



CELLMATE™  
WELLNESS  
SYSTEMS

P.O. Box 4549  
Incline Village, NV 89450

(775) 832-8485  
(775) 832-8488 Fax  
www.cellmatewellness.com

**ANNA**

Test date: 3/11/2003  
(accession: A0303120089)  
Entered: 3/24/2003

Next Test Due: 9/9/2003

## ***CellMate™ Amino Acid & Organic Acid Report***

### ***Practitioner***

*Printed on Sunday, March 30, 2003 for:*

**Anna**

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If there is a problem with this report, please contact us as soon as possible at: (775) 832-8485 or Fax (775) 832-8488

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## Basic Status Report (High/Low)

Amino Acid & Organic Acid Date: 3/11/2003

**ANNA**

Female / Age: 51

Client ID:555986644 (8322)

The % Status is the weighted deviation of the laboratory result.

### Low Results

-80	-60	-40	-20	0		% Status	Result	Low	High
						-60.48 L	34.00	45.00	150.00
						-57.27 L	42.00	50.00	160.00
						-53.33 L	34.00	35.00	65.00
						-52.80 L	163.00	170.00	420.00
						-52.11 L	43.00	45.00	140.00
						-50.00 L	25.00	25.00	50.00
						-49.09 L	91.00	90.00	200.00
						-49.00 L	0.01	0.00	1.00
						-49.00 L	0.01	0.00	1.00
						-48.82 L	46.00	45.00	130.00
						-45.83 L	7.00	6.00	30.00
						-45.50 L	59.00	50.00	250.00
						-45.00 L	96.00	90.00	210.00
						-44.29 L	74.00	70.00	140.00
						-39.26 L	159.00	130.00	400.00
						-38.57 L	58.00	50.00	120.00
						-37.56 L	253.00	225.00	450.00
						-36.67 L	70.00	50.00	200.00
						-32.00 L	681.00	600.00	1050.00
						-30.00 L	1.00	0.00	5.00
						-30.00 L	1.00	0.00	5.00
						-29.89 L	0.74	0.50	1.70
						-26.00 L	136.00	100.00	250.00

-25%

### High Results

-20	0	20	40	60		% Status	Result	Low	High
						50.00 H	20.00	0.00	20.00
						50.00 H	5.00	0.00	5.00
						50.00 H	5.00	0.00	5.00
						49.33 H	159.00	10.00	160.00
						37.50 H	7.00	0.00	8.00
						30.00 H	0.80	0.00	1.00
						25.69 H	2.64	1.50	3.00
						25.00 H	3.00	0.00	4.00
						25.00 H	3.00	0.00	4.00

25%



## Basic Status Report (Alphabetic)

**ANNA**

**Amino Acid & Organic Acid Date: 3/11/2003**

Female / Age: 51

The % Status is the weighted deviation of the laboratory result relative to the range.

		-100	-50	0	50	100	% Status		Result	Low	High
							<b>1-Methylhistidine - P</b>	<b>50.00 H</b>	<b>20.00</b>	0.00	20.00
							<b>3-Methylhistidine - P</b>	<b>50.00 H</b>	<b>5.00</b>	0.00	5.00
							<b>a-Aminoadipic Acid - P</b>	<b>25.00 H</b>	<b>3.00</b>	0.00	4.00
							a-Amino-N-Butyric Acid - P	-23.33	18.00	10.00	40.00
							Alanine - P	-18.00	362.00	250.00	600.00
							<b>Anserine - P</b>	<b>-49.00 L</b>	<b>0.01</b>	0.00	1.00
							Arginine - P	-16.36	87.00	50.00	160.00
							<b>Asparagine - P</b>	<b>-48.82 L</b>	<b>46.00</b>	45.00	130.00
							<b>Aspartic Acid - P</b>	<b>-45.83 L</b>	<b>7.00</b>	6.00	30.00
							<b>b-Alanine - P</b>	<b>-30.00 L</b>	<b>1.00</b>	0.00	5.00
							b-Aminoisobutyric Acid - P	0.00	1.00	0.00	2.00
							<b>Carnosine - P</b>	<b>-49.00 L</b>	<b>0.01</b>	0.00	1.00
							Citrulline - P	4.55	45.00	15.00	70.00
							<b>Collagen Related AA</b>	<b>49.33 H</b>	<b>159.00</b>	10.00	160.00
							<b>Cystathionine - P</b>	<b>25.00 H</b>	<b>3.00</b>	0.00	4.00
							Cystine - P	-10.00	42.00	10.00	90.00
							<b>Ethanolamine - P</b>	<b>37.50 H</b>	<b>7.00</b>	0.00	8.00
							<b>Gamma-aminobutyric Acid-P</b>	<b>50.00 H</b>	<b>5.00</b>	0.00	5.00
							<b>Glutamic Acid - P</b>	<b>-60.48 L</b>	<b>34.00</b>	45.00	150.00
							<b>Glutamine - P</b>	<b>-32.00 L</b>	<b>681.00</b>	600.00	1050.00
							<b>Glycine - P</b>	<b>-37.56 L</b>	<b>253.00</b>	225.00	450.00
							<b>Glycine/Serine Ratio</b>	<b>25.69 H</b>	<b>2.64</b>	1.50	3.00
							<b>Histidine - P</b>	<b>-44.29 L</b>	<b>74.00</b>	70.00	140.00
							Homocystine - P	18.00	0.68	0.00	1.00
							<b>Hydroxylysine - P</b>	<b>30.00 H</b>	<b>0.80</b>	0.00	1.00
							Hydroxyproline - P	-16.67	10.00	0.00	30.00
							<b>Isoleucine - P</b>	<b>-57.27 L</b>	<b>42.00</b>	50.00	160.00
							<b>Leucine - P</b>	<b>-49.09 L</b>	<b>91.00</b>	90.00	200.00
							Lysine - P	-7.33	214.00	150.00	300.00
							<b>Methionine - P</b>	<b>-50.00 L</b>	<b>25.00</b>	25.00	50.00
							<b>Ornithine - P</b>	<b>-36.67 L</b>	<b>70.00</b>	50.00	200.00
							<b>Phenylalanine - P</b>	<b>-52.11 L</b>	<b>43.00</b>	45.00	140.00
							<b>Phenylalanine/Tyrosine</b>	<b>-29.89 L</b>	<b>0.74</b>	0.50	1.70
							Phosphoethanolamine - P	-13.33	11.00	0.00	30.00
							Phosphoserine - P	8.33	7.00	0.00	12.00
							<b>Proline - P</b>	<b>-39.26 L</b>	<b>159.00</b>	130.00	400.00
							<b>Sarcosine - P</b>	<b>-30.00 L</b>	<b>1.00</b>	0.00	5.00
							<b>Serine - P</b>	<b>-45.00 L</b>	<b>96.00</b>	90.00	210.00
							<b>Taurine - P</b>	<b>-45.50 L</b>	<b>59.00</b>	50.00	250.00
							<b>Threonine - P</b>	<b>-26.00 L</b>	<b>136.00</b>	100.00	250.00
							<b>Tryptophan - P</b>	<b>-53.33 L</b>	<b>34.00</b>	35.00	65.00
							<b>Tyrosine - P</b>	<b>-38.57 L</b>	<b>58.00</b>	50.00	120.00
							<b>Valine - P</b>	<b>-52.80 L</b>	<b>163.00</b>	170.00	420.00
							<b>Total Status Deviation</b>	<b>35.09</b>			
							<b>Total Status Skew</b>	<b>-18.86</b>			



## Client Summary Review

Amino Acid & Organic Acid Date: 3/11/2003

**ANNA**

Female / Age: 51

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### Nutritional Support

The following supplements may help to balance your biochemistry. Consult your practitioner.

- |   |  |
|---|--|
| <input type="checkbox"/> 1-Balanced Amino Acid Supplement<br>5-10 grams daily | <input type="checkbox"/> 1-CAC Entry Protocol<br>See Nutrition Detail        |
| <input type="checkbox"/> 1-Customized Amino Acids<br>8-10 grams daily         | <input type="checkbox"/> 1-L-Carnitine<br>2x daily 500 mg                    |
| <input type="checkbox"/> 1-Pyridoxal-5-Phosphate<br>2x daily 50 mg            | <input type="checkbox"/> 1-Taurine<br>2x daily 500 mg                        |
| <input type="checkbox"/> 1-Vitamin B6<br>2x daily 50 mg                       | <input type="checkbox"/> 1-Vitamin B6<br>2x daily 50 mg                      |
| <input type="checkbox"/> 2-Betaine HCL<br>2 tablets at mealtime               | <input type="checkbox"/> 2-Glutathione (reduced)<br>2x daily 250 mg          |
| <input type="checkbox"/> 2-Glycine<br>2x daily 500 mg                         | <input type="checkbox"/> 2-Magnesium Citrate or Glycinate<br>2x daily 150 mg |
| <input type="checkbox"/> 2-Vitamin E & Beta-carotene<br>1x daily see details  | <input type="checkbox"/> 3-5-Hydroxy-Tryptophan (5-HTP)<br>2x daily 50 mg    |

### Food Recommendations

The following foods may help to balance or strengthen your biochemistry.

Turkey

ANNA

Female / Age: 51

**Out-Of-Balance Panel Values**

The following panels have a PSD of greater than 25% indicating need for further review. PSD is the Panel Status Deviation, or the average imbalance of that subset of results. The PSS is the Panel Status Skew, or the direction, negative (deficiency) or positive (excess), of that subset of results.

Panel Name	PSD	PSS
CAC Cycle Ratios	52.35%	10.45%
Neurotransmitters	50.01%	37.60%
Muscle Metabolites	49.50%	0.50%
Neuroendocrine Met.	43.33%	-23.33%
Essential Amino Acid	40.86%	-40.86%
Fat Metabolism	40.43%	-40.43%
Citric Acid Cycle	38.08%	0.11%
Connective Tissue	37.23%	-17.23%
Gluconeogen	35.98%	-35.98%
CNS Metabolism	34.98%	-17.55%
Ammonia/Energy	32.11%	-27.89%
Hepatic Metabolism	28.36%	-16.07%
Immune Metabolites	27.76%	-27.76%

**Lab Reported out-of-range Values**

The following results are out-of-range (as reported by the lab), and should be carefully reviewed.

**CA Cycle Entry ( 146.67%)**

A high result for the marker representing the entry into the citric acid may indicate carbohydrate metabolism impairment especially if pyruvate and/or lactate are elevated. Possibilities causing this particular blockade include mercury, arsenic or petrochemical exposure.

**Kynurenate ( 105.00%)**

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.

**Homovanillate ( 95.45%)**

High levels of this organic acid should be correlated with vanillylmandelic acid (VMA) as a marker for potential abnormal cell growth.

**Drugs which may have an adverse affect:**

Aspirin

**Pyruvate ( 75.00%)**

Pyruvate is the end product of glucose metabolism. An elevated level may be indicative of a fundamental deficiency of B-complex vitamins and lipoic acid.

**CA Cycle Phase 1 ( 63.15%)**

This is the first phase of the citric acid cycle moving from Citrate to cis-Aconitate. A high reading may indicate a disruption in the efficiency of energy production. It can also be due to a problem clearing ammonia due to an arginase enzyme deficiency.

**a-Ketoglutarate ( 61.43%)**

High levels of this amino acid may be indicative of poor amino acid metabolism or a need for both B-complex and lipoic acid.

**Glutamic Acid - P (-60.48%)**

Glutamic acid is considered an excitatory neurotransmitter. It is critical in removing excess ammonia from the brain as well as helping deal with symptoms such as headache, irritability, and fatigue. A low plasma level of glutamic acid may be indicative of hyperammonemia especially if high glutamine is present.

**Xanthurenate ( 60.00%)**

A high reading of this by-product of amino acid breakdown is consistent with a vitamin B6 deficiency.

ANNA

Female / Age: 51

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**Hippurate ( 58.21%)**

A high reading of this organic acid may be indicative of an overgrowth of intestinal microbiota. The use of glycine may help lower the results. The presence of this acid may be due to the action of bacteria on phenylalanine.

**Drugs which may have an adverse affect:**

Aspirin

**Isoleucine - P ( -57.27%)**

Isoleucine is one of the branched chain amino acids (BCAA) a group of essential amino acids (with leucine and valine) involved in handling of stress, energy production, and muscle metabolism. Balanced supplementation of BCAA's has been reported to be effective in chronic liver disease, anorexia, recovery from surgery, and endocrine functioning. A low reading could be indicative of hypoglycemia, loss of muscle mass or the inability to build muscle.

**Isocitrate ( -56.67%)**

No information is available to indicate why this organic acid may be low.

**Citrate ( 54.16%)**

A high reading of this organic acid may be indicative of an amino acid deficiency or a problem with metabolism.

**AA Competency ( -53.36%)**

This ratio evaluates the general levels of the essential amino acids. Since they can only be gotten from diet or supplements it is important to increase intake of these components of protein.

**Tryptophan - P ( -53.33%)**

Tryptophan metabolism requires B6, folic acid, and magnesium. Also, niacin and glutamine are important requirements for normal metabolism. Niacin can be made from tryptophan. A low result may be indicative of depression and insomnia.

**Drugs which may have an adverse affect:**

Aspirin

**AA Competency-2 ( -52.88%)**

This ratio evaluates the general levels of the essential amino acids. Since they can only be gotten from diet or supplements it is important to increase intake of these components of protein.

**Valine - P ( -52.80%)**

Valine is one of the branched chain amino acids (BCAA) a group of essential amino acids (with leucine and isoleucine) involved in handling of stress, energy production, and muscle metabolism. Balanced supplementation of BCAA's has been reported to be effective in chronic liver disease, anorexia, recovery from surgery, and endocrine functioning. A low plasma level of valine may be due to muscle loss or inadequate stomach acid if other essential amino acids are also low.

**Phenylalanine - P ( -52.11%)**

May be indicative of altered thyroid function or catecholamine deficits. Symptoms may include depression, memory loss, fatigue, cognitive disorders, stress, and autonomic dysfunction. Phenylalanine is an essential amino acid and is converted to tyrosine in the liver by phenylalanine hydroxylase. Nutrients needed for this amino acid's metabolism are folic acid, iron, niacin, pyridoxine, copper, and vitamin C.

**1-Methylhistidine - P ( 50.00%)**

May be indicative of inadequate methyl group transfer or impaired methionine metabolism. If 3-Methylhistidine is also elevated, consider using TMG (trimethylglycine).

**3-Methylhistidine - P ( 50.00%)**

May be indicative of the need for additional antioxidants.

**Drugs which may have an adverse affect:**

Cortisol

**Gamma-aminobutyric Acid-P ( 50.00%)**

GABA is known as a neuroinhibitory amino acid that is derived from glutamic acid and seems to regulate nerve cell function. A high reading may be due to missing co-factors within the Krebs or citric acid cycle.

**Drugs which may have an adverse affect:**

Valproic Acid



**Methionine - P (-50.00%)**

An essential amino acid, you can only get methionine from dietary or supplemental sources. It is important that adequate vitamin B6 is available, otherwise methionine may over convert to homocysteine and throw arginine and/or ornithine out of balance. Low plasma levels may be indicative of poor dietary intake of protein or poor quality of protein. May adversely effect sulfur metabolism.

**Phenylpropionate ( 50.00%)**

A high reading of this organic acid may be indicative of an overgrowth of intestinal microbiota or protozoa. The presence of this acid may be due to the action of bacteria on phenylalanine and should not appear in anything more than background amounts.

**Succinate (-50.00%)**

A low reading of this organic acid may be indicative of a need for BCAA's (Branched Chain Amino Acids).

## Nutrition - Detail

Amino Acid & Organic Acid Date: 3/11/2003

ANNA

Female / Age: 51

Nutritional and herbal information contained in this report is based upon research related to imbalances in your chemistry. The recommendations are based upon the information provided, without interpretation. This must be done with the help of a qualified health care professional.

### 1-Balanced Amino Acid Supplement 5-10 grams daily

BALANCED AMINO ACID SUPPLEMENT

Imbalanced levels of this organic and amino acid may indicate poor amino acid levels. The addition of a balanced amino acid complex is helpful in resolving this deficiency. With this profile, make sure that the amino acid complex contains Alpha Keto Glutarate and B6.

Decreased

Succinate

### Rationale

Normal

Increased

Gamma-aminobutyric Acid-P

### 1-CAC Entry Protocol See Nutrition Detail

CAC ENTRY PROTOCOL

When the entry point to the citric acid cycle is blocked, the ability to utilize carbohydrates to produce energy is impaired. The following protocol may be helpful in bringing down this ratio.

B-Complex - 2x daily

Amino Acid Complex - 5 grams 2x daily

CoEnzyme Q10 - 50 mg 2x daily

Alpha Lipoic Acid - 200 mg 2x daily

Vitamin C - 1000 mg 2x daily

Decreased

Normal

Increased

CA Cycle Entry

### 1-Customized Amino Acids 8-10 grams daily

CUSTOMIZED AMINO ACIDS

A pattern suggesting amino acid insufficiency may be due to inadequate protein intake, chronic illness or malabsorption. Intake of a customized free-form amino acid supplement with appropriate nutrient cofactors (such as My AminoPlex) is advised.

Decreased

AA Competency

Normal

Increased

### 1-L-Carnitine 2x daily 500 mg

L-CARNITINE

Carnitine is sometimes considered a non-essential amino acid which is synthesized in the liver and kidneys from lysine, methionine and other nutrients. It is critical in the metabolism of fat and transport of long-chain essential fatty acids as well as being cardiac protective.

Decreased

Fatty Acid Metabolism

Normal

Increased

### 1-Pyridoxal-5-Phosphate 2x daily 50 mg

PYRIDOXINE (B6)

B6 function involves many complex interrelated functions around amino acid metabolism. Cell processes involve PLP in immune modulation, fatty acids, steroid hormone, receptors, neurotransmitters, gluconeogenesis, and heme synthesis.

Decreased

Normal

Increased

Cystathionine - P

### 1-Taurine 2x daily 500 mg

TAURINE

An amino-sulfonic acid and modulator of cation flux, especially for Ca. A neuromodulator indirectly depressing neuroexcitation through control over glutamate. It also mediates contractility in the cardiac muscle.

Decreased

Taurine - P

Normal

Increased

a-Aminoadipic Acid - P

### 1-Vitamin B6 2x daily 50 mg

PYRIDOXINE (B6)

B6 function involves many complex interrelated functions around amino acid metabolism. Cell processes involve PLP in immune modulation, fatty acids, steroid hormone, receptors, neurotransmitters, gluconeogenesis, and heme synthesis. of fat and transport of long-chain essential fatty acids as well as being cardiac protective. Kynurenate is a strong marker for Vitamin B6 deficiency.

Decreased

Normal

Increased

Kynurenate

## Nutrition - Detail

Amino Acid & Organic Acid Date: 3/11/2003

**ANNA**

Female / Age: 51

Nutritional and herbal information contained in this report is based upon research related to imbalances in your chemistry. The recommendations are based upon the information provided, without interpretation. This must be done with the help of a qualified health care professional.

### 1-Vitamin B6 2x daily 50 mg

PYRIDOXINE (B6)

B6 function involves many complex interrelated functions around amino acid metabolism. Cell processes involve PLP in immune modulation, fatty acids, steroid hormone, receptors, neurotransmitters, gluconeogenesis, and heme synthesis. of fat and transport of long-chain essential fatty acids as well as being cardiac protective. Kynurenate is a strong marker for Vitamin B6 deficiency.

Decreased

### Rationale

Normal

Increased

Xanthurenate

### 2-Betaine HCL 2 tablets at mealtime

BETAIN HCl

When this pattern of imbalances show up, it may be due to a BCl/betaine deficiency and suggests muscle/collagen catabolism and inadequate synthesis due to inadequate quality and/or quantity of protein.

Decreased

Normal

Increased

Proline - P

Hydroxyproline - P

3-Methylhistidine - P

### 2-Glutathione (reduced) 2x daily 250 mg

GLUTATHIONE

Glutathione is a tripeptide made in the body from cysteine, glutamic acid and glycine. An accumulation of Pyroglutamate is indicative of glutathione depletion.

Decreased

Normal

Increased

Pyroglutamate

### 2-Glycine 2x daily 500 mg

GLYCINE

Glycine is an important amino acid and it is helpful in lowering the levels of Benzoate and Hippurate.

Decreased

Normal

Increased

Benzoate

Hippurate

### 2-Magnesium Citrate or Glycinate 2x daily 150 mg

MAGNESIUM (Mg)

Second most abundant mineral in intracellular fluid. It helps facilitate Na - K transport and influences Ca levels. It is involved in vasodilation, contraction, as well as cardiac and skeletal muscle cells. Required in over 300 enzymes, temperature control, neuronal homeostasis and has a profound effect on cardiac physiology

Decreased

Normal

Increased

Ethanolamine - P

### 2-Vitamin E & Beta-carotene 1x daily see details

VITAMIN E

800 IU - Adult, 400 IU - Children

Vitamin E is a major antioxidant, scavenging free radicals - enhancing lymphocyte production, increasing nitrogen retention, maintaining cellular integrity, and aiding in the biosynthesis of heme proteins.

BETA-CAROTENE

25,000 IU - Adult, 12,500 - Children

Beta-carotene is involved in the growth and repair of tissue and helps maintain healthy skin. It is essential in the maintenance of eyesight, building of bones, teeth and blood. Do not take if pregnant.

Decreased

Normal

Increased

1-Methylhistidine - P

### 3-5-Hydroxy-Tryptophan (5-HTP) 2x daily 50 mg

TRYPTOPHAN

A carbon skeleton indispensable amino acid, tryptophan is the precursor to the neurotransmitter serotonin. The only form available presently is 5-HTP.

Decreased

Normal

Increased

Tryptophan - P

## Drug Interactions

**ANNA**

**Amino Acid & Organic Acid Date: 3/11/2003**

Female / Age: 51

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Drugs listed below tend to further aggravate elements of blood chemistry that are out of range (H or L). The (#) after each drug denotes the number of times that drug is flagged as being potentially harmful.

Aspirin(2)  
Steroids

Aspirin  
Valproic Acid

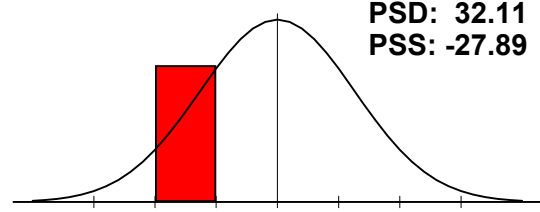
Cortisol

Salicylates

**Ammonia/Energy**

Arginine - P, Threonine - P[L], Glycine - P[L], Serine - P[L],  
 a-Aminoadipic Acid - P[H], Asparagine - P[L], Aspartic Acid - P[L],  
 Citrullin.

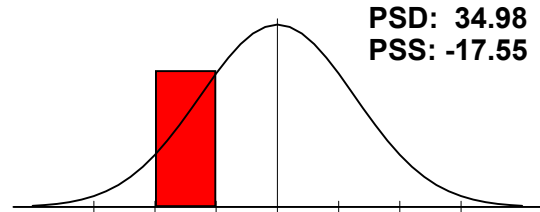
A panel profile such as this may be indicative of inadequate protein intake, poor absorption or poor quality protein intake.



**CNS Metabolism**

Arginine - P, Tryptophan - P[L], Gamma-aminobutyric Acid-P[H],  
 Glycine - P[L], Serine - P[L], Taurine - P[L], Aspartic Acid - P[L],  
 Glutamin.

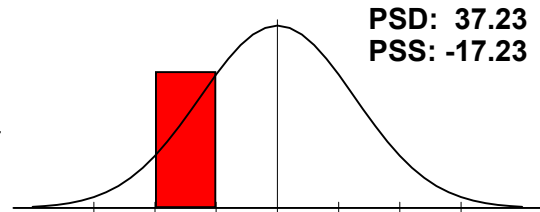
The panel profile seen here may be indicative of poor central nervous system functioning including memory loss, fatigue, poor concentration.



**Connective Tissue**

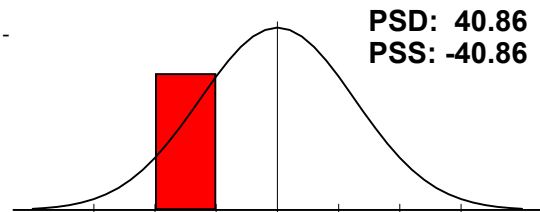
Leucine - P[L], Methionine - P[L], Valine - P[L], Cystine - P,  
 Hydroxylysine - P[H], Hydroxyproline - P, 3-Methylhistidine - P[H],  
 Proline -.

A profile such as this may be indicative of poor collagen and other tissue formation.



**Essential Amino Acid**

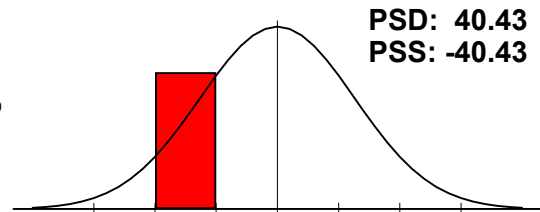
Arginine - P, Histidine - P[L], Isoleucine - P[L], Leucine - P[L], Lysine -  
 P, Methionine - P[L], Phenylalanine - P[L], Threonine - P[L], Tr.



**Fat Metabolism**

Arginine - P, Isoleucine - P[L], Leucine - P[L], Valine - P[L], Taurine -  
 P[L], Glutamine - P[L], Sarcosine - P[L].

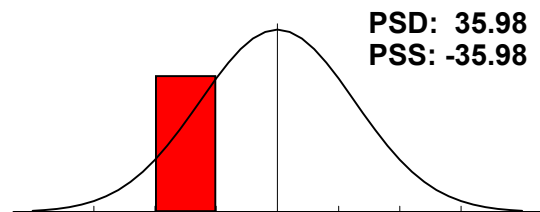
A panel profile such as this may indicate an inability of the body to properly metabolize dietary fats. Check for dysbiosis, or try supplementation with lipase digestive enzymes as well as broad spectrum amino acids.



**Gluconeogen**

Threonine - P[L], Tryptophan - P[L], Glycine - P[L], Serine - P[L],  
 Alanine - P.

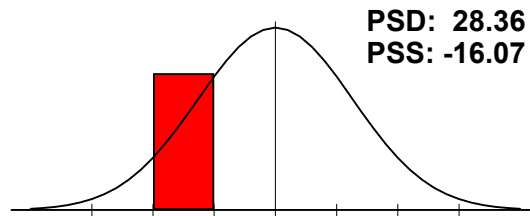
This panel profile may be indicative of hypoglycemia or poor dietary protein intake.



**Hepatic Metabolism**

Methionine - P[L], Taurine - P[L], Glutamine - P[L], Cystine - P, Cystathionine - P[H], Homocystine - P, Alanine - P.

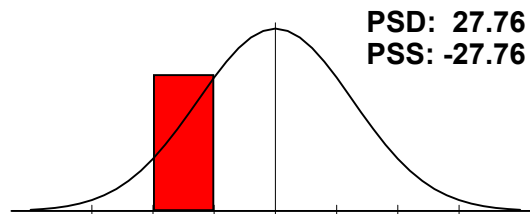
A panel profile such as this may be indicative of an underfunctioning liver or poor dietary protein intake.



**Immune Metabolites**

Arginine - P, Threonine - P[L], Glutamine - P[L], Ornithine - P[L].

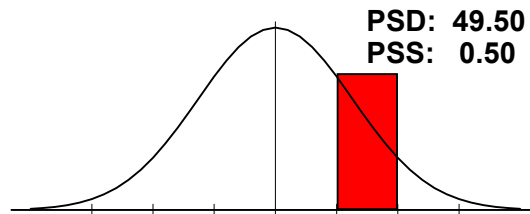
A panel profile such as this may be indicative of a poor functioning immune system or low dietary intake of protein.



**Muscle Metabolites**

Anserine - P[L], Carnosine - P[L], 1-Methylhistidine - P[H], 3-Methylhistidine - P[H].

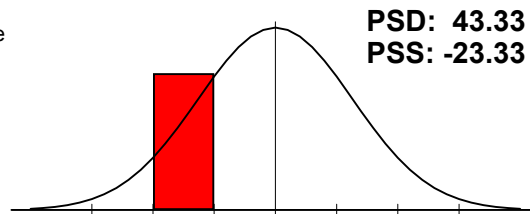
This panel profile may be indicative of abnormal protein metabolism especially if 1-methylhistidine is elevated.



**Neuroendocrine Met.**

Gamma-aminobutyric Acid-P[H], Glycine - P[L], Serine - P[L], Taurine - P[L], Tyrosine - P[L].

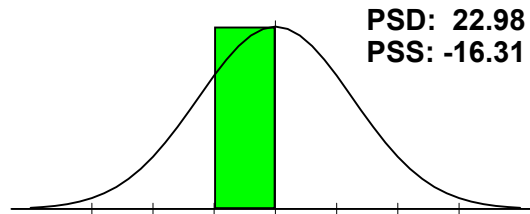
This panel profile may be indicative of an underfunctioning endocrine system or poor dietary intake of protein.



**Amino Acid Catabolism**

a-Ketoisovalerate[L], a-Ketoisocaproate, a-Keto-b-methylvalerate.

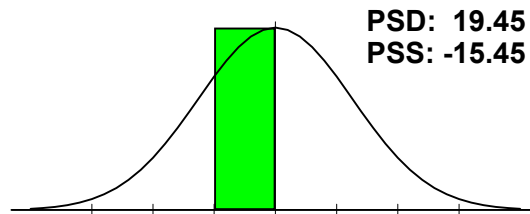
A normal reading in this panel suggest proper amino acid stores.



**B-Complex Markers**

b-Hydroxyisovalerate, a-Ketoisovalerate[L], a-Ketoisocaproate, a-Keto-b-methylvalerate, Methylmalonate.

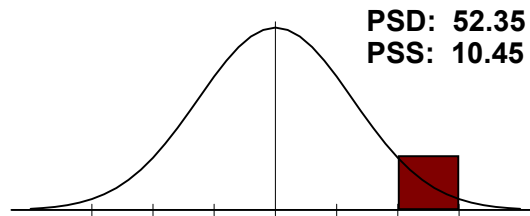
A normal panel profile such as this is an indicator of adequate intake of B-complex vitamins.



**CAC Cycle Ratios**

CA Cycle Entry[H], CA Cycle Phase 1[H], CA Cycle Phase 2[L], CA Cycle Phase 3[L], CA Cycle Phase 4[L], CA Cycle Phase 5[L], CA Cycle Phase 6.

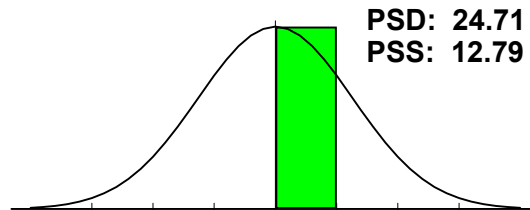
This panel reflects steps of the citric acid cycle. A low reading may be indicative of poor energy production and/or vitamin, mineral and amino acid deficiencies.



**Carbohydrate Metabolism**

Lactate, Pyruvate[H], a-Hydroxybutyrate, b-Hydroxybutyrate.

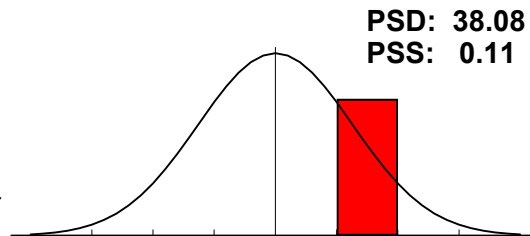
A normal reading is consistent with the proper metabolism of dietary carbohydrates.



**Citric Acid Cycle**

Citrate[H], cis-Aconitate, Isocitrate[L], a-Ketoglutarate[H], Succinate[L], Fumarate[H], Malate, Hydroxymethylglutarate[L].

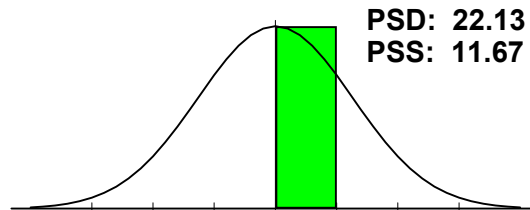
This panel profile result may be due to a breakdown in the Citric Acid Cycle. Supplementation with specific amino acid combinations and precursor vitamins and minerals may help to reverse this imbalance. Review the Nutritional Support section for further details.



**Intestinal Dysbiosis**

Hippurate[H], Benzoate[L], p-Hydroxybenzoate, p-Hydroxyphenyllactate[H], Phenylacetate[L], Phenylpropionate[H], Tricarballic acid, DHPP, Citra.

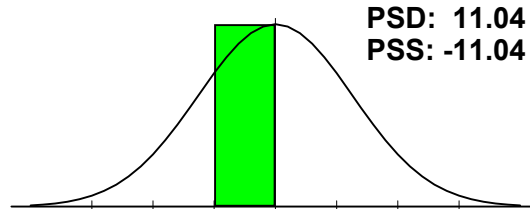
A normal panel profile such as this is consistent with good intestinal health but may suggest a need for probiotic supplementation.



**Lipid Metabolism**

Adipate, Suberate, Ethylmalonate.

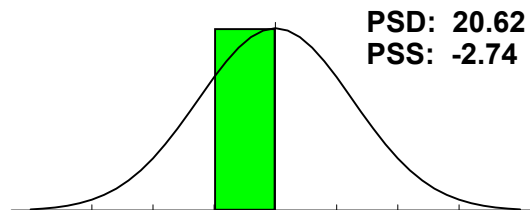
This panel profile is indicative of proper lipid metabolism.



**Liver Detox Indicators**

2-Methylhippurate, Glucarate[L], P-Hydroxyphenylacetate, Orotate, Pyroglutamate[H], Sulfate.

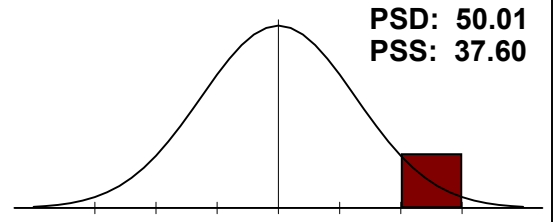
A normal liver detox panel is consistent with good liver detoxification processes.



**Neurotransmitters**

Vanillylmandelate, Homovanillate[H], 5-Hydroxyindoleacetate,  
Kynurenate[H], Quinolate.

The panel profile seen here may be due to the use of serotonin re-uptake inhibitors such as Prozac or poor catecholamine catabolism.





## Clinical Correlation

ANNA

Amino Acid & Organic Acid Date: 3/11/2003

Female / Age: 51

This report "MATCHES" clinical observations with the lab test. Elements shown, normal and abnormal, tend to characterize the observation. Highlighted elements are those reported to "MATCH" the characteristics of the clinical observation. Others are NOT matches but are elements in the observation.

### Cystathioninuria (270.4)

100.00% (1 of 1)

Decreased

Normal

Increased

25.00 Cystathionine - P

### Depression ()

100.00% (4 of 4)

Decreased

Normal

Increased

-50.00 Methionine - P  
-52.11 Phenylalanine - P  
-53.33 Tryptophan - P  
-38.57 Tyrosine - P

### Fatigue/Low Cellular Energy Production ()

100.00% (1 of 1)

Decreased

Normal

Increased

-45.83 Aspartic Acid - P

### Impaired Ca<sup>+</sup> and Zn Transport ()

100.00% (2 of 2)

Decreased

Normal

Increased

-49.00 Anserine - P  
-49.00 Carnosine - P

### Mild Hyperammonemia ()

100.00% (1 of 1)

Decreased

Normal

Increased

-60.48 Glutamic Acid - P

### Potential Excessive Oxidative Damage ()

100.00% (1 of 1)

Decreased

Normal

Increased

-45.50 Taurine - P

### Potential Rheumatoid Arthritis ()

100.00% (1 of 1)

Decreased

Normal

Increased

-44.29 Histidine - P

### Muscle/Collagen Catabolism ()

80.00% (4 of 5)

Decreased

Normal

Increased

-49.09 Leucine - P  
-52.80 Valine - P  
30.00 Hydroxylysine - P  
-39.26 Proline - P

50.00 3-Methylhistidine - P

This profile may be indicative of an individual who is either catabolising their muscle tissue or is unable to

## Clinical Correlation

Amino Acid & Organic Acid Date: 3/11/2003

**ANNA**

Female / Age: 51

This report "MATCHES" clinical observations with the lab test. Elements shown, normal and abnormal, tend to characterize the observation. Highlighted elements are those reported to "MATCH" the characteristics of the clinical observation. Others are NOT matches but are elements in the observation.

### Muscle/Collagen Catabolism (continued)

build proper muscle tissue due to amino acid deficiencies. Further investigation into amino acid competency may be helpful.

### Ammonia Toxicity/Buildup ()

**75.00% (3 of 4)**

Decreased

-57.27 Isoleucine - P  
-45.83 Aspartic Acid - P  
-60.48 Glutamic Acid - P

Normal

Increased

-32.00 Glutamine - P

## Comparison Progress Report

**ANNA**

Female / Age: 51

**Amino Acid & Organic Acid Date: 3/11/2003**

A "+" change is toward optimal % Status of zero. A "-" change is away from optimal % Status of zero.

	<b>Status % on:</b>	<b>11/19/2002</b>	<b>3/11/2003</b>	<b>+/- change</b>
1-Methylhistidine - P		15.00	<b>50.00 H</b>	<b>- 35.00</b>
Tryptophan - P		-23.33	<b>-53.33 L</b>	<b>- 30.00</b>
Tyrosine - P		-10.00	<b>-38.57 L</b>	<b>- 28.57</b>
Serine - P		-17.50	<b>-45.00 L</b>	<b>- 27.50</b>
a-Aminoadipic Acid - P		0.00	<b>25.00 H</b>	<b>- 25.00</b>
Lysine - P		<b>-39.33 L</b>	-7.33	<b>+ 32.00</b>
Cystathionine - P		<b>50.00 H</b>	<b>25.00 H</b>	<b>+ 25.00</b>


























## Comparison Report

**ANNA**

**Amino Acid & Organic Acid Date: 3/11/2003**

Female / Age: 51

The arrow's length is proportional to change. Left to right is increase. Right to left is decrease.  
Green is improvement. Red is decline.

	+/-	Status	% on:	11/19/2002	3/11/2003
15.00  50.00	-	1-Methylhistidine - P		15.00	50.00 H
30.00  50.00	-	3-Methylhistidine - P		30.00 H	50.00 H
		AA Competency		-47.45 L	-53.36 L
-35.19  -27.04	+	AA Competency-1		-35.19 L	-27.04 L
-52.88  -38.27	-	AA Competency-2		-38.27 L	-52.88 L
0.00  25.00	-	a-Aminoadipic Acid - P		0.00	25.00 H
-23.33  -13.33	-	a-Amino-N-Butyric Acid - P		-13.33	-23.33
		Alanine - P		16.86	-18.00
		Anserine - P		-49.00 L	-49.00 L
-25.45  -16.36	+	Arginine - P		-25.45 L	-16.36
-48.82  -30.00	-	Asparagine - P		-30.00 L	-48.82 L
-45.83  -33.33	-	Aspartic Acid - P		-33.33 L	-45.83 L
		b-Alanine - P		30.00 H	-30.00 L
		b-Aminoisobutyric Acid - P		0.00	0.00
		Carnosine - P		-49.00 L	-49.00 L
4.55  19.09	+	Citrulline - P		19.09	4.55
49.33  69.33	+	Collagen Related AA		69.33 H	49.33 H
25.00  50.00	+	Cystathionine - P		50.00 H	25.00 H
		Cystine - P		-7.50	-10.00
25.00  37.50	-	Ethanolamine - P		25.00 H	37.50 H
-30.00  50.00	-	Gamma-aminobutyric Acid-P		-30.00 L	50.00 H
-60.48  -47.14	-	Glutamic Acid - P		-47.14 L	-60.48 L
		Glutamine - P		-37.11 L	-32.00 L
-37.56  -13.11	-	Glycine - P		-13.11	-37.56 L
9.17  25.69	-	Glycine/Serine Ratio		9.17	25.69 H
-44.29  -30.00	-	Histidine - P		-30.00 L	-44.29 L
		Homocystine - P		18.00	18.00
30.00  50.00	+	Hydroxylysine - P		50.00 H	30.00 H
-16.67  40.00	+	Hydroxyproline - P		40.00 H	-16.67
-57.27  -46.36	-	Isoleucine - P		-46.36 L	-57.27 L
		Leucine - P		-43.64 L	-49.09 L
-39.33  -7.33	+	Lysine - P		-39.33 L	-7.33
-50.00  -38.00	-	Methionine - P		-38.00 L	-50.00 L
-36.67  -21.33	-	Ornithine - P		-21.33	-36.67 L
-52.11  -27.89	-	Phenylalanine - P		-27.89 L	-52.11 L
-29.89  -21.15	-	Phenylalanine/Tyrosine		-21.15	-29.89 L
		Phosphoethanolamine - P		-20.00	-13.33
		Phosphoserine - P		8.33	8.33
-39.26  -28.15	-	Proline - P		-28.15 L	-39.26 L
		Sarcosine - P		-30.00 L	-30.00 L
-45.00  -17.50	-	Serine - P		-17.50	-45.00 L
-45.50  -34.50	-	Taurine - P		-34.50 L	-45.50 L
		Threonine - P		-18.67	-26.00 L
-53.33  -23.33	-	Tryptophan - P		-23.33	-53.33 L
-38.57  -10.00	-	Tyrosine - P		-10.00	-38.57 L
-52.80  -33.20	-	Valine - P		-33.20 L	-52.80 L
		<b>Total Status Deviation</b>		<b>28.69</b>	<b>35.09</b>
		<b>Total Status Skew</b>		<b>-12.13</b>	<b>-18.86</b>

## Comparison Progress Report

**ANNA**

**Amino Acid & Organic Acid Date: 3/11/2003**

Female / Age: 51

A "+" change is toward optimal % Status of zero. A "-" change is away from optimal % Status of zero.

	<b>Status % on: 11/19/2002</b>		<b>3/11/2003</b>		<b>+/- change</b>
Citrate	-0.94		<b>54.16</b>	H	- <b>53.22</b>
Homovanillate	<b>-47.50</b>	L	<b>95.45</b>	H	- <b>47.95</b>
Hippurate	10.63		<b>58.21</b>	H	- <b>47.59</b>
a-Ketoglutarate	14.09		<b>61.43</b>	H	- <b>47.34</b>
Phenylpropionate	-8.33		<b>50.00</b>	H	- <b>41.67</b>
Phenylacetate	0.00		<b>-28.57</b>	L	- <b>28.57</b>
2-Methylhippurate	<b>117.00</b>	H	-9.46		+ 107.54
Tartarate	<b>87.50</b>	H	-8.18		+ 79.32
Lactate	<b>62.31</b>	H	0.00		+ 62.31
Pyruvate	<b>135.71</b>	H	<b>75.00</b>	H	+ <b>60.71</b>
Fumarate	<b>70.00</b>	H	<b>30.00</b>	H	+ <b>40.00</b>
Pyroglutamate	<b>66.25</b>	H	<b>26.88</b>	H	+ <b>39.37</b>
Adipate	<b>-36.67</b>	L	-3.57		+ 33.10
a-Hydroxybutyrate	<b>-35.60</b>	L	-2.73		+ 32.87
p-Hydroxybenzoate	<b>36.00</b>	H	4.55		+ 31.45
a-Ketoisocaproate	<b>-40.00</b>	L	10.00		+ 30.00

## Comparison Report

**ANNA**

**Amino Acid & Organic Acid Date: 3/11/2003**

Female / Age: 51

The arrow's length is proportional to change. Left to right is increase. Right to left is decrease.  
Green is improvement. Red is decline.

		+/-	Status % on:	11/19/2002	3/11/2003
-9.46		117.00	+	2-Methylhippurate	117.00 H -9.46
-26.19		-9.02	+	5-Hydroxyindoleacetate	-26.19 L -9.02
-36.67		-3.57	+	Adipate	-36.67 L -3.57
-35.60		-2.73	+	a-Hydroxybutyrate	-35.60 L -2.73
-21.43		3.33	-	a-Keto-b-methylvalerate	3.33 -21.43
14.09		61.43	-	a-Ketoglutarate	14.09 61.43 H
-40.00		10.00	+	a-Ketoisocaproate	-40.00 L 10.00
				a-Ketoisovalerate	-36.67 L -37.50 L
				Benzoate	-22.00 -27.45 L
-21.11		-5.00	-	b-Hydroxybutyrate	-5.00 -21.11
-20.00		-9.00	-	b-Hydroxyisovalerate	-9.00 -20.00
				cis-Aconitate	-15.31 -16.18
23.00		36.67	-	Citramalate	23.00 36.67 H
-0.94		54.16	-	Citrate	-0.94 54.16 H
				DHPP	-16.67 12.50
-20.00		-9.17	+	Ethylmalonate	-20.00 -9.17
30.00		70.00	+	Fumarate	70.00 H 30.00 H
10.63		58.21	-	Hippurate	10.63 58.21 H
-47.50		95.45	-	Homovanillate	-47.50 L 95.45 H
-29.03		-8.75	-	Hydroxymethylglutarate	-8.75 -29.03 L
-56.67		76.53	+	Isocitrate	76.53 H -56.67 L
0.00		62.31	+	Lactate	62.31 H 0.00
				Malate	-3.33 7.14
-16.67		-8.33	+	Methylmalonate	-16.67 -8.33
				Orotate	-3.33 4.55
-28.57		0.00	-	Phenylacetate	0.00 -28.57 L
-8.33		50.00	-	Phenylpropionate	-8.33 50.00 H
4.55		36.00	+	p-Hydroxybenzoate	36.00 H 4.55
				P-Hydroxyphenylacetate	-14.00 -16.67
32.19		50.00	+	p-Hydroxyphenyllactate	50.00 H 32.19 H
26.88		66.25	+	Pyroglutamate	66.25 H 26.88 H
75.00		135.71	+	Pyruvate	135.71 H 75.00 H
-20.37		-12.50	-	Suberate	-12.50 -20.37
-50.00		-28.00	-	Succinate	-28.00 L -50.00 L
10.56		22.22	-	Sulfate	10.56 22.22
-8.18		87.50	+	Tartarate	87.50 H -8.18
				Tricarballic acid	-11.11 -3.85
				Vanillylmandelate	-22.22 -22.00
				<b>Total Status Deviation</b>	<b>55.84 31.97</b>
				<b>Total Status Skew</b>	<b>28.96 1.81</b>

## Panel/Subset Comparison Report

**ANNA**

**Amino Acid & Organic Acid Date: 3/11/2003**

Female / Age: 51

Ammonia/Energy	11/19/2002		3/11/2003	+/-	
Arginine - P	-25.45	L	-16.36	+	-25.45  -16.36
Threonine - P	-18.67		-26.00	L	
Glycine - P	-13.11		-37.56	L -	-37.56  -13.11
Serine - P	-17.50		-45.00	L -	-45.00  -17.50
a-Aminoadipic Acid - P	0.00		25.00	H -	0.00  25.00
Asparagine - P	-30.00	L	-48.82	L -	-48.82  -30.00
Aspartic Acid - P	-33.33	L	-45.83	L -	-45.83  -33.33
Citrulline - P	19.09		4.55	+	4.55  19.09
Glutamic Acid - P	-47.14	L	-60.48	L -	-60.48  -47.14
Glutamine - P	-37.11	L	-32.00	L	
Ornithine - P	-21.33		-36.67	L -	-36.67  -21.33
a-Amino-N-Butyric Acid - P	-13.33		-23.33	-	-23.33  -13.33
Alanine - P	16.86		-18.00		
b-Alanine - P	30.00	H	-30.00	L	
<b>PSS / PSD</b>	-13.65 / 23.07		-27.89 / 32.11		

CNS Metabolism	11/19/2002		3/11/2003	+/-	
Arginine - P	-25.45	L	-16.36	+	-25.45  -16.36
Tryptophan - P	-23.33		-53.33	L -	-53.33  -23.33
Gamma-aminobutyric Acid-P	-30.00	L	50.00	H -	-30.00  50.00
Glycine - P	-13.11		-37.56	L -	-37.56  -13.11
Serine - P	-17.50		-45.00	L -	-45.00  -17.50
Taurine - P	-34.50	L	-45.50	L -	-45.50  -34.50
Aspartic Acid - P	-33.33	L	-45.83	L -	-45.83  -33.33
Glutamine - P	-37.11	L	-32.00	L	
Ethanolamine - P	25.00	H	37.50	H -	25.00  37.50
Phosphoethanolamine - P	-20.00		-13.33		
Phosphoserine - P	8.33		8.33		
<b>PSS / PSD</b>	-18.27 / 24.33		-17.55 / 34.98		

Connective Tissue	11/19/2002		3/11/2003	+/-	
Leucine - P	-43.64	L	-49.09	L	
Methionine - P	-38.00	L	-50.00	L -	-50.00  -38.00
Valine - P	-33.20	L	-52.80	L -	-52.80  -33.20
Cystine - P	-7.50		-10.00		
Hydroxylysine - P	50.00	H	30.00	H +	30.00  50.00
Hydroxyproline - P	40.00	H	-16.67	+	-16.67  40.00
3-Methylhistidine - P	30.00	H	50.00	H -	30.00  50.00
Proline - P	-28.15	L	-39.26	L -	-39.26  -28.15
<b>PSS / PSD</b>	-3.81 / 33.81		-17.23 / 37.23		

## Panel/Subset Comparison Report

**ANNA**

**Amino Acid & Organic Acid Date: 3/11/2003**

Female / Age: 51

<b>Essential Amino Acid</b>	<b>11/19/2002</b>		<b>3/11/2003</b>	<b>+/-</b>		
Arginine - P	-25.45	L	-16.36	+	-25.45	→ -16.36
Histidine - P	-30.00	L	-44.29	L	-44.29	← -30.00
Isoleucine - P	-46.36	L	-57.27	L	-57.27	← -46.36
Leucine - P	-43.64	L	-49.09	L		
Lysine - P	-39.33	L	-7.33	+	-39.33	→ -7.33
Methionine - P	-38.00	L	-50.00	L	-50.00	← -38.00
Phenylalanine - P	-27.89	L	-52.11	L	-52.11	← -27.89
Threonine - P	-18.67		-26.00	L		
Tryptophan - P	-23.33		-53.33	L	-53.33	← -23.33
Valine - P	-33.20	L	-52.80	L	-52.80	← -33.20
<b>PSS / PSD</b>	<b>-32.59 / 32.59</b>		<b>-40.86 / 40.86</b>			

<b>Fat Metabolism</b>	<b>11/19/2002</b>		<b>3/11/2003</b>	<b>+/-</b>		
Arginine - P	-25.45	L	-16.36	+	-25.45	→ -16.36
Isoleucine - P	-46.36	L	-57.27	L	-57.27	← -46.36
Leucine - P	-43.64	L	-49.09	L		
Valine - P	-33.20	L	-52.80	L	-52.80	← -33.20
Taurine - P	-34.50	L	-45.50	L	-45.50	← -34.50
Glutamine - P	-37.11	L	-32.00	L		
Sarcosine - P	-30.00	L	-30.00	L		
<b>PSS / PSD</b>	<b>-35.75 / 35.75</b>		<b>-40.43 / 40.43</b>			

<b>Gluconeogen</b>	<b>11/19/2002</b>		<b>3/11/2003</b>	<b>+/-</b>		
Threonine - P	-18.67		-26.00	L		
Tryptophan - P	-23.33		-53.33	L	-53.33	← -23.33
Glycine - P	-13.11		-37.56	L	-37.56	← -13.11
Serine - P	-17.50		-45.00	L	-45.00	← -17.50
Alanine - P	16.86		-18.00			
<b>PSS / PSD</b>	<b>-11.15 / 17.89</b>		<b>-35.98 / 35.98</b>			

<b>Hepatic Metabolism</b>	<b>11/19/2002</b>		<b>3/11/2003</b>	<b>+/-</b>		
Methionine - P	-38.00	L	-50.00	L	-50.00	← -38.00
Taurine - P	-34.50	L	-45.50	L	-45.50	← -34.50
Glutamine - P	-37.11	L	-32.00	L		
Cystine - P	-7.50		-10.00			
Cystathionine - P	50.00	H	25.00	H	25.00	← 50.00
Homocystine - P	18.00		18.00			
Alanine - P	16.86		-18.00			
<b>PSS / PSD</b>	<b>-4.61 / 28.85</b>		<b>-16.07 / 28.36</b>			

<b>Immune Metabolites</b>	<b>11/19/2002</b>		<b>3/11/2003</b>	<b>+/-</b>		
Arginine - P	-25.45	L	-16.36	+	-25.45	→ -16.36
Threonine - P	-18.67		-26.00	L		
Glutamine - P	-37.11	L	-32.00	L		
Ornithine - P	-21.33		-36.67	L	-36.67	← -21.33
<b>PSS / PSD</b>	<b>-25.64 / 25.64</b>		<b>-27.76 / 27.76</b>			



## Panel/Subset Comparison Report

**ANNA**

**Amino Acid & Organic Acid Date: 3/11/2003**

Female / Age: 51

<b>Muscle Metabolites</b>	<b>11/19/2002</b>		<b>3/11/2003</b>		<b>+/-</b>	
Anserine - P	-49.00	L	-49.00	L		
Carnosine - P	-49.00	L	-49.00	L		
1-Methylhistidine - P	15.00		50.00	H	-	15.00  50.00
3-Methylhistidine - P	30.00	H	50.00	H	-	30.00  50.00
<b>PSS / PSD</b>	<b>-13.25 / 35.75</b>		<b>0.50 / 49.50</b>			

<b>Neuroendocrine Met.</b>	<b>11/19/2002</b>		<b>3/11/2003</b>		<b>+/-</b>	
Gamma-aminobutyric Acid-P	-30.00	L	50.00	H	-	-30.00  50.00
Glycine - P	-13.11		-37.56	L	-	-37.56  -13.11
Serine - P	-17.50		-45.00	L	-	-45.00  -17.50
Taurine - P	-34.50	L	-45.50	L	-	-45.50  -34.50
Tyrosine - P	-10.00		-38.57	L	-	-38.57  -10.00
<b>PSS / PSD</b>	<b>-21.02 / 21.02</b>		<b>-23.33 / 43.33</b>			

<b>Amino Acid Catabolism</b>	<b>11/19/2002</b>		<b>3/11/2003</b>		<b>+/-</b>	
a-Ketoisovalerate	-36.67	L	-37.50	L		
a-Ketoisocaproate	-40.00	L	10.00		+	-40.00  10.00
a-Keto-b-methylvalerate	3.33		-21.43		-	-21.43  3.33
<b>PSS / PSD</b>	<b>-24.44 / 26.67</b>		<b>-16.31 / 22.98</b>			

<b>B-Complex Markers</b>	<b>11/19/2002</b>		<b>3/11/2003</b>		<b>+/-</b>	
b-Hydroxyisovalerate	-9.00		-20.00		-	-20.00  -9.00
a-Ketoisovalerate	-36.67	L	-37.50	L		
a-Ketoisocaproate	-40.00	L	10.00		+	-40.00  10.00
a-Keto-b-methylvalerate	3.33		-21.43		-	-21.43  3.33
Methylmalonate	-16.67		-8.33		+	-16.67  -8.33
<b>PSS / PSD</b>	<b>-19.80 / 21.13</b>		<b>-15.45 / 19.45</b>			

<b>CAC Cycle Ratios</b>	<b>11/19/2002</b>		<b>3/11/2003</b>		<b>+/-</b>
<b>PSS / PSD</b>	<b>0.00 / 0.00</b>		<b>10.45 / 52.35</b>		

<b>Carbohydrate Metabolism</b>	<b>11/19/2002</b>		<b>3/11/2003</b>		<b>+/-</b>	
Lactate	62.31	H	0.00		+	0.00  62.31
Pyruvate	135.71	H	75.00	H	+	75.00  135.71
a-Hydroxybutyrate	-35.60	L	-2.73		+	-35.60  -2.73
b-Hydroxybutyrate	-5.00		-21.11		-	-21.11  -5.00
<b>PSS / PSD</b>	<b>39.36 / 59.66</b>		<b>12.79 / 24.71</b>			

<b>Citric Acid Cycle</b>	<b>11/19/2002</b>		<b>3/11/2003</b>		<b>+/-</b>	
Citrate	-0.94		54.16	H	-	-0.94  54.16
cis-Aconitate	-15.31		-16.18			
Isocitrate	76.53	H	-56.67	L	+	-56.67  76.53
a-Ketoglutarate	14.09		61.43	H	-	14.09  61.43
Succinate	-28.00	L	-50.00	L	-	-50.00  -28.00
Fumarate	70.00	H	30.00	H	+	30.00  70.00
Malate	-3.33		7.14			
Hydroxymethylglutarate	-8.75		-29.03	L	-	-29.03  -8.75
<b>PSS / PSD</b>	<b>13.04 / 27.12</b>		<b>0.11 / 38.08</b>			

## Panel/Subset Comparison Report

Amino Acid & Organic Acid Date: 3/11/2003

**ANNA**

Female / Age: 51

<b>Intestinal Dysbiosis</b>	<b>11/19/2002</b>	<b>3/11/2003</b>	<b>+/-</b>	
Hippurate	10.63	<b>58.21</b> H	-	10.63 <b>58.21</b>
Benzoate	-22.00	<b>-27.45</b> L		
p-Hydroxybenzoate	<b>36.00</b> H	4.55	+	4.55 <b>36.00</b>
p-Hydroxyphenyllactate	<b>50.00</b> H	<b>32.19</b> H	+	<b>32.19</b> <b>50.00</b>
Phenylacetate	0.00	<b>-28.57</b> L	-	<b>-28.57</b> 0.00
Phenylpropionate	-8.33	<b>50.00</b> H	-	-8.33 <b>50.00</b>
Tricarballoylate	-11.11	-3.85		
DHPP	-16.67	12.50		
Citramalate	23.00	<b>36.67</b> H	-	23.00 <b>36.67</b>
Tartarate	<b>87.50</b> H	-8.18	+	-8.18 <b>87.50</b>
<b>PSS / PSD</b>	11.92 / 23.94	11.67 / 22.13		

<b>Lipid Metabolism</b>	<b>11/19/2002</b>	<b>3/11/2003</b>	<b>+/-</b>	
Adipate	<b>-36.67</b> L	-3.57	+	<b>-36.67</b> -3.57
Suberate	-12.50	-20.37	-	-20.37  -12.50
Ethylmalonate	-20.00	-9.17	+	-20.00  -9.17
<b>PSS / PSD</b>	-23.06 / 23.06	-11.04 / 11.04		

<b>Liver Detox Indicators</b>	<b>11/19/2002</b>	<b>3/11/2003</b>	<b>+/-</b>	
2-Methylhippurate	<b>117.00</b> H	-9.46	+	-9.46 <b>117.00</b>
P-Hydroxyphenylacetate	-14.00	-16.67		
Orotate	-3.33	4.55		
Pyroglutamate	<b>66.25</b> H	<b>26.88</b> H	+	<b>26.88</b> <b>66.25</b>
Sulfate	10.56	22.22	-	10.56  22.22
<b>PSS / PSD</b>	29.41 / 35.19	-2.74 / 20.62		

<b>Neurotransmitters</b>	<b>11/19/2002</b>	<b>3/11/2003</b>	<b>+/-</b>	
Vanillylmandelate	-22.22	-22.00		
Homovanillate	<b>-47.50</b> L	<b>95.45</b> H	-	<b>-47.50</b> <b>95.45</b>
5-Hydroxyindoleacetate	<b>-26.19</b> L	-9.02	+	<b>-26.19</b> -9.02
<b>PSS / PSD</b>	-19.18 / 19.18	37.60 / 50.01		