Metametrix
Clinical Laboratory
3425 Corporate Way
Duluth, GA 30096
770.446.5483 Fax:770.441.2237

Ordering Physician:

Metametrix

3425 Corporate Way
Duluth, GA 30096

Accession Number: **A1001250160**
Reference Number:
Patient: Sample Report
Age: 47 *Sex:* Female
Date of Birth: 02/05/1962
Date Collected: 1/24/10
Date Received: 1/25/10
Report Date: 1/25/10
Telephone: (770) 446-4583
Fax: (770) 441-2237
Reprinted: 1/29/10
Comment:

0410 Triad™ Bloodspot Profile

This report contains the following:

1. Laboratory data
   Organix™ Comprehensive Profile
   Amino Acids 20 - Blood Spot
   IgG4 Food Antibodies (90 Antigens)
2. Triad Profile Analyte Pattern Analysis

To view your online Food Reaction Patient Guide, please visit our website at *www.metametrix.com/triad* and select the Interpretive Guide tab on the top row navigation.

Bloodspot amino acid reference ranges have been changed due to refinement of reference population data and the addition of ranges for children.

0400 Triad™ Profile

Summary of abnormal results:

	Findings	Intervention Options	Metabolic Association
Fatty Acid Metabolism			
No Abnormality Found			
Carbohydrate Metabolism			
No Abnormality Found			
Energy Production Markers			
Fumarate	High	CoQ10	ATP production
Hydroxymethylglutarate	High	CoQ10	HMG-CoA reductase inhibition
B-Complex Vitamin Markers			
Xanthurenate	Very High	B6	Impaired Tryptophan metabolism
Methylation Cofactor Markers			
No Abnormality Found			
Neurotransmitter Metabolism Markers			
No Abnormality Found			
Oxidative Damage and Antioxidant Markers			
8-Hydroxy-2-deoxyguanosine	High	Vitamin C, Vitamin E	DNA oxidation product
Detoxification Indicators			
Glucarate	High	N-acetylcysteine, Glutathione, Hepatic support	Hepatic Phase I and II detox
Bacterial - General			
Benzoate	High	Glycine	Hepatic Phase II conjugation
p-Hydroxyphenylacetate	High	Probiotics	Intestinal bacterial overgrowth
L. acidophillus/general bacteria			
No Abnormality Found			
Clostridial species			
No Abnormality Found			
Yeast/Fungal			
D-Arabinitol	High	Antifungals	Yeast overgrowth
Essential Amino Acids			
Number of abnormal aminos	2	Determine candidacy for amino acids	Failure to utilize
Neuroendocrine Metabolism			
No Abnormality Found			
Ammonia/Energy Metabolism			
Number of abnormal aminos	1	Customized free from amino acids	Amino Acid insufficiency
Food Antibody Reactions (No. of foods)			
Mild (+1 and +2)	2	Use Elimination Diet	Intestinal hyperpermeability
Moderate (+3 and +4)	1	Use Elimination Diet	Intestinal hyperpermeability
Severe (+5)	1	Use Elimination Diet	Intestinal hyperpermeability
Total Number >= +1	4	Glutamine	Intestinal hyperpermeability

Organix™ Comprehensive - Urine

Methodology: LC/Tandem Mass Spectroscopy, Colorimetric

Results are expressed as mcg/mg creatinine.

Ranges are for ages 13 and over.

Percentile Ranking by Quintile

1st | 2nd | 3rd | 4th | 5th

20% | 40% | 60% | 80%

95% Reference Interval

NUTRIENT MARKERS	Results		Percentile Ranking by Quintile	95% Reference Interval
Fatty Acid Metabolism				
(Carnitine & B2)				
1 Adipate	0.7		5.2	<= 8.3
2 Suberate	0.4		1.7	<= 3.2
3 Ethylmalonate	1.5		3.6	<= 6.3
Carbohydrate Metabolism				
(B1, B3, Cr, Lipoic Acid, CoQ10)				
4 Pyruvate	2.3		3.9	<= 6.4
5 L-Lactate	5		14	3 - 46
6 β-Hydroxybutyrate	0.9		2.1	<= 9.9
Energy Production (Citric Acid Cycle)				
(B comp., Q10, Amino acids, Mg)				
7 Citrate	280		601	56 - 987
8 Cis-Aconitate	50		51	18 - 78
9 Isocitrate	51		98	39 - 143
10 a-Ketoglutarate	<DL*		19.0	<= 35.0
11 Succinate	11.4		11.6	<= 20.9
12 Fumarate	0.65	H	0.59	<= 1.35
13 Malate	0.4		1.4	<= 3.1
14 Hydroxymethylglutarate	4.5	H	3.6	<= 5.1
B-Complex Vitamin Markers				
(B1, B2, B3, B5, B6, Biotin)				
15 a-Ketoisovalerate	<DL*		0.25	<= 0.49
16 a-Ketoisocaproate	0.06		0.34	<= 0.52
17 a-Keto-β-Methylvalerate	<DL*		0.38	<= 1.10
18 Xanthurenate	0.92	H	0.47	<= 0.74
19 β-Hydroxyisovalerate	2.5		7.6	<= 11.5
Methylation Cofactor Markers				
(B12, Folate)				
20 Methylmalonate	0.5		1.7	<= 2.3
21 Formiminoglutamate	0.1		1.2	<= 2.2

Organix™ Comprehensive - Urine

Methodology: LC/Tandem Mass Spectroscopy, Colorimetric

Ranges are for ages 13 and over.

Percentile Ranking by Quintile

1st | 2nd | 3rd | 4th | 5th

20% 40% 60% 80%

95% Reference Interval

CELL REGULATION MARKERS

Neurotransmitter Metabolism Markers
(Tyrosine, Tryptophan, B6, antioxidants)

					95% Reference Interval
22	Vanilmandelate	2.5		1.8 – 3.9	1.3 - 4.9
23	Homovanillate	4.6		2.1 – 6.3	1.6 - 10.9
24	5-Hydroxyindoleacetate	2.6		2.1 – 5.6	1.6 - 9.8
25	Kynurenate	1.9		1.9	<= 2.7
26	Quinolinate	1.4		4.0	<= 5.8
27	Picolinate	2.8		8.0	2.8 - 13.5

Oxidative Damage and Antioxidant Markers
(Vitamin C and other antioxidants)

					95% Reference Interval
28	p-Hydroxyphenyllactate	0.73		0.79	<= 1.45
29	8-Hydroxy-2-deoxyguanosine*	5.4	H	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)

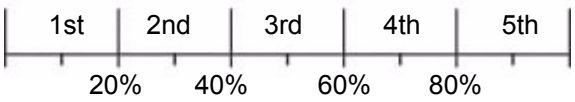
					95% Reference Interval
30	2-Methylhippurate	0.083		0.084	<= 0.192
31	Orotate	0.09		0.69	<= 1.01
32	Glucarate	6.4	H	6.3	<= 10.7
33	a-Hydroxybutyrate	0.3		0.3	<= 0.9
34	Pyroglutamate	42		59	28 - 88
35	Sulfate	2,107		958 – 2,347	690 - 2,988

Organix™ Comprehensive - Urine

Methodology: LC/Tandem Mass Spectroscopy, Colorimetric

Ranges are for ages 13 and over.

Percentile Ranking by Quintile



COMPOUNDS OF BACTERIAL OR YEAST/FUNGAL ORIGIN

Bacterial - general					
36	Benzoate	13.1	H	0.6	<= 9.3
37	Hippurate	221		594	<= 1,150
38	Phenylacetate	<DL*		0.04	<= 0.15
39	Phenylpropionate	<DL*		0.4	<= 0.4
40	p-Hydroxybenzoate	0.11		0.99	<= 2.08
41	p-Hydroxyphenylacetate	20	H	19	<= 34
42	Indican	23		40	<= 74
43	Tricarballylate	0.48		0.73	<= 1.41
L. acidophilus / general bacterial					
44	D-Lactate	0.4		2.3	<= 7.0
Clostridial species					
45	3,4-Dihydroxyphenylpropionate	<DL*		0.12	<= 0.12
Yeast / Fungal					
46	D-Arabinitol	55	H	36	<= 73

Creatinine =200 mg/dl

* <DL = less than detection limit

Amino Acid Analysis - Bloodspot

Methodology: ION Exchange HPLC

Ranges are for ages 13 and over

		Results umol/L		Percentile Ranking by Quintile (1st 2nd 3rd 4th 5th; 20% 40% 60% 80%)	95% Reference Interval
Essential Amino Acids					
Limiting Amino Acids					
1	Lysine	153		92 – 183	63 - 220
2	Methionine	36	H	12 – 28	10 - 33
3	Tryptophan	45		28 – 45	24 - 52
Branched Chain Amino Acids					
4	Isoleucine	50		35 – 77	28 - 96
5	Leucine	93		71 – 139	59 - 162
6	Valine	168		126 – 229	105 - 266
Other Essential Amino Acids					
7	Phenylalanine	70		43 – 72	37 - 86
8	Histidine	63		31 – 84	22 - 99
9	Threonine	152	H	67 – 143	54 - 169
Conditionally Essential Amino Acids					
10	Arginine	69		28 – 71	17 - 91
11	Taurine	178		145 – 245	124 - 282
12	Glycine	376		243 – 449	207 - 559
13	Serine	168		95 – 219	79 - 310

Amino Acid Analysis - Bloodspot

Methodology: ION Exchange HPLC

Ranges are for ages 13 and over

	Results umol/L		Percentile Ranking by Quintile (1st 20% 2nd 40% 3rd 60% 4th 80% 5th)	95% Reference Interval
Funtional Categories				
Vascular Function				
14 Arginine	69		28 – 71	17 - 91
15 Taurine	178		145 – 245	124 - 282
Neurotransmitters and Precursors				
16 Phenylalanine	70		43 – 72	37 - 86
17 Tyrosine	66		44 – 85	36 - 99
18 Tryptophan	45		28 – 45	24 - 52
19 Glutamic Acid	104	L	112 – 207	97 - 258
20 Taurine	178		145 – 245	124 - 282
Sulfur Amino Acids (Glutathione - related)				
21 Methionine	36	H	12 – 28	10 - 33
22 Taurine	178		145 – 245	124 - 282
Urea Cycle and Ammonia Detoxification				
23 Arginine	69		28 – 71	17 - 91
24 Citrulline	36		19 – 41	16 - 51
25 Ornithine	131		68 – 158	50 - 210
26 Glutamine	388		307 – 520	209 - 573
27 Asparagine	73		49 – 77	42 - 88
28 Aspartic Acid	112		44 – 180	26 - 233
Ratios				
29 Phenyalanine/Tyrosine	1.06	H	1.04	<= 1.19
30 Glutamic Acid/Glutamine	0.27		0.26 – 0.51	0.22 - 0.88
31 Tryptophan/LNAA*	0.084		0.061 – 0.093	0.050 - 0.105

*Large neutral amino acids

Bloodspot™ IgG Food Antibodies

Methodology: ELISA

Negative	Foods to Avoid		
	Mild +1 and +2	**Moderate** +3 and +4	**Severe** +5
Almond	Milk	Mustard	Egg, Whole
Aspergillus	Tuna		
Beef			
Cantaloupe			
Cashew			
Chicken			
Corn			
Crab			
Garlic			
Lobster			
Oat			
Orange			
Pea, Green			
Peanut			
Pinto Bean			
Pork			
Rice			
Salmon			
Shrimp			
Soybean			
Strawberry			
Sunflower			
Tomato			
Turkey			
Walnut			
Wheat			

Responses reflect IgG levels measured by ELISA with standardized food extracts. The assay yields semi-quantitative antibody concentrations for each food. The concentration readings are categorized into four reaction levels (Negative, Mild, Moderate, or Severe) corresponding to semi quantitative responses (0/1, +1, +2, +3, +4, or +5), based on relative absorbance readings. The likelihood of adverse reactions to a given food increases as the response level for that food becomes more positive.

These test results are not for the diagnosis of disease. They are intended to provide nutritional guidelines to qualified healthcare professionals with full knowledge of patient history and concerns to assist in their design of an appropriate healthcare program.

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 Triad 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 X appears when the patient result is in the fifth quintile of the population. An additional H or L next to an analyte indicates that the patient result is outside the reference limit or 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

Fatigue (Mitochondrial Impairment)

Isoleucine	Leucine	Phenylalanine	Adipate
Suberate	aKG	Succinate	Malate
Xanthurenate H X	MeMalonate	FIGLU	

Low significance High significance

Mental/Emotional

Tryptophan	Tyrosine	Xanthurenate H X	MeMalonate
FIGLU	Quinolinate	VMA	5-HIA
HVA			

Low significance High significance

Intestinal Hyperpermeability (Leaky Gut)

Positive IgG scores of 1+ or higher were found for 3 foods.

Low significance High significance

Digestive Insufficiency

Histidine	Isoleucine	Leucine	Lysine
Methionine	Threonine	Valine	MeMalonate
Pyruvate	aKbMeVal	Glutamine	

Low significance High significance

Toxic Exposure

2-MeHipp	Glucarate H	Sulfate	Orotate
Citrate	Cis-Aconitate	Isocitrate	Quinolinate

Low significance — High significance

Mitochondrial Functional Impairment

Adipate	Suberate	Ethylmalonate	Pyruvate
L-Lactate	β-HB	Succinate	Fumarate H
Malate	HMG H		

Low significance — High significance

Amino Acid Insufficiency

Arginine	Histidine	Isoleucine	Leucine
Lysine	Methionine	Phenylalanine	Threonine
Tryptophan	Valine	aKG	Succinate
Sulfate			

Low significance — High significance

Gut Dysbiosis

D-Arabinitol H	PhAc	PhProp	phPhAc H
Indican	Tricarb	D-Lactate	3,4-DHPP

Low significance — High significance

Detoxification Capacity

Methionine	Glycine	Taurine	Sulfate
Pyroglutamate	AHB		

Low significance — High significance

Methylation

Xanthurenate H X MeMalonate FIGLU

Low significance High significance

Abbreviatio	Analyte Name
2-MeHipp	2-Methylhippurate
5-HIA	5-Hydroxyindoleacetate
8-OhdG	8-Hydroxy-2-deoxyguanosine
AHB	a-Hydroxybutyrate
aKbMeVal	a-Keto-ß-Methylvalerate
AKG	a-ketoglutarate
aKiCap	a-Ketoisocaproate
aKiVal	a-Ketoisovalerate
BHB	ß-Hydroxybutyrate
BHiVal	ß-Hydroxyisovalerate
3,4-DHPP	3,4-Dihydroxyphenylpropionate
FIGLU	Formiminoglutamate

Abbreviation	Analyte Name
HVA	Homovanillate
HMG	Hydroxymethylglutarate
IgG	Immunoglobulin G*
MeMalonate	Methylmalonate
PhAc	Phenylacetate
PhProp	Phenylpropionate
pHBenz	p-Hydroxybenzoate
pHPhAc	p-Hydroxyphenylacetate
pHPhLac	p-Hydroxyphenyllactate
Tricarb	Tricarballylate
VMA	Vanilmandelate

* Thermometers are affected when more than nine foods cause reactions of +1 or higher.

Customized Vitamin-Mineral Formula

With knowledge of a patient's full medical history and concerns, the Triad 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. All amounts are adult doses that should be reduced for children according to body weight.

Customized Vitamin and Mineral Formulation

Nutrients listed in this section are normally contained in a multi-vitamin preparation. "Base" amounts may be used for insurance of health even when no abnormalities are found.

Customized preparations of the multi-vitamin/mineral formula shown below may be produced by compounding pharmacies. If such a product is made according to these specifications each dose should be thoroughly stirred into a few ounces of water or diluted fruit juice to fully release carbonates and avoid stomach bloating effects.

	Daily Amounts	
	Base	**Units Added**
Vitamin A*	2500 IU	
B-Carotene*	5500 IU	
Vitamin C	250 mg	2000 mg
Vitamin D*	400 IU	
Vitamin E (Mixed Tocopherols)	100 IU	400 IU
Vitamin K*	100 mcg	
Thiamin (B1)	5 mg	
Riboflavin (B2)	5 mg	
Niacin (B3)	25 mg	
Pyridoxine (B6)	15 mg	80 mg
Folic Acid	400 mcg	
Vitamin B12	50 mcg	
Biotin	100 mcg	
Pantothenic Acid (B5)	25 mg	
Calcium	500 mg	
Iodine*	75 mcg	
Magnesium	250 mg	
Zinc*	15 mg	
Selenium	100 mcg	
Copper	1.5 mg	
Manganese	5 mg	
Chromium	200 mcg	
Molybdenum*	25 mcg	
Boron*	1 mg	
Citric Acid*	200 mg	
Malic Acid*	200 mg	

* Nutrients with an asterisk are not modified based on the Triad test results. MM01

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. Any amino acids that appear may be needed in addition to the customized amino acid formula on the following page.

Item	Amount
Potential to Benefit from Probiotics	Moderate
Antifungals	As needed
Coenzyme Q10	60 mg
Glycine	3000 mg
Need for Other Antioxidants	Moderate

Customized Free-Form Amino Acids

30 - Day Amino Acid Powder Supplement Recommendation

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	10.50	840
L-Histidine HCl (74% active)	0	12.20	902
L-Isoleucine	1	8.73	873
L-Leucine	1	11.86	1,186
L-Lysine HCl (80% active)	0	10.50	840
L-Methionine	0	6.88	688
L-Phenylalanine	0	11.52	1,152
Taurine	1	0.33	33
L-Threonine	0	7.23	723
L-Tryptophan	0	1.97	197
L-Valine	1	10.43	1,043
Pyridoxal-5-phosphate	0	0.27	27
Alpha-ketoglutaric acid	0	7.69	759

Total grams added	4
Base Formula amount	296
Total Weight	300

✓ ☐	L-5-Hydroxytryptophan	0	0.66	40

This formula is intended to optimize essential and conditionallly 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 non-protein 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.

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.