
***The Neurodharma of Love:
Nutritional Neurochemistry***

**Esalen
December, 2010**

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Optimizing Brain Chemistry

- Two core functions of neurotransmitters:
 - Calming down - “Inhibitory”
 - Energizing up - “Excitatory”
- Supplementing these neurotransmitters or their co-factors - In a context of overall health
- Individual differences:
 - More benefit from inhibitory neurotransmitters

Nutrition Basics

- Eat a healthy diet
 - High protein
 - Low allergen -- low dairy, gluten, soy
 - Several cups of vegetables per day
- Foundation supplements
 - Multi-vitamin with minerals: high B's (10x d.v.; 800 mcg folic acid), d.v. of minerals
 - Fish oil: about 500 mg. each of EPA and DHA

#2 Get the Gut Right

- The road to health is paved with good intestines.
 - Our gastrointestinal (GI) tract has a huge effect on our brain.
 - We can have a huge effect on our GI tract.
 - Key issues: cytokines, malabsorption, dysbiosis
- GI tract effects on the brain via the immune system:
 - 60 - 70% of the immune system is in the GI tract.
 - When the GI tract is inflamed, it sends messengers called ***cytokines*** throughout the body - including the brain - causing inflammation and trouble.
 - By activating a particular enzyme, cytokines deplete the brain of serotonin.
 - Cytokines stimulate hypothalamic-pituitary stress pathway, resulting in higher stress hormones, including cortisol.

Get the Gut Right

- When the intestines are inflamed, malabsorption of nutrients occurs.
- Malabsorption decreases amino acids, iron, folic acid, and fats. (And probably all nutrients).
- We need these nutrients for brain health.

Improve the Microbes in the Gut

- There are trillions of bacteria in the intestines.
 - Beneficial bacteria protect intestinal walls, help build vitamins, and decrease inflammation and bad microbes.
 - Pathogenic bacteria cause inflammation.
- Increase beneficial bacteria:
 - Supplement probiotics:
 - Lactobacillus GG (Culturelle)
 - Saccharomyces boulardii (Florastor)
 - Bifido-bifidus (particularly for kids)
 - Lactobacillus paracasei, casei, plantarum, rhamnosus, and salivarius
 - Eat a low sugar, low refined flour, high fiber diet.
 - Bad bugs like sugar; good bugs like fiber.

Improve the Microbes in the Gut

- Get rid of bad bugs: parasites, yeast overgrowth, and bacterial overgrowth.
- You may need to test to identify pathogens. A comprehensive stool test is offered by integrative practitioners.
 - My favorite test is one that uses DNA to identify and quantify microbes -- it is very accurate.
- Treat microbes as appropriate. If possible use natural products. Parasites usually require prescription medication, and perhaps a long treatment.

Remove Food Allergens

- Food allergens cause inflammation and reactivity all over the body.
 - No down side, except giving up your favorite foods
 - Dramatic effects on mood and energy
 - Particularly noticeable in children
- The worst offenders are gluten and dairy, then soy.
 - Gluten: wheat, oats, rye, barley, spelt, kamut
 - Dairy: cow is usually worse than goat and sheep.
- Test:
 - Try a couple weeks off.
 - Or you can do an IgG antibody test (through integrative practitioners).

Perspectives on Natural Methods

■ Potential benefits:

- Often highly effective
- Minimal side effects (pure molecules that the body knows how to metabolize)
- Readily available

■ But use wisely:

- Gather information.
- Don't do on your own with psychotropic meds.
- Start with low doses.
- If something does not feel good, stop.
- Make sure other co-factors are adequate, (e.g., B-6, iron).
- Consider further testing (e.g., amino acids)

Inhibitory and Excitatory Neurotransmitters

■ Inhibitory:

- Serotonin
- Taurine
- GABA
- Glycine

■ Excitatory:

- Norepinephrine
- Dopamine
- Adrenaline
- Glutamic acid (glutamate)

Increasing Serotonin

- Serotonin is the big guy for “happy and relaxed.”
- Serotonin is a neuromodulator of GABA that increases its effects, and also helps decrease overactive norepinephrine, dopamine, adrenaline, and cortisol.
- Tryptophan (with iron) -> 5-hydroxytryptophan (5-HTP) (with P-5-P) -> serotonin
- Options for increasing serotonin:
 - Tryptophan, 500 – 1500 mg./day
 - 5-HTP, 50 – 200 mg./day

Increasing Dopamine and Norepinephrine

- These are stimulating neurotransmitters, and help increase energy, happiness, and attention.
- Phenylalanine (with iron) -> tyrosine (with P-5-P) -> dopamine -> dopamine -> norepinephrine.
- Supplement:
 - 500-1000mg. L-Phenylalaine or L-Tyrosine (empty stomach in the morning)
 - 50 mg. of P-5-P (empty stomach in the morning)
 - Supplement iron as shown by testing

The Glutamic Acid and GABA Dance

- GABA modulates glutamic acid (GA) effects.
- Too much GA feels like a monosodium glutamate overdose.

Increasing GABA

- Glutamic acid -> GABA
- Vitamin B-6 as Pyridoxal-5-Phosphate (P-5-P) is the key nutritional co-factor that shifts the balance in the direction of GABA.
- Take 50 mg./day of P-5-P on an empty stomach.

Increasing Taurine

- Taurine binds to GABA receptors, thus stimulating GABA-like activity.
- It's typically a benign amino acid, also depleted during breastfeeding.
- Consider 1000 mg./day (maybe more).

Increasing Theanine

- Theanine is an amino acid found in green tea and added to soft drinks in Japan (!).
- It is “antagonistic” to glutamic acid.
- Consider 100 – 200 mg./day.

Taking GABA

- Theoretically, GABA does not cross the blood-brain barrier, but many people do report a calming effect.
 - Possibly there is a “leaky brain syndrome” allowing GABA to get through.
- Consider 250 - 750 mg./day on an empty stomach.

Taking Progesterone

- For women only . . .
- Progesterone stimulates GABA receptors, triggering a GABA-like effect.
- Approaching menopause, progesterone decreases before estrogen does, so supplementing progesterone may be helpful.
- Consider Pro-Gest cream, during the second half of your cycle.

Increasing Glycine

- Glycine is an inhibitory neurotransmitter. In the spine, it performs a GABA-like role, balancing the effect of glutamic acid.
- Consider:
 - Glycine, 500 – 1000 mg./day, or more
 - Magnesium glycinate, enough to get 400 mg. of magnesium

Summary of Possible Interventions for Inhibitory Neurotransmitters

- P-5-P: 50 mg. on an empty stomach
- Tryptophan or 5-HTP to enhance serotonin
- Taurine: 1000 mg. on an empty stomach (in a.m.)
- Theanine: 100 – 200 mg.
- GABA: 250 - 750 mg.
- Progesterone cream (women only)
- Glycine: 500 - 1000 mg.

St. John's Wort

- Neurochemistry:
 - Many pathways
 - Uptake inhibitor of serotonin, and probably dopamine and norepinephrine
 - If the drug companies could make this product, they would!
- Dosing: 300 mg. 3 times per day
- Concerns about decreasing the effectiveness of other medications:
 - Do not use with protease inhibitors for HIV.
 - Unproven concern with birth control pills, but be mindful

About Supplements

Most supplements are available at health food stores.

Some products might be hard to find. If so, you can get them at my website, www.JanHealth.com.

If you want to check the formulas of vitamin, mineral, or amino acid products at health food stores, etc., you can compare them to products on my website.

For comparisons, look on my site at the Twice Daily Multi, and BAM or All Basic Plus amino acid mixes.