

## Organic Acid Test (OAT) markers

#	Marker	Low	High	12/15/2010	4/6/2011	8/22/2011	1/12/2012	8/23/2012	2/25/2013	6/5/2013	9/18/2013	1/8/2014	
<b>Yeast and Fungal Markers</b>													
1	Citramalic	0.11	2	1.1	1.4	0.85	0.73	0.47	0.98	0.8	2.3	H 0.59	
2	5-Hydroxymethyl-2-furoic	0	18	13	24	H 8	1.9	0.54	27	H 4.7	26	H 7.4	
3	3-Oxoglutaric	0	0.11	1.8	H 0.33	H 0	0.18	H 0	0.09	0	0.13	H 0.08	
4	Furan-2,5-dicarboxylic	0	13	35	H 23	H 9	4.1	1.6	16	H 11	19	H 8.8	
5	Furancarboxylglycine	0	2.3	0.17	0.16	1.2	0.04	0.06	0.22	0.31	2.2	1.7	
6	Tartaric	0	5.3	1.3	6.6	H 0.3	1	1.6	0.3	5.4	H 1.5	1.6	
7	Arabinose	0	20	51	H 89	H 114	H 31	H 34	H 135	H 81	H 88	H 62	H
8	Carboxycitric	0	20	3.9	5.3	8.6	3.6	0.55	7.1	5.2	5	1	
	Tricarballic	0	0.58					0.17	0.25	0	0.44	0.15	
	Sub-total out of range:			3	5	1	1	1	3	2	5	1	
<b>Malabsorption &amp; Bacterial Markers</b>													
9	2-Hydroxyphenylacetic	0.03	0.47	1.7	H 0.39	0.35	0.3	0.32	0.27	0.22	0.44	0.25	
10	4-Hydroxyphenylacetic	0	18	10	10	22	H 5.3	6.3	15	18	23	H 5.9	
11	4-Hydroxybenzoic	0.01	0.73	1.7	H 0.43	0.42	0.5	0.26	0.47	0.64	1	H 0.21	
12	4-Hydroxyhippuric	0	14	11	4.1	5.3	4.9	1.8	13	6.7	14	3.1	
13	Hippuric	0	241	300	H 610	H 261	H 270	H 394	234	739	H 279	H 184	
14	3-Indoleacetic	0	6.8	2.6	1.8	1.9	0.93	4.2	1.7	0.86	1.6	1.3	
15	Succinic	0	5.3	19	H 4.9	7.6	H 10	H 10	3.1	3.7	7.9	H 5.1	
16	HPHPA (clostridia marker)	0	102	87	109	H 141	H 37	18	112	H 160	H 95	46	
	4-Cresol (C. difficile)	0	39					0	7.5	7.7	11	4.4	
17	DHPPA (beneficial bacteria)	0	0.23	0.06	0.1	0.1	0.16	0.09	0.06	0.14	0.11	0.06	
	Sub-total out of range:			4	2	4	2	2	1	2	4	0	
<b>Oxalate Metabolites</b>													
18	Glyceric	0.21	4.9	6	H 3	4	4.9	1.8	1.1	1.8	5.1	H 1.9	
19	Glycolic	18	81	31	41	66	68	41	41	79	34	65	
20	Oxalic	8.9	67	85	H 118	H 115	H 100	H 233	66	59	286	H 75	H
	Sub-total out of range:			1	1	1	1	1	0	0	2	1	
<b>Glycolytic Cycle Metabolites</b>													
21	Lactic	0.74	19	9.3	15	5	20	H 12	10	12	5.1	7.1	
22	Pyruvic	0.28	6.7	3.8	2.7	1.9	0.91	0.65	0.58	3.3	1.5	1.5	
23	2-Hydroxybutyric	0	1.2	0.56	0.5	0.85	0.58	1.2	0.74	0.77	0.59	0.64	
	Sub-total out of range:						1	0	0	0	0	0	
<b>Krebs Cycle Metabolites</b>													
24	Succinic	0	5.3	19	H 4.9	7.6	H 10	H 10	3.1	3.7	7.9	H 5.1	

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25	Fuamric	0	0.49	0.44	0.21	0.26	0.15	0.44	0.4	0.29	0.24	0.15
26	Malic	0	1.1	1.3 H	0.71	0.37	0.55	0.11	0.32	0	0.75	0.48
27	2-Oxoglutaric	0	18	1.6	4.9	14	2.2	3.4	19 H	17	7.7	4.7
28	Aconitic	4.1	23	14	11	19	10	8.4	14	18	18	7.6
29	Citric	2.2	260	224	99	152	145	123	354 H	240	199	144
	Sub-total out of range:				2			1		1		0
	<b>Neurotransmitter Metabolites</b>											
30	Homovanillic (HVA)	0.39	2.2	1.9	1.7	1.6	2.3 H	1.1	1.6	1.9	2	0.83
31	Vanillylmandelic (VMA)	0.53	2.2	1.1	1.7	1.9	1.3	0.85	1.5	1.2	1.2	0.71
32	HVA/VMA Ratio	0.32	1.4	0.66	N/A	0.82	1.8 H	1.3	1.1	1.6	H	1.6 H
33	5-Hydroxyindoleacetic (5-HIAA)	0	2.9	0.47	0.66	0.72	0.35	1	0.91	27	H	0.84
34	Quinolinic	0.5	2.4	9.2 H	7.4 H	8.7 H	5.4 H	2.1	2.2	3.8	H	6.4 H
35	Kynurenic	0.12	1.8	1.9 H	4.7 H	1.5	1.1	0.72	1.6	1.9	H	1.4
36	Quinolinic/5-HIAA Ratio	0	2.5	20 H	11 H	12 H	15 H	2	2.4	0.14	7.6	H
37	Quinolinic/Kynurenic Ratio	0.22	3	4.9 H	N/A	12 H		NA	NA			
	Sub-total out of range:				4	3	3	4		0	0	4
	<b>Pyrimidine Metabolites</b>											
37	Uracil	0	6.9	4.3	3.3	5.3	3.5	5.8	3	2.5	3.2	1.3
38	Thymine	0	0.36	0.17	0.11	0.21	0.11	0.09	0.21	0	0.11	0.009
	Sub-total out of range:									0	0	0
	<b>Ketone and Fatty Acid Oxidation</b>											
39	3-Hydroxybutyric	0	1.9	1.7	0.71	1.7	1.1	1.9	0.94	1.5	0.78	0.48
40	Acetoacetic	0	10	0	1.1	0.49	6.4	0.98	0.65	2.7	1	2.7
41	4-Hydroxybutyric	0	4.3	0.22	0.91	0.49	0.96	2.5	1.7	2.8	2	1.9
42	Ethylmalonic	0.13	2.7	1.6	1.5	2.5	1.3	2	1.5	2.1	2.3	0.9
43	Methylsuccinic	0	2.3	1.8	1.6	3.5 H	1	1.3	2.1	1.9	2.9	H
44	Adipic	0	2.9	8.3 H	1.5	5.5 H	1	1.8	1.7	3.3	H	4.1 H
45	Suberic	0	1.9	3.1 H	4 H	4.7 H	2.7 H	0.49	2.1 H	6.4	H	5.2 H
46	Sebacic	0	0.14	0.36 H	0.11	0.11	0.07		0.18 H	0.31	H	0.24 H
	Sub-total out of range:				3	1	3	1	0	2	3	4
	<b>Nutritional Markers</b>											
47	Methylmalonic (B12)	0	2.3	1.3	0.88	2	0.89	0.49	1.9	1.6	1	1.2
48	Pyridoxic (B6)	0	26	11	31 H	41	91	0.94	5.7	12	6.7	2.8
49	Pantothenic (B5)	0	5.4	35 H	185 H	16 H	15 H	2.2	11 H	49	H	17 H

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50	Glutaric (B2 Riboflavin)	0	0.43	1.5 H	0.56 H	0.7 H	0.82 H	0.55	0.27	0.5 H	0.65 H	0.34	
51	Ascorbic (Vitamin C)	10	200	2676 H	8761 H	2.2 L	1225 H	779 H	4.7 L	199	7.9 L	689 H	
52	3-Hydroxy-3-ethylglutaric (Q10)	0	26	10	10	22	7.2	13	7.8	15	15	9.5	
53	N-Acetylcysteine	0	0.13	0.1	0.4 H	0.07	0.03	0	0.07	0	0.04	0.07	
54	Methylcitric (Biotin/Vitamin H)	0.15	1.7	0.73	0.57	1.1	0.65	0.97	2.1 H	1.4	2.4 H	0.55	
Sub-total out of range:					3	5	3	3	1	3	2	4	2
<b>Indicators of Detoxification</b>													
55	Pyroglutamic	5.7	25	23	24	30 H	10	24	2	28 H	25	23	
56	Orotic	0	0.46	0.33	0.26	0.48 H	0.32	0.31	0.32	0.3	0.33	0.21	
57	2-Hydroxyhippuric	0	0.86	0.84	0.78	0.5	0.36	0.53	0.45	1.4 H	0.43	0.34	
Sub-total out of range:						2				0	2	0	0
<b>Amino Acid Metabolites</b>													
58	2-Hydroxyisovaleric	0	0.41	0	0	0	0	0	0	0	0	0	
59	2-Oxoisovaleric	0	1.5	0	0	0	0.59	0	0.31	0	0	0	
60	3-Methyl-2-oxovaleric	0	0.56	0.22	0	0	0.13	0.19	0.46	0	0.33	0.2	
61	2-Hydroxyisocaproic	0	0.39	0.04	0.06	0.13	0.03	0.01	0.01	0.05	0.05	0.02	
62	2-Oxoisocaproic	0	0.34	0.04	0.06	0	0.02	0	0.08	0	0	0.07	
63	2-Oxo-4-methiobutyric	0	0.14	0.05	0.09	0.02	0.11	0.05	0.13	0.11	0.05	0.03	
64	Mandelic	0	0.09	0	0.12 H	0.28 H	0	0	0.07	0	0.2 H	0	
65	Phenyllactic	0	0.1	0.03	0.08	0.06	0.02	0.01	0.303	0	0.02	0.02	
66	Phenylpyruvic	0.02	1.4	0.25	0.79	0.16	0.37	0.44	0.6	1.3	0.88	0.57	
67	Homogentisic	0	0.23	0.05	0.11	0.04	0.3	0.02	0.03	0	0.02	0.02	
68	4-Hydroxyphenyllactic	0	0.62	0.38	0.5	0.42	0.26	0.21	0.44	0.41	0.56	0.28	
69	N-Acetylaspartic	0	2.5	2	0.42	0.74	0.37	1.7	1.1	0	1.3	1	
70	Malonic	0	9.9	0	4.3	0	1.3	7.4	0.85	3.5	0	6.4	
71	3-Methylglutaric	0.02	0.38	0.43 H	0.3	0.66 H	0.31	0.3	0.35	0.36	0.35	0.28	
	3-Hydroxyglutaric	0	4.6					0	0.85	0	0.28	1	
	3-Methylglutaconic	0.38	2					1	1.2	1.7	1.5	0.64	
Sub-total out of range:					1	1	1		0	0	0	1	0
<b>Bone Metabolites</b>													
72	Phosphoric	332	5040	8519 H	7877 H	12466 H	2482	1322	1445	1709	2147	0	
Sub-total out of range:					1	1	1			0	0	0	2.331
<b>Total of all deleterious markers:</b>					<b>20</b>	<b>14</b>	<b>18</b>	<b>12</b>	<b>5</b>	<b>8</b>	<b>13</b>	<b>20</b>	<b>3</b>

