 200 mg/dL

\* <DL = less than detection limit

\*\* >LIN = greater than linearity limit

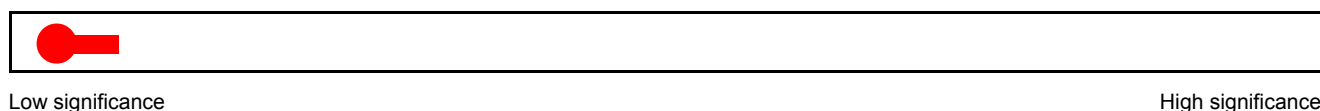
A multi-analyte report can provide greater insight about health risks and special nutrient needs. Patterns of abnormalities can reinforce the degree of significance indicated by a single measurement. Analytes from the various profiles in the ION report are combined below into categories associated with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

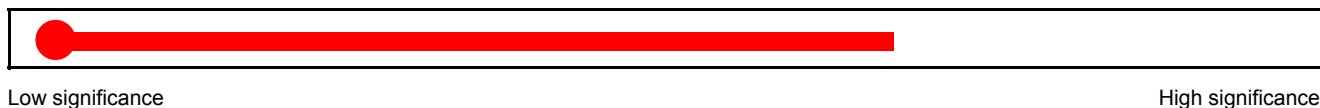
## Cardiovascular System

Arginine	Homocysteine	Calcium	Magnesium
CoQ10	a-Tocopherol	g-Tocopherol	Lipid Peroxide
8-OHdG	AA/EPA		



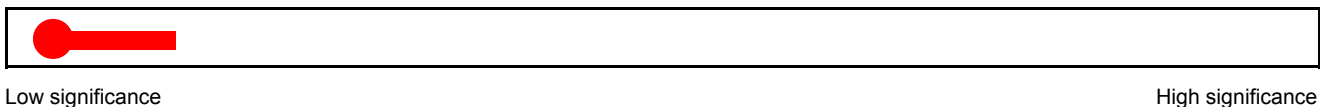
## Fatigue

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



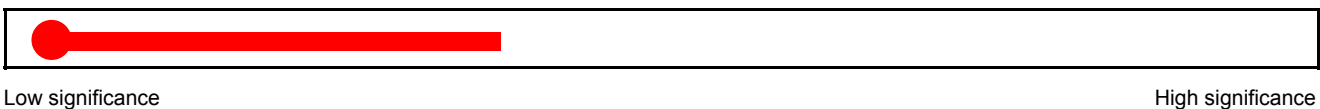
## Metabolic Syndrome (Syndrome X)

Magnesium	Palmitic	H	Stearic	AHB
BHB	BHiVal			



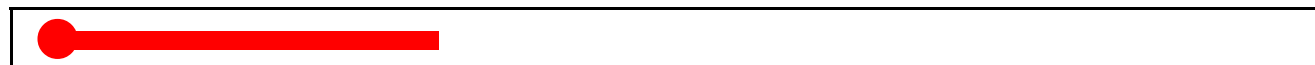
## Mental/Emotional

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



## Intestinal Bacterial Metabolites

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

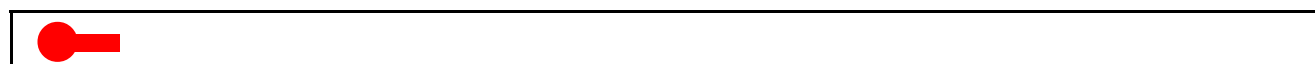


Low significance

High significance

## Intestinal Yeasts / Fungal Metabolites

D-Arabinitol

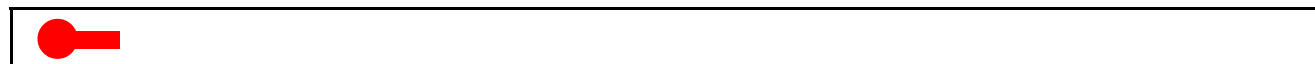


Low significance

High significance

## Digestion/Absorption

Arginine	Histidine	Isoleucine	H	Leucine
Lysine	Methionine	Phenylalanine		Threonine
Tryptophan	Valine	X H	Selenium	



Low significance

High significance

## Toxic Exposure

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



Low significance

High significance

## Detoxification Impairment

Methionine	Glycine	Serine	Taurine
Glutamine	Pyroglutamate	X L	Sulfate
			Benzoate



Low significance

High significance

## Oxidative Stress/Antioxidant Insufficiency

Taurine	Selenium	Lead	Mercury
a-Tocopherol	Vitamin A	g-Tocopherol	b-Carotene
Lipid Peroxide	8-OHdG	pOHPHac <b>X</b> H	Sulfate

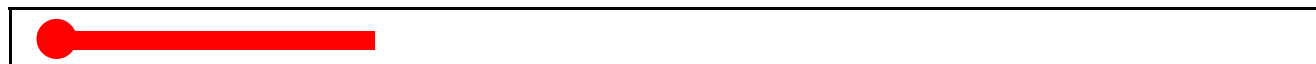


Low significance

High significance

## Mitochondrial Functional Impairment

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



Low significance

High significance

## Amino Acid Insufficiency

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



Low significance

High significance

## Essential Fatty Acid Insufficiency

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



Low significance

High significance

## Disordered Methyl Group (Single carbon) Transfer

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



Low significance

High significance

## Disordered Tryptophan Metabolism

Tryptophan	Xanthurenate	X H	5-HIA	H	Kynurenate	H
Quinolate	Indican					



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	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.

**The dosage recommendations are for children 6 to 12. Further adjustments for body weight may be needed.**

### 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	1250 IU	
B-Carotene	2750 IU	
Vitamin C	125 mg	1000 mg
Vitamin D	200 IU	300 IU
Vitamin E (Mixed Tocopherols)	50 IU	200 IU
Vitamin K*	50 mcg	
Thiamin (B1)	2.5 mg	
Riboflavin (B2)	2.5 mg	
Niacin (B3)	12.5 mg	
Pyridoxine (B6)	7.5 mg	50 mg
Folic Acid (or 5-Methyl-THF)	200 mcg	
Vitamin B12	25 mcg	
Biotin	50 mcg	300 mcg
Pantothenic Acid (B5)	12.5 mg	
Calcium Citrate	250 mg	250 mg
Iodine*	37.5 mcg	
Magnesium	125 mg	25 mg
Zinc	7.5 mg	
Selenium	50 mcg	25 mcg
Copper	0.5 mg	
Manganese*	2.5 mg	
Chromium	100 mcg	
Molybdenum*	12.5 mcg	
Boron*	0.5 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
Potential to Benefit from Probiotics	Low
Carnitine	200 mg
Flax Oil	2 gm
Need for Other Antioxidants	Moderate

## 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)	0	10.64	851
L-Histidine HCl (74% active)	0	12.36	915
L-Isoleucine	0	8.51	851
L-Leucine	0	11.68	1,168
L-Lysine HCl (80% active)	0	10.64	851
L-Methionine	0	6.97	697
L-Phenylalanine	0	11.68	1,168
Taurine	0	0.00	0
L-Threonine	0	7.33	733
L-Tryptophan	0	2.00	200
L-Valine	0	10.23	1,023
Pyridoxal-5-phosphate	0	0.27	27
Alpha-ketoglutaric acid	0	7.69	769

Total grams added	0
Base Formula amount	300
Total Weight	300



L-5-Hydroxytryptophan	0	0.67	40
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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.