



Metamatrix teleconference series

Session 2 10/05/06

B Vitamins and Autism

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Case 1

LeAnne, 2 year old female.

Chief Complaint: Regressive autism.

Common metabolic derangements seen in LeAnne and many autistic patients:

- Poor B1,2,3,5 vitamin status
- Poor B12 and folic acid
- Lowered homocysteine (glutathione precursor)
- Elevated oxidative stress- 8OHdG
- Increased NMDA activity due to elevated NMDA agonist quinolinate

Refer below for test results and transmethylation and sulfation pathway

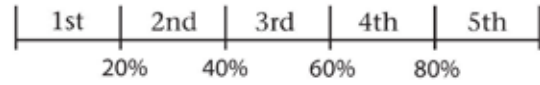
Follow-up x 1 month

LeAnne displays rapid response to the intervention and is speaking for the first time.

Intervention includes gluten and cows milk free diet, probiotics, fish oil, Brain Child Nutrients vitamin and mineral formula, and far infrared sauna.



Percentile Ranking by Quintile



95%
Reference
Interval

B-Complex Vitamin Markers

(B1, B2, B3, B5, B6, Biotin)

Results
ug/mg creatinine

Marker ID	Marker Name	Result	Status	Value	95% Reference Interval
15	α-Ketoisovalerate	0.35		0.60	<= 0.94
16	α-Ketoisocaproate	0.48	H	0.39	<= 0.58
17	α-Keto-β-Methylvalerate	2.7	H	1.6	<= 2.7
18	Xanthurenate	0.80	H	0.70	<= 1.10
19	β-Hydroxyisovalerate	12.0	H	9.0	<= 15.3

Methylation Cofactor Markers

(B12, Folate)

20	Methylmalonate	2.9	H	2.3	<= 3.4
21	Formiminoglutamate	0.60	H	0.41	<= 0.75

CELL REGULATION MARKERS

Neurotransmitter Metabolism Markers

(Tyrosine, Tryptophan, B6, antioxidants)

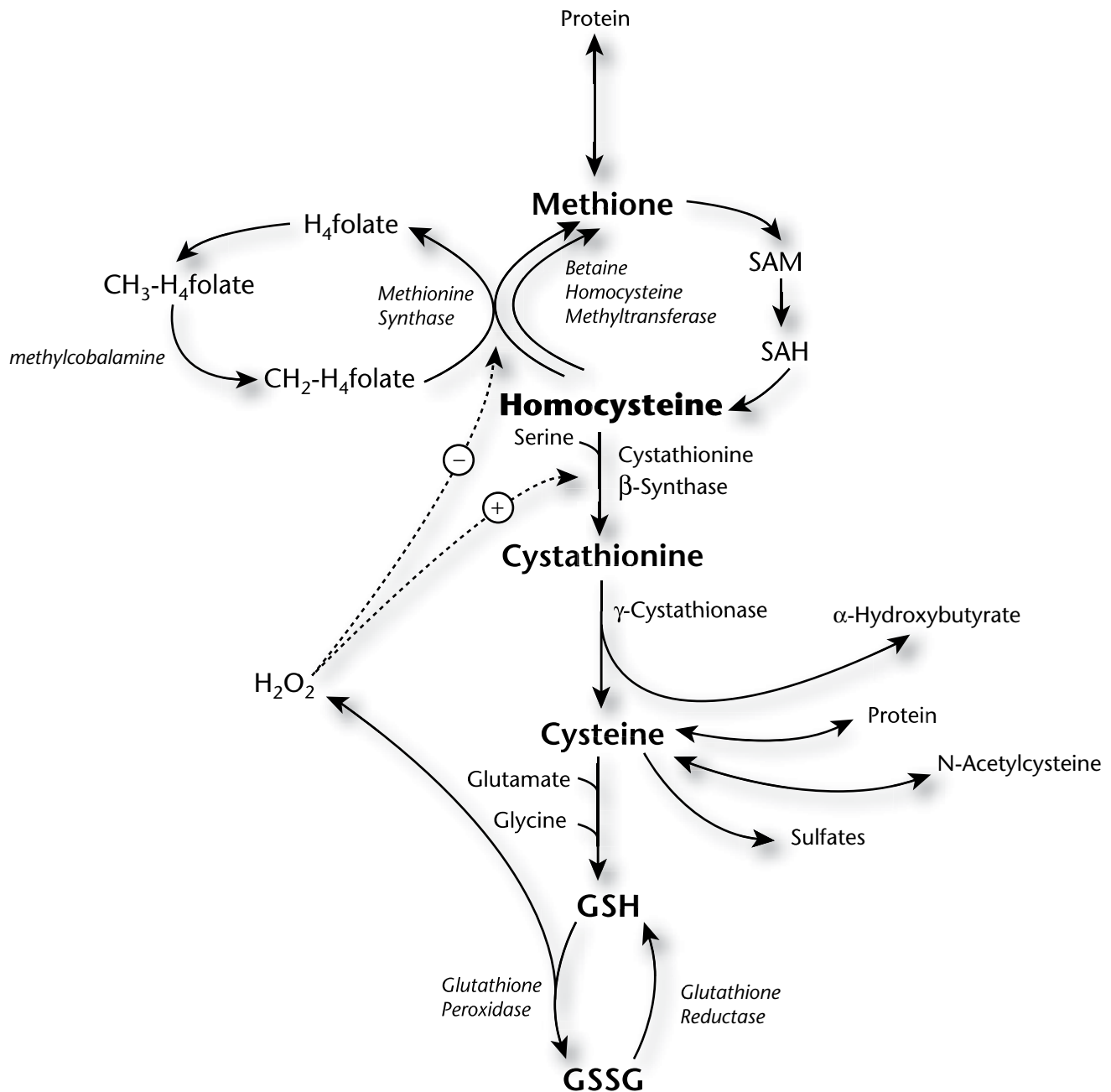
26	Quinolate	11.5	H	10.2	<= 16.5
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Oxidative Damage and Antioxidant Markers

(Vitamin C and other antioxidants)

28	8-Hydroxy-2-deoxyguanosine*	6.2		5.3	<= 7.6
	Homocysteine	4.0		4.0 - 8.0	2.5 - 11.3

Homocysteine in transmethylation and transsulfuration.



Note: The conversion of homocysteine to glutathione via sulfation or to methionine via methylation.

A small but important study by James and Neubrander in 2004 illustrated the derangements in these pathways experienced in the autistic population, pointing to the role of increased oxidant stress.

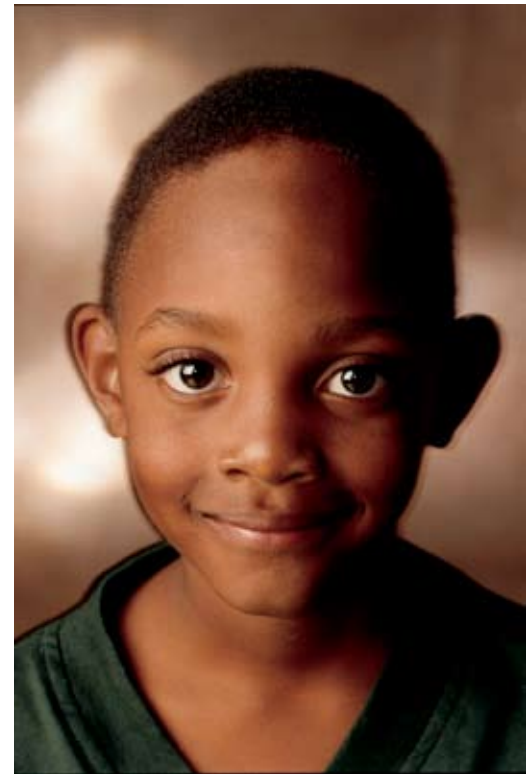
Case 1

Phillip, 4 year old male

Chief Complaint: IBS, eczema, allergies chronic upper respiratory infection. While the child appears to be hitting developmental milestones, parents are concerned they are seeing ASD behaviors.

In addition to his complaints, Phillip's Organix profile shows evidence of the metabolic derangements commonly seen in autism, including poor B vitamin status, oxidative stress and elevated quino-

linate. At 4 years old, Phillip is due to continue with vaccines, including MMR vaccine. Given his Organix profile, it is recommended that the issues are normalized and thimerisol-free vaccines are used if the parents follow the vaccination schedule.



	Results			Reference Interval	
	ug/mg creatinine				
<u>B-Complex Vitamin Markers</u> (B1, B2, B3, B5, B6, Biotin)					
15	α-Ketoisovalerate	0.67	H	0.60	<= 0.94
16	α-Ketoisocaproate	0.39		0.39	<= 0.58
17	α-Keto-β-Methylvalerate	1.8	H	1.6	<= 2.7
18	Xanthurenate	0.90	H	0.70	<= 1.10
19	β-Hydroxyisovalerate	12.0	H	9.0	<= 15.3
<u>Methylation Cofactor Markers</u> (B12, Folate)					
20	Methylmalonate	1.5		2.3	<= 3.4
21	Formiminoglutamate	<0.03		0.41	<= 0.75
<u>CELL REGULATION MARKERS</u>					
<u>Neurotransmitter Metabolism Markers</u> (Tyrosine, Tryptophan, B6, antioxidants)					
26	Quinolate	18.0	H	10.2	<= 16.5
<u>Oxidative Damage and Antioxidant Markers</u> (Vitamin C and other antioxidants)					
28	8-Hydroxy-2-deoxyguanosine*	5.8	H	5.3	<= 7.6