The Great Plains Laboratory, Inc.

William Shaw, Ph.D., Director | 11813 West 77th Street, Lenexa, KS 66214 | (913) 341-8949 | Fax (913) 341-6207

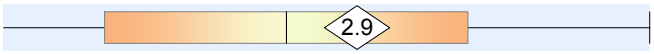
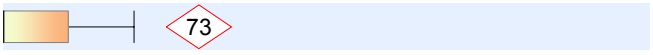
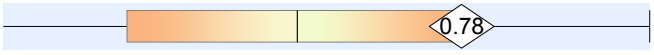
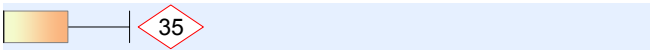
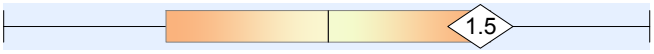
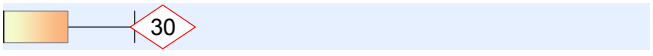
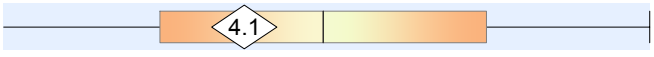
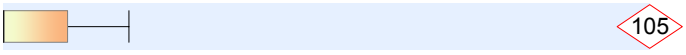
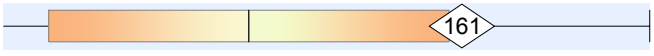
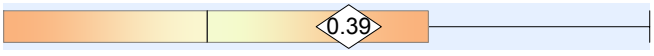
Requisition #: ***Physician Name:***

Patient Name: ***Date of Collection:***

Patient Age: ***Time of Collection:***

Sex: ***Print Date:***

Organic Acids Test - Nutritional and Metabolic Profile

Metabolic Markers in Urine	Reference Range (mmol/mol creatinine)			Patient Value	Reference Population - Females Under Age 13
Intestinal Microbial Overgrowth					
Yeast and Fungal Markers					
1 Citramalic	≤ 5.3			2.9	
2 5-Hydroxymethyl-2-furoic	≤ 30			4.3	
3 3-Oxoglutaric	≤ 0.52		H	1.1	
4 Furan-2,5-dicarboxylic	≤ 22			1.6	
5 Furancarbonylglycine	≤ 3.6			0.74	
6 Tartaric	≤ 3.9			1.4	
7 Arabinose	≤ 56		H	73	
8 Carboxycitric	≤ 34			1.1	
Malabsorption and Bacterial Markers					
9 2-Hydroxyphenylacetic	≤ 1.1			0.78	
10 4-Hydroxyphenylacetic	≤ 30		H	35	
11 4-Hydroxybenzoic	0.09	- 2.0		1.5	
12 4-Hydroxyhippuric	≤ 27		H	30	
13 Hippuric	≤ 717			281	
14 3-Indoleacetic	≤ 11			4.1	
15 Succinic	≤ 15		H	105	
16 HPHPA (Clostridia marker)	≤ 227			161	
17 DHPPA (beneficial bacteria)	≤ 0.73			0.39	

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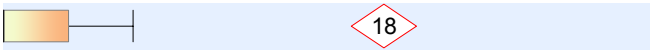
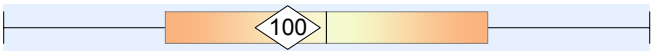
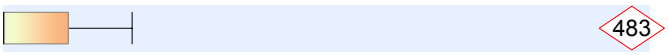
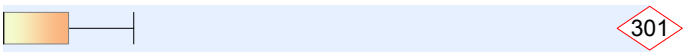
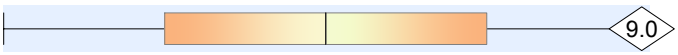
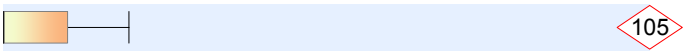
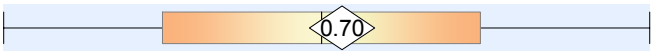
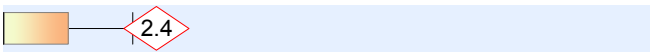
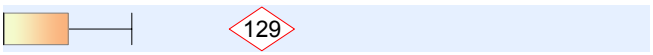
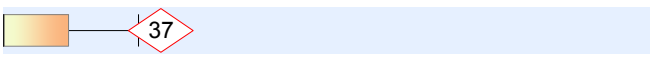
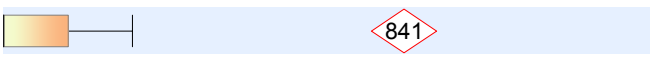
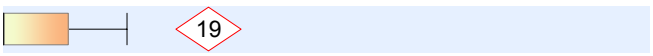
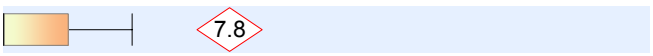
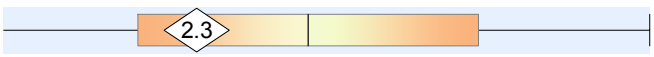
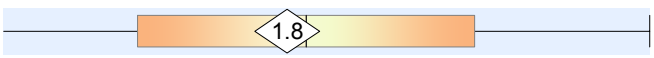
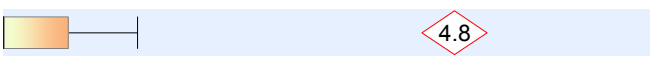
Requisition #: *Physician Name:*

Patient Name: *Date of Collection:*

Metabolic Markers in Urine	Reference Range (mmol/mol creatinine)	Patient Value	Reference Population - Females Under Age 13
Oxalate Metabolites			
18 Glyceric	0.71 - 9.5	H 18	
19 Glycolic	20 - 202	100	
20 Oxalic	15 - 174	H 483	
Glycolytic Cycle Metabolites			
21 Lactic	0.18 - 44	H 301	
22 Pyruvic	0.88 - 9.1	9.0	
23 2-Hydroxybutyric	≤ 2.2	H 3.7	
Krebs Cycle Metabolites			
24 Succinic	≤ 15	H 105	
25 Fumaric	0.04 - 1.3	0.70	
26 Malic	≤ 2.2	H 2.4	
27 2-Oxoglutaric	≤ 81	H 129	
28 Aconitic	11 - 35	H 37	
29 Citric	59 - 440	H 841	
Neurotransmitter Metabolites			
30 Homovanillic (HVA)	≤ 14	H 19	
31 Vanillylmandelic (VMA)	0.87 - 5.9	H 7.8	
32 5-Hydroxyindoleacetic (5-HIAA)	≤ 7.7	2.3	
33 Quinolinic	0.63 - 6.7	H 11	
34 Kynurenic	≤ 4.1	1.8	
35 Quinolinic / 5-HIAA Ratio	0.04 - 2.2	H 4.8	
36 Quinolinic / Kynurenic Ratio	0.36 - 3.8	H 6.2	

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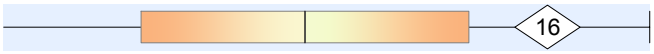
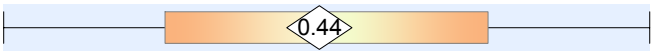
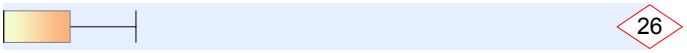
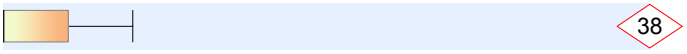
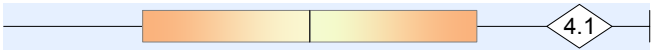
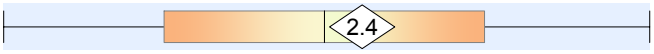
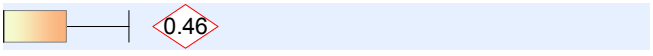
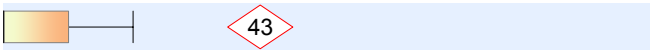
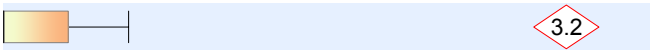
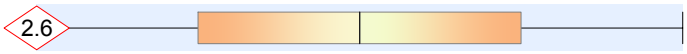
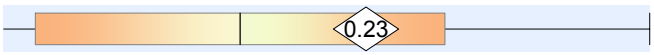
Metabolic Markers in Urine	Reference Range (mmol/mol creatinine)		Patient Value	Reference Population - Females Under Age 13
Pyrimidine Metabolites				
37 Uracil	≤ 19		16	
38 Thymine	0.02 - 0.88		0.44	
Ketone and Fatty Acid Oxidation				
39 3-Hydroxybutyric	≤ 4.1	H	26	
40 Acetoacetic	≤ 10	H	38	
41 4-Hydroxybutyric	≤ 3.4		0.44	
42 Ethylmalonic	≤ 4.6		4.1	
43 Methylsuccinic	≤ 4.3		2.4	
44 Adipic	≤ 9.7		2.8	
45 Suberic	≤ 9.5		6.5	
46 Sebacic	≤ 0.37	H	0.46	
Nutritional Markers				
Vitamin B12				
47 Methylmalonic	≤ 6.2		5.2	
Vitamin B6				
48 Pyridoxic	≤ 59		8.0	
Vitamin B5				
49 Pantothenic	≤ 26	H	43	
Vitamin B2 (Riboflavin)				
50 Glutaric	≤ 1.1	H	3.2	
Vitamin C				
51 Ascorbic	10 - 200	L	2.6	
Vitamin Q10 (CoQ10)				
52 3-Hydroxy-3-methylglutaric	≤ 101		47	
Glutathione Precursor and Chelating Agent				
53 N-Acetylcysteine	≤ 0.41		0.23	

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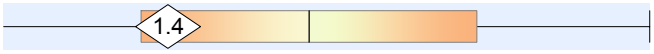
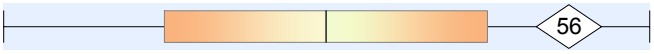
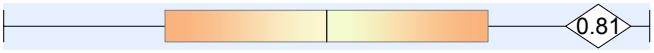
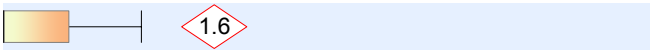
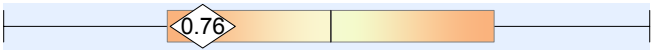
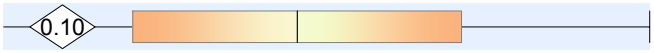
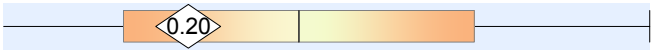
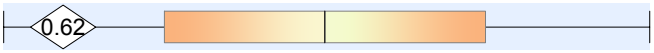
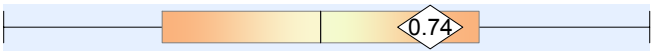
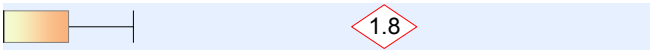
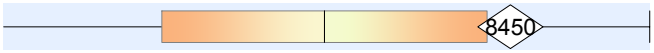
Requisition #: *Physician Name:*

Patient Name: *Date of Collection:*

Metabolic Markers in Urine	Reference Range (mmol/mol creatinine)	Patient Value	Reference Population - Females Under Age 13
Nutritional Markers			
Biotin (Vitamin H)			
54 Methylcitric	≤ 5.5	1.4	
Indicators of Detoxification			
55 Pyroglutamic	7.0 - 63	56	
56 Orotic	≤ 0.88	0.81	
57 2-Hydroxyhippuric	≤ 1.2 H	1.6	
Amino Acid Metabolites			
58 2-Hydroxyisovaleric	≤ 1.2	0.85	
59 2-Oxoisovaleric	0.03 - 2.4	0.76	
60 3-Methyl-2-oxovaleric	≤ 1.1	0.10	
61 2-Hydroxyisocaproic	≤ 0.70	0.20	
62 2-Oxoisocaproic	≤ 0.54	0.09	
63 2-Oxo-4-methiolbutyric	≤ 0.30	0.11	
64 Mandelic	≤ 0.28	0.17	
65 Phenyllactic	≤ 0.27	0.02	
66 Phenylpyruvic	0.45 - 2.3	0.62	
67 Homogentisic	≤ 0.51	0.09	
68 4-Hydroxyphenyllactic	0.04 - 1.1	0.74	
69 N-Acetylaspartic	≤ 8.1	2.3	
70 Malonic	≤ 12	3.5	
71 3-Methylglutaric	0.07 - 0.95 H	1.8	
Bone Metabolites			
72 Phosphoric	≤ 10769	8450	

The Great Plains Laboratory, Inc.

Requisition #: ***Physician Name:***

Patient Name: ***Date of Collection:***

Indicator of Fluid Intake

73	*Creatinine	31	mg/dL

*The creatinine test is performed to adjust metabolic marker results for differences in fluid intake. Urinary creatinine has limited diagnostic value due to variability as a result of recent fluid intake. Samples are rejected if creatinine is below 20 mg/dL unless the client requests results knowing of our rejection criteria.

Explanation of Report Format

The reference ranges for organic acids were established using samples collected from typical individuals of all ages with no known physiological or psychological disorders. The ranges were determined by calculating the mean and standard deviation (SD) and are defined as ± 2SD of the mean. Reference ranges are age and gender specific, consisting of Male Adult (≥13 years), Female Adult (≥13 years), Male Child (<13 years), and Female Child (<13 years).

There are two types of graphical representations of patient values found in the new report format of both the standard Organic Acids Test and the Microbial Organic Acids Test.

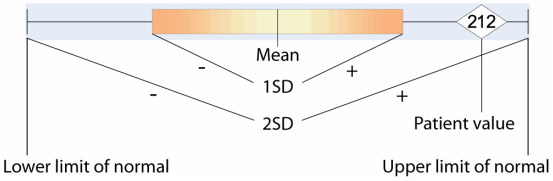
The first graph will occur when the value of the patient is within the reference (normal) range, defined as the mean plus or minus two standard deviations.

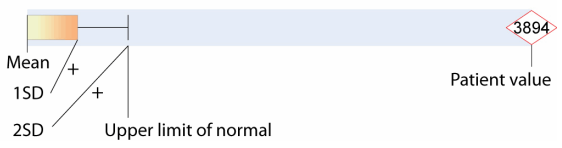
The second graph will occur when the value of the patient exceeds the upper limit of normal. In such cases, the graphical reference range is "shrunk" so that the degree of abnormality can be appreciated at a glance. In this case, the lower limits of normal are not shown, only the upper limit of normal is shown.

In both cases, the value of the patient is given to the left of the graph and is repeated on the graph inside a diamond. If the value is within the normal range, the diamond will be outlined in black. If the value is high or low, the diamond will be outlined in red.

Example of Value Within Reference Range

Metabolic Markers in Urine	Reference Range *(mmol/mol creatinine)*		Patient Result	Reference Range - Males Age 13 and Under
Intestinal Microbial Overgrowth				
HPHPA (Clostridia marker)	<	219 .9	212	



Example of Elevated Value

Metabolic Markers in Urine	Reference Range *(mmol/mol creatinine)*		Patient Result	Reference Range - Males Age 13 and Under
Intestinal Microbial Overgrowth				
HPHPA (Clostridia marker)	<	219 .9	H 3894