HOW FREE GLUTAMATE AFFECTS AUTISM SPECTRUM DISORDER

IMPORTANT FOOD SCIENCE NOTES:

- HIGH HEAT DESTROYS TAURINE
- HIGH HEAT AND SUBSTANCES IN CORN DESTROY TRYPTOPHAN
- MOIST HEAT PRODUCES MORE FREE GLUTAMATE
- GABA FITS THE SAME RECEPTORS AS VALIUM
- CARBOHYDRATES INCREASE SEROTONIN FORMATION
- VITAMIN C PROTECTS FROM NEUROTOXICITY
- VITAMIN B6 HELPS CONVERT AMINO ACIDS AND FORM COQ10
- GINGER CONTAINS ANTI-INFLAMMATORY AGENTS
- VITAMIN B12 IS NEEDED TO MAKE MYELIN WHICH INSULATES NERVE CELLS.

TAURINE, is an important sulfur-containing free amino acid (made from cysteine). It is the second most prevalent free amino acid in the human body after glutamate.

Taurine:
1) Regulates Heartbeat
2) Regulates osmotic balance
3) Acts as a water soluble anti-oxidant
4) Is used to make bile which breaks down fatty foods
5) Is a factor in cholesterol solubility
6) Is an inhibitory neurotransmitter
7) Is critical in the development of the nervous system and vision
8) Is an essential amino acid for human babies
9) Was only added to baby formula in 1986
10) Was found to be low in persons who had just had an epileptic seizure
11) Is used in Japan to lower blood pressure

NOTE:
Meat EXTRACT, Boullion Cubes, Fish Paste & Fish EXTRACT are also extremely high in free glutamate

HYDROLYZED PROTEIN IS APPROX 20% FREE GLUTAMATE BY WEIGHT!

WHEAT GLUTEN OVER 40% FREE GLUTAMATE BY WT

DAIRY CASEIN 25% FREE GLUTAMATE BY WT

VACCINES CONTAINING HYDROLYZED PROTEIN

SOY PROTEIN 20% FREE GLUTAMATE BY WT

CORN PROTEIN 25% FREE GLUTAMATE BY WT

MSG

EXCESS FREE GLUTAMIC ACID (GLUTAMATE)

PROCESSED FOODS CONTAINING EXCESSIVE GLUTAMATE

SOY PROTEIN
USED IN BAKED GOODS, HOT DOGS, VEGETARIAN FOODS

POWDERED CHEESE USED IN SNACK CHIPS LIKE DORITOS

MALTED BARLEY
USED IN BREADS, BEER

HYDROLYZED PROTEIN
USED IN CANNED TUNA, SELF-BASTING POULTRY CANNED AND DRIED SOUPS

POWDERED MILK IS USED IN LOW FAT MILK AND BAKED GOODS

AUTISM SYMPTOMS

Timothy Syndrome-cardiac arrhythmia

Rhett Syndrome which affects girls
breathing difficulty
speech
movement
Tremors

Asperger's Syndrome which affect boys
ADHD
ODD
Depression
Bipolar
Anxiety
OCD

Heller's syndrome
Loss of communication skills

Common Autism Syndrome symptoms
Epilepsy
Sensitivity to light
Sensitivity to sound
Sensitivity to pain
Fatty Acid digestion problems
Multiple Food allergy
Constant motion
Type I diabetes
Thyroid disorder
Inability to metabolize sulphur compounds
Celiac symptoms
Tantrums

In Children with ASD, the amygdala is activated – resulting in avoiding eye contact because the gaze of others is considered threatening

The Hypothalamus regulates Fight/Flight Reflex, Hunger, Temperature, Metabolism, and Reproduction. It directs the endocrine system by controlling the pituitary.

Valproic Acid exposure in the first trimester increases NMDA receptors and autism

The Microglia are the brain's immune system. They are free moving cells that can induce inflammation in the brain. Inflammation in the brain is a common symptom in ASD.

Amygdala

Hypothalamus

NMDA Receptors Sensitized

Poor Diet

Microglia

Pancreas

Oligodendrocytes Killed

Liver

Uric Acid is a neuroprotective anti-oxidant that increases as glutamate does but can cause gout

Smell
Taste
Fear
Insomnia

Anxiety
Rage
Fever
Heat
Sensitivity
Hunger
PANIC

Epilepsy
Seizures
Addiction

Tryptophan

Indoleamine 2,3 dioxygenase

Cytokines

Histamine

Allergy

Inter-leukin 12

Myelin

NBQX
Prolactin

Vitamin B12

Is prolactin the body's protective response to the destruction seen in MS? Could the higher protective Prolactin levels cause the lower number of autism cases in girls?

Anti-bodies to GAD

Glutamic Acid Decarboxylase (GAD) turns Glutamate into GABA

Islet cells killed by Immune System

GABA

Type I Diabetes

Insomnia

Insulin

Over 85% of those with Type 1 Diabetes have antibodies to GAD putting Type I diabetes patients at risk of excess glutamate. Type I Diabetes is associated with ASD.

Lunesta
Valium
Tryptophan

Cysteine Metabolism

Taurine

Glutathione

Seizures

Atrial fibrillation

Constipation
Diarrhea

Taurine
Magnesium
Topiramate

Potassium

Mercury & Heavy Metal Toxicity

Chelation therapy
Amalgam removal
No Thimerosal
No Fish

Glutathione
Selenium
Alpha-Lipoic Acid

Cilantro
Rosemary
Ginger

Lunesta
Valium
Tryptophan

Ice Cream
Sweets

Ibuprofen

Valium
Divalproex
Haloperidal

Topiramate
Taurine

Children given a GF/CF Diet often crave what appears to be the very foods they should not have. What if it is simply carbohydrates they crave to quiet down the CNS? Low Glutamic and Aspartic Acid foods that are higher in carbohydrate may be helpful for these children.
ICE CREAM BUTTERFAT
SUPPLIES GABA, MILK
PROTEIN SUPPLIES
TRYPTOPHAN

Valium
fits GABA
receptors

Are Red Bull "Addicts" simply self-medicating??

Red Bull contains:
Taurine
Vitamin B6 – 250%RDA
Niacin-100%RDA
B12 – 80% RDA
Pantothenic Acid – 50%RDA

Niacin

Serotonin

Anti-bodies to Serotonin Receptor

Depression

Serotonin Reuptake Inhibitors (SSRIs)

Lamotrogine
Ketamine

Dopamine Agonist

Niacin

Tryptophan

"Leaky Gut"

Inflammation

Urinary Incontinence

Gastric Reflux

Ibuprofen
Benadryl

Magnesium

Singulair
Leukotriene Blocker

Vitamin B6

AUTISM GENES

1) C3orf58 - located at 3q24 (chromosome 3 - position q24) missing in ASD It is connected to tyrosine phosphorylation and epidermal growth factor.

2) NHE9 - located at 3q24 (chromosome 3 - position q24) This gene codes for solute carrier family 9 members.

3) PCDH10 - located at 4q283 (chromosome 4 - position q283)
This gene codes for protocadherin 10 precursor. This gene is involved with cell-adhesion protein, calcium ion binding and cell communication. It is found in the brain, testes, and ovary. Note that glutamate neurotoxicity involves calcium channels.

4) CNTN3 - located at 3p26 (chromosome 3 - position p26)
This gene codes for plasmacytoma associated neuronal glycoprotein. What is fascinating about this protein is that it is found in the amygdala. which is targeted by MSG - it is involved in smell and taste as well as fear and may be responsible for the gaze-avoidance seen in autism. It is also associated with immunoglobulin. And so here is a link to the immune system, which in individuals with autism often is over-stimulated - resulting in multiple allergies.

5) RNF8 - located at 6p21.2 (chromosome 6 - position 21.2)
This gene codes for RING finger protein 8. This protein is used in E3 ubiquitin - protein ligase formation. Ligases are important in forming amino acids. Specifically, the ones of concern in ASD are
a) glutamate-cysteine ligase,
b) glutathione-synthase.
This gene is critical for the formation of glutathione. Glutathione is the body's natural means of chelating mercury and getting rid of it. No matter WHERE it comes from. Could THIS gene be the reason some children with autism often suffer from heavy metal toxicity? Is THIS the common genetic source of trouble with cysteine and sulfur metabolism seen in both children with autism and those sensitive to MSG?

6) SCN7A - located at 2q21-q23 (chromosome 2 - position q21 - q23)
Mutations in this gene result in: muscle weakness, trouble swallowing, blocked and inflamed blood vessels, swelling, and erythromelalgia, (which can be caused by MERCURY POISONING, and even bromocriptine - a drug used to treat both Parkinson's and prolactin - secreting pituitary tumors. Apparently the drug Effexor - and SSRI has been reported to relieve symptoms.) It is interesting that mutations in this gene ALSO give the same symptoms as mercury poisoning.

Also, Neurexin 1 - the area of the human genome found to be associated with autism, contains the genes involved in building glutamate synapses - the very locations where glutamate is used as a neurotransmitter by the nerve cells.

Legend:

FREE GLUTAMIC ACID

ORGAN AFFECTED

WHAT HAPPENS

DISEASE

Increase

Decrease

Process Activated

The Immune System gets involved

The Following colors indicate how commonly prescribed medications and home remedies work.

GLUTAMATE BLOCKER

COUNTERACTS GLUTAMATE

REMOVES GLUTAMATE

AIDS GLUCOSE TO ENERGY PATHWAY

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