

Accession Number:
Order 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	394	H		< 200	mg/dL
HDL Cholesterol	105			>= 50	mg/dL
LDL Cholesterol (Direct)	275	H		< 130	mg/dL
Triglycerides	74			< 150	mg/dL
Lipoprotein (a)	45	H		<= 37	mg/dL

Lipoprotein Ratios

LDL/HDL	2.6	<= 3.3
Total/HDL	3.8	<= 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	59		6 - 159	ng/mL
Fibrinogen	350		175 - 425	mg/dL
c-Reactive Protein (HS)	2.1		<= 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	

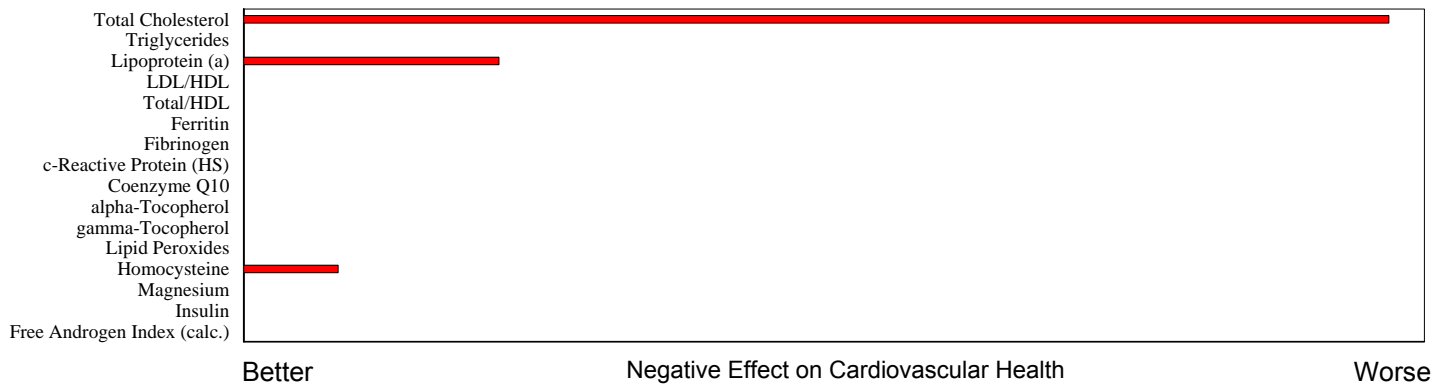
Other Important Indicators

Insulin	4.1		2.0 - 12.0	µIU/mL
Testosterone	30		<= 51	ng/dL
Sex Hormone Binding Globulin	46		18 - 114	nmol/L
Free Androgen Index (calc.)	2.3		<= 4.6	

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

Magnesium	44		34 - 63	ppm	
Oxidant Stress Factors					
Homocysteine	10.8	H		3.0 - 14.0	nmol/mL
Coenzyme Q10	0.80			0.48 - 3.04	mg/L
alpha-Tocopherol	12.5			6.8 - 31.7	mg/L
gamma-Tocopherol	0.67			0.06 - 2.99	mg/L
Lipid Peroxides	0.70			<= 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 13 and over.

Essential Amino Acids

Limiting Amino Acids

	Results µmol/L	Quintile Ranking	95% Reference Interval
		1st 2nd 3rd 4th 5th	
1 Lysine	158	117 203	99 - 234
2 Methionine	17	16 26	14 - 30
3 Tryptophan	49	35 59	30 - 67

Branched Chain Amino Acids

4 Isoleucine	63	40 72	33 - 89
5 Leucine	113	80 137	68 - 161
6 Valine	225	143 240	123 - 282

Other Essential Amino Acids

7 Phenylalanine	44	43 64	39 - 74
8 Histidine	65	48 72	41 - 82
9 Threonine	88	76 151	63 - 181

Conditionally Essential Amino Acids

10 Arginine	65	48 96	37 - 114
11 Taurine	49	31 73	26 - 100
12 Glycine	300	162 348	136 - 430
13 Serine	114	66 115	57 - 133

Amino Acids 20 Profile - Plasma

Methodology: High Performance Liquid Chromatography

Ranges are for ages 13 and over.

Functional Categories

Vascular Function

	Results µmol/L	Quintile Ranking	95% Reference Interval
		1st 2nd 3rd 4th 5th	
14 Arginine	65	48 96	37 - 114
15 Taurine	49	31 73	26 - 100

Neurotransmitters and Precursors

16 Phenylalanine	44	43 64	39 - 74
17 Tyrosine	41	38 70	29 - 80
18 Tryptophan	49	35 59	30 - 67
19 Glutamic Acid	51	29 95	23 - 136
20 Taurine	49	31 73	26 - 100

Sulfur Amino Acids (Glutathione - related)

21 Methionine	17	16 26	14 - 30
22 Taurine	49	31 73	26 - 100

Urea Cycle and Ammonia Detoxification

23 Arginine	65	48 96	37 - 114
24 Citrulline	17 L	20 38	15 - 44
25 Ornithine	39	32 81	23 - 109
26 Glutamine	544	397 585	338 - 630
27 Asparagine	38	30 49	26 - 56
28 Aspartic Acid	7.0	4.8 9.7	4.2 - 12.5

Ratios

29 Phenylalanine/Tyrosine	1.07	1.44	<= 1.44
30 Glutamic Acid/Glutamine	0.09	0.06 0.21	0.05 - 0.35
31 Tryptophan/LNAA*	0.101	0.100 0.106	0.095 - 0.106

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

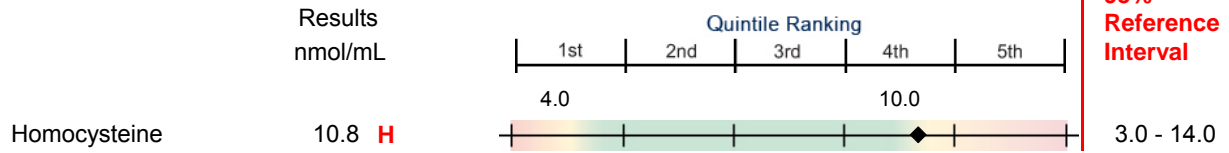
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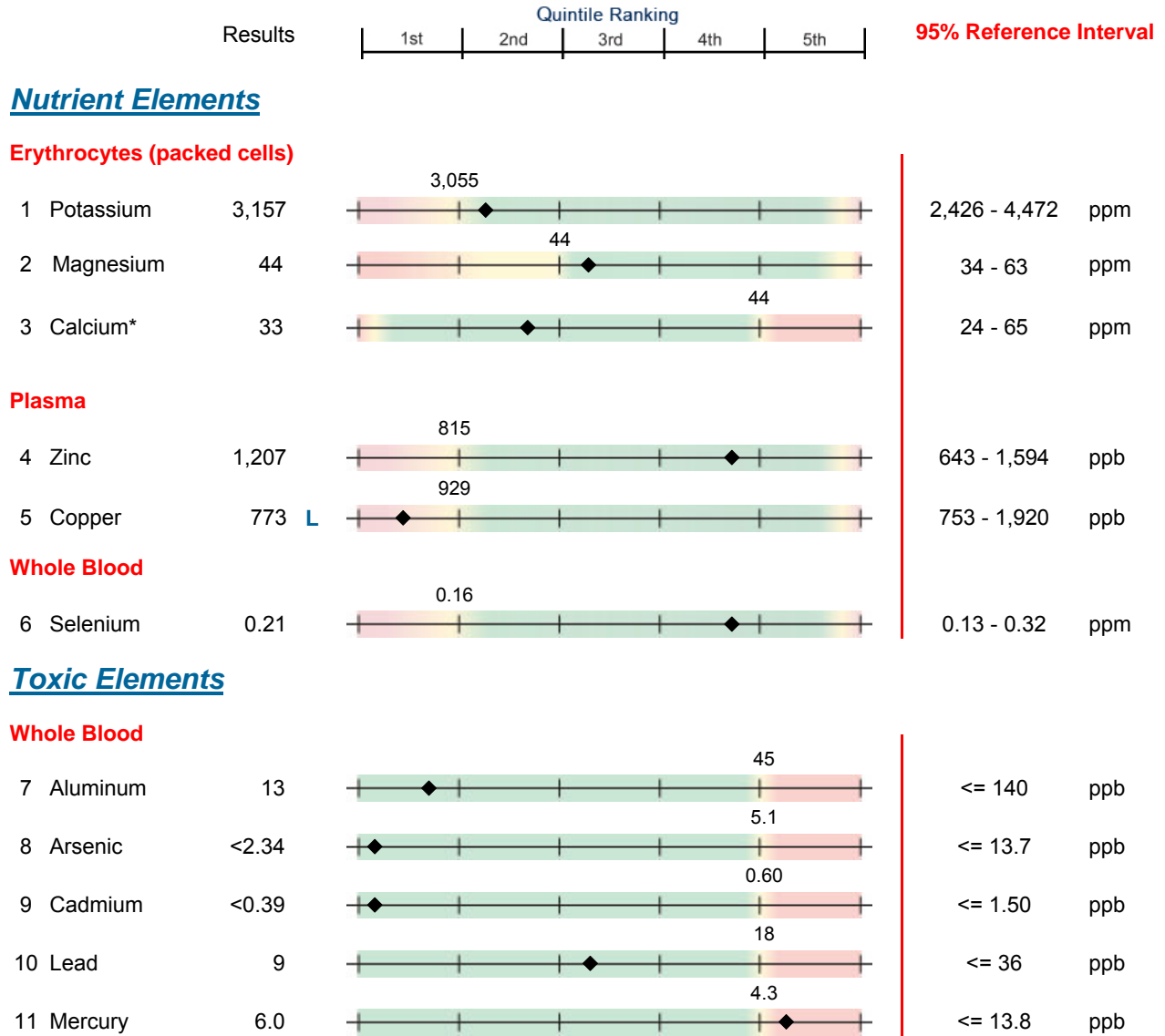
Homocysteine Assay - Plasma

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.

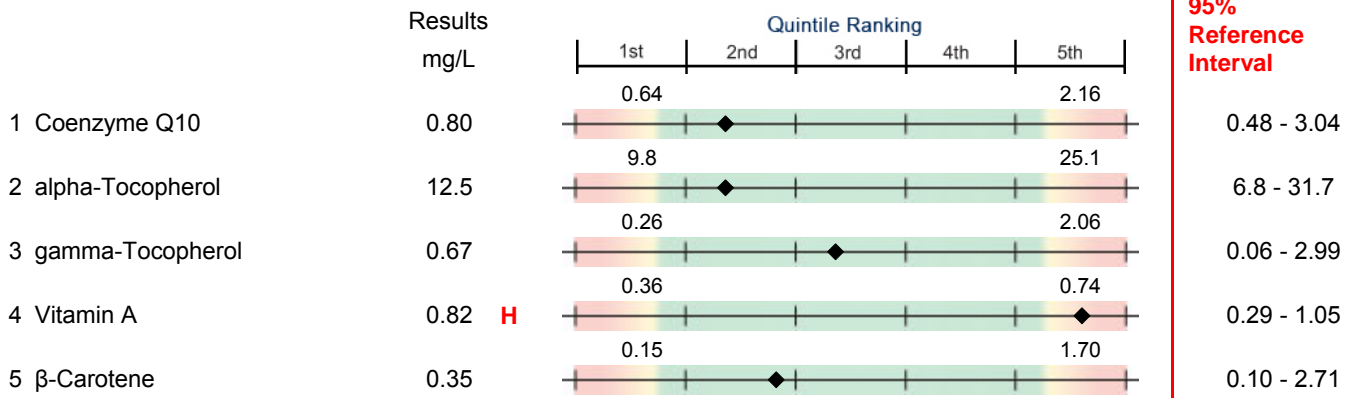
Ordering Physician:

Date Received:

Date Reported:

CoEnzyme Q10 Plus Vitamins Profile - Serum

Methodology: High Performance Liquid Chromatography



Lipid Peroxide Assay - Serum

Methodology: High Performance Liquid Chromatography



DNA/Oxidative Stress Marker Assay - Urine

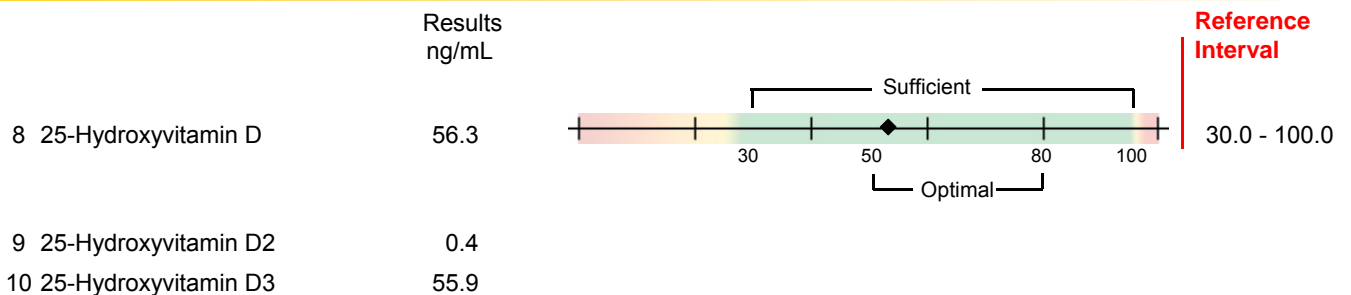
Methodology: LC/Tandem Mass Spectroscopy, Colorimetric

Ranges are for ages 13 and over.



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:

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Fatty Acids Profile - Plasma

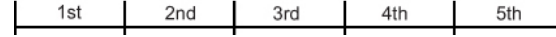
Methodology: Capillary Gas Chromatography/Mass Spectrometry

Ranges: Ages 13 and over.

Results
µmol/L

Quintile Ranking

95%
Reference
Interval



Polyunsaturated Omega-3

1	Alpha Linolenic (18:3n3)	18 L	20	13 - 80
2	Eicosapentaenoic (20:5n3)	10 L	17	5 - 210
3	Docosapentaenoic (22:5n3)	11 L	16	11 - 50
4	Docosahexaenoic (22:6n3)	32 L	59	31 - 213

Polyunsaturated Omega-6

5	Linoleic (18:2n6)	642 L	930, 1,669	821 - 2,032
6	Gamma Linolenic (18:3n6)	11	7, 33	5 - 46
7	Eicosadienoic (20:2n6)	5.1 L	6.4, 15.3	5.2 - 22.5
8	Dihomogamma Linolenic (20:3n6)	35	34, 102	27 - 140
9	Arachidonic (20:4n6)	209	201, 451	158 - 521
10	Docosadienoic (22:2n6)	<0.23	0.9	<= 2.0
11	Docosatetraenoic (22:4n6)	4.6	3.7, 13.8	2.6 - 18.1

Polyunsaturated Omega-9

12	Mead (20:3n9)	2.9	5.3	<= 8.3
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Monounsaturated

13	Myristoleic (14:1n5)	2.0	1.2, 6.1	0.8 - 9.7
14	Palmitoleic (16:1n7)	28 L	40, 155	30 - 256
15	Vaccenic (18:1n7)	26 L	48, 93	40 - 122
16	Oleic (18:1n9)	561	555, 1,182	466 - 1,470
17	11-Eicosenoic (20:1n9)	2.6 L	4.6, 10.3	3.7 - 18.1
18	Nervonic (24:1n9)	<1.1 L	1.1, 2.2	1.1 - 2.7

Fatty Acids Profile - Plasma

Methodology: Capillary Gas Chromatography/Mass Spectrometry

Ranges: Ages 13 and over.

Saturated

	Results µmol/L	Quintile Ranking	95% Reference Interval
		1st 2nd 3rd 4th 5th	
19 Capric (10:0)	4.8 H	1.4 4.0	0.7 - 6.2
20 Lauric (12:0)	6.9	3.3 14.5	2.2 - 27.3
21 Myristic (14:0)	34	20 87	15 - 139
22 Palmitic (16:0)	924	792 1,794	667 - 2,526
23 Stearic (18:0)	367	294 511	250 - 629
24 Arachidic (20:0)	1.7	1.5 3.2	1.3 - 4.7
25 Behenic (22:0)	0.9	0.8 2.0	0.6 - 2.9
26 Lignoceric (24:0)	0.86	0.84 1.66	0.63 - 2.45
27 Hexacosanoic (26:0)	<0.27	0.36	<= 0.43

Odd Chain

28 Pentadecanoic (15:0)	7.8	14.5	<= 20.6
29 Heptadecanoic (17:0)	9.7	19.3	<= 24.4
30 Nonadecanoic (19:0)	0.91	1.51	<= 1.89
31 Heneicosanoic (21:0)	<0.38	0.50	<= 0.74
32 Tricosanoic (23:0)	<0.37	0.62	<= 0.78

Trans

33 Palmitelaidic (16:1n7t)	<0.4	0.4	<= 1.8
34 Total C:18 Trans	35	42	<= 59

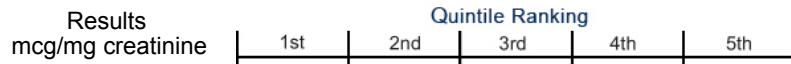
Ratios

35 LA/DGLA	18	30	11 - 46
36 EPA/DGLA	0.29	0.24	0.07 - 5.98
37 AA/EPA	21 H	20	1 - 57
38 Triene/Tetraene	0.014	0.016	<= 0.023

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	Results	Quintile Ranking	95% Reference Interval
1 Adipate	1.0	6.2	<= 11.1
2 Suberate	1.0	2.1	<= 4.6
3 Ethylmalonate	2.1	3.6	<= 6.3

Carbohydrate Metabolism

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

Item	Results	Quintile Ranking	95% Reference Interval
4 Pyruvate	<DL*	3.9	<= 6.4
5 L-Lactate	6.9	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	Results	Quintile Ranking	95% Reference Interval
7 Citrate	618 H	601	56 - 987
8 Cis-Aconitate	46	51	18 - 78
9 Isocitrate	70	98	39 - 143
10 α-Ketoglutarate	6.9	19.0	<= 35.0
11 Succinate	15.5 H	11.6	<= 20.9
12 Fumarate	0.64 H	0.59	<= 1.35
13 Malate	0.7	1.4	<= 3.1
14 Hydroxymethylglutarate	2.5	3.6	<= 5.1

B-Complex Vitamin Markers

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

Item	Results	Quintile Ranking	95% Reference Interval
15 α-Ketoisovalerate	0.18	0.25	<= 0.49
16 α-Ketoisocaproate	0.05	0.34	<= 0.52
17 α-Keto-β-Methylvalerate	0.08	0.38	<= 1.10
18 Xanthurenate	0.10	0.34	<= 0.46
19 β-Hydroxyisovalerate	3.4	7.6	<= 11.5

Methylation Cofactor Markers

(B12, Folate)

Item	Results	Quintile Ranking	95% Reference Interval
20 Methylmalonate	0.8	1.7	<= 2.3
21 Formiminoglutamate	<DL*	1.2	<= 2.2

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)

Item	Result	Quintile Ranking	95% Reference Interval
22 Vanilmandelate	1.0 L	1.6 - 3.9	1.2 - 5.3
23 Homovanillate	1.4 L	1.9 - 5.7	1.4 - 7.6
24 5-Hydroxyindoleacetate	2.1	2.1 - 5.6	1.6 - 9.8
25 Kynurenate	0.3	1.0	<= 1.5
26 Quinolinate	2.3	4.0	<= 5.8
27 Picolinate	2.8	8.0	2.8 - 13.5

Oxidative Damage and Antioxidant Markers

(Vitamin C and other antioxidants)

28 p-Hydroxyphenyllactate	0.19	0.39	<= 0.66
29 8-Hydroxy-2-deoxyguanosine	2.0	5.3	<= 7.6

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

Toxicants and Detoxification

Detoxification Indicators

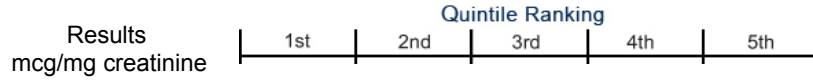
(Arg, NAC, Met, Mg and antioxidants)

30 2-Methylhippurate	0.087 H	0.084	<= 0.192
31 Orotate	0.16	0.69	<= 1.01
32 Glucarate	1.1	6.3	<= 10.7
33 a-Hydroxybutyrate	0.2	0.3	<= 0.9
34 Pyroglutamate	34	59	28 - 88
35 Sulfate	938 L	958 - 2,347	690 - 2,988

Organix® Comprehensive Profile - Urine

Methodology: LC/Tandem Mass Spectroscopy, Colorimetric

Ranges: Ages 13 and over.



Compounds of Bacterial or Yeast/Fungal Origin

Bacterial - general

Item #	Compound Name	Results (mcg/mg creatinine)	Quintile Ranking	Reference Range
36	Benzoate	5.2 H	4th	<= 9.3
37	Hippurate	8	1st	<= 1,070
38	Phenylacetate	<DL*	1st	<= 0.18
39	Phenylpropionate	<DL*	1st	<= 0.06
40	p-Hydroxybenzoate	0.6	3rd	<= 1.8
41	p-Hydroxyphenylacetate	<DL*	1st	<= 34
42	Indican	5	1st	<= 90
43	Tricarballoylate	0.56	4th	<= 1.41

L. acidophilus / general bacterial

44	D-Lactate	1.9	4th	<= 4.3
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Clostridial species

45	3,4-Dihydroxyphenylpropionate	<DL*	1st	<= 0.05
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Yeast / Fungal

46	D-Arabinitol	12	1st	<= 73
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Creatinine = 200 mg/dL

* <DL = less than detection limit

** >LIN = greater than linearity limit

ION Analyte Pattern Analysis

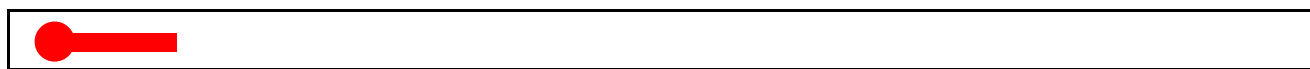
A multi-analyte report can provide greater insight about health risks and special nutrient needs. Patterns of abnormalities can reinforce the degree of significance indicated by a single measurement. Analytes from the various profiles in the ION report are combined below into categories associated with 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 H	Calcium	Magnesium
CoQ10	a-Tocopherol	Lipid Peroxide	8-OHdG
AA/EPA H			



Low significance

High significance

Fatigue

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

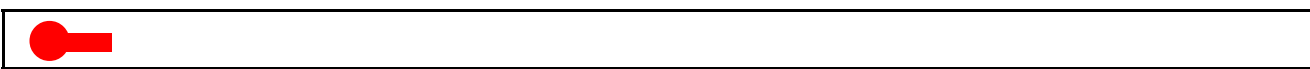


Low significance

High significance

Metabolic Syndrome (Syndrome X)

Magnesium	Palmitic	Stearic	AHB
BHB	BHiVal		

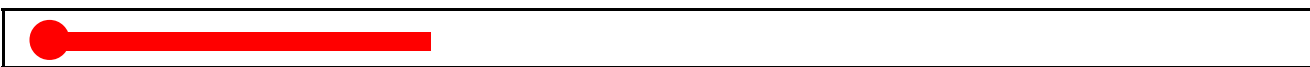


Low significance

High significance

Mental/Emotional

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



Low significance

High significance

ION Analyte Pattern Analysis

Intestinal Bacterial Metabolites

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

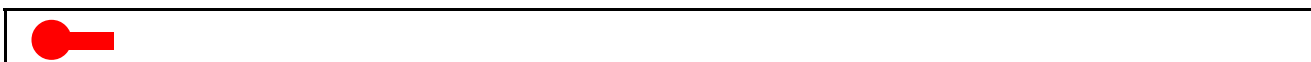


Low significance

High significance

Intestinal Yeasts / Fungal Metabolites

D-Arabinitol



Low significance

High significance

Digestion/Absorption

Arginine	Histidine	Isoleucine	Leucine
Lysine	Methionine	Phenylalanine	Threonine
Tryptophan	Valine	Selenium	



Low significance

High significance

Toxic Exposure

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



Low significance

High significance

Detoxification Impairment

Methionine	Glycine	Serine	Taurine
Glutamine	Pyroglutamate	Sulfate L	Benzoate H



Low significance

High significance

ION Analyte Pattern Analysis

Oxidative Stress/Antioxidant Insufficiency

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

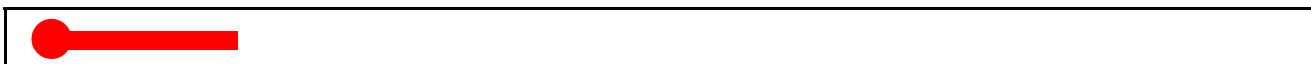


Low significance

High significance

Mitochondrial Functional Impairment

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

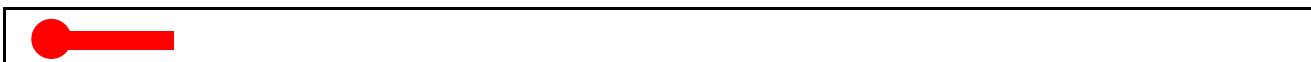


Low significance

High significance

Amino Acid Insufficiency

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

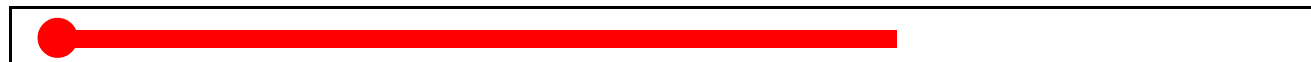


Low significance

High significance

Essential Fatty Acid Insufficiency

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



Low significance

High significance

Disordered Methyl Group (Single carbon) Transfer

Homocysteine	H	Pentadeca	Heptadeca	Nonadecanoic
Tricosanoic		Xanthurenate	MeMalonate	FIGLU
Kynurenate				



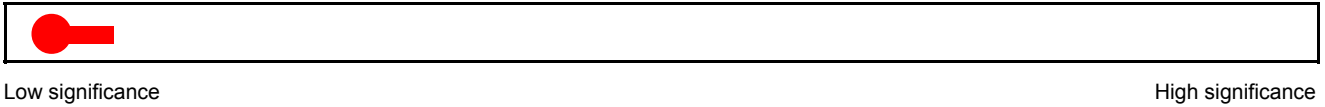
Low significance

High significance

ION Analyte Pattern Analysis

Disordered Tryptophan Metabolism

Tryptophan	Xanthurenate	5-HIA	Kynurenate
Quinolinate	Indican		



<u>Abbreviation</u>	<u>Analyte Name</u>	<u>Abbreviation</u>	<u>Analyte Name</u>
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