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Accession Number:
Reference Number:
Patient:
Age: *Sex:*
Date of Birth:
Date Collected:
Date Received:
Report Date:
Telephone:
Fax:
Reprinted:
Comment:

0290 Cardio/ION Profile

Ordering Physician:

Date Received:

Date Reported:

Cardiovascular Health Profile - Serum, Plasma & Erythrocytes

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

Results

Reference Limits

Lipoprotein Factors

Total Cholesterol	156		< 200	mg/dL
HDL Cholesterol	62		>= 50	mg/dL
LDL Cholesterol (Direct)	101		< 130	mg/dL
Triglycerides	70		< 150	mg/dL
Lipoprotein (a)	2		<= 37	mg/dL

Lipoprotein Ratios

LDL/HDL	1.6	<= 3.3
Total/HDL	2.5	<= 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	141		6 - 159	ng/mL
Fibrinogen	325		175 - 425	mg/dL
c-Reactive Protein (HS)	1.8		<= 3.0	mg/L

Cardio CRP value (mg/L)	CHD Risk Level	* If the cardio CRP concentration exceeds 10 mg/L after repeat testing, the patient should be evaluated for noncardiovascular etiologies.
<1	Low	
1-3	Average	
>3 (up to 10)*	High	

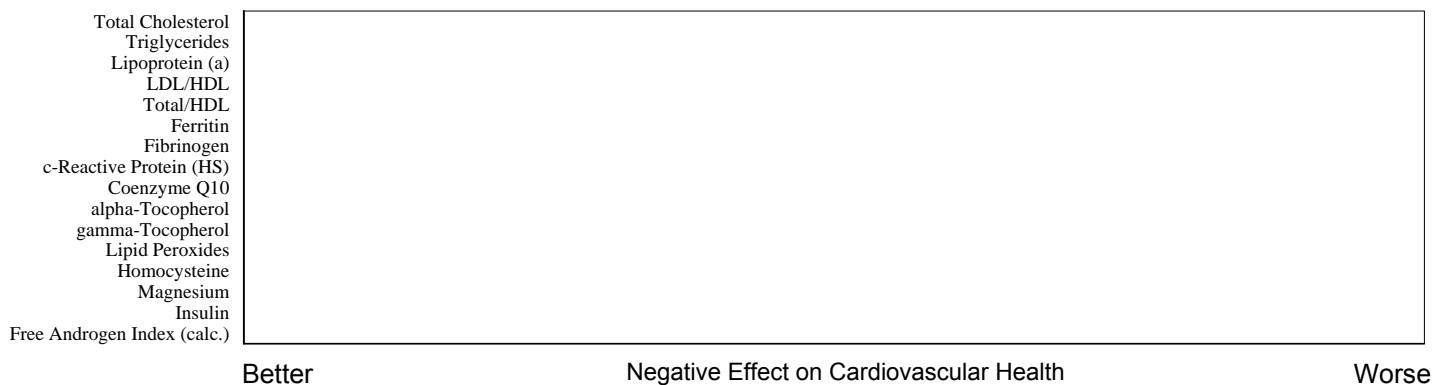
Other Important Indicators

Insulin	2.6		2.0 - 12.0	µIU/mL
Testosterone	25		<= 51	ng/dL
Sex Hormone Binding Globulin	55		18 - 114	nmol/L
Free Androgen Index (calc.)	1.6		<= 4.6	

Quintile Ranking: 1st | 2nd | 3rd | 4th | 5th | **95% Reference Interval**

Magnesium	60		34 - 63	ppm
Homocysteine	5.7		3.0 - 14.0	nmol/mL
Coenzyme Q10	0.90		0.26 - 4.33	mg/L
alpha-Tocopherol	12.9		3.5 - 24.4	mg/L
gamma-Tocopherol	0.74		0.02 - 2.20	mg/L
Lipid Peroxides	1.25		<= 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 = 2.8



- 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.

Ordering Physician:

Date Received:

Date Reported:

Amino Acids 20 Profile - Plasma

Methodology: High Performance Liquid Chromatography

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	172 H	91				164	70 - 189
2	Methionine	25	14				25	11 - 32
3	Tryptophan	50	30				55	23 - 65

Branched Chain Amino Acids

4	Isoleucine	88 H	34				66	27 - 83
5	Leucine	145 H	66				123	54 - 147
6	Valine	239 H	125				218	107 - 254

Other Essential Amino Acids

7	Phenylalanine	65 H	38				59	33 - 73
8	Histidine	68	46				70	39 - 82
9	Threonine	141 H	62				128	47 - 154

Conditionally Essential Amino Acids

10	Arginine	81	44				93	31 - 110
11	Taurine	41	33				80	27 - 112
12	Glycine	333 H	162				315	122 - 400
13	Serine	110	78				128	64 - 153

Amino Acids 20 Profile - Plasma

Methodology: High Performance Liquid Chromatography

Ranges are for ages 12 and under.

Functional Categories

Vascular Function

	Results µmol/L	Quintile Ranking	95% Reference Interval
		1st 2nd 3rd 4th 5th	
14 Arginine	81	44 93	31 - 110
15 Taurine	41	33 80	27 - 112

Neurotransmitters and Precursors

16 Phenylalanine	65	H 38 59	33 - 73
17 Tyrosine	70	35 70	30 - 87
18 Tryptophan	50	30 55	23 - 65
19 Glutamic Acid	97	H 30 90	24 - 162
20 Taurine	41	33 80	27 - 112

Sulfur Amino Acids (Glutathione - related)

21 Methionine	25	14 25	11 - 32
22 Taurine	41	33 80	27 - 112

Urea Cycle and Ammonia Detoxification

23 Arginine	81	44 93	31 - 110
24 Citrulline	33	18 34	12 - 40
25 Ornithine	122	H 27 74	21 - 104
26 Glutamine	577	361 584	292 - 629
27 Asparagine	36	26 45	21 - 55
28 Aspartic Acid	8.3	5.1 10.9	4.0 - 13.2

Ratios

29 Phenylalanine/Tyrosine	0.93	1.38	<= 1.38
30 Glutamic Acid/Glutamine	0.17	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)

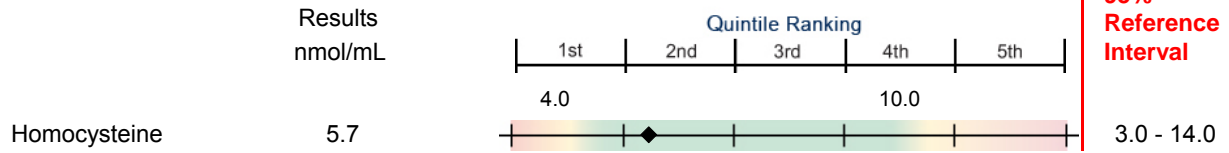
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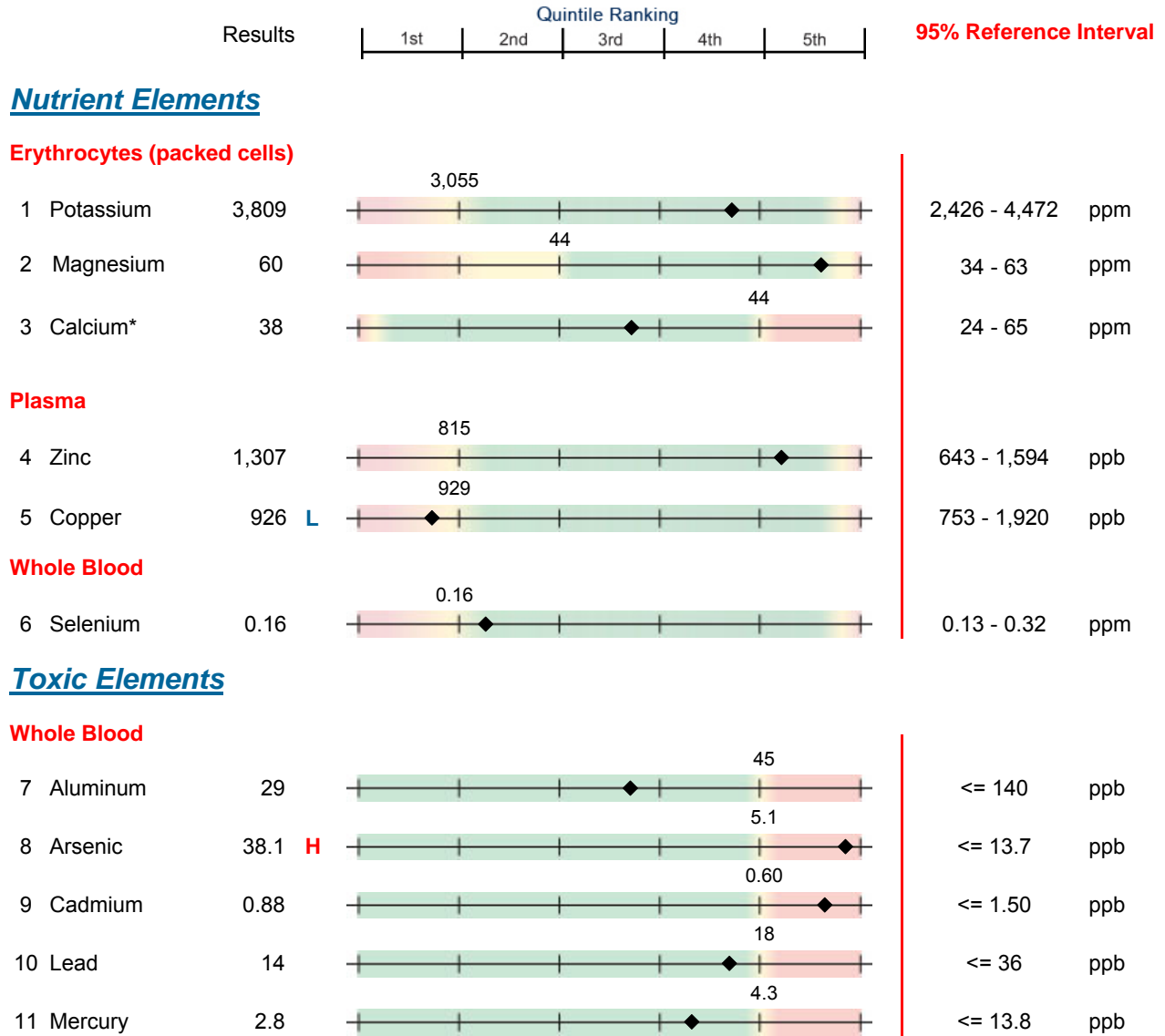
Homocysteine Assay - Plasma

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.

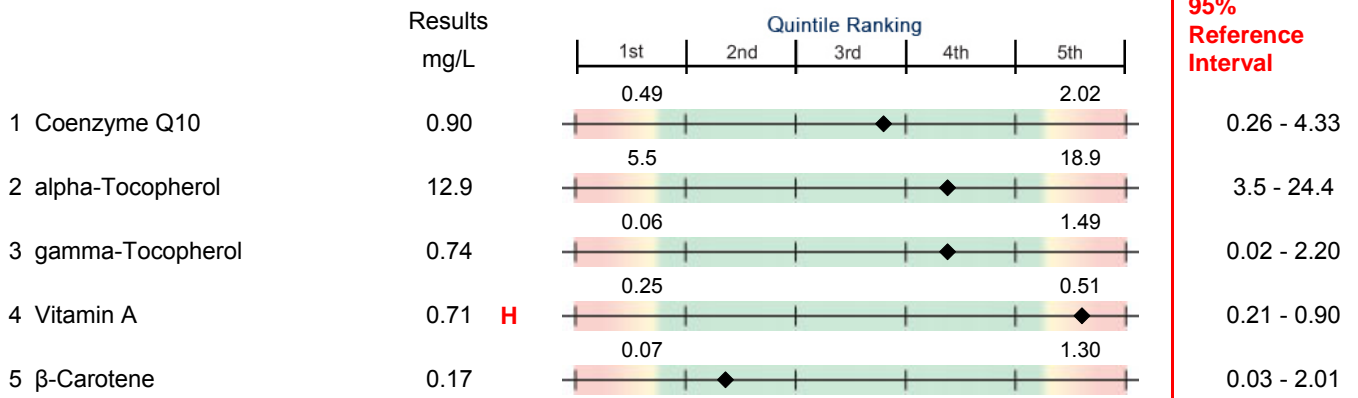
Ordering Physician:

Date Received:

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CoEnzyme Q10 Plus Vitamins Profile - Serum

Methodology: High Performance Liquid Chromatography



Lipid Peroxide Assay - Serum

Methodology: High Performance Liquid Chromatography



DNA/Oxidative Stress Markers Assay - Urine

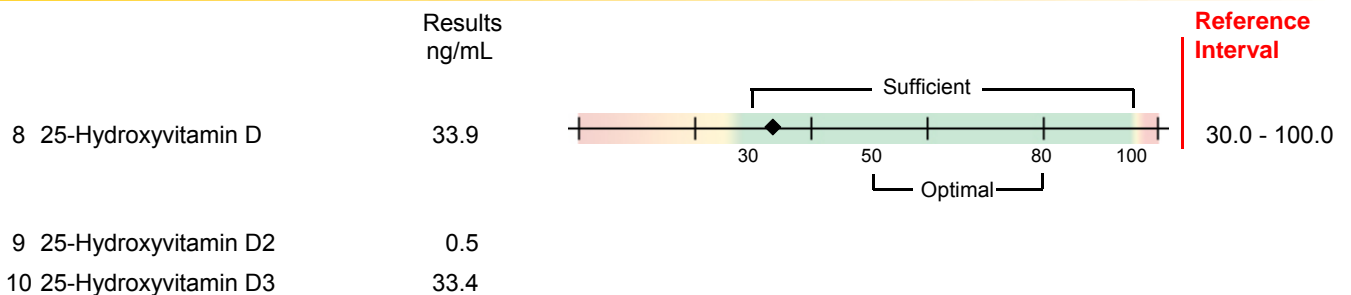
Methodology: LC/Tandem Mass Spectroscopy, Colorimetric

Ranges are for ages 12 and under.



Vitamin D Profile - 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.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.

- 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

* <DL = less than detection limit

Ordering Physician:

Date Received:

Date Reported:

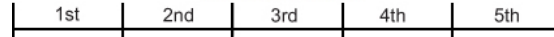
Fatty Acids Profile - Plasma

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)	9 L	18	12 - 82
2	Eicosapentaenoic (20:5n3)	70	7	4 - 165
3	Docosapentaenoic (22:5n3)	19	12	6 - 43
4	Docosahexaenoic (22:6n3)	92	39	24 - 191

Polyunsaturated Omega-6

5	Linoleic (18:2n6)	558 L	812, 1,560	773 - 1,786
6	Gamma Linolenic (18:3n6)	3 L	6, 28	4 - 47
7	Eicosadienoic (20:2n6)	3.6 L	6.1, 14.4	4.7 - 17.9
8	Dihomogamma Linolenic (20:3n6)	17 L	30, 85	26 - 100
9	Arachidonic (20:4n6)	230	158, 375	122 - 532
10	Docosadienoic (22:2n6)	<0.23	0.6	<= 1.9
11	Docosatetraenoic (22:4n6)	3.2 L	4.3, 12.9	1.2 - 15.3

Polyunsaturated Omega-9

12	Mead (20:3n9)	1.1	4.5	<= 7.7
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Monounsaturated

13	Myristoleic (14:1n5)	1.9	1.1, 4.5	0.8 - 11.3
14	Palmitoleic (16:1n7)	36 L	38, 102	22 - 169
15	Vaccenic (18:1n7)	37 L	40, 72	33 - 80
16	Oleic (18:1n9)	864	510, 1,020	416 - 1,271
17	11-Eicosenoic (20:1n9)	3.9 L	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.

Saturated

	Results µmol/L	Quintile Ranking	95% Reference Interval
		1st 2nd 3rd 4th 5th	
19 Capric (10:0)	1.9	1.6 8.8	0.7 - 68.8
20 Lauric (12:0)	7.1	3.4 22.9	2.1 - 52.5
21 Myristic (14:0)	28	20 61	15 - 97
22 Palmitic (16:0)	1,126	674 1,255	644 - 1,717
23 Stearic (18:0)	383	295 470	260 - 566
24 Arachidic (20:0)	1.4 L	1.6 4.6	1.5 - 6.7
25 Behenic (22:0)	0.7 L	0.8 2.2	0.6 - 6.2
26 Lignoceric (24:0)	0.61 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)	8.1	10.8	<= 15.6
29 Heptadecanoic (17:0)	11.7	16.5	<= 21.4
30 Nonadecanoic (19:0)	<0.86	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	22	35	<= 48

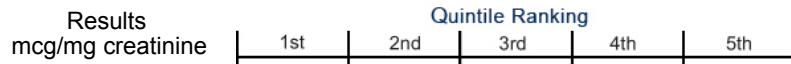
Ratios

35 LA/DGLA	33 H	29	11 - 44
36 EPA/DGLA	4.12	0.12	0.09 - 4.57
37 AA/EPA	3	34	1 - 54
38 Triene/Tetraene	0.005	0.018	<= 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	Results	Quintile Ranking	95% Reference Interval
1 Adipate	6.1	7.5	<= 12.5
2 Suberate	1.2	3.2	<= 8.9
3 Ethylmalonate	1.1	5.5	<= 9.4

Carbohydrate Metabolism

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

Item	Results	Quintile Ranking	95% Reference Interval
4 Pyruvate	<DL*	4.3	<= 7.5
5 L-Lactate	10.6	15.1	1.4 - 38.5
6 β-Hydroxybutyrate	<DL*	2.2	<= 7.9

Energy Production (Citric Acid Cycle)

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

Item	Results	Quintile Ranking	95% Reference Interval
7 Citrate	395	703	59 - 1,276
8 Cis-Aconitate	44	77	27 - 119
9 Isocitrate	63	162	63 - 232
10 α-Ketoglutarate	<DL*	38.0	<= 82.0
11 Succinate	17.4	36.1	<= 61.0
12 Fumarate	0.66	0.69	<= 1.56
13 Malate	0.5	1.9	<= 4.6
14 Hydroxymethylglutarate	3.6	8.9	<= 13.9

B-Complex Vitamin Markers

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

Item	Results	Quintile Ranking	95% Reference Interval
15 α-Ketoisovalerate	0.09	0.29	<= 0.54
16 α-Ketoisocaproate	0.05	0.42	<= 0.63
17 α-Keto-β-Methylvalerate	0.12	0.42	<= 1.12
18 Xanthurenate	0.62 H	0.32	<= 0.46
19 β-Hydroxyisovalerate	4.6	13.5	<= 22.5

Methylation Cofactor Markers

(B12, Folate)

Item	Results	Quintile Ranking	95% Reference Interval
20 Methylmalonate	1.3	2.4	<= 3.3
21 Formiminoglutamate	<DL*	1.9	<= 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)

Item	Results	Quintile Ranking	95% Reference Interval
22 Vanilmandelate	2.2 L	2.9 (1st), 6.4 (5th)	2.0 - 8.2
23 Homovanillate	9.1	3.3 (1st), 11.3 (5th)	2.4 - 16.7
24 5-Hydroxyindoleacetate	2.0 L	3.7 (1st), 11.9 (5th)	2.6 - 22.2
25 Kynurenate	0.3	1.4 (5th)	<= 2.3
26 Quinolinate	2.5	8.0 (5th)	<= 12.3
27 Picolinate	2.8 L	16.3 (5th)	4.8 - 28.7

Oxidative Damage and Antioxidant Markers

(Vitamin C and other antioxidants)

28 p-Hydroxyphenyllactate	0.26	0.27 (5th)	<= 0.67
29 8-Hydroxy-2-deoxyguanosine	2.3	5.9 (5th)	<= 8.7

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

Toxicants and Detoxification

Detoxification Indicators

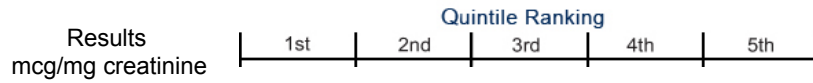
(Arg, NAC, Met, Mg and antioxidants)

30 2-Methylhippurate	0.083	0.122 (5th)	<= 0.283
31 Orotate	0.29	1.05 (5th)	<= 1.59
32 Glucarate	2.8	9.1 (5th)	<= 14.8
33 a-Hydroxybutyrate	<DL*	0.3 (5th)	<= 0.8
34 Pyroglutamate	40	101 (5th)	34 - 154
35 Sulfate	633 L	1,073 (1st), 3,191 (5th)	784 - 4,494

Organix™ Comprehensive Profile - Urine

Methodology: LC/Tandem Mass Spectroscopy, Colorimetric

Ranges: Ages 12 and under.



Compounds of Bacterial or Yeast/Fungal Origin

Bacterial - general

Compound	Results	Quintile Ranking	Reference Range
36 Benzoate	<DL*	2.1	<= 33.6
37 Hippurate	106	667	<= 1,271
38 Phenylacetate	<DL*	0.14	<= 0.80
39 Phenylpropionate	<DL*		<= 0.06
40 p-Hydroxybenzoate	<DL*	2.2	<= 4.0
41 p-Hydroxyphenylacetate	8	24	<= 48
42 Indican	9	64	<= 99
43 Tricarballoylate	0.38	1.18	<= 2.00

L. acidophilus / general bacterial

44 D-Lactate	3.3 H	2.6	<= 5.6
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Clostridial species

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

46 D-Arabinitol	49	53	<= 92
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Creatinine = 200 mg/dL

* <DL = less than detection limit

** >LIN = greater than linearity limit

ION Analyte Pattern Analysis

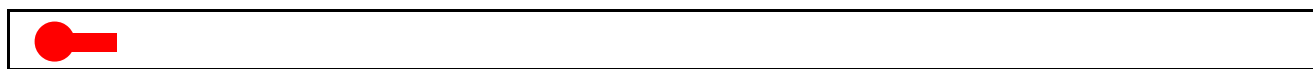
A multi-analyte report can provide greater insight about health risks and special nutrient needs. Patterns of abnormalities can reinforce the degree of significance indicated by a single measurement. Analytes from the various profiles in the ION report are combined below into categories associated with 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 H X	Leucine H	Phenylalanine	Valine H
Magnesium	CoQ10	Adipate	Suberate
AKG	Succinate	Malate	Xanthurenate H X
MeMalonate	FIGLU		

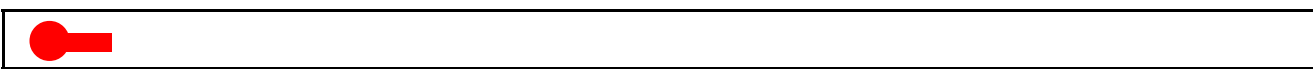


Low significance

High significance

Metabolic Syndrome (Syndrome X)

Magnesium	Palmitic	Stearic	AHB
BHB	BHiVal		



Low significance

High significance

Mental/Emotional

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



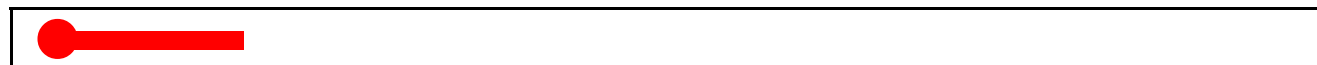
Low significance

High significance

ION Analyte Pattern Analysis

Intestinal Bacterial Metabolites

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

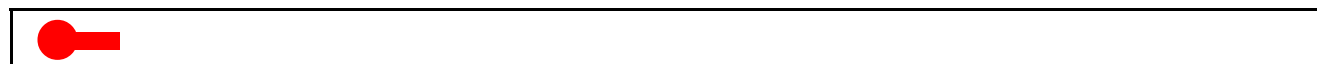


Low significance

High significance

Intestinal Yeasts / Fungal Metabolites

D-Arabinitol

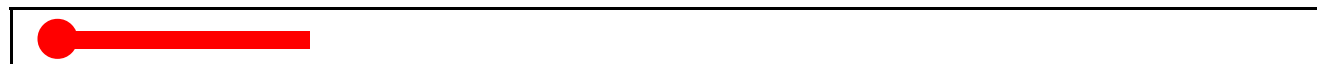


Low significance

High significance

Digestion/Absorption

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

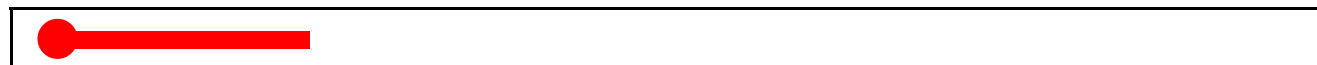


Low significance

High significance

Toxic Exposure

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

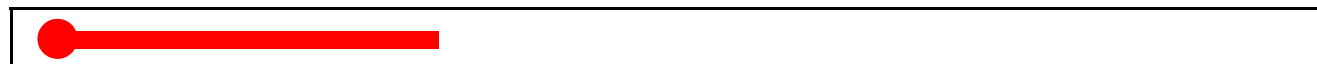


Low significance

High significance

Detoxification Impairment

Methionine	Glycine	Serine	Taurine
Glutamine	Pyroglutamate	Sulfate L X	Benzoate



Low significance

High significance

ION Analyte Pattern Analysis

Oxidative Stress/Antioxidant Insufficiency

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

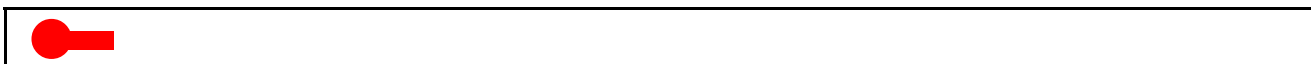


Low significance

High significance

Mitochondrial Functional Impairment

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



Low significance

High significance

Amino Acid Insufficiency

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



Low significance

High significance

Essential Fatty Acid Insufficiency

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



Low significance

High significance

Disordered Methyl Group (Single carbon) Transfer

Homocysteine	Pentadeca	Heptadeca	Nonadecanoic
Tricosanoic	Xanthurenate H X	MeMalonate	FIGLU
Kynurenate			



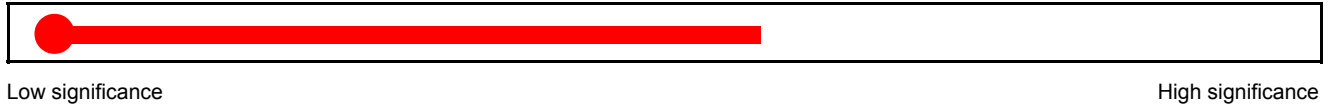
Low significance

High significance

ION Analyte Pattern Analysis

Disordered Tryptophan Metabolism

Tryptophan Xanthurenate **H X** 5-HIA **L X** Kynurenate
 Quinolinate 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
AKG	a-ketoglutarate	HVA	Homovanillate
aKbMeVal	a-Keto-β-Methylvalerate	HMG	Hydroxymethylglutarate
aKiCap	a-Ketoisocaproate	LA	Linoleic (18:2n6)
aKiVal	a-Ketoisovalerate	MeMalonate	Methylmalonate
ALA	Alpha Linolenic (18:3n3)	Pentadeca	Pentadecanoic (15:0)
a-Tocopherol	alpha-Tocopherol	PhAc	Phenylacetate
BHB	β-Hydroxybutyrate	PhProp	Phenylpropionate
BHiVal	β-Hydroxyisovalerate	pHBenz	p-Hydroxybenzoate
C18TrFa	Total C:18 Trans	pHPhAc	p-Hydroxyphenylacetate
CoQ10	Coenzyme Q10	pHPhLac	p-Hydroxyphenyllactate
DGLA	Dihomogamma Linolenic (20:3n6)	Total C:18	Total c:18 Trans
DHA	Docosahexanoic (22:6n3)	Tricarb	Tricarallylate
3,4-DHPP	3,4-Dihydroxyphenylpropionate	Triene/Tetraene	Mead/Arachidonic Ratio
EPA	Eicosapentaenoic (20:5n3)	VMA	Vanilmandelate