



# Age Diagnostic Labs

1341 West Fullerton Ave #123  
Chicago, IL 60614  
1-773-528-8500

## TEST PATIENT

Date of Birth : 02/05/1988  
Sex : F  
Lab id : 1915307  
Collected : 07/19/2005

### INTEGRATIVE MEDICINE

07/19/2005

URINE, SPOT

#### ORGANIC ACIDS

Creatinine Concentration

Result Range  
3.1 0.0 - 4.8

mol/L



#### Bacterial Dysbiosis Markers

Indoleacetic Acid

28.0 \*h 0.0 - 9.0

mmol/mol Cr



PHENYLACETIC ACID

0.0 0.0 - 0.0

mmol/mol Cr



Dihydroxyphenylproionic Acid

3.8 \*h 0.0 - 2.2

mmol/mol Cr



Succinic Acid

32.0 \*h 0.0 - 20.0

mmol/mol Cr



Benzoic/Hippuric Acids Ratio

0.0 0.0 - 0.0

RATIO



#### Yeast/Fungal Dysbiosis Markers

Citramalic Acid

7.2 \*h 0.0 - 7.0

mmol/mol Cr



ARABINOSE

62.0 \*h 0.0 - 42.3

mmol/mol Cr



b-KETOGLUTARIC ACID

0.0 0.0 - 0.0

mmol/mol Cr



TARTARIC ACID

15.5 \*h 0.0 - 14.1

mmol/mol Cr



#### Citric Acid Cycle Metabolites

LACTIC ACID

23.0 6.3 - 36.4

mmol/mol Cr



PYRUVIC ACID

12.2 1.1 - 15.4

mmol/mol Cr



CITRIC ACID

370.0 21.9 - 475.1

mmol/mol Cr



cis-ACONITIC ACID

22.0 1.4 - 76.8

mmol/mol Cr



ISOCITRIC ACID

68.0 3.7 - 87.4

mmol/mol Cr



a-KETOGLUTARIC ACID

3.2 0.5 - 16.0

mmol/mol Cr



FUMARIC ACID

3.7 \*h 0.0 - 1.4

mmol/mol Cr



MALIC ACID

3.8 \*h 0.0 - 2.4

mmol/mol Cr



#### Ketone and Fatty Acid Metabolites

ADIPIPIC ACID

3.6 0.0 - 5.2

mmol/mol Cr



SUBERIC ACID

2.2 0.0 - 3.0

mmol/mol Cr



b-OH-b-Methylglutaric Acid

2.0 0.0 - 6.7

mmol/mol Cr



b-OH-BUTYRIC ACID

4.0 0.0 - 6.4

mmol/mol Cr



#### Organic Acids for Cofactor Need

a-Ketoisovaleric Acid

5.2 \*h 0.0 - 2.0

mmol/mol Cr



a-Ketoisocaproic Acid

3.3 \*h 0.0 - 2.0

mmol/mol Cr



a-Keto-b-Methylvaleric Acid

5.8 \*h 0.0 - 2.0

mmol/mol Cr



KYNURENIC ACID

12.5 \*h 0.0 - 10.0

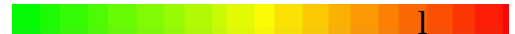
mmol/mol Cr



Formiminoglutamic Acid

10.8 \*h 0.0 - 9.0

mmol/mol Cr



3-OH-Propionic Acid

31.5 \*h 0.0 - 27.5

mmol/mol Cr



METHYLMALONIC ACID

27.0 \*h 0.0 - 19.0

mmol/mol Cr



2-OH-Phenylacetic Acid

3.9 \*h 0.0 - 1.2

mmol/mol Cr



4-OH-Phenylpyruvic Acid

34.5 \*h 0.0 - 24.7

mmol/mol Cr



HOMOENTISIC ACID

3.6 \*h 0.0 - 2.0

mmol/mol Cr



(\* ) Outside reference range.

(h) Above reference range.



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	<u>Result</u>	<u>Range</u>		
<b>a-Ketoadipic Acid</b>	<b>1.1 *h</b>	0.0 - 0.8	mmol/mol Cr	
<b>GLUTARIC ACID</b>	<b>2.9 *h</b>	0.0 - 2.5	mmol/mol Cr	
<b>OROTIC ACID</b>	<b>25.7 *h</b>	0.0 - 20.7	mmol/mol Cr	
<b>PYROGLUTAMIC ACID</b>	<b>162.0 *h</b>	21.7 - 105.3	mmol/mol Cr	
<b>Neurotransmitter Metabolites</b>				
<b>HOMOVANILLIC ACID</b>	<b>3.9 *h</b>	2.5 - 3.5	mmol/mol Cr	
<b>3-Methyl-4-OH-phenylglycerol</b>	<b>2.1 *h</b>	0.5 - 0.9	mmol/mol Cr	
<b>Vanilmandelic Acid</b>	<b>3.8 *h</b>	2.5 - 3.5	mmol/mol Cr	
<b>5-OH-Indoleacetic Acid</b>	<b>4.7 *h</b>	3.0 - 4.5	mmol/mol Cr	
<b>KRYPTOPYRROLES</b>	<b>0.45 *h</b>	0.00 - 0.08	units	

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### KRYPTOPYRROLES

Often people with depression or other mental health disorders demonstrate an abnormal production of a group of chemicals called 'pyrroles', this is called pyroluria. The pyrroles deplete the body of B6 and Zinc causing them to be excreted in the urine. This may result in a deficiency of B6 and zinc, which supplementation can correct. Most also have low levels of Arachidonic Acid, supplementation with Omega 6 EFAs is also recommended. It is thought that about 10% of a normal population has pyroluria, which may cause symptoms when the patient is stressed. Review levels 8-10 weeks post supplementation.

#### Kynurenate

Early in the same pathway described under xanthurenate, this compound may be formed through oxidation of kynurenin. In the brain, this pathway helps to control the sensitivity of neuronal responses. Kynurenate elevations tend to accompany quinolinate as a kind of balancing of the strong effects of that compound. Vitamin B6 can help support metabolism of kynurenate.

Citrate, Isocitrate,  $\alpha$ -ketoglutarate, cis-Aconitate, Succinate, and Fumarate: These components are citric acid cycle (CAC) intermediates in the body's metabolic pathway that generate cellular energy. The Krebs or CAC is the source of basic structural or anabolic molecules that feed and support organ maintenance and neurological cofactors and minerals maintenance and neurological cofactors and minerals for their function. Higher levels of CAC intermediates in urine indicate inefficiencies in energy production in the cells.

#### Methylmalonate

The metabolism of this compound requires a vitamin B12-dependent enzyme; the lack of vitamin B12 impairs this conversion, leading to accumulation of methylmalonate. High levels indicate a functional deficiency of vitamin B12.

Orotic acid accumulation is a sensitive marker of ammonia build-up and consequently of arginine availability. Most of the symptoms of arginine deprivation can be accounted for by decreased efficiency of ammonia detoxification. Supplementing alpha-ketoglutarate, magnesium, aspartic and glutamic acids can help.

Indican is a by-product from breakdown of dietary protein in the upper bowel. Bacteria are responsible for the production of indican. Indican is present only at low levels in a healthy person. An elevated level of urinary indican is an indication of upper bowel bacterial overgrowth or dysbiosis. Indican excretion is reduced when the intestines are populated with strains of lactobacillus.

#### Fumarate Comment:

Elevated fumarate may be indicative of a Coenzyme Q10 deficiency.

#### a-Keto-b-methylvalerate Comment:

An analyte of valine, this organic acid at a high level may be indicative of a functional B-complex imbalance or deficiency.

#### a-Ketoisocaproate Comment:

This organic acid is elevated due to poor amino acid metabolism. Supplementation

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with a B complex may be necessary.

### a-Ketoisovalerate Comment:

This organic acid is elevated due to poor amino acid metabolism. Supplementation with a B complex may be necessary.

### Pyroglutamate Comment:

A high level may be due to glutathione depletion as this organic acid is formed in the kidney from the amino acid glutathione.

Elevated levels mean the kidney is conserving amino acids at the expense of glutathione, which is important for protection of every cell from oxidation. Glutamic acid, alpha-KG, methionine, and glycine can help rebuild total body glutathione.

### Malate Comment:

A high level of this organic acid may be indicative of a need for certain nutrients such as niacin and Coenzyme Q10.

### Kynurenate Comment:

A high reading of this by-product of amino acid breakdown is consistent with a vitamin B6 deficiency. Abnormally high levels can adversely affect brain function.

### Isocitrate Comment:

This organic acid may be high due to a breakdown in the citric acid cycle. Adding arginine, a B-complex, manganese, and magnesium.

Bill Anton

Tests ordered: ORGACS,KRP

FINAL REPORT on 02 Aug 2005