

PATIENT: #####

TEST REF: TST-##-####

TEST NUMBER: #####

COLLECTED: dd-mm-yyy

PRACTITIONER: #####

PATIENT NUMBER: #####

RECEIVED: dd-mm-yyy

GENDER: Female

TESTED: dd-mm-yyy

AGE: 62

DATE OF BIRTH: dd-mm-yyy

ADDRESS:

TEST NAME: Cardio ION
3104 Cardio/ION® Profile - Blood/Urine
Cardiovascular Health Profile - Blood

Methodology: Automated Chemistry, Immunometric Assay, Enzymatic Assay, HPLC, ICP-MS

Results

Reference Limit

Lipoprotein Factors

1. Total Cholesterol	252	H		<200 mg/dL
2. HDL Cholesterol	71			>= 50 mg/dL
3. LDL Cholesterol (Direct)	172	H		<130 mg/dL
4. Triglycerides	99			<150 mg/dL
5. Lipoprotein (a)	52	H		<= 37 mg/dL

Lipoprotein Ratios

6. LDL/HDL	2.4			<= 3.3
7. Total/HDL	3.5			<= 4.5

Male		Female		Risk(*)
LDL/HDL	Total/HDL	LDL/HDL	Total/HDL	
1.0	3.4	1.5	3.3	0.5x Average
3.6	5.0	3.2	4.4	1.0x Average
6.3	9.6	5.0	7.1	2.0x Average
8.0	23.4	6.1	11.0	3.0x Average

*Adapted from the Framingham Heart Study

Chronic Inflammatory Markers

8. Ferritin	97			6 - 159 ng/mL
9. Fibrinogen	258			175 - 425 mg/dL
10. c-Reactive Protein (HS)	2.5			<= 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	

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Cardiovascular Health Profile - Blood

Methodology: Automated Chemistry, Immunometric Assay, Enzymatic Assay, HPLC, ICP-MS

	Results		Reference Limit
Other Important Indicators			
11. Insulin	2.5		2.0 - 12.0 µIU/mL
12. Testosterone	<20		<= 51 ng/dL
13. Sex Hormone Binding Globulin	45		18 - 114 nmol/L
14. Free Androgen Index (calc.)	<1.5		<= 4.6 Ratio
QU NTILE DISTRIBUTION 1st 2nd 3rd 4th 5th 95% Reference Range			
15. RBC Magnesium	39	 44	34 - 63 ppm packed cells

Oxidant Stress Factors			
16. Homocysteine	12.5	 4.0 10.0	3.0 - 14.0 nmol/mL
17. Coenzyme Q10	3.52 H	 0.64 2.16	0.48 - 3.04 mg/L
18. Lipid Peroxides	0.48	 1.72	<= 2.60 nmol/mL
19. alpha-Tocopherol	32.1 H	 9.8 25.1	6.8 - 31.7 mg/L
20. gamma-Tocopherol	0.99	 0.26 2.06	0.06 - 2.99 mg/L

NR = Not Reportable

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DATE OF BIRTH: dd-mm-yyy

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TEST NAME: Cardio ION
Amino Acids 20 Profile - Plasma

Methodology: High Performance Liquid Chromatography

Ranges: Ages 13 and over.


 Results $\mu\text{mol/L}$ QUINT LE DISTRIBUTION 95% Reference Range
 1st 2nd 3rd 4th 5th

Essential Amino Acids
Limiting Amino Acids

Rank	Amino Acid	Result $\mu\text{mol/L}$	1st	2nd	3rd	4th	5th	95% Reference Range
1.	Lysine	133	117				203	99 - 234
2.	Methionine	20	16				26	14 - 30
3.	Tryptophan	49	35				59	30 - 67

Branched Chain Amino Acids

4.	Isoleucine	51	40				72	33 - 89
5.	Leucine	97	80				137	68 - 161
6.	Valine	207	143				240	123 - 282

Other Essential Amino Acids

7.	Phenylalanine	50	43				64	39 - 74
8.	Histidine	69	48				72	41 - 82
9.	Threonine	115	76				151	63 - 181

Conditionally Essential Amino Acids

10.	Arginine	81	48				96	37 - 114
11.	Taurine	39	31				73	26 - 100
12.	Glycine	226	162				348	136 - 430
13.	Serine	85	66				115	57 - 133

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TEST NAME: Cardio ION
Amino Acids 20 Profile - Plasma

Methodology: High Performance Liquid Chromatography

Ranges: Ages 13 and over.

Results μmol/L	QUINTILE DISTRIBUTION					95% Reference Range
	1st	2nd	3rd	4th	5th	
Functional Categories						
Vascular Function						
14. Arginine	81	48			96	37 - 114
15. Taurine	39	31			73	26 - 100
Neurotransmitters and Precursors						
16. Phenylalanine	50	43			64	39 - 74
17. Tyrosine	58	38			70	29 - 80
18. Tryptophan	49	35			59	30 - 67
19. Glutamic Acid	49	29			95	23 - 136
20. Taurine	39	31			73	26 - 100
Sulfur Amino Acids (Glutathione - related)						
21. Methionine	20	16			26	14 - 30
22. Taurine	39	31			73	26 - 100
Urea Cycle and Ammonia Detoxification						
23. Arginine	81	48			96	37 - 114
24. Citrulline	32	20			38	15 - 44
25. Ornithine	57	32			81	23 - 109
26. Glutamine	586	397			585	338 - 630
27. Asparagine	32	30			49	26 - 56
28. Aspartic Acid	6.2	4.8			9.7	4.2 - 12.5
Ratios						
29. Phenylalanine/Tyrosine	0.86					<= 1.44
30. Glutamic Acid/Glutamine	0.08	0.06			0.21	0.05 - 0.35
31. Tryptophan/LNAA*	0.106	0.100			0.106	0.095 - 0.106

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

NR = Not Reportable

PATIENT: #####

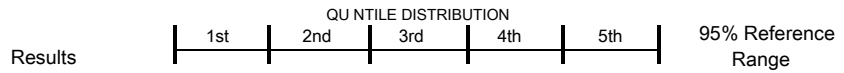
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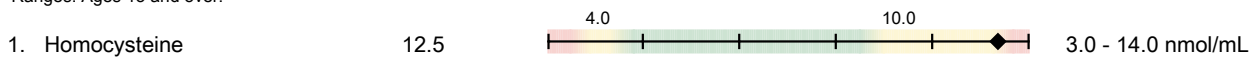
PRACTITIONER: #####
 ADDRESS:

TEST NAME: Cardio ION



Homocysteine Assay - Plasma

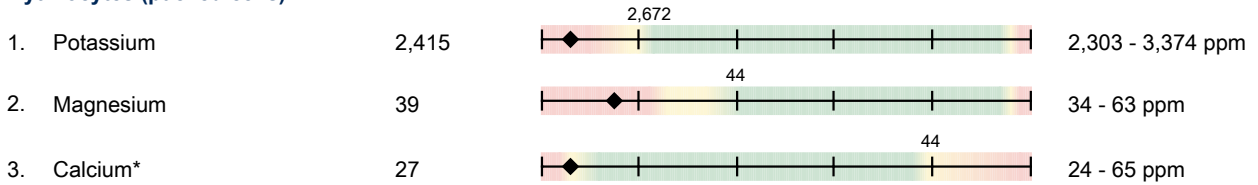
Methodology: Enzymatic Assay
 Ranges: Ages 13 and over.



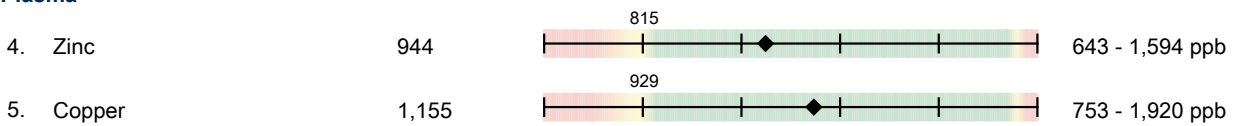
Nutrient & Toxic Elements Profile - Blood
 Methodology: Inductively Coupled Plasma/Mass Spectrometry

Nutrient Elements

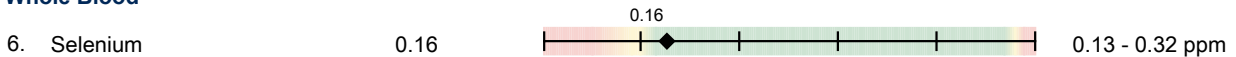
Erythrocytes (packed cells)



Plasma

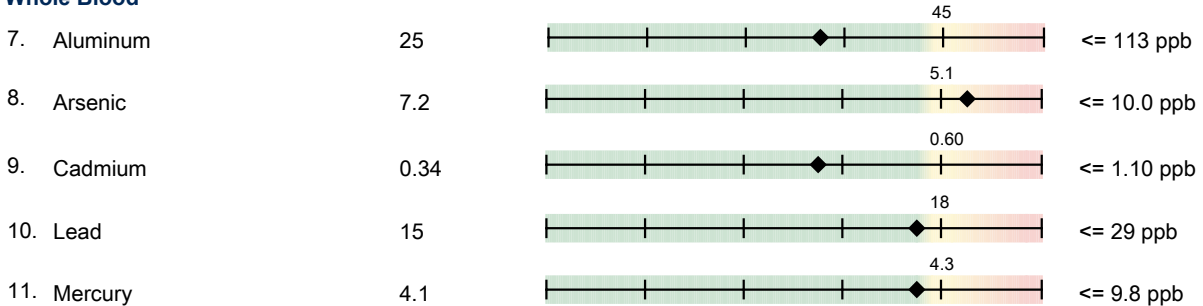


Whole Blood



Toxic Elements

Whole Blood



*Relevant to membrane permeability, not nutritional status.

Results for whole blood toxic elements that are within normal limits do not rule out metal accumulation in other tissues.

NR = Not Reportable

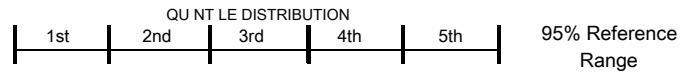
PATIENT: #####

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 AGE: 62
 DATE OF BIRTH: dd-mm-yyy

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 TESTED: dd-mm-yyy

 PRACTITIONER: #####
 ADDRESS:

TEST NAME: Cardio ION

Coenzyme Q10 Plus Vitamins Profile - Serum

Methodology: High Performance Liquid Chromatography

Ranges: Ages 13 and over.

Item	Results mg/L	Visual	Reference Range
1. Coenzyme Q10	3.52 H		0.48 - 3.04
2. alpha-Tocopherol	32.1 H		6.8 - 31.7
3. gamma-Tocopherol	0.99		0.06 - 2.99
4. Vitamin A (Retinol)	0.65		0.29 - 1.05
5. beta-Carotene	1.08		0.10 - 2.71

Lipid Peroxides Assay - Serum

Methodology: High Performance Liquid Chromatography

Item	Results nmol/mL	Visual	Reference Range
6. Lipid Peroxides	0.48		<= 2.60

DNA/Oxidative Stress Marker (8-OHdG) Assay - Urine

Methodology: LC/Tandem Mass Spectrometry, Colorimetric

Ranges: Ages 13 and over.

Item	Results ng/mg creatinine	Visual	Reference Range
7. 8-Hydroxy-2-deoxyguanosine	8.5 H		<= 7.6

Vitamin D Profile - Serum

Methodology: LC/Tandem Mass Spectrometry

Item	Results ng/mL	Visual	Reference Range
8. 25-Hydroxyvitamin D	23.8 L		30.0 - 100.0
9. 25-Hydroxyvitamin D2	<0.1		
10. 25-Hydroxyvitamin D3	23.7		

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).

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

<DL = less than detection limit

NR = Not Reportable

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GENDER: Female

TESTED: dd-mm-yyy

AGE: 62

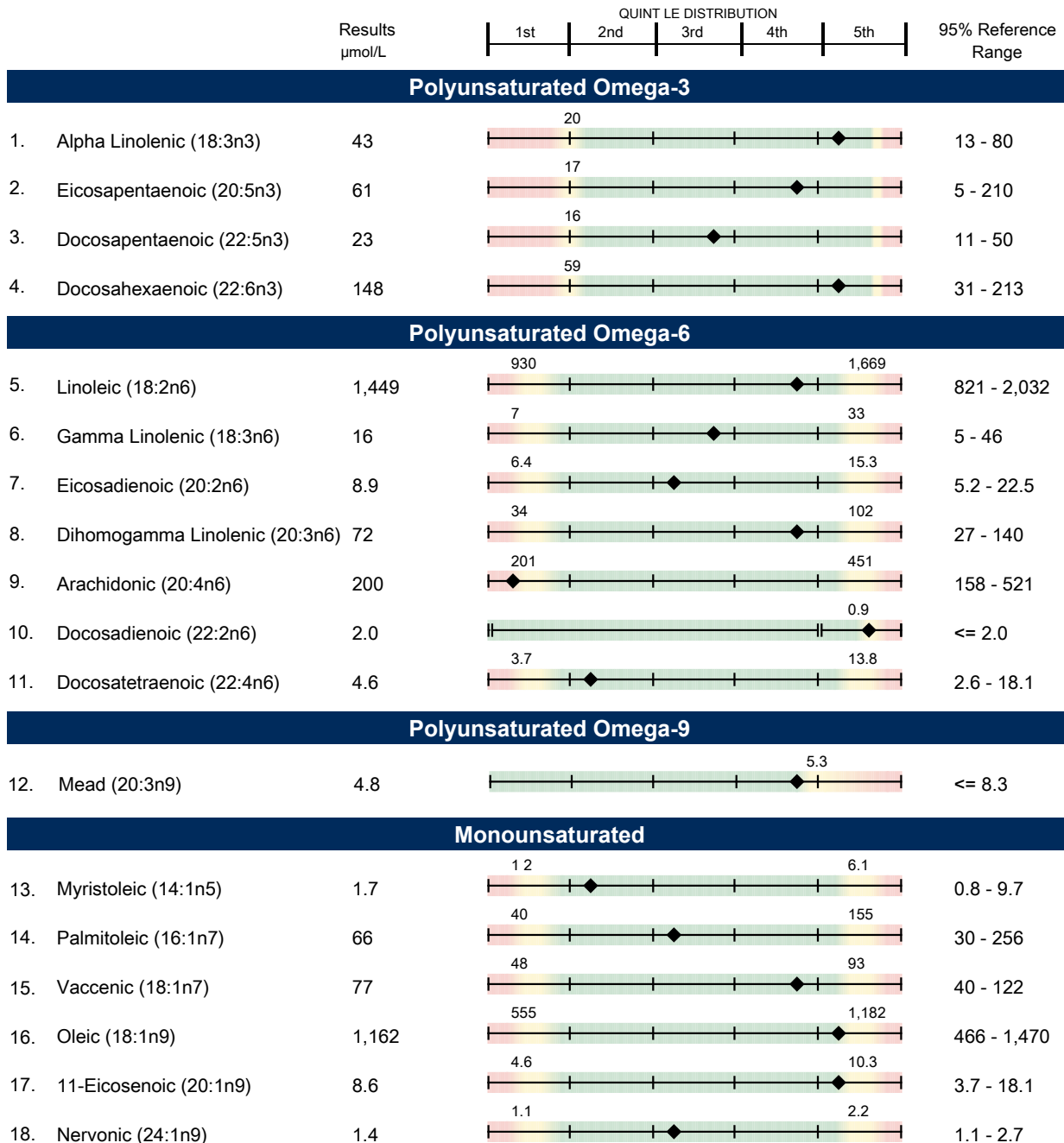
DATE OF BIRTH: dd-mm-yyy

ADDRESS:

TEST NAME: Cardio ION
Fatty Acids Profile - Plasma

Methodology: Capillary Gas Chromatography/Mass Spectrometry

Ranges: Ages 13 and over



PATIENT: #####

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TEST NUMBER: #####

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RECEIVED: dd-mm-yyy

GENDER: Female

TESTED: dd-mm-yyy

AGE: 62

DATE OF BIRTH: dd-mm-yyy

ADDRESS:

TEST NAME: Cardio ION
Fatty Acids Profile - Plasma

Methodology: Capillary Gas Chromatography/Mass Spectrometry

Ranges: Ages 13 and over

	Results µmol/L	QUINTILE DISTRIBUTION					95% Reference Range
		1st	2nd	3rd	4th	5th	
Saturated							
19. Capric (10:0)	1.3	1.4				4.0	0.8 - 6.2
20. Lauric (12:0)	6.5	3.3				14.5	2.2 - 27.3
21. Myristic (14:0)	25	20				87	15 - 139
22. Palmitic (16:0)	1,087	792				1,794	667 - 2,526
23. Stearic (18:0)	420	294				511	250 - 629
24. Arachidic (20:0)	3.1	1.5				3.2	1.3 - 4.7
25. Behenic (22:0)	1.6	0.8				2.0	0.6 - 2.9
26. Lignoceric (24:0)	1.30	0.84				1.66	0.63 - 2.45
27. Hexacosanoic (26:0)	0.37					0.36	<= 0.43
Odd Chain							
28. Pentadecanoic (15:0)	11.6					14.5	<= 20.6
29. Heptadecanoic (17:0)	13.9					19.3	<= 24.4
30. Nonadecanoic (19:0)	1.60					1.51	<= 1.89
31. Heneicosanoic (21:0)	0.63					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	8					42	<= 59
Ratios							
35. LA/DGLA	20					30	11 - 46
36. EPA/DGLA	0.85	0.24					0.07 - 5.98
37. AA/EPA	3					20	1 - 57
38. Triene/Tetraene	0.024					0.016	<= 0.023

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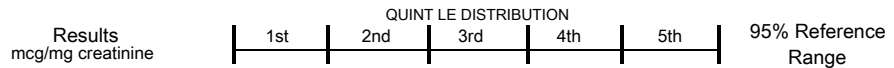
 PRACTITIONER: #####
 ADDRESS:

TEST NAME: Cardio ION
Organix® Comprehensive Profile - Urine

Methodology: LC/Tandem Mass Spectrometry, Colorimetric

This report is not intended for the diagnosis of neonatal inborn errors of metabolism.

Ranges: Ages 13 and over


Nutrient Markers
Fatty Acid Metabolism

(Carnitine & B2)

Results	mcg/mg creatinine	1st	2nd	3rd	4th	5th	95% Reference Range
1.	Adipate	3.5				6.2	<= 11.1
2.	Suberate	1.4				2.1	<= 4.6
3.	Ethylmalonate	3.5				3.6	<= 6.3

Carbohydrate Metabolism

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

4.	Pyruvate	<DL				3.9	<= 6.4
5.	L-Lactate	13.7				8.5	0.6 - 16.4
6.	β-Hydroxybutyrate	1.8				2.1	<= 9.9

Energy Production (Citric Acid Cycle)

(B comp., CoQ10, Amino Acids, Mg)

7.	Citrate	535				601	56 - 987
8.	Cis-Aconitate	56				51	18 - 78
9.	Isocitrate	94				98	39 - 143
10.	α-Ketoglutarate	6.0				19.0	<= 35.0
11.	Succinate	8.3				11.6	<= 20.9
12.	Fumarate	<DL				0.59	<= 1.35
13.	Malate	0.5				1.4	<= 3.1
14.	Hydroxymethylglutarate	4.8				3.6	<= 5.1

B-Complex Vitamin Markers

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

15.	α-Ketoisovalerate	<DL				0.25	<= 0.49
16.	α-Ketoisocaproate	0.08				0.34	<= 0.52
17.	α-Keto-β-Methylvalerate	1.06				0.38	<= 1.10
18.	Xanthurenate	0.09				0.34	<= 0.46
19.	β-Hydroxyisovalerate	6.0				7.6	<= 11.5

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Organix® Comprehensive Profile - Urine

Methodology: LC/Tandem Mass Spectrometry, Colorimetric

This report is not intended for the diagnosis of neonatal inborn errors of metabolism.

Ranges: Ages 13 and over



Nutrient Markers

Methylation Cofactor Markers

(B12, Folate)

Item	Results	1st	2nd	3rd	4th	5th	95% Reference Range
20. Methylmalonate	1.7					1.7	<= 2.3
21. Formiminoglutamate	0.5					1.2	<= 2.2

Cell Regulation Markers

Neurotransmitter Metabolism Markers

(Tyrosine, Tryptophan, B6, Antioxidants)

Item	Results	1st	2nd	3rd	4th	5th	95% Reference Range
22. Vanilmandelate	3.4	1.6				3.9	1.2 - 5.3
23. Homovanillate	3.9	1.9				5.7	1.4 - 7.6
24. 5-Hydroxyindoleacetate	6.1	2.1				5.6	1.6 - 9.8
25. Kynurenate	0.7					1.0	<= 1.5
26. Quinolinate	2.8					4.0	<= 5.8
27. Picolinate	5.5					8.0	2.8 - 13.5

Oxidative Damage and Antioxidant Markers

(Vitamin C and Other Antioxidants)

Item	Results	1st	2nd	3rd	4th	5th	95% Reference Range
28. p-Hydroxyphenyllactate	0.32					0.39	<= 0.66
29. 8-Hydroxy-2-deoxyguanosine	8.5					5.3	<= 7.6

(Units for 8-hydroxy-2-dexoyguanosine are ng/mg creatinine)

Toxicants and Detoxification

Detoxification Indicators

(Arg, NAC, Met, Mg, Antioxidants)

Item	Results	1st	2nd	3rd	4th	5th	95% Reference Range
30. 2-Methylhippurate	0.045					0.084	<= 0.192
31. Orotate	0.46					0.69	<= 1.01
32. Glucarate	4.1					6.3	<= 10.7
33. α-Hydroxybutyrate	<DL					0.3	<= 0.9
34. Pyroglutamate	47					59	28 - 88
35. Sulfate	1,423	958				2,347	690 - 2,988

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Ranges: Ages 13 and over

Results mcg/mg creatinine	QUINTILE DISTRIBUTION					95% Reference Range
	1st	2nd	3rd	4th	5th	

Compounds of Bacterial or Yeast/Fungal Origin
Bacterial - General

36. Benzoate	<DL					0.6	<= 9.3
37. Hippurate	1,352	H				548	<= 1,070
38. Phenylacetate	0.06					0.11	<= 0.18
39. Phenylpropionate	<DL						<= 0.06
40. p-Hydroxybenzoate	0.7					1.1	<= 1.8
41. p-Hydroxyphenylacetate	13					19	<= 34
42. Indican	114	H				64	<= 90
43. Tricarballic acid	0.67					0.73	<= 1.41

L. acidophilus / General Bacterial

44. D-Lactate	1.0					2.0	<= 4.1
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Clostridial Species

45. 3,4-Dihydroxyphenylpropionate	<DL						<= 0.05
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Yeast / Fungal

46. D-Arabinitol	53					36	<= 73
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Creatinine = 91 mg/dL

<DL = less than detection limit

>UL = greater than upper linearity limit

NR = Not reportable



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GENDER: Female	TESTED: dd-mm-yyy	
AGE: 62		
DATE OF BIRTH: dd-mm-yyy		

TEST NAME: Cardio ION



Commentary

Lab Comments
Urine to follow bhowell 07/09/2018

Urine received bhowell 07/13/2018

This test has been developed and its performance characteristics determined by Genova Diagnostics, Inc. It has not been cleared by the U.S. Food and Drug Administration.

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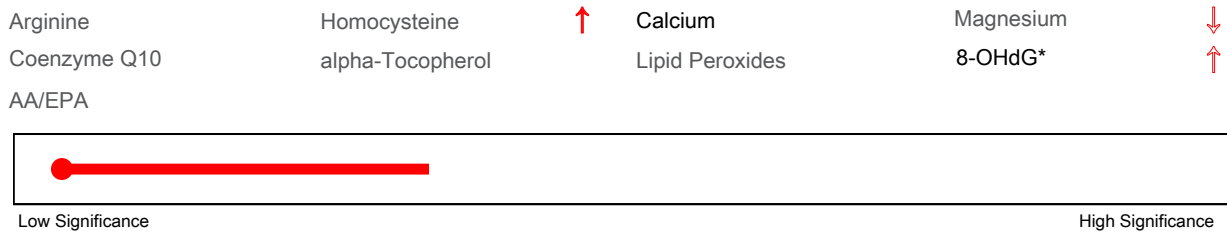
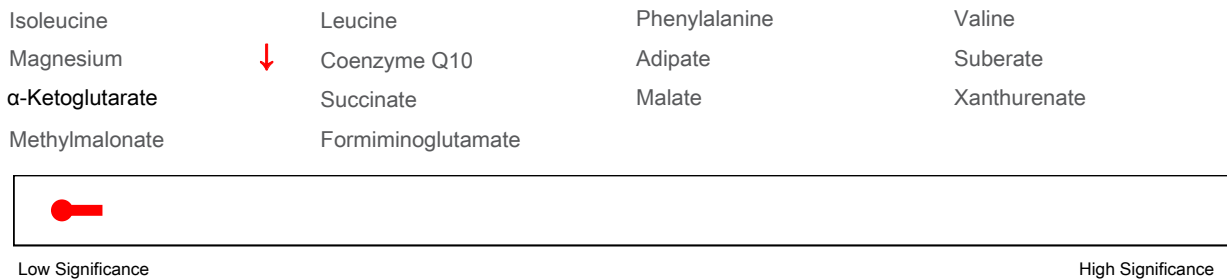
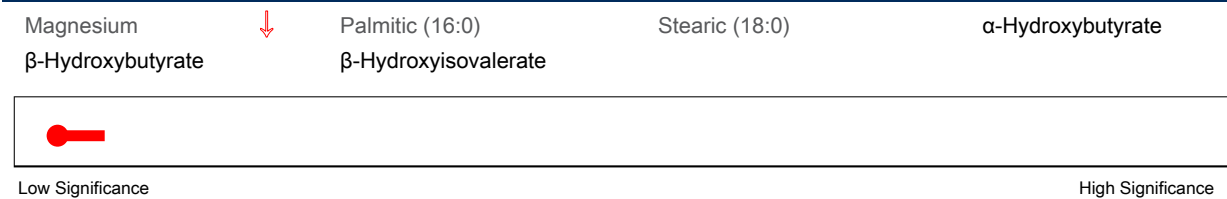
ADDRESS:

TEST NAME: Cardio ION
3104 Cardio/ION Profile - Blood/Urine
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 ↑ or ↓ appears when the patient result is outside the fourth quintile of the population.

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 results provide the detail upon which these thermometers are based.

Cardiovascular System

Fatigue

Metabolic Syndrome (Syndrome X)


*8-OHdG = 8-Hydroxy-2-deoxyguanosine

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3104 Cardio/ION Profile - Blood/Urine

Mental/Emotional

Tryptophan	Tyrosine	Magnesium	↓	Eicosapentanoic
Docosahexaenoic	Xanthurenate	Methylmalonate		Formiminoglutamate
Vanilmandelate	5-Hydroxyindoleacetate	↑		

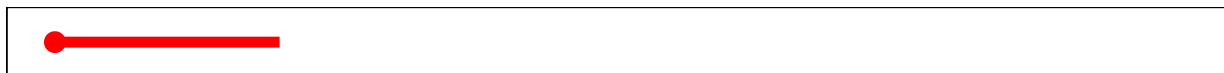


Low Significance

High Significance

Intestinal/Bacterial Metabolites

Phenylacetate	Phenylpropionate	p-Hydroxybenzoate	p-Hydroxyphenylacetate
Indican	↑ Tricarballicylate	D-Lactate	3,4-DHPP*



Low Significance

High Significance

Intestinal Yeasts/Fungal Metabolites

D-Arabinitol ↑

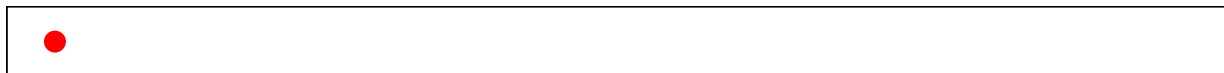


Low Significance

High Significance

Digestion/Absorption

Arginine	Histidine	Isoleucine	Leucine
Lysine	Methionine	Phenylalanine	Threonine
Tryptophan	Valine	Selenium	



Low Significance

High Significance

*3,4-DHPP = 3,4-Dihydroxyphenylpropionate



PATIENT: #####

TEST REF: TST-##-#####

TEST NUMBER: #####

COLLECTED: dd-mm-yyy

PRACTITIONER: #####

PATIENT NUMBER: #####

RECEIVED: dd-mm-yyy

GENDER: Female

TESTED: dd-mm-yyy

AGE: 62

DATE OF BIRTH: dd-mm-yyy

ADDRESS:

TEST NAME: Cardio ION

3104 Cardio/ION Profile - Blood/Urine

Toxic Exposure

Aluminum	Arsenic	Cadmium	Lead
Mercury	Palmitelaidic (16:1n7t)	Total C:18 Trans	Citrate
Cis-Aconitate	↑ Isocitrate	Quinolate	2-Methylhippurate
Orotate	Glucarate		



Low Significance

High Significance

Detoxification Impairment

Methionine	Glycine	Serine	Taurine
Glutamine	Pyroglutamate	Sulfate	Benzoate

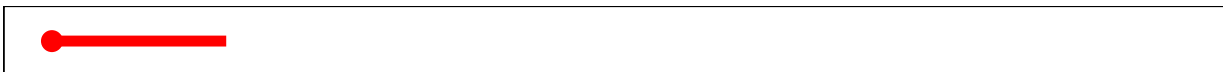


Low Significance

High Significance

Oxidative Stress/Antioxidant Insufficiency

Taurine	Selenium	Lead	Mercury
alpha-Tocopherol	gamma-Tocopherol	Vitamin A (Retinol)	β-Carotene
Lipid Peroxides	8-OHdG*	↑ p-Hydroxyphenyllactate	Sulfate

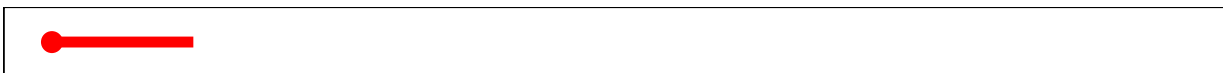


Low Significance

High Significance

Mitochondrial Functional Impairment

Magnesium	↓ Coenzyme Q10	Adipate	Suberate
Ethylmalonate	Pyruvate	L-Lactate	↑ α-Hydroxybutyrate
β-Hydroxybutyrate	Succinate	Fumarate	Malate



Low Significance

High Significance

*8-OHdG = 8-Hydroxy-2-deoxyguanosine



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3104 Cardio/ION Profile - Blood/Urine

Amino Acid Insufficiency

Arginine	Histidine	Isoleucine	Leucine
Lysine	Methionine	Phenylalanine	Threonine
Tryptophan	Valine	Sulfate	



Low Significance

High Significance

Essential Fatty Acid Insufficiency

Arachidonic	↓	Alpha Linoleic	Eicosapentaenoic	Docosahexaenoic
Linoleic		Gamma Linolenic	Dihomogamma Linolenic	Palmitoleic
Triene/Tetraene	↑			



Low Significance

High Significance

Disordered Methyl Group (Single Carbon) Transfer

Homocysteine	↑	Pentadecanoic	Heptadecanoic	Nonadecanoic	↑
Tricosanoic		Xanthurenate	Methylmalonate	Formiminoglutamate	
Kynurenate					



Low Significance

High Significance

Disordered Tryptophan Metabolism

Tryptophan	Xanthurenate	5-Hydroxyindoleacetate	↑	Kynurenate
Quinolate	Indican		↑	



Low Significance

High Significance



PATIENT: #####		TEST REF: TST-##-####
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PATIENT NUMBER: #####	RECEIVED: dd-mm-yyy	
GENDER: Female	TESTED: dd-mm-yyy	
AGE: 62		
DATE OF BIRTH: dd-mm-yyy		

TEST NAME: Cardio ION

3104 Cardio/ION Profile - Blood/Urine

Additional Considerations

This page 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.

Nutrient	Nutrient Need
Vitamin C	High
Vitamin D	High
Vitamin E (mixed tocopherols)	Moderate
Magnesium	Low
Need for other antioxidants	Moderate

Various conditionally essential nutrients and other potentially beneficial interventions appear in this section only if relevant abnormalities are present.

Nordic Laboratories Aps

Nygade 6, 3.sal · 1164 Copenhagen K · Denmark

Tel: +45 33 75 10 00

UK Office:

11 Old Factory Buildings · Stonegate · E. Sussex TN5 7DU · UK

Tel: +44 (0)1580 201 687

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info@nordic-labs.com



PATIENT: #####

TEST REF: TST-##-####

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3104 Cardio/ION Profile - Blood/Urine

General Supplement Ranges

These supplement ranges are not adjusted for age, sex, or gender.

Nutrient supplementation is at the discretion of the treating clinician. The supplement dose ranges provided below are meant for educational purposes only. These dosage ranges relate to findings commonly found on Genova's nutritional panels and do not apply to specific disease conditions where different dosages may be warranted.

Nutrient	Adult Dosage Range*
Vitamin A	0-5000 IU
Vitamin C	0-1000 mg
Vitamin D	0-2000 IU
Vitamin E (mixed tocopherols)	0-400 IU
Vitamin B-1 (Thiamin)	0-50 mg
Vitamin B-2 (Riboflavin)	0-50 mg
Vitamin B-3 (Niacin)	0-50 mg
Vitamin B-5 (Pantothenic Acid)	0-100 mg
Vitamin B-6 (Pyridoxine)	0-50 mg
Vitamin B-12 (Cobalamin)	0-1000 mcg
Folic Acid	0-1000 mcg
Biotin	0-400 mcg
Magnesium	0-400 mg
Zinc	0-25 mg
Selenium	0-200 mcg
Omega-3	0-3 gms
Carnitine	0-1000 mg
Coenzyme Q10	0-200 mg
Lipoic Acid	0-200 mg
N-Acetylcysteine	0-1000 mg
L-Arginine	0-1000 mg
Glycine	0-3000 mg
L-Glutamine	0-3000 mg
L-Isoleucine	0-500 mg
L-Leucine	0-1000 mg
L-Lysine	0-1000 mg
L-Methionine	0-500 mg
L-Phenylalanine	0-500 mg
Taurine	0-1000 mg
L-Tyrosine	0-1000 mg
L-Threonine	0-500 mg
L-Tryptophan	0-200 mg
L-Valine	0-500 mg

*Dosage ranges are adapted from the textbook *Nutritional Medicine* by Alan Gaby, M.D.¹

1. Gaby AR. *Nutritional Medicine*. Vol 265: Fritz Perlberg Publishing; 2011.

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