



Ordering Physician:

John Doe MD

1234 Main St.
Anywhere, GA 30096

0090 ION® Profile

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:

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

Item	Results $\mu\text{mol/L}$	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:

Date Received: 4/4/2013

A1304040319

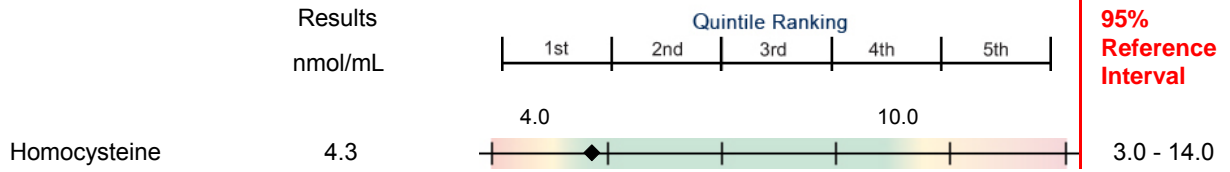
John Doe MD

Date Reported: 4/5/2013

Child Doe

Homocysteine Assay - Plasma

Methodology: Competitive Immunoassay



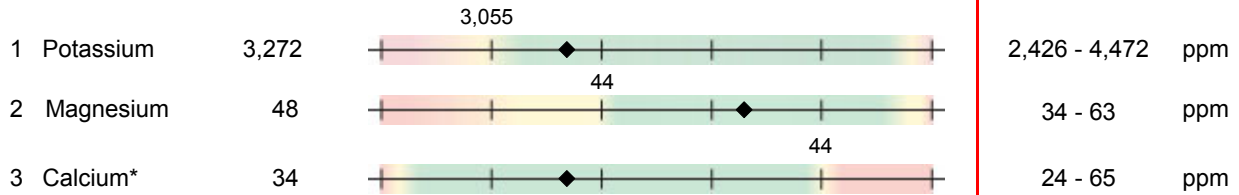
Nutrient & Toxic Elements Profile - Blood

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.

CoEnzyme Q10 Plus Vitamins Profile - Serum

Methodology: High Performance Liquid Chromatography

Ranges: Ages 12 and under.

	Results	Quintile Ranking					95% Reference Interval
	mg/L	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		95% Reference Interval
	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		95% Reference Interval
	ng/mg creatinine		
7 8-Hydroxy-2-deoxyguanosine	1.3	5.9	<= 8.7

	Results ng/mL		Reference Interval
8 25-Hydroxyvitamin D	20.4 L		30.0 - 100.0
9 25-Hydroxyvitamin D2	0.9		
10 25-Hydroxyvitamin D3	19.5		

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.¹ The Vitamin D Council has proposed 50-80 ng/ml as optimal, and 100 ng/ml as an upper limit.² 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



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



95%
Reference
Interval

Saturated

Fatty Acid	Result (µmol/L)	Quintile Ranking	95% Reference Interval
19 Capric (10:0)	1.8	Between 1st and 2nd	0.7 - 68.8
20 Lauric (12:0)	15.5	Between 4th and 5th	2.1 - 52.5
21 Myristic (14:0)	61	Between 4th and 5th	15 - 97
22 Palmitic (16:0)	1,294 H	Between 4th and 5th	644 - 1,717
23 Stearic (18:0)	406	Between 3rd and 4th	260 - 566
24 Arachidic (20:0)	1.5 L	Between 1st and 2nd	1.5 - 6.7
25 Behenic (22:0)	0.6 L	Between 1st and 2nd	0.6 - 6.2
26 Lignoceric (24:0)	0.76 L	Between 1st and 2nd	0.68 - 3.92
27 Hexacosanoic (26:0)	<0.27	Between 1st and 2nd	<= 0.76

Odd Chain

28 Pentadecanoic (15:0)	7.9	Between 3rd and 4th	<= 15.6
29 Heptadecanoic (17:0)	11.6	Between 2nd and 3rd	<= 21.4
30 Nonadecanoic (19:0)	0.89	Between 1st and 2nd	<= 1.97
31 Heneicosanoic (21:0)	<0.38	Between 1st and 2nd	<= 0.52
32 Tricosanoic (23:0)	<0.37	Between 1st and 2nd	<= 0.80

Trans

33 Palmitelaidic (16:1n7t)	<0.4	Between 1st and 2nd	<= 1.0
34 Total C:18 Trans	42 H	Between 4th and 5th	<= 48

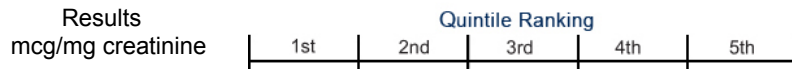
Ratios

35 LA/DGLA	20	Between 2nd and 3rd	11 - 44
36 EPA/DGLA	0.72	Between 4th and 5th	0.09 - 4.57
37 AA/EPA	15	Between 3rd and 4th	1 - 54
38 Triene/Tetraene	0.008	Between 1st and 2nd	<= 0.025

Organix® Comprehensive Profile - Urine

Methodology: LC/Tandem Mass Spectroscopy, Colorimetric

Ranges: Ages 12 and under.



95%
Reference
Interval

Nutrient Markers

Fatty Acid Metabolism

(Carnitine & B2)

Item	Result	Quintile Ranking	95% Reference Interval
1 Adipate	5.8	4th	<= 12.5
2 Suberate	9.7 H	5th	<= 8.9
3 Ethylmalonate	1.5	1st	<= 9.4

Carbohydrate Metabolism

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

Item	Result	Quintile Ranking	95% Reference Interval
4 Pyruvate	<DL*	4th	<= 7.5
5 L-Lactate	4.7	1st	1.4 - 38.5
6 β-Hydroxybutyrate	<DL*	4th	<= 7.9

Energy Production (Citric Acid Cycle)

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

Item	Result	Quintile Ranking	95% Reference Interval
7 Citrate	280	2nd	59 - 1,276
8 Cis-Aconitate	50	3rd	27 - 119
9 Isocitrate	51 L	1st	63 - 232
10 α-Ketoglutarate	<DL*	1st	<= 82.0
11 Succinate	16.4	3rd	<= 61.0
12 Fumarate	0.65	4th	<= 1.56
13 Malate	0.4	1st	<= 4.6
14 Hydroxymethylglutarate	4.5	2nd	<= 13.9

B-Complex Vitamin Markers

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

Item	Result	Quintile Ranking	95% Reference Interval
15 α-Ketoisovalerate	<DL*	4th	<= 0.54
16 α-Ketoisocaproate	0.06	1st	<= 0.63
17 α-Keto-β-Methylvalerate	<DL*	4th	<= 1.12
18 Xanthurenate	0.92 H	5th	<= 0.46
19 β-Hydroxyisovalerate	2.5	1st	<= 22.5

Methylation Cofactor Markers

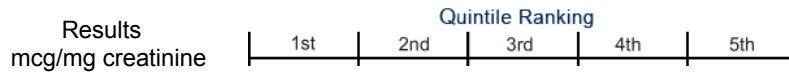
(B12, Folate)

Item	Result	Quintile Ranking	95% Reference Interval
20 Methylmalonate	0.5	1st	<= 3.3
21 Formiminoglutamate	0.2	1st	<= 3.2

Organix® Comprehensive Profile - Urine

Methodology: LC/Tandem Mass Spectroscopy, Colorimetric

Ranges: Ages 12 and under.



**95%
Reference
Interval**

Cell Regulation Markers

Neurotransmitter Metabolism Markers

(Tyrosine, Tryptophan, B6, antioxidants)

Marker	Result	Quintile Ranking	Reference Interval
22 Vanilmandelate	6.0	2.9 - 6.4	2.0 - 8.2
23 Homovanillate	8.0	3.3 - 11.3	2.4 - 16.7
24 5-Hydroxyindoleacetate	17.7 H	3.7 - 11.9	2.6 - 22.2
25 Kynurenate	1.9 H	1.4	<= 2.3
26 Quinolinate	1.4	8.0	<= 12.3
27 Picolinate	2.8 L	16.3	4.8 - 28.7

Oxidative Damage and Antioxidant Markers

(Vitamin C and other antioxidants)

28 p-Hydroxyphenyllactate	0.73 H	0.27	<= 0.67
29 8-Hydroxy-2-deoxyguanosine	1.3	5.9	<= 8.7

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

Toxicants and Detoxification

Detoxification Indicators

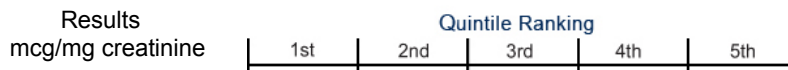
(Arg, NAC, Met, Mg and antioxidants)

30 2-Methylhippurate	0.006	0.122	<= 0.283
31 Orotate	0.09	1.05	<= 1.59
32 Glucarate	2.9	9.1	<= 14.8
33 a-Hydroxybutyrate	0.3	0.3	<= 0.8
34 Pyroglutamate	7 L	101	34 - 154
35 Sulfate	1,103	1,073 - 3,191	784 - 4,494

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

Compound	Result	Quintile Ranking	Reference Interval
36 Benzoate	<DL*	2.1	<= 33.6
37 Hippurate	1,096 H	667	<= 1,271
38 Phenylacetate	<DL*	0.14	<= 0.80
39 Phenylpropionate	<DL*		<= 0.06
40 p-Hydroxybenzoate	0.1	2.2	<= 4.0
41 p-Hydroxyphenylacetate	>LIN** H	24	<= 48
42 Indican	23	64	<= 99
43 Tricarballic acid	0.48	1.18	<= 2.00

L. acidophilus / general bacterial

44 D-Lactate	0.5	2.6	<= 5.6
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Clostridial species

45 3,4-Dihydroxyphenylpropionate	0.03		<= 0.12
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Yeast / Fungal

46 D-Arabinitol	5	53	<= 92
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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		



Low significance

High significance

Fatigue

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



Low significance

High significance

Metabolic Syndrome (Syndrome X)

Magnesium	Palmitic	H	Stearic	AHB
BHB	BHiVal			



Low significance

High significance

Mental/Emotional

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



Low significance

High significance

Intestinal Bacterial Metabolites

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

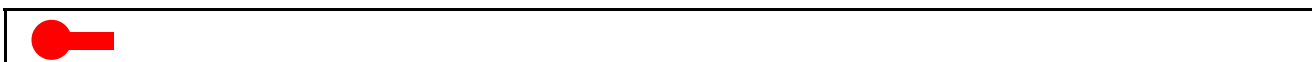


Low significance

High significance

Intestinal Yeasts / Fungal Metabolites

D-Arabinitol



Low significance

High significance

Digestion/Absorption

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

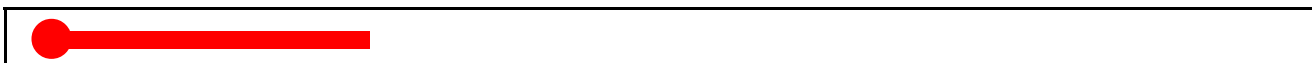


Low significance

High significance

Toxic Exposure

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

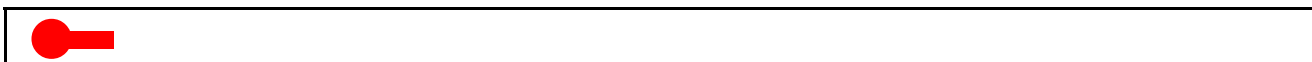


Low significance

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 X H	Sulfate

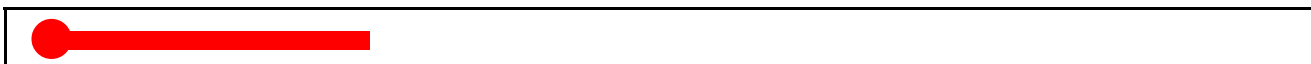


Low significance

High significance

Mitochondrial Functional Impairment

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

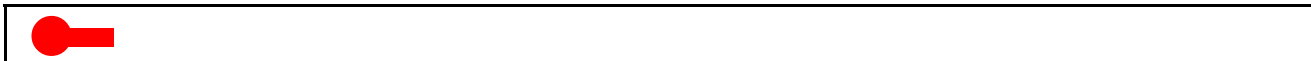


Low significance

High significance

Amino Acid Insufficiency

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



Low significance

High significance

Essential Fatty Acid Insufficiency

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



Low significance

High significance

Disordered Methyl Group (Single carbon) Transfer

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



Low significance

High significance

Disordered Tryptophan Metabolism

Tryptophan	Xanthurenate	X H	5-HIA	H	Kynurenate	H
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
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

<input checked="" type="checkbox"/>	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.