



# Green Health

## MEDICAL GROUP

a collaborative thinktank of ecologically minded beings

405 Alberto Way Suite C and Suite 1

Los Gatos, CA 95032

408 458 8201

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## ORGANIC ACIDS SCAN

Signal	Lvl	% Imbalance	7/15/26 notes	
Organic Acids -> Neurotransmitter Metabolites -> Quinolinic Acid May be elevated due to chronic microbial inflammation, central nervous system degredation, tryptophan supplementation, or phthalates. Consider carnitine, melatonin, B6, tumeric, garlic.	2		99	
Organic Acids -> Amino Acid Metabolites -> 2-Oxoisocaproic Acid BCAA metabolite. Moderate increase may result from lactic acidosis, episodic ketosis, or thiamine/lipoic acid deficiency. Significant elevations are associated with genetic issues, MSUD, and pyruvate dehydrogenase deficiency.	4		97	
Organic Acids -> Yeast and Fungal Biomarkers -> Arabinose Produced by action of the Candida enzyme hyaluronidase on the intercellular cement, hyaluronic acid. Oxidation of the hyaluronic acid breakdown by WBC hypochlorite produces tartaric acid and arabinose. Consider antifungals and/or probiotics.	10		95	
Organic Acids -> Neurotransmitter Metabolites -> Vanillylmandelic acid Metabolite of epinephrine and norepinephrine. Often elevated due to stress induced catecholamine output or lead toxicity.	2		94	
Organic Acids -> Amino Acid Mitochondrial Metabolites -> 3-Methylglutaconic Elevated levels may indicate a reduced ability to metabolize leucine. Consider supplementation with CoQ10, niacin, carnitine, riboflavin, nicotinaminde, biotin, and Vitamin E.	5		88	
Organic Acids -> Nutritional Markers -> N-Acetylcysteine Acid Antioxidant, increases glutathione reserves. Binds directly to toxic metabolites with glutathione.	4		88	
Organic Acids -> Oxalate Metabolites -> Glyceric Acid Elevated in genetic hyperoxaluria type II. Normal values rule out genetic causes of significantly elevated urinary oxalic acid.	1		87	
Organic Acids -> Bacterial Biomarkers -> 3-Indoleacetic Acid Tryptophan byproduct of Clostria: C. stricklandii, C. litusburense, C. subterminale, and C. putrefaciens. Very high amounts of this tryptophan metabolite may indicate a depletion of tryptophan.	3		86	



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Organic Acids -> Ketone and Fatty Acid Oxidation -> Suberic Acid Metabolite of the omega fatty acid pathway. Elevated levels may be due to carnitine deficiency, fasting, increased intake of triglycerides from coconut oil, etc. Symptoms include hypoglycemia and lethargy. Carnitine may improve symptoms.	11		86	
Organic Acids -> Yeast and Fungal Biomarkers -> Tricarballic Acid A chemical byproduct released from fumonisins during passage through the GI tract. Fumonisin are fungal toxins produced by F. verticillioides. Elevated levels can be caused by contaminated corn products.	10		83	
Organic Acids -> Amino Acid Metabolites -> N-Acetylaspartic Acid Elevated levels are associated with Carnavan's disease.	1		82	
Organic Acids -> Yeast and Fungal Biomarkers -> Furan-2,5-dicarboxylic Acid Aspergillus metabolite. Consider antifungals and/or probiotics.	7		81	
Organic Acids -> Nutritional Markers -> Ascorbic Acid Vitamin C Commonly elevated with supplementation. High values generally of no concern, but check oxalic acid levels. Kidney stones are unlikely if oxalic acid is in within range.	7		79	
Organic Acids -> Nutritional Markers -> 3-Hydroxy-3-methylglutaric Acid CoQ10 Precursor of CoQ10. Slightly elevated levels suggest yeast overgrowth. Elevated levels may also indicate decreased CoQ10 synthesis. Very elevated levels may be due to HMG aciduria.	1		79	
Organic Acids -> Nutritional Markers -> Glutaric Acid B2 Elevated levels indicate riboflavin B2 deficiency, fatty acid oxidation defects, metabolic effects of valproic acid, or Celiac. Very high levels suggest a genetic issue. Consider riboflavin and CoQ10 supplementation.	8		76	
Organic Acids -> Glycolytic Cycle Metabolites -> Pyruvic Acid Elevated by exercise, bacterial overgrowth, poor perfusion, B vitamin deficiency, mitochondrial dysfunction (tiglylglycine), and anemia. Higher levels suggest an inborn metabolic dysfunction.	3		76	
Organic Acids -> Bacterial Biomarkers -> Dihydroxyphenylpropionic Acid DHPPA DHPPA indicates intake of chlorogenic acid, common in fruits, vegetables, and beverages. Lactobacilli, bifidus, and e.coli can increase the breakdown of chlorogenic acid to DHPPA, so elevated values are	6		74	



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generally associated with increased levels of these in the GI tract.				
Organic Acids -> Nutritional Markers -> Pyridoxic Acid B6 Metbolite of B6. High levels correlate with intake of vitamin B6. Some individuals may require higher levels, so do not necessarily recommend decreasing. Low values associated with low B6 status, high oxalates, and/or low neurotransmitters.	4		72	
Organic Acids -> Ammonia Excess -> Orotic Acid Commonly elevated with ammonia toxicity due to liver drug toxicity, viral liver infection, GI bleeding, ammonia metabolism issues.	7		70	
Organic Acids -> Neurotransmitter Metabolites -> Kynurenic Acid (KYNA) Commonly elevated with tryptophan supplementation or chronic infections.	9		70	
Organic Acids -> Glycolytic Cycle Metabolites -> Lactic Acid Elevated by exercise, bacterial overgrowth, poor perfusion, B vitamin deficiency, mitochondrial dysfunction (tiglylglycine), and anemia. Extremely high levels suggest inborn metabolic disorders of sugar metabolism, pyruvate dehydrogenase deficiency, and mitochondrial deficiency.	11		67	
Organic Acids -> Yeast and Fungal Biomarkers -> Furancarboxylglycine Aspergillus metabolite. Consider antifungals and/or probiotics.	8		64	
Organic Acids -> Ketone and Fatty Acid Oxidation -> Methylsuccinic Acid Metabolite of the omega fatty acid pathway. Elevated levels may be due to carnitine deficiency, fasting, increased intake of triglycerides from coconut oil, etc. Symptoms include hypoglycemia and lethargy. Carnitine may improve symptoms.	11		63	
Organic Acids -> Neurotransmitter Metabolites -> 5-Hydroxyindoleacetic Acid Metabolite of serotonin. Elevated values suggest 5-HTP/Tryptophan supplementation. Low values indicate inadequate serotonin production. Slight elevation can result for ingestion of avocado, banana, tomato, plum, walnut, pineapple, or eggplant.	3		63	
Organic Acids -> Oxalate Metabolites -> Glycolic Acid Very elevated in genetic hyperoxaluria type I. Normal values rule out genetic causes of significantly elevated urinary oxalic acid.	6		62	
Organic Acids -> Ketone and Fatty Acid Oxidation -> Acetoacetic Acid A ketone end product of fatty acid oxidation. Common causes of elevated ketones are fasting, protein deficiency, high fat diet, B12 deficiency, Candida overgrowth, and pulmonary infections.	7		61	



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Organic Acids -> Neurotransmitter Metabolites -> Homovanillic acid Dopamine metabolite. May be elevated due to stress induced catecholamine output, lead toxicity, dopamine/phenylalanine/tyrosine supplementation, or Clostridia metabolites.	9		60	
Organic Acids -> Bacterial Biomarkers -> 4-Hydroxyhippuric Acid A glycine conjugate of 4-hydroxybenzoic acid, the paraben metabolite. May be elevated after paraben exposure from foods and cosmetics, or furits high in polyphenols like anthrocyanins, flavonols, and hydroxycinnamates.	8		60	
Organic Acids -> Amino Acid Metabolites -> 2-Oxoisovaleric Acid BCAA metabolite. Moderate increase may result from lactic acidosis, episodic ketosis, or thiamine/lipoic acid deficiency. Significant elevations are associated with genetic issues, MSUD, and pyruvate dehydrogenase deficiency.	6		59	
Organic Acids -> Amino Acid Metabolites -> 2-Hydroxyisovaleric Acid BCAA metabolite. Moderate increase may result from lactic acidosis, episodic ketosis, or thiamine/lipoic acid deficiency. Significant elevations are associated with genetic issues, MSUD, and pyruvate dehydrogenase deficiency. Elevated levels have been linked to short bowel syndrome.	3		58	
Organic Acids -> Ketone and Fatty Acid Oxidation -> 4-Hydroxybutyric Acid Moderate elevation may be due to GABA supplementation. Very high levels may indicate succinic semialdehyde dehydrogenase deficiency.	12		57	
Organic Acids -> Amino Acid Metabolites -> 3-Methyl-2-oxovaleric Acid BCAA metabolite. Moderate increase may result from lactic acidosis, episodic ketosis, or thiamine/lipoic acid deficiency. Significant elevations are associated with genetic issues, MSUD, and pyruvate dehydrogenase deficiency.	6		57	
Organic Acids -> Yeast and Fungal Biomarkers -> Citramalic Acid Elevated citramalic acid is produced mainly by Saccharomyces species or Propionibacteria overgrowth. Consider need for high-potency, multistrain probiotics.	6		54	
Organic Acids -> Detoxification Indicators -> 2-Hydroxybutyric Acid Elevated 2-hydroxybutyric acid is a byproduct of the breakdown of cystathione, the sulfur amino acid metabolite formed with oxidative stress or increase in detoxification need. Pyroglutamic acid will also	9		53	



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<p>be elevated with glutathione depletion. High values may be associated with diabetes or high alcohol intake. May be elevated in genetic cases of lactic acidosis, glutaric aciduria type II, dihydrolipoyl dehydrogenase (E3) deficiency, and propionic aciduria.</p>				
<p>Organic Acids -&gt; Ketone and Fatty Acid Oxidation -&gt; Ethylmalonic Acid Metabolite of the omega fatty acid pathway. Elevated levels may be due to carnitine deficiency, fasting, increased intake of triglycerides from coconut oil, etc. Symptoms include hypoglycemia and lethargy. Carnitine may improve symptoms.</p>	4		51	
<p>Organic Acids -&gt; Krebs Cycle Mitochondrial Metabolites -&gt; 2-Oxoglutaric Acid Elevated levels suggest dietary vitamin deficiencies or supplementation with 2-ketoglutaric acid. Coenzyme A (derived from pantothenic acid), flavin adenine dinucleotide (FAD) (derived from riboflavin), and thiamine are required for conversion of 2-oxoglutaric acid to succinyl-CoA.</p>	3		47	
<p>Organic Acids -&gt; Bacterial Biomarkers -&gt; 2-Hydroxyphenylacetic Acid Elevated levels may be associated with intestinal bacterial overgrowth.</p>	8		45	
<p>Organic Acids -&gt; Krebs Cycle Mitochondrial Metabolites -&gt; Aconitic Acid Elevated in mitochondrial disorders. Aconitase metabolizes citric and aconitic acids, and is dependent on glutathione. Increased levels may indicate additional requirement for reduced glutathione.</p>	1		44	
<p>Organic Acids -&gt; Bacterial Biomarkers -&gt; 3-(3-hydroxyphenyl)-3-hydroxypropionic acid HPHPA Elevated values indicate overgrowth of Clostridia in the GI tract including C. sporogenes, C. caloritolerans, and C. botulinum. This metabolite is commonly elevated in GAPS cases. Inhibits the enzyme dopamine-beta-hydroxylase, leading to neurotransmitter imbalances.</p>	8		44	
<p>Organic Acids -&gt; Amino Acid Metabolites -&gt; Phenylpyruvic Acid Moderate elevations may result from phenylalanine intake, carrier PKU status, or bipterin deficiency. Very high values associated with PKU.</p>	8		42	
<p>Organic Acids -&gt; Amino Acid Mitochondrial Metabolites -&gt; 3-Methylglutaric Acid Elevated levels indicate a reduced ability to metabolize leucine. Consider supplementation with CoQ10, niacin, carnitine, riboflavin, nicotinamide, biotin, and Vitamin E.</p>	5		41	



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Organic Acids -> Pyrimidine Metabolites Folate Metabolism -> Thymine Slightly elevated levels may not be clinically relevant. Highly elevated levels are associated with inflammatory conditions and cancer.	6		40	
Organic Acids -> Pyrimidine Metabolites Folate Metabolism -> Uracil Folic acid is a methyl donor in the conversion of uracil to thymine. Elevated uracil suggests a defect in folic acid metabolism.	11		39	
Organic Acids -> Amino Acid Mitochondrial Metabolites -> 3-Hydroxyglutaric Marker for glutaryl CoA dehydrogenase (required for breakdown of lysine, hydroxylysine, and tryptophan) deficiency. Elevated levels may occur in combination with glutaric and glutaconic acids. Symptoms are variable. Consider a low lysine diet and carnitine supplementation.	11		37	
Organic Acids -> Yeast and Fungal Biomarkers -> 3-Oxoglutaric Acid May correlate with yeast overgrowth in GI tract. Consider probiotics.	4		35	
Organic Acids -> Amino Acid Metabolites -> Malonic Acid An industrial chemical and by product of parasites. Malonic acid is also known to be a competitive inhibitor of succinic dehydrogenase, the enzyme responsible for the dehydrogenation of succinate within Krebs cycle. The coenzyme A derivative of malonate, malonyl-CoA, is an important precursor in fatty acid biosynthesis along with acetyl CoA. Malonyl CoA is formed from acetyl CoA by the action of acetyl-CoA carboxylase, and the malonate is transferred to an acyl carrier protein to be added to a fatty acid chain.	11		33	
Organic Acids -> Amino Acid Metabolites -> Mandelic Acid Increased by dietary or supplemental phenylalanine, exposure to styrene, or with PKU.	7		32	
Organic Acids -> Bacterial Biomarkers -> 4-Hydroxybenzoic Acid Indicates intestinal dysbiosis. Elevated levels may also indicate ingestion of foods containing parabens.	8		32	
Organic Acids -> Ketone and Fatty Acid Oxidation -> Adipic Acid Slightly elevated levels may result from ingestion of gelatin or other food additives containing adipic acid. Elevated levels suggest issues with	4		28	



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fatty acid metabolism. Consider carnitine supplementation.				
Organic Acids -> Neurotransmitter Metabolites -> Quinolinic Acid/5-HIAA Ratio Higher ratios indicate excessive inflammation due to recurrent infections, excessive tryptophan intake, immune overstimulation, excessive cortisol, or excessive phthalate exposure.	8		27	
Organic Acids -> Nutritional Markers -> Pantothenic Acid B5 Higher levels are associated with B5 supplementation, some individuals need this, do not necessarily recommend decreasing dose. Low levels correlate with low reserves (stored in the adrenal glands).	9		24	
Organic Acids -> Bacterial Biomarkers -> Hippuric Acid Bacterial product of phenylalanine metabolism. Most HA in urine is derived from microbial breakdown of chlorogenic acid (commonly found in beverages, fruits, and vegetables). Higher levels indicate GI overgrowth. Consider antibacterials and/or probiotics.	3		24	
Organic Acids -> Bacterial Biomarkers -> 4-Hydroxyphenylacetic Acid Tyrosine metabolic product of GI bacteria. Elevated levels associated with bacterial overgrowth, small bowel issues, or Celiac.	2		23	
Organic Acids -> Ketone and Fatty Acid Oxidation -> Sebacid Acid Metabolite of the omega fatty acid pathway. Elevated levels may be due to carnitine deficiency, fasting, increased intake of triglycerides from coconut oil, etc. Symptoms include hypoglycemia and lethargy. Carnitine may improve symptoms.	1		23	
Organic Acids -> Neurotransmitter Metabolites -> HVA/VMA Ratio Elevated ratios may be due to decreased conversion of dopamine to norepinephrine by dopamine beta-hydroxylase. Inhibition of dopamine beta-hydroxylase can be caused by Clostridia metabolites HPPHA, 4-cresol, and 4-hydroxyphenylacetic acid.	9		23	
Organic Acids -> Detoxification Indicators -> Pyroglutamic Acid Glutathione metabolite. Elevated levels associated with glutathione deficiency due to toxic exposure, medication intake (antibiotics, acetaminophen, etc.).	8		23	
Organic Acids -> Amino Acid Metabolites -> 4-Hydroxyphenyllactic Acid Increased values associated with tyrosinemias, which can result from immature development of enzyme synthesis in infants or genetic deficiencies. Slight increases may be due to	12		19	



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tyrosine intake, bacterial gut metabolism, short bowel syndrome, or liver issues.				
Organic Acids -> Krebs Cycle Mitochondrial Metabolites -> Malic Acid Elevated values suggest increased need for niacin and CoQ10. When malic acid is simultaneously elevated with citric, fumaric, and 2-ketoglutaric acids, mitochondrial energy production dysfunction is likely.	5		19	
Organic Acids -> Amino Acid Metabolites -> 2-Oxo-4-methiolbutyric Acid Elevated with inborn defect in methionine metabolism.	2		19	
Organic Acids -> Krebs Cycle Mitochondrial Metabolites -> Succinic Acid Elevated levels suggest a relative deficiency of riboflavin and/or CoQ10. Produced by bacterial degradation of unabsorbed glutamine supplement. Low levels may indicate the need for leucine/isoleucine supplementation.	1		19	
Organic Acids -> Amino Acid Metabolites -> Phenyllactic Acid Phenylalanine metabolite. Elevated values suggest intake of PA or carrier status for PKU.	10		17	
Organic Acids -> Bacterial Biomarkers -> 2-Hydroxyhippuric Acid Conjugate of glycine and hydroxybenzoic acid (salicylic acid). Salicylate intake or growth of salicylate producing GI bacteria may elevate levels. May be elevated after aspartame ingestion.	10		12	
Organic Acids -> Krebs Cycle Mitochondrial Metabolites -> Fumaric Acid Increased levels may be due to Krebs cycle dysfunction or defective fumarase. Consider supplementation with CoQ10, NAD, carnitine, riboflavin, nicotinamide, vitamin, and/or Vitamin E.	6		12	
Organic Acids -> Yeast and Fungal Biomarkers -> 5-Hydroxy-methyl-furoic Acid Aspergillus metabolite. Consider antifungals and/or probiotics.	11		11	
Organic Acids -> Oxalate Metabolites -> Oxalic Acid May be associated with dysbiosis from Aspergillus, Penicillium, Candida, or high dose vitamin C. If yeast or fungal markers are elevated, antifungal therapy may reduce oxalates. Also associated with anti-freeze (ethylene glycol) poisoning.	10		10	
Organic Acids -> Yeast and Fungal Biomarkers -> Carboxycitric Acid Metabolite of yeast/fungus in GI tract. Consider antifungals and/or probiotics.	2		9	



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Organic Acids -> Amino Acid Metabolites -> Homogentisic Acid Elevated with homogentisic aciduria (alkaptonuria). Mild elevation may suggest carrier status.	5	■	8	
Organic Acids -> Bacterial Biomarkers -> 4-Cresol Elevated values indicate overgrowth of C. difficile in the GI tract. This metabolite is commonly elevated in GAPS cases. Inhibits the enzyme dopamine-beta-hydroxylase, leading to neurotransmitter imbalances.	7	■	7	
Organic Acids -> Nutritional Markers -> Methylcitric Acid Biotin Elevation generally indicates biotin deficiency due to malabsorption, egg white intake, or dysbiosis.	1		0	
Organic Acids -> Nutritional Markers -> Phosphoric Acid Directly proportional to dietary intake. Elevated levels associated with hyperparathyroidism, vitamin D resistant rickets, bone resorption, vitamin D excess, high blood lead levels, renal tubular issues, familial hypophosphatemia, and metabolic acidosis. Low levels commonly correlate to low dietary and vitamin D deficiency.	12		0	
Organic Acids -> Yeast and Fungal Biomarkers -> Tartaric Acid Produced by action of the Candida enzyme hyaluronidase on the intercellular cement, hyaluronic acid. Oxidation of the hyaluronic acid breakdown by WBC hypochlorite produces tartaric acid and arabinose. Consider antifungals and/or probiotics.	11		0	
Organic Acids -> Krebs Cycle Mitochondrial Metabolites -> Citric Acid Elevated levels can be due to increased intake of citric acid containing foods or yeast producing citric acid. Increased citric acid may also indicate glutathione depletion. Glutathione is required for aconitase to metabolize aconitic and citric acids. If pyroglutamic acid values are low, consider supplementing with glutathione or NAC.	10		0	
Organic Acids -> Nutritional Markers -> Methylmalonic Acid B12 Slightly elevated levels correlate to B12 deficiency, pernicious anemia, GI bacterial metabolism, malabsorption, or gastroenteritis in young infants. Very elevated levels may suggest a genetic issue.	8		0	
Organic Acids -> Amino Acid Metabolites -> 2-Hydroxyisocaproic Acid BCAA metabolite. Moderate increase may result from lactic acidosis, episodic ketosis, or thiamine/lipoic acid deficiency. Significant	7		0	



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elevations are associated with genetic issues, MSUD, and pyruvate dehydrogenase deficiency.				
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