LAB #: Sample Report
PATIENT: Sample Patient
ID:
SEX: Male
AGE: 5

CLIENT #: 12345
DOCTOR: Sample Doctor
Doctor's Data, Inc.
3755 Illinois Ave.
St. Charles, IL 60174 U.S.A.

Amino Acids; Plasma

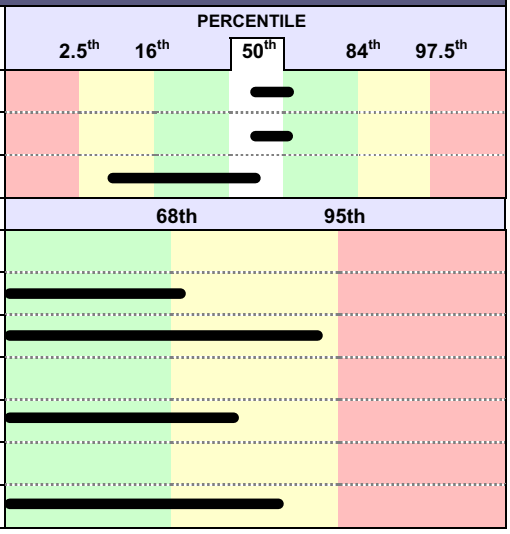
SPECIMEN VALIDITY	RESULT	REFERENCE INTERVAL	PERCENTILE (5th, 32nd, 68th, 95th)
Glutamine/Glutamate	14	> 8.5	
Asparagine/Aspartate	9.3	> 7.5	
Ammonia	12 µM/dL	< 30	
Specimen Validity Index			

ESSENTIAL / CONDITIONALLY INDISPENSABLE AMINO ACIDS	RESULT µM/dL	REFERENCE INTERVAL	PERCENTILE (2.5th, 16th, 50th, 84th, 97.5th)
Methionine	2.1	1.4- 3.5	
Taurine	7.3	4.5- 16	
Lysine	21	12- 24	
Threonine	11	6- 17	
Tryptophan	2.9	2.5- 6	
Phenylalanine	5.1	3- 8	
Leucine	13	6- 15	
Isoleucine	6.3	3.7- 9	
Valine	21	13- 29	
Arginine	7.8	4- 12	
Histidine	8.1	6- 10	

NONESSENTIAL AMINO ACIDS	RESULT µM/dL	REFERENCE INTERVAL	PERCENTILE (2.5th, 16th, 50th, 84th, 97.5th)
Alanine	28	20- 54	
Aspartate	0.45	0.15- 1.6	
Asparagine	4.2	3.5- 7.5	
Glutamine	27	40- 69	
Glutamate	2	2- 15	
Cystine	4.9	1.5- 4.5	
Glycine	49	14- 40	
Tyrosine	5.4	3.5- 9	
Serine	9.9	6- 16	
Proline	13	9- 25	

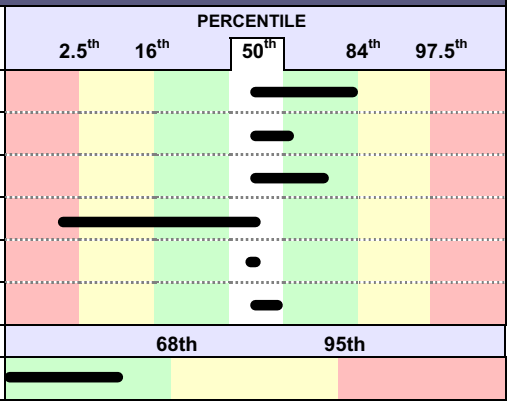
GASTROINTESTINAL MARKERS

	RESULT µM/dL	REFERENCE INTERVAL
Ethanolamine	**0.67**	0.2- 1.3
Threonine	**11**	6- 17
Tryptophan	**2.9**	2.5- 6
Alpha-Aminoadipate	**< dl**	< 0.3
Beta-alanine	**0.45**	< 1
Beta-aminoisobutyrate	**0.47**	< 0.5
Anserine	**< dl**	< 0.1
Carnosine	**0.07**	< 0.1
Gamma-aminobutyrate	**< dl**	< 0.1
Hydroxyproline	**3**	< 3.5



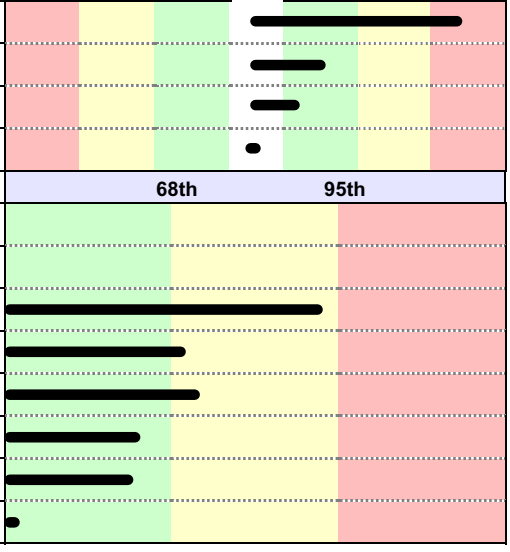
MAGNESIUM DEPENDANT MARKERS

	RESULT µM/dL	REFERENCE INTERVAL
Citrulline	**3.1**	1.6- 3.9
Ethanolamine	**0.67**	0.2- 1.3
Phosphoethanolamine	**0.48**	0.08- 1
Phosphoserine	**0.01**	0.013- 0.025
Serine	**9.9**	6- 16
Taurine	**7.3**	4.5- 16
Methionine Sulfoxide	**0.36**	< 1



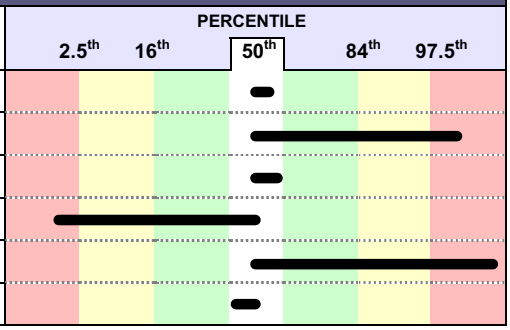
B6, B12, & FOLATE DEPENDANT MARKERS

	RESULT µM/dL	REFERENCE INTERVAL
Cystine	**4.9**	1.5- 4.5
Alpha-amino-N-butyrate	**2.3**	0.8- 3.3
Histidine	**8.1**	6- 10
Serine	**9.9**	6- 16
Cystathionine	**< dl**	< 0.05
Alpha-aminoadipate	**< dl**	< 0.3
Beta-aminoisobutyrate	**0.47**	< 0.5
Beta-alanine	**0.45**	< 1
Homocystine	**0.025**	< 0.05
Sarcosine	**0.41**	< 0.8
1-Methylhistidine	**0.39**	< 1.5
3-Methylhistidine	**0.099**	< 3.5



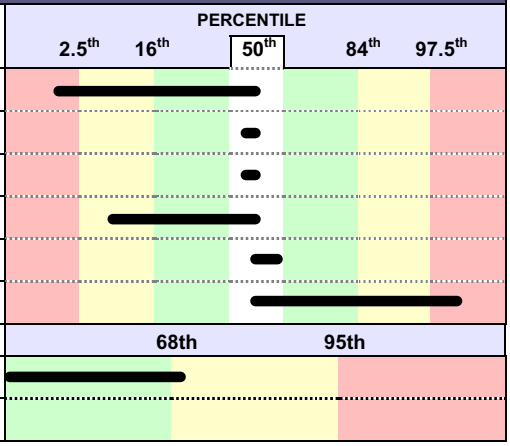
DETOXIFICATION MARKERS

	RESULT µM/dL	REFERENCE INTERVAL
Methionine	**2.1**	1.4 - 3.5
Cystine	**4.9**	1.5 - 4.5
Taurine	**7.3**	4.5 - 16
Glutamine	**27**	40 - 69
Glycine	**49**	14 - 40
Aspartate	**0.45**	0.15 - 1.6



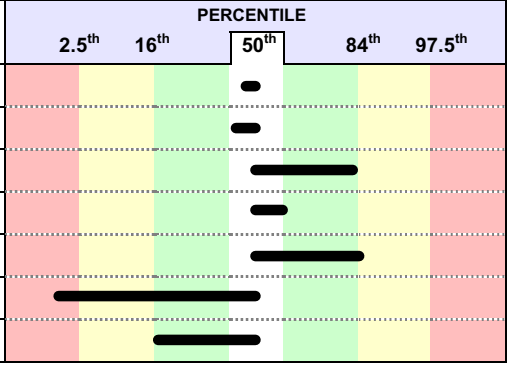
NEUROLOGICAL MARKERS

	RESULT µM/dL	REFERENCE INTERVAL
Glutamine	**27**	40 - 69
Phenylalanine	**5.1**	3 - 8
Tyrosine	**5.4**	3.5 - 9
Tryptophan	**2.9**	2.5 - 6
Taurine	**7.3**	4.5 - 16
Cystine	**4.9**	1.5 - 4.5
Beta-alanine	**0.45**	< 1
Cystathionine	**< dl**	< 0.05



UREA CYCLE METABOLITES

	RESULT µM/dL	REFERENCE INTERVAL
Arginine	**7.8**	4 - 12
Aspartate	**0.45**	0.15 - 1.6
Citrulline	**3.1**	1.6 - 3.9
Ornithine	**6.2**	3 - 10
Urea	**510**	200 - 620
Glutamine	**27**	40 - 69
Asparagine	**4.2**	3.5 - 7.5



SPECIMEN DATA

Comments:

Date Collected: **01/14/2019**
Date Received: **01/16/2019**
Date Completed: **01/18/2019**

Methodology: **LC MS/MS**
NH_4 by Automated Chem Analyzer

Reference ranges are representative of a healthy population under fasting (6-8 hours) conditions. v3

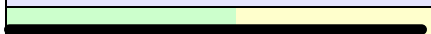
SUPPLEMENTATION SCHEDULE

L-configured Amino Acids	Total Daily Oral Dose
Tryptophan	**325 mg**
Arginine	**935 mg**
Histidine	**740 mg**
Isoleucine	**935 mg**
Leucine	**1285 mg**
Lysine	**935 mg**
Methionine	**770 mg**
Phenylalanine	**1285 mg**
Threonine	**810 mg**
Valine	**1295 mg**
Pyridoxal-5-phosphate	**30 mg**
Alpha-ketoglutarate	**650 mg**
Taurine	**0 mg**

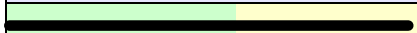
Directions: Amino acids are best taken between meals unless instructed differently by your physician. Twice daily, dissolve one and ½ teaspoons (5grams) into a small amount of warm water, add water or juice, stir and drink immediately. For children under 12 years of age, consume one teaspoon 1-2 times per day; the amino acid formula can be added to applesauce but should not be mixed with other beverages or foods that contain protein (e.g. milk, yogurt).
If you experience heightened energy that interferes with sleep, take the second daily dose earlier in the day. Patients typically take the amino acid supplement daily for up to 3 months before repeating the Plasma Amino Acid Test to re-evaluate the need for supplementation.

PRESUMPTIVE NEEDS / IMPLIED CONDITIONS

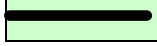
NEED FOR VITAMIN B6



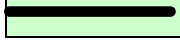
NEED FOR FOLATE, VITAMIN B12



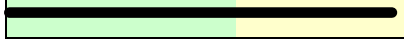
NEED FOR MAGNESIUM



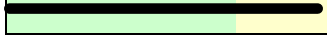
SUSCEPTIBILITY TO VASCULAR DISEASE



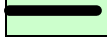
ABNORMAL INTESTINAL MICROFLORA



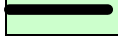
MALDIGESTION / MALABSORPTION



IMPAIRED DETOXIFICATION

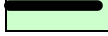


NEUROLOGICAL DISORDERS



NITROGEN INSUFFICIENCY

EXCESSIVE PROTEIN



OXIDATIVE STRESS

This recommended Amino Acid Supplement Schedule was calculated based upon the difference between the test results for this specific patient and optimal plasma levels, and guidelines for human amino acid requirements as provided by the Food and Nutrition Board of the NRC. The schedule has been provided at the request of a licensed medical practitioner and the calculated levels of amino acids only apply to ORAL administration. The supplement schedule is not intended for use by pregnant females and is strictly contraindicated for individuals with suspected or known renal insufficiency or renal failure.

Only pure, L-form crystalline amino acids should be used and the custom formulation should be prepared by credible pharmacies or purveyors who specialize in amino acid formulations. To get the full benefit of the amino acid supplementation, one needs to ensure adequate intake of CALORIES and the essential co-factors that permit proper metabolism of the amino acids (eg. B-6, B-12, folate, magnesium). Supplemental cystine or N-acetylcysteine should not be given to patients who have been diagnosed with intestinal candidiasis.

PAA INTRODUCTION

This analysis of amino acids and related metabolites was performed using High Pressure Liquid Chromatography. The test provides fundamental information about the adequacy of dietary protein, digestive disorders, dysbiosis, mood and sleep disorders, and vitamin and mineral deficiencies. The ”Presumptive Needs/Implied Conditions” are considered to be possible or probable rather than definite for the individual.When the level of a specific amino acid or metabolite deviates significantly from the norm, an interpretive paragraph is presented which briefly discusses the possible causes, clinical implications and remedies for the metabolic aberrations. If no significant abnormalities are detected, interpretive paragraphs and amino acid supplementation schedules are not provided. Reference ranges are representative of a healthy population under fasting (6-8 hours) conditions.

”Presumptive Needs” are not the result of direct analyses of B vitamins or magnesium but are based upon algorithms that utilize levels of specific amino acids (AA) and intermediary metabolites that may be abnormal if nutrient cofactors limit normal AA metabolism. Direct testing for B vitamins and magnesium (Red Blood Cell Elements) may be warranted. ”Implied conditions” may infer further clinical evaluation, functional testing and direct laboratory testing (e.g. Comprehensive Stool Analysis, Cardiovascular Risk Profile, DNA Oxidative Damage, Methylation Profile).

Glutamine (low)

Glutamine, a nonessential amino acid, is low in this plasma specimen. Glutamine is derived directly from dietary protein, and also formed endogenously by addition of ammonia to glutamate. In the CNS the formation of glutamine from glutamate provides a disposal mechanism that protects against excess accumulation of cytotoxic ammonia. Low glutamine can be a result of protein malnutrition or negative nitrogen balance, incomplete digestive proteolysis or other malabsorption syndromes, or chronic alcoholism. Glutamine can also be artifactualy low as a result of sample decay in which glutamine is broken down to glutamate and ammonia due to improper, post-collection preservation and handling of the blood specimen.

Glutamate (low)

Glutamate, a nonessential amino acid, is low in this plasma specimen. Glutamate is derived from dietary protein, and endogenously formed and removed in the processes of transamination and deamination. Ornithine, a urea cycle metabolite, is a major source of endogenously formed glutamate. In the central nervous system, glutamate picks up ammonia to form glutamine that can cross the blood brain barrier and thereby protect against the toxic effects of excess tissue ammonia levels. Plasma levels of glutamate are most commonly low in association with insufficient protein intake. Less commonly, glutamate and aspartate may be low in association with poor renal reabsorption of these amino acids that can occur with exposure to toxic chemicals.

Cystine (high)

Cystine, the oxidized dimer of cysteine is high in this plasma specimen. Cystine is derived from dietary protein, and formed endogenously from cysteine. Cystine may be abnormally high in association with excessive supplementation with methionine, cystine or N-acetylcysteine. Cystine can also be elevated due to insufficient renal clearance that can be diagnosed by performing a bona fide creatinine clearance test. Excessive levels of cystine/cysteine can be neurotoxic and adversely affect mental function.

Glycine (high)

Glycine, a very abundant nonessential amino acid, is abnormally elevated in this plasma specimen. Glycine can be elevated with B-6 deficiency, or in association with a metabolic defect in the conversion of glycine to serine that requires folic acid and adequate methionine. Renal clearance of glycine is not typically problematic, except in the presence of excessive ammonia levels or other problems with ammonia detoxification. Diminished tubular resorption of glycine can also occur with familial iminoglycinurea or possibly with vitamin D deficiency. Although very rare, a genetic defect has been described which results in extremely high levels of glycine in blood, urine and cerebrospinal fluid due to a block in the enzymatic decarboxylation of glycine. The patients are mentally retarded, have seizure disorders and the disease can be life threatening in the early postnatal period.

Phosphoserine (low)

The nonessential amino acid phosphoserine is low in this plasma specimen. Phosphoserine is derived directly from dietary sources and, metabolically as an intermediary metabolite from glycolysis and gluconeogenesis. Phosphoserine may be low in association with a very poor diet that is extremely low in protein, calories, B-6 and/ or magnesium. Hormonal dysfunctions, vitamin D deficiency, and calcium deficit are other possible reasons for low phosphoserine.