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The RDN's Role in Eating Disorders
A Progressive Approach
Part 2

Hosted by Susan Allen RDN, CCN
Presented by Margo Gasta, DCN, RDN

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Functional Nutrition and Lifestyle Interventions that May Help with Recovery from Eating Disorders

First Considerations

- If you are not an eating disorder specialist, allow your patient to complete conventional treatment first.
- The treatment team can determine the state of health based on endocrine status, percent body fat, cognitive improvements, labs, overall nutrition status, and food intake.
- Once stable, consider additional lifestyle and nutritional intervention

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Lifestyle and Nutrition

Interventions to Balance Serotonin, Dopamine, GABA and glutamate, opioid receptors, and Support Adrenals

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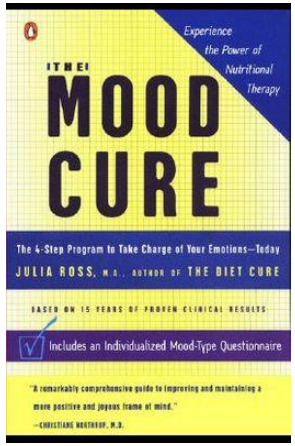

Mood Questionnaire By Julia Ross - Mood Cure

Part I. Are You Under a Dark Cloud?

3 Do you have a tendency to be negative, to see the glass as half-empty rather than half-full? Do you have dark, pessimistic thoughts?

3 Are you often worried and anxious?

3 Do you have feelings of low self-esteem and lack confidence? Do you easily get to feeling self-critical and guilty?

3 Do you have obsessive, repetitive, angry, or useless thoughts that you just can't turn off-for instance, when you're trying to get to sleep?

3 Does your behavior often get a bit, or a lot, obsessive? Is it hard for you to make transitions, to be flexible? Are you a perfectionist, a neatnik, or a control freak? A computer, TV, or work addict?

3 Do you really dislike the dark weather or have a clear-cut fall/winter depression (SAD)?

3 Are you apt to be irritable, impatient, edgy or angry?

3 Do you tend to be shy or fearful? Do you get nervous or panicky about height, flying, enclosed spaces, public performance, spiders, snakes, bridges, crowds, leaving the house, or anything else?

Ross, J. The Mood Cure (2002). Penguin Group, New York, NY.

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Questionnaire Continued

2 Have you had anxiety attacks or panic attacks (your heart races, it's hard to breathe)?
2 Do you get PMS or menopausal moodiness (tears, anger, depression)?
3 Do you hate hot weather?
2 Are you a night owl, or do you often find it hard to get to sleep even though you want to?
2 Do you wake up in the night, have restless or light sleep, or wake up too early in the morning?
3 Do you routinely like to have sweet or starchy snacks, wine, or marijuana in the afternoons, evenings, or in the middle of the night (but not earlier in the day)?
2 Do you find relief from any of the above symptoms through exercise?
3 Have you had fibromyalgia (unexplained muscle pain) or TMJ (pain, tension, and grinding associated with your jaw)?
2 Have you had suicidal thoughts or plans?
Total If your score is more than 12 in part one you have inadequate serotonin.

Ross, J. The Mood Cure (2002). Penguin Group, New York, NY.

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Summary of Nutrients to Make Catecholamines

- SAMe
- Tyrosine or phenylalanine from protein
- Iron, as it supports Biopterin
- B6
- Ascorbate
- Copper
- The previous 4 supported with a balanced diet and a basic multivitamin

1. Singh K. J Nutrient and Stress Management. Nutr Food Sci 2016, 6:4 DOI: 10.4172/2155-9600.1000528
2. Purves, D.; Augustine, G. J.; Fitzpatrick, D.; Hall, W. C.; LaMantia, A. S.; McNamara, J. O.; White, L. E., eds. (2008). Neuroscience (4th ed.). Sinauer Associates. pp. 137–138. ISBN 978-0-87893-697-7.
3. Nagatsu T, Nagatsu I. Tyrosine hydroxylase (TH), its cofactor tetrahydrobiopterin (BH4), other catecholamine-related enzymes, and their human genes in relation to the drug and gene therapies of Parkinson's disease (PD): historical overview and future prospects. J Neural Transm (Vienna). 2016 Nov;123(11):1255-1278. doi: 10.1007/s00702-016-1596-4. Epub 2016 Aug 4. PMID: 27491309.
4. Gibson GE, Blass JP. Nutrition and Functional Neurochemistry. In: Siegel GJ, Agranoff BW, Albers RW, et al., editors. Basic Neurochemistry: Molecular, Cellular and Medical Aspects. 6th edition. Philadelphia: Lippincott-Raven; 1999. Available from: https://www.ncbi.nlm.nih.gov/books/NBK28242/

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SAMe Overview

- S-adenosyl-L-methionine (SAMe) increases 5 HT, DA, NE
- Deficiencies of vitamins B12 and folate may cause deficiencies of SAMe and be a factor in dementia and depression
- Also useful in fibromyalgia, hepatitis, cirrhosis and osteoarthritis
- As effective as NSAIDS for arthritis
- Reduced primary pain outcomes in fibromyalgia
- Oral SAMe crosses the BBB
- Does not cause weight gain or sexual dysfunction compared to SSRIs
- Some research recommends dose range from 400 to 1600 mg/d
- No causes of death by SAMe ever reported

Sharma, A., Gerbarg, P., Bottiglieri, T., Massoumi, L., Carpenter, L. L., Lavretsky, H., Muskin, P. R., Brown, R. P., Mischoulon, D., & as Work Group of the American Psychiatric Association Council on Research (2017). S-Adenosylmethionine (SAMe) for Neuropsychiatric Disorders: A Clinician-Oriented Review of Research. *The Journal of clinical psychiatry*, *78*(6), e656–e667. https://doi.org/10.4088/JCP.16r11113

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SAMe Overview

- Utilized for psychiatric and medical conditions in Europe for over 30 years
- Can worsen bipolar and may cause mild insomnia. Back off the dose with insomnia
- Universal methyl donor
- Significant improvement in symptoms by day 10. Faster than traditional antidepressants, some people having improvement in 2-3 days.
- Can be adjunctive treatment in MDD with other anti-depressants
- Decreased elevated Liver function test
- No documented case of SAMe causing elevated homocysteine

Sharma, A., Gerbarg, P., Bottiglieri, T., Massoumi, L., Carpenter, L. L., Lavretsky, H., Muskin, P. R., Brown, R. P., Mischoulon, D., & as Work Group of the American Psychiatric Association Council on Research (2017). S-Adenosylmethionine (SAMe) for Neuropsychiatric Disorders: A Clinician-Oriented Review of Research. *The Journal of clinical psychiatry*, *78*(6), e656–e667. https://doi.org/10.4088/JCP.16r11113

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Tyrosine

- Tyrosine is a non-essential, large neutral Amino Acid that serves as a precursor to catecholamines.
- Is converted to dopamine through L Dopa and the enzymes tyrosine hydroxylase (TH) and aromatic l-amino acid decarboxylase.
- Then converted to norepinephrine (noradrenaline) through dopamine beta hydroxylase.
- Rodent research shows L tyrosine given orally reaches the brain
- Requires copper, B6. Iron status is important as well.

Bloemendaal, M., Froböse, M. I., Wegman, J., Zandbelt, B. B., van de Rest, O., Cools, R., & Aarts, E. (2018). Neuro-Cognitive Effects of Acute Tyrosine Administration on Reactive and Proactive Response Inhibition in Healthy Older Adults. *eNeuro*, *5*(2), ENEURO.0035-17.2018. https://doi.org/10.1523/ENEURO.0035-17.2018

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Tyrosine in Young Adults

- In young adults, tyrosine administered orally improved cognitive control such as task switching, response inhibition, and working memory.
- Studies have used dosing of 150 mg/kg in young adults.
- Tyrosine comes in 500 mg doses and is typically given from 500-1500 mg 1-2 x per day.
- In clinical practice start very low

Bloemendaal, M., Froböse, M. I., Wegman, J., Zandbelt, B. B., van de Rest, O., Cools, R., & Aarts, E. (2018). Neuro-Cognitive Effects of Acute Tyrosine Administration on Reactive and Proactive Response Inhibition in Healthy Older Adults. *eNeuro*, *5*(2), ENEURO.0035-17.2018. https://doi.org/10.1523/ENEURO.0035-17.2018

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Study in Netherlands on Older Adults and Tyrosine

- Participants ranged from 60-75 years.
- Neurocognitive effects worsened the higher the dose of tyrosine and also the older the subject.
- “We speculate that administrating extra precursor to a system with already high dopamine synthesis capacity may result in its inhibition.”
- Detrimental affects of tyrosine administration seemed to affect those from 70-79, more than 60-69 years of age.

Bloemendaal, M., Froböse, M. I., Wegman, J., Zandbelt, B. B., van de Rest, O., Cools, R., & Aarts, E. (2018). Neuro-Cognitive Effects of Acute Tyrosine Administration on Reactive and Proactive Response Inhibition in Healthy Older Adults. *eNeuro*, *5*(2), ENEURO.0035-17.2018. https://doi.org/10.1523/ENEURO.0035-17.2018

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Tyrosine in Older Adults – Not Helpful

- In older adults, the use of 100, 150, 200 mg/kg of tyrosine showed decreased cognitive performance the higher the dose of tyrosine
- Aging is associated with reduced dopamine receptor and transport binding, but also with increased striatal dopamine synthesis
- Upregulation of dopamine synthesis has been associated with worse neurocognitive function in older adults compared to younger adults

Bloemendaal, M., Froböse, M. I., Wegman, J., Zandbelt, B. B., van de Rest, O., Cools, R., & Aarts, E. (2018). Neuro-Cognitive Effects of Acute Tyrosine Administration on Reactive and Proactive Response Inhibition in Healthy Older Adults. *eNeuro*, *5*(2), ENEURO.0035-17.2018. https://doi.org/10.1523/ENEURO.0035-17.2018

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Review of Nutrients and Serotonin

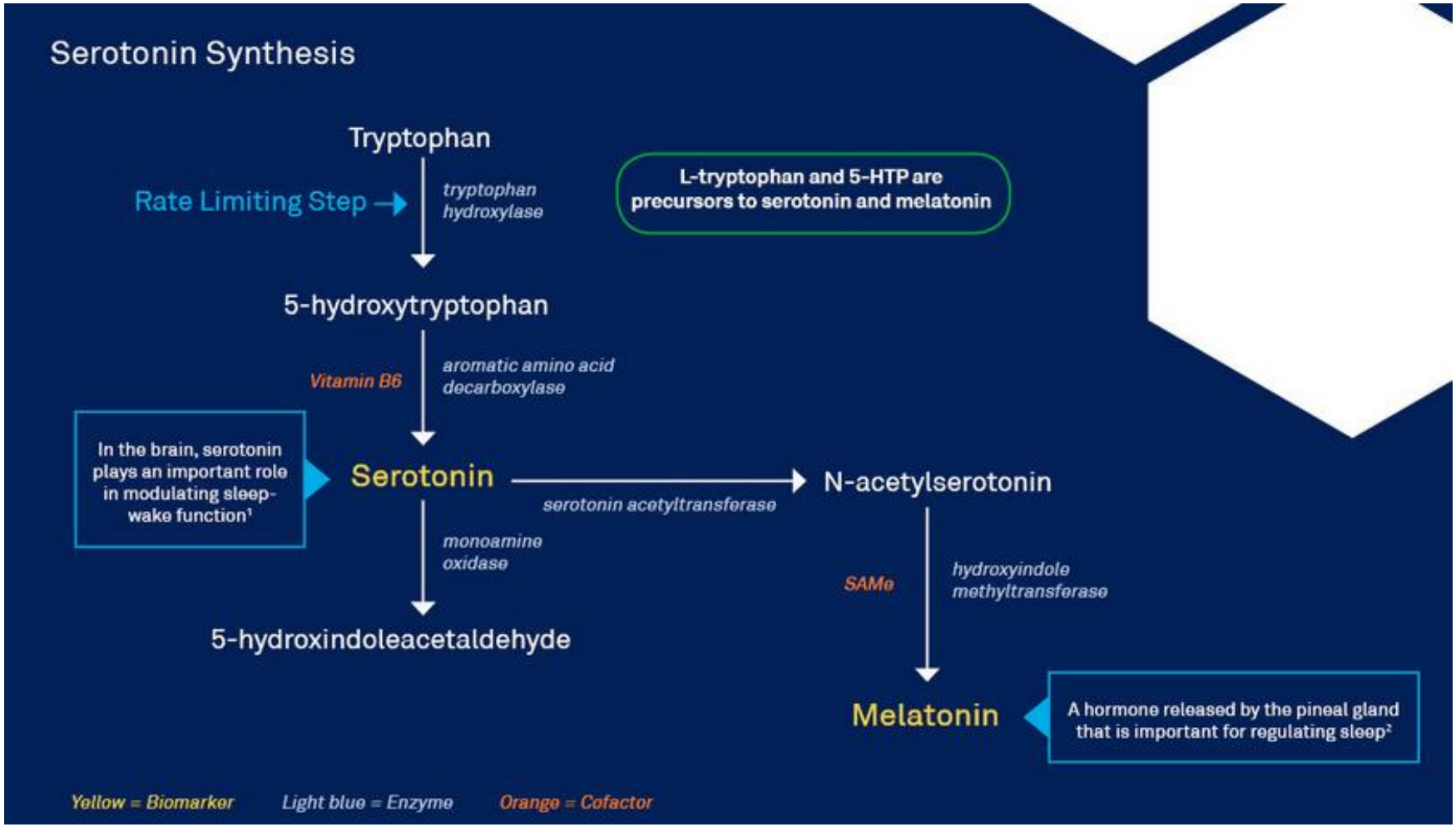
- Serotonin is synthesized from tryptophan. Tryptophan or 5 Hydroxytryptophan (5-HTP) as precursors
  - The available evidence suggests these substances as supplements were better than placebo at alleviating depression
  - Because alternative antidepressants exist which have been proven to be effective and safe the clinical usefulness of 5-HTP and tryptophan is limited at present.
- Niacin, magnesium, Vitamin B6 are co-factors

1. Young S. N. (2007). How to increase serotonin in the human brain without drugs. Journal of psychiatry & neuroscience : JPN, 32(6), 394–399.
2. Shaw K, Turner J, Del Mar C. Tryptophan and 5-hydroxytryptophan for depression. Cochrane Database Syst Rev. 2002;(1):CD003198. doi: 10.1002/14651858.CD003198. PMID: 11869656.

Food Sources

- Tryptophan is an amino acid found in milk as well as in many protein rich foods like whole grains.
  - Ensure adequate protein in general
- If too little tryptophan is available for the brain, then it may limit the amount of serotonin. To make tryptophan-laden meals more effective, make them high in complex carbohydrates but medium to low in protein. Carbohydrate makes tryptophan more available in the brain but protein has the opposite effect.

Singh K. J Nutrient and Stress Management. Nutr Food Sci 2016, 6:4 DOI: 10.4172/2155-9600.1000528



Serotonin Synthesis Retrieved from Neuroscience, Inc
https://www.neuroscienceinc.com/healthcare-providers/

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Adrenal Herbs for Stress

- Rhodiola
- Schizandra
- Holy Basil
- Ashwaganda
- Wild Oats
- Passionflower
- Rehmannia
- Curcumin

*These are beyond the scope of this class

(See next slide for supportive research)

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Research Supporting Herbal Use in Adrenal Health

- Scholey, A., Ossoukhova, A., Owen, L. et al. Effects of American ginseng (Panax quinquefolius) on neurocognitive function: an acute, randomised, double-blind, placebo-controlled, crossover study. Psychopharmacology 212, 345–356 (2010). https://doi.org/10.1007/s00213-010-1964-y
- Astragalus. (Aug 2020) NIH National Center for Complementary and Integrative Health. https://www.nccih.nih.gov/health/astragalus Accessed Oct 31, 2020.
- Tuli, H.S., Sandhu, S.S. & Sharma, A.K. Pharmacological and therapeutic potential of Cordyceps with special reference to Cordycepin. 3 Biotech 4, 1–12 (2014). https://doi.org/10.1007/s13205-013-0121-9
- Tuli, H.S., Sandhu, S.S. & Sharma, A.K. Pharmacological and therapeutic potential of Cordyceps with special reference to Cordycepin. 3 Biotech 4, 1–12 (2014). https://doi.org/10.1007/s13205-013-0121-9
- Amagase H. and Annce D. A Randomized, Double-Blind, Placebo-Controlled, Clinical Study of the General Effects of a Standardized *Lycium barbarum* (Goji) Juice, *GoChi*. The Journal of Alternative and Complementary Medi. cine VOL. 14, NO. 415 May 2008 https://doi.org/10.1089/acm.2008.0004
- Panossian A, and Wikman G. Evidence-Based Efficacy of Adaptogens in Fatigue, and Molecular Mechanisms Related to their Stress-Protective Activity. Current Clinical Pharmacology. Volume 4 , Issue 3 , 2009. DOI : 10.2174/157488409789375311
- Ishaque, S., Shamseer, L., Bukutu, C. et al. Rhodiola rosea for physical and mental fatigue: a systematic review. BMC Complement Altern Med 12, 70 (2012). https://doi.org/10.1186/1472-6882-12-70
- Panossian A and Wikman G. Pharmacology of Schisandra chinensis Bail.: An overview of Russian research and uses in medicine. Journal of Ethnopharmacology. Volume 118, Issue 2, 23 July 2008, Pages 183-212. https://doi.org/10.1016/j.jep.2008.04.020
- Cohen M. M. (2014). Tulsi - Ocimum sanctum: A herb for all reasons. Journal of Ayurveda and integrative medicine, 5(4), 251–259. https://doi.org/10.4103/0975-9476.146554
- Wong, R. H., Howe, P. R., Bryan, J., Coates, A. M., Buckley, J. D., & Berry, N. M. (2012). Chronic effects of a wild green oat extract supplementation on cognitive performance in older adults: a randomised, double-blind, placebo-controlled, crossover trial. Nutrients, 4(5), 331–342. https://doi.org/10.3390/nu4050331
- Yance D. and Sky S. Nourishing Botanical Nervines to Calm Anxiety, Enhance Sleep, and Promote Relaxation. 2018 Reserach Review Paper. NaturaEDU. https://www.naturaedu.com/ Accessed oct 31, 2020.
- Sanmukhani J, Satodia V, Trivedi J, Patel T, Tiwari D, Panchal B, Goel A, Tripathi CB. Efficacy and safety of curcumin in major depressive disorder: a randomized controlled trial. Phytother Res. 2014 Apr;28(4):579-85. doi: 10.1002/ptr.5025. Epub 2013 Jul 6. PMID: 23832433.
- Bystritsky A, Kerwin L, Feusner JD. A pilot study of Rhodiola rosea (Rhodax) for generalized anxiety disorder (GAD). J Altern Complement Med 2008;14:175-180.
- Head K. and Kelly G. Nutrients and Botanicals for Treatment of Stress: Adrenal Fatigue, Neurotransmitter Imbalance, Anxiety, and Restless Sleep. Alternative Medicine Review. 2009, Volume 14, Number 2:114-140.

Glutamate and GABA

Anxiety can result from over production of glutamate and underproduction of GABA

1. Joanna M Wierońska, K. Stachowicz, G. Nowak and A. Pilc. The Loss of Glutamate-GABA Harmony in Anxiety Disorders. Anxiety Disorders. Open access peer-reviewed chapter. Published online August 1st 2011. https://www.intechopen.com/books/anxiety-disorders/the-loss-of-glutamate-gaba-harmony-in-anxiety-disorders. DOI: 10.5772/19919
2. Kendell SF, Krystal JH, Sanacora G. GABA and glutamate systems as therapeutic targets in depression and mood disorders. Expert Opin Ther Targets 2005;9:153-168.

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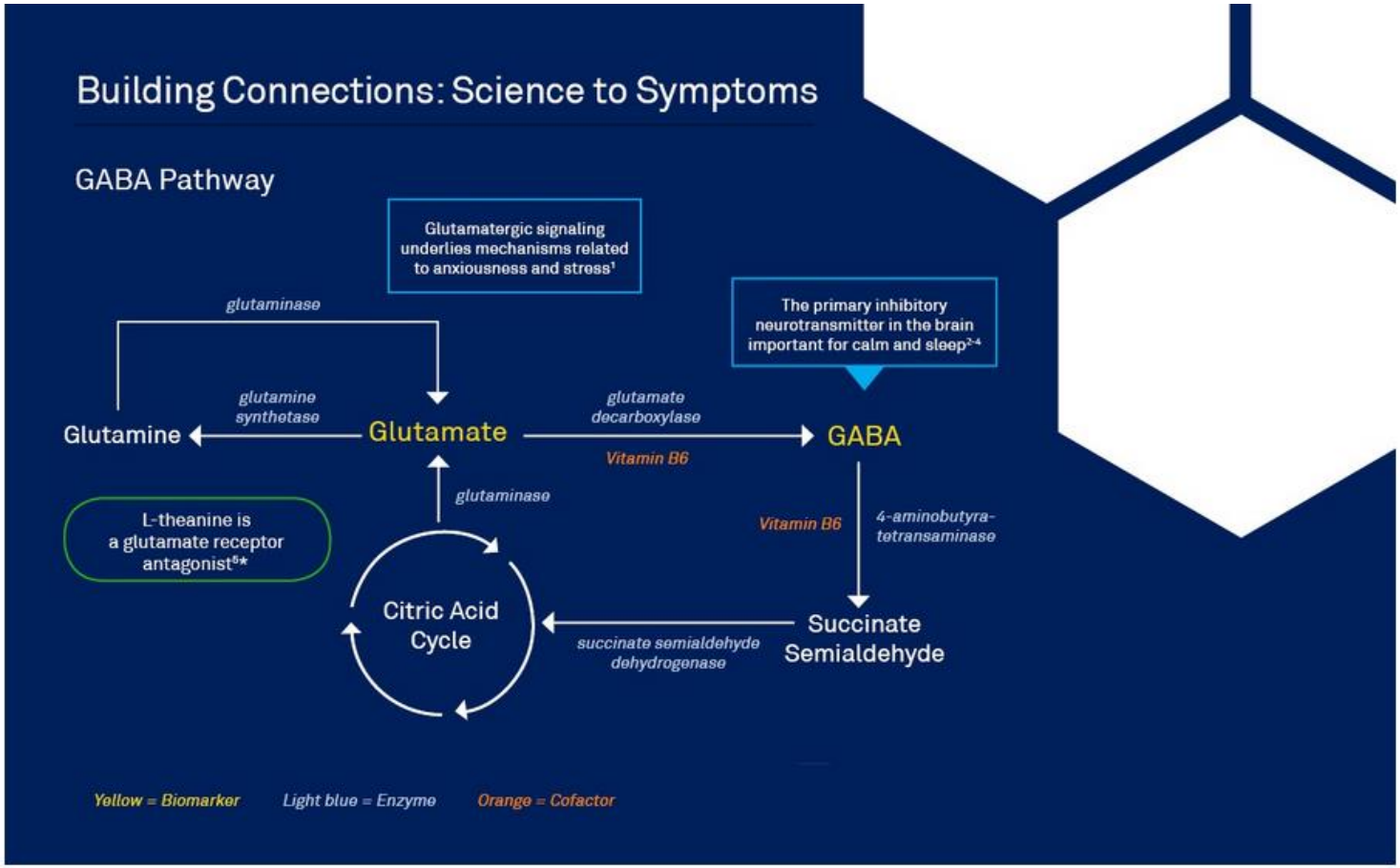

Drug Treatment of Anxiety

- "The main drug classes used to treat anxiety disorders are GABAergic or serotonergic agents, including benzodiazepines (BZD), 5-HT_{1A} serotonin receptor agonists, and selective serotonin reuptake inhibitors (SSRIs).
- "BZDs and SSRIs are associated with unwanted adverse effects, including sedation, memory deficits, dependence, withdrawal syndrome, sexual dysfunction, and weight gain."

Santos P, Herrmann AP, Elisabetsky E, Piato A. Anxiolytic properties of compounds that counteract oxidative stress, neuroinflammation, and glutamatergic dysfunction: a review. *Braz J Psychiatry*. 2019;41(2):168-178. doi:10.1590/1516-4446-2018-0005

Newer Approach for Anxiety

"A newer approach involving multi-targeted agents recognizes the complex pathophysiology underlying psychiatric disorders. In anxiety disorders, oxidative stress, neuroinflammation, and glutamatergic hyperactivity are now recognized as key contributing factors."

Santos P, Herrmann AP, Elisabetsky E, Piato A. Anxiolytic properties of compounds that counteract oxidative stress, neuroinflammation, and glutamatergic dysfunction: a review. *Braz J Psychiatry*. 2019;41(2):168-178. doi:10.1590/1516-4446-2018-0005

Zinc Effects on Glutamatergic System

Zinc Deficiency:

→ Elevated glucocorticoid secretion from adrenal cortex

→ Disturbance of glutamatergic neurotransmission

→ Depressive and aggressive behavior under zinc deficiency.

Takeda A, Tamano H, Nishio R, Murakami T. Behavioral Abnormality Induced by Enhanced Hypothalamo-Pituitary-Adrenocortical Axis Activity under Dietary Zinc Deficiency and Its Usefulness as a Model. *Int J Mol Sci*. 2016;17(7):1149. Published 2016 Jul 16. doi:10.3390/ijms17071149

Zinc Effects on Glutamatergic System Continued

"Dietary zinc deficiency increases glucocorticoid secretion from the adrenal cortex via enhanced hypothalamo-pituitary-adrenocortical (HPA) axis activity and induces neuropsychological symptoms, i.e., behavioral abnormality. "

Takeda A, Tamano H, Nishio R, Murakami T. Behavioral Abnormality Induced by Enhanced Hypothalamo-Pituitary-Adrenocortical Axis Activity under Dietary Zinc Deficiency and Its Usefulness as a Model. *Int J Mol Sci.* 2016;17(7):1149. Published 2016 Jul 16. doi:10.3390/ijms17071149

WHY ZINC?

- Crucial part of over 200 enzymes.
- DNA synthesis and cell renewal, protein structure, skin, sexual maturation and reproduction, hair.
- **Stimulates the production of neurotransmitters**.
- Plays a part in making myelin.
- Immune system function, wound healing, growth.
- Low levels correlated with depression and eating disorders, diminished sense of taste and smell, decreases appetite, causes nausea, mood disturbances, anxiety, depression, apathy, lethargy, impaired concentration, blood levels correlated with severity of depression. (Greenblatt, J., Hymen, M).
- **Medical literature shows about 50% of anorexics have measurable zinc deficiency.**

Greenblatt: Answers to Binge Eating: New Hope for Appetite Control. CreateSpace Independent Publishing Platform (April 24, 2014)

Magnesium Effects on Glutamatergic System

Magnesium Has Anti-Depressant Effects:

"Low levels of magnesium with high levels of calcium and glutamate in the hippocampus may cause changes in the functioning of synapses which may lead to the development of depression."

"Magnesium blocks NMDAR in a voltage-dependent manner; when its concentration is too low there is an abnormal influx of calcium into the cells resulting in the release of intracellular glutamate that causes depolarization and can lead to neuronal dysfunction."

Górska N, Słupski J, Szałach ŁP, et al. Magnesium and ketamine in the treatment of depression. *Psychiatr Danub*. 2019;31(Suppl 3):549-553.

Magnesium Effects on Glutamatergic System

- "Magnesium is also important for the functioning of serotonergic, noradrenergic, dopaminergic, and (GABAergic) systems and has anti-inflammatory activity. All the above-mentioned mechanisms are associated with its antidepressant effect."
- "Studies indicate the antidepressant properties of magnesium and/ or its potential usage as an additive to antidepressant treatment."

Górska N, Słupski J, Szałach ŁP, et al. Magnesium and ketamine in the treatment of depression. *Psychiatr Danub*. 2019;31(Suppl 3):549-553.

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NAC Effects on Glutamatergic System

N-acetyl cysteine (NAC) Regulates Glutamate Excitotoxity

- Abnormalities in glutamate neurotransmission are among the biological mechanisms underlying stress response and anxiety disorders.
- NAC Regulates glutamate excitotoxicity.
- NAC Reduces inflammation in the brain (animal studies on traumatic brain injury and ischemia).

Santos P, Herrmann AP, Elisabetsky E, Piato A. Anxiolytic properties of compounds that counteract oxidative stress, neuroinflammation, and glutamatergic dysfunction: a review. *Braz J Psychiatry*. 2019;41(2):168-178. doi:10.1590/1516-4446-2018-0005

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NAC Effects on Glutamatergic System Cont

- NAC has an Antioxidant effect (precursor to glutathione)
- Study on veterans with PTSD and substance abuse: NAC decreased PTSD symptoms, cravings.
- Several studies show beneficial effects in OCD in children, adolescents and adults
- NAC has been researched as an add-on to SSRI therapy and showed benefit with OCD in several studies.
- Most common side effect was headache
- Doses in research range from 600-2400 mg/day

Santos P, Herrmann AP, Elisabetsky E, Piato A. Anxiolytic properties of compounds that counteract oxidative stress, neuroinflammation, and glutamatergic dysfunction: a review. *Braz J Psychiatry*. 2019;41(2):168-178. doi:10.1590/1516-4446-2018-0005

Melatonin Synthetic Analog affects Glutamatergic System

Animal Studies:

- "Agomelatine also modulates glutamate neurotransmission in regions associated with mood and cognition, such as the prefrontal and frontal cortex, the hippocampus, and the amygdala."
- Modulated kynurenic pathway possibly protecting the brain from the neurotoxic consequences of the conversion of kynurenine to quinolinic acid, an N-methyl-D-aspartate (NMDA) receptor agonist.

Santos P, Herrmann AP, Elisabetsky E, Piato A. Anxiolytic properties of compounds that counteract oxidative stress, neuroinflammation, and glutamatergic dysfunction: a review. *Braz J Psychiatry*. 2019;41(2):168-178. doi:10.1590/1516-4446-2018-0005

Omega 3 FA Affects on Anxiety

- "By inhibiting proinflammatory cytokine secretion, omega-3 may also decrease corticosteroid release from the adrenal gland, reducing the mood-altering effects associated with increased cortisol, and hence reducing the impact of cortisol on anxiety."
- EPA may decrease immune-inflammatory responses mediated by omega-6 derived eicosanoids, which have been linked to the pathophysiology of anxiety and other mental disorders."
- Most common side effect was fish aftertaste and nausea

Santos P, Herrmann AP, Elisabetsky E, Piato A. Anxiolytic properties of compounds that counteract oxidative stress, neuroinflammation, and glutamatergic dysfunction: a review. *Braz J Psychiatry*. 2019;41(2):168-178. doi:10.1590/1516-4446-2018-0005

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Omega 3 FA and Anxiety

- Low omega 3 erythrocyte membrane levels in patients with anxiety
- In healthy young adults EPA and DHA supplementation decreased anxiety levels
- EPA DHA supplementation decreased LPS stimulated production of IL6
- Antianxiolytic properties of omega 3 fatty acids found in premenstrual women, patients with acute MI
- Decreased anxiety in patients with substance abuse.

Santos P, Herrmann AP, Elisabetsky E, Piato A. Anxiolytic properties of compounds that counteract oxidative stress, neuroinflammation, and glutamatergic dysfunction: a review. *Braz J Psychiatry*. 2019;41(2):168-178. doi:10.1590/1516-4446-2018-0005

Probiotics in Binge Eating?

- "Changes in gut microbiota may play an important role in human metabolic diseases." The mechanism involves "increased gut permeability, metabolic endotoxemia and systemic low-grade inflammation."
- "Probiotic supplementation may be useful in the prevention of diet-induced (from overeating) metabolic diseases such as type II diabetes."
- Lactobacillus casei Shirota caused normal insulin sensitivity and less body mass increase after 7 day high fat (65% of energy) and high energy diet (+50% kcal) compared to control group.

Hulston, C. J., Churnside, A. A., & Venables, M. C. (2015). Probiotic supplementation prevents high-fat, overfeeding-induced insulin resistance in human subjects. *The British journal of nutrition*, *113*(4), 596–602. https://doi.org/10.1017/S0007114514004097

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Gut Microbiota: Dysbiosis in Anorexia?

Gut Brain Axis is Bidirectional Communication Between Gut and Brain. Brain-microbiota communication is carried out several ways:

- Gut communication to nervous system by ENS (enteric nervous system).
- These connections coordinate and control secretions, motility, mucosal transport and blood flow of GI tract that directly influences microbiota.
- ENS is connected to CNS by vagus nerve---direct neuro-chemical signals from microbiota to brain or NS to gut microbiota.

Mendez-Figueroa, V., Biscaia, J. M., Mohedano, R. B., Blanco-Fernandez, A., Bailen, M., Bressa, C., Larrosa, M., & Gonzalez-Soltero, R. (2019). Can Gut Microbiota and Lifestyle Help Us in the Handling of Anorexia Nervosa Patients?. *Microorganisms*, *7*(2), 58. https://doi.org/10.3390/microorganisms7020058

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Gut Microbiota: Dysbiosis in Anorexia?

"The gut microbiota of patients with anorexia nervosa has lower microbial diversity, affecting all taxonomic levels, and there is an overgrowth of some families such as *Enterobacteriaceae* and the archaeon *Methanobrevibacter smithii* (*M. smithii*). M Smithi overgrowth, or other dysbiosis can affect GI Transit time, can be associated with IBS and make refeeding and compliance harder."

Mendez-Figueroa, V., Biscaia, J. M., Mohedano, R. B., Blanco-Fernandez, A., Bailen, M., Bressa, C., Larrosa, M., & Gonzalez-Soltero, R. (2019). Can Gut Microbiota and Lifestyle Help Us in the Handling of Anorexia Nervosa Patients?. *Microorganisms*, *7*(2), 58. https://doi.org/10.3390/microorganisms7020058

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Gut Microbiota and Anorexia Cont.

- “Undereating likely influences the lack of diversity and affects inflammation and the immune system.”
- “When patients gain weight the microbial diversity increases, however, but many of the disturbances remain.”
- “First reverse malnutrition before supplementing with probiotics as patients with AN may be immuno-compromised and you don’t want to risk a bacterial infection from probiotics.”
- “Including prebiotic foods in refeeding may be helpful.”

Mendez-Figueroa, V., Biscaia, J. M., Mohedano, R. B., Blanco-Fernandez, A., Bailen, M., Bressa, C., Larrosa, M., & Gonzalez-Soltero, R. (2019). Can Gut Microbiota and Lifestyle Help Us in the Handling of Anorexia Nervosa Patients?. *Microorganisms*, *7*(2), 58. https://doi.org/10.3390/microorganisms7020058

May Be Helpful Test for Dysbiosis

- Organic Acids test with dysbiosis through Great Plains or Genova Labs.
- Stool Culture through Great Plains Lab or Genova Labs.
- IgG Delayed Food Sensitivity Test
- Celiac Test and antigliadin AB test

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Gut Issues I have Seen with Eating Disorders

- Blastocystis hominus-common
- Hook Worm
- Giardia
- Citrobacter species
- Celiac's Disease
- SIBO
- Yeast Overgrowth
- IgG delayed food sensitivities

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Research-based Practical Lifestyle and Nutrition Interventions for Eating Disorders

- Balance meals and snacks; include adequate protein
- Normalize meal patterns, ensure enough calories
- When needed, consider Multivitamin-mineral for neurotransmitter co-factors and general health
- Movement as appropriate
- Promote healthy microbiome balance
- Stress management techniques
- Practical lifestyle counseling

1. Mama, S. K., Schembre, S. M., O'Connor, D. P., Kaplan, C. D., Bode, S., & Lee, R. E. (2015). Effectiveness of lifestyle interventions to reduce binge eating symptoms in African American and Hispanic women. Appetite, 95, 269–274. https://doi.org/10.1016/j.appet.2015.07.015
2. Hackert, A., et al, 2020: Academy of Nutrition and Dietetics: Revised Standards of Practice and Standards of Professional Performance for Registered Dietitians Nutritionists (Competent, Proficient, and Expert) in Eating Disorders. J Acad Nutr Diet. 2020;120(11):1902-1919.
3. Ozier A. and Henry B. Position of the American Dietetic Association: Nutrition Intervention in the Treatment of Eating Disorders. J Acad Nutr Diet. 2011;111(8):1236-1241DOI:https://doi.org/10.1016/j.jada.2011.06.016.

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Labs that I Use for Functional Nutrition Assessment

Conventional Labs

- **Blood Chemistry and CBC**–assess electrolytes, protein, blood sugar, immune function.
- **Thyroid**: TSH Free T3, Free, T4, RT3.
- **Serum Vit D3**—associated with depression, anxiety, lack of concentration.
- **Gluten**: Antigliadin AB: ttg, IgA, IgG, EMA, and gene test for celiacs (HLA DQ2 and 8)—many, gene will be positive and antigliadin AB are negative.

Conventional Labs, cont.

- **Liver panel**:
  -Low or low normal liver enzymes (ALK PHOS, AST, ALT) can be an indicator of low zinc. Liquid zinc taste test, nutraval, spectracell test.
  -High normal liver enzymes can be an indicator of celiac's.
- **Homocysteine**—(6-7 desirable). High levels indicate need for folate,B1, B6, B12, SAMe or NAC needs. May be accompanied by high normal or high MCV.
- **Lipid panel**—Cholesterol levels (160 or less, 180 ideal) is associated with depression, anxiety, insomnia, low sex hormone levels. Low TG and low chol can indicate fat malabsorption and the need for GI Effects Test.

Conventional Labs, cont.

- **Methylmalonic acid (urine or serum**)—more accurate indicator of how much B12 deficiency is playing into symptoms. Nutraval testing can provide additional information about B Vitamin status. Elevated MMR and Homocysteine are good indicators of need for B12 and folate.
- **Serum B12—**not very accurate, less than 600 many recommend supplementation.
- **Ferritin**— Iron storage. Can be high or low. Will affect energy, concentration, etc. High ferritin over 200 can indicate inflammation. More useful than Hb, Hct as it will catch low iron levels before anemic.

Conventional Labs, cont

- **Total testosterone, estrogen, progesterone**-directly relate to energy, depression, anxiety, PCOS.
- **DHEAs + 8 am Fasting cortisol**—indicate level of stress and depression, adrenal function
- **hsCRP**-assesses inflammation which can be associated with depression (common with binge eating). Consider infection—sinuses, gums, GI tract, etc.
- **HgA1C + fasting insulin**—can guide you on meal plans, tendency toward hypoglycemia or hyperglycemia

Lab Patterns

It is difficult to generalize but you *might* see:

- **Binge Eating**-High lipids, (sometimes low lipids), high hscrp, low or normal protein, high fasting insulin, elevated hbA1C, women high testosterone, men high estrogen, low testosterone, low electrolytes, low or high cortisol.
- **Anorexia-**high cholesterol (possibly liver issues), low protein, low electrolytes, high or low cortisol. They can do things in advance to manipulate lab work.

Functional labs

- **Stool Culture** (GI Effects from Genova)—
- **Nutraval**—Can serve as backup to assess neurotransmitters, individual levels of B vitamins, krebs cycle (mental and physical fatigue), RBC fatty acid analysis which is relevant to mental health, toxicity assessment, plasma or urine amino acids which play a role in production of neurotransmitters.
- **Food sensitivity panels**—ALCAT, MRT, Cyrex Labs or Enterolabs. Need to be careful with anorexia and bulimia—don't want to give them a reason not to eat. Binge eaters can also eat more if you restrict them.

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Nutrients that Support Neurochemistry

- Cholesterol-precursor to Vit D, sex hormones, cell membranes, myelin sheath, brain is the organ with the most cholesterol in the body. Can be high with anorexia. If low, run GI Effects.
- EPA, DHA—cell membrane linings, better communication of neurotransmitters.
- Protein—amino acids are the building blocks of neurotransmitters.
- Electrolytes-Sodium, potassium—cofactors for synthesis of neurotransmitters.

1. Hamazaki K, Itomura M, Huan M, et al. Effect of omega-3 fatty acid-containing phospholipids on blood catecholamine concentrations in healthy volunteers: a randomized, placebo-controlled, double-blind trial. Nutrition 2005;21:705-710.
2. Cognitive Function in Depth. Oregon State University Linus Pauling Institute. Micronutrient Information Center. https://lpi.oregonstate.edu/mic/health-disease/cognitive-function. Accessed Oct 31, 2020.
3. Ohwada R, Hotta M, Oikawa S, Takano K. Etiology of hypercholesterolemia in patients with anorexia nervosa. Int J Eat Disord. 2006 Nov;39(7):598-601. doi: 10.1002/eat.20298. PMID: 16791856.
4. Patri M. Synaptic Transmission and Amino Acid Neurotransmitters. Open Access Peer-reviewed Chapter. Published: October 23rd 2019. DOI: 10.5772/intechopen.82121

Nutrients that Support Neurochemistry, Cont

- Minerals (copper, zinc, magnesium), —cofactors for synthesis of neurotransmitters.
- Magnesium-helps with anxiety, insomnia, constipation, muscle spasms (300-600 mg).
- Vit D 3—low levels associated with depression (base dose on lab values or stick with 2000 IU, use emulsi form).
- Vitamin C-1000 mg helpful in treating depression.

1. Macphail. E. Correlations Amongst Mental Health, Cognitive Flexibility, and Zinc Status. University of Calgary. SU Symposium Abstracts. Vol. 4 No. 2 (2015): Students Union Symposium Award Abstracts
2. Wilkins CH, Sheline YI, Roe CM, Birge SJ, Morris JC. Vitamin D deficiency is associated with low mood and worse cognitive performance in older adults. Am J Geriatr Psychiatry. 2006;14(12):1032-1040.
3. Pullar, J. M., Carr, A. C., Bozonet, S. M., & Vissers, M. (2018). High Vitamin C Status Is Associated with Elevated Mood in Male Tertiary Students. Antioxidants (Basel, Switzerland), 7(7), 91. https://doi.org/10.3390/antiox7070091
4. Boyle NB, et. al. (2017). The effects of magnesium supplementation on subjective anxiety and stress - A systematic review. DOI:3390/nu9050429

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Nutrients that Support Neurochemistry, Cont

- Curcumin-decreases inflammation in the brain (500-1500). Don't use with reflux and ulcers.
- NAC—helpful with OCD and obsessive thoughts, antioxidant and precursor to glutathione production. (600-2500 mg, work up slowly).
- Choline-used to make acetyl choline which is crucial with memory and concentration (eggs yolk, fish, milk). (300-500 mg, usually in a multivitamin).
- All the B vitamins-cofactors for making neurotransmitters (I often use DFH B supreme and pair it with a multivitamin).

1. Sorrenti, V., Contarini, G., Sut, S., Dall'Acqua, S., Confortin, F., Pagetta, A., Giusti, P., & Zusso, M. (2018). Curcumin Prevents Acute Neuroinflammation and Long-Term Memory Impairment Induced by Systemic Lipopolysaccharide in Mice. Frontiers in pharmacology, 9, 183. https://doi.org/10.3389/fphar.2018.00183
2. Oliver, G., Dean, O., Camfield, D., Blair-West, S., Ng, C., Berk, M., & Sarris, J. (2015). N-acetyl cysteine in the treatment of obsessive compulsive and related disorders: a systematic review. Clinical psychopharmacology and neuroscience : the official scientific journal of the Korean College of Neuropsychopharmacology, 13(1), 12–24. https://doi.org/10.9758/cpn.2015.13.1.12
3. Choline Fact Sheet for Health professionals. NIH National Institutes of Health. Office of Dietary Supplements. Publish update: July 10, 2020. https://ods.od.nih.gov/factsheets/Choline-HealthProfessional/ Accessed Oct 31, 2020.
4. Kennedy D. O. (2016). B Vitamins and the Brain: Mechanisms, Dose and Efficacy--A Review. Nutrients, 8(2), 68. https://doi.org/10.3390/nu8020068

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Nutrients that Support Neurochemisty, Cont

- SAMe (200-400 mg 1-2x per day)-helps to produces serotonin, dopamine and norepinephrine but can increase homocysteine (need B6, B12, folate and Betaine).
  - Some research recommends dose range from 400 to 1600 mg/d
- Betaine TMG (found in B supreme)—increases SAMe serum levels and decreases homocysteine.
- 5 HTP (50-200 mg)or Tryptophan(500-1500mg)-precursors to serotonin, 5 HTP also increases melatonin.
- Tyrosine (200-1000mg)- derived from phenylalanine, precursor to dopamine, required for T4 synthesis.

1. David Mischoulon, Maurizio Fava, Role of S-adenosyl-L-methionine in the treatment of depression: a review of the evidence, The American Journal of Clinical Nutrition, Volume 76, Issue 5, November 2002, Pages 1158S–1161S, https://doi.org/10.1093/ajcn/76.5.1158S
2. Betaine (Trimethylglycine) Kaiser Permanente. 3-24-2015. https://wa.kaiserpermanente.org/kbase/topic.jhtml?docId=hn-2807004. Accessed Oct 21, 2020
3. Di Pierro, F., Orsi, R., & Settembre, R. (2015). Role of betaine in improving the antidepressant effect of S-adenosyl-methionine in patients with mild-to-moderate depression. Journal of multidisciplinary healthcare, 8, 39–45. https://doi.org/10.2147/JMDH.S77766
4. Shaw K, Turner J, Del Mar C. Tryptophan and 5-hydroxytryptophan for depression. Cochrane Database Syst Rev. 2002;(1):CD003198. doi: 10.1002/14651858.CD003198. PMID: 11869656.
5. van de Rest, O., Bloemendaal, M., de Heus, R., & Aarts, E. (2017). Dose-Dependent Effects of Oral Tyrosine Administration on Plasma Tyrosine Levels and Cognition in Aging. Nutrients, 9(12), 1279. https://doi.org/10.3390/nu9121279

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Nutrients that Support Neurochemistry, Cont

- Glycine—inhibitory amino acid (calming), helps with insomnia and anxiety (magnesium glycinate).
- GABA—The body's primary inhibitory amino acid (calming). I have not had success using this (I use GABA precursors/glutamate antagonists like taurine/theanine).
- DL-Phenylalanine (binge eating) –inhibits appetite and decreases food intake by inducing feelings of fullness (300-3000 mg).

1. Kawai, N., Sakai, N., Okuro, M., Karakawa, S., Tsuneyoshi, Y., Kawasaki, N., Takeda, T., Bannai, M., & Nishino, S. (2015). The sleep-promoting and hypothermic effects of glycine are mediated by NMDA receptors in the suprachiasmatic nucleus. Neuropsychopharmacology : official publication of the American College of Neuropsychopharmacology, 40(6), 1405–1416. https://doi.org/10.1038/npp.2014.326
2. Schaffer, S., & Kim, H. W. (2018). Effects and Mechanisms of Taurine as a Therapeutic Agent. Biomolecules & therapeutics, 26(3), 225–241. https://doi.org/10.4062/biomolther.2017.251
3. Ross. J. The Craving Cure: The Nutritional Solution to Our Worldwide Dietary Crisis. Townsend Letter. Article 424 Nov 2018. https://www.townsendletter.com/article/424-the-craving-cure-the-nutritional-solution-to-our-worldwide-dietary-crisis-2/. Accessed Oct 31st. 2020.
4. Reinholz, J., Skopp, O., Breitenstein, C. et al. Compensatory weight gain due to dopaminergic hypofunction: new evidence and own incidental observations. Nutr Metab (Lond) 5, 35 (2008). https://doi.org/10.1186/1743-7075-5-35

Nutrients that Support Neurochemistry, Cont

- Inositol (B8)-Useful for depression, low level obsessive thinking, OCD, panic attacks, insomnia.
- Helps form healthy cell membranes, maintains proper electrical energy, and helps to regulate action of serotonin nutrient transfer between cells, transmits nerve signals, 2nd messenger inside the cell. Start ½ tsp or 1.4 grams 1-2x per day, can slowly increase up to much higher doses. I prefer to use lower doses and combine it with 5 htp and SAMe. **Not safe in pregnancy**.

1. Benjamin J, Levine J, Fux M, Aviv A, Levy D, Belmaker RH. Double-blind, placebo-controlled, crossover trial of inositol treatment for panic disorder. Am J Psychiatry. 1995 Jul;152(7):1084-6. doi: 10.1176/ajp.152.7.1084. PMID: 7793450.
2. Palatnik A, Frolov K, Fux M, Benjamin J. Double-blind, controlled, crossover trial of inositol versus fluvoxamine for the treatment of panic disorder. J Clin Psychopharmacol. 2001 Jun;21(3):335-9. doi: 10.1097/00004714-200106000-00014. PMID: 11386498.

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More Nutrients that Support Neurochemistry

- Alpha ketoglutarate —found in some amino acid blends—boosts cellular energy (ATP) in citric acid cycle—makes a huge difference for people who have low energy
- Glutamine—can convert to GABA and glutamate or bicarb." Lazy Susan" I use very low doses or none at all in people with neurological symptoms or severe anxiety.
- Theanine-precursor to GABA.
- Grapeseed extract or pycnogenol—helps with concentration and focus (ADD), can help to metabolize epinephrine, prevents age related cognitive decline.
- Taurine—boosts GABA, very helpful with insomnia, concentration and anxiety. Many people take it at night to help sleep. May cause panic attacks so start small.

1. Wu, N., Yang, M., Gaur, U., Xu, H., Yao, Y., & Li, D. (2016). Alpha-Ketoglutarate: Physiological Functions and Applications. Biomolecules & therapeutics, 24(1), 1–8. https://doi.org/10.4062/biomolther.2015.078
2. Kendell SF, Krystal JH, Sanacora G. GABA and glutamate systems as therapeutic targets in depression and mood disorders. Expert Opin Ther Targets 2005;9:153-168.
3. Kimura K, Ozeki M, Juneja LR, Ohira H. L-theanine reduces psychological and physiological stress responses. Biol Psychol 2007;74:39-45.
4. Nobre AC, Rao A, Owen GN. L-theanine, a natural constituent in tea, and its effect on mental state. Asia Pac J Clin Nutr 2008;17:167-168.
5. Verlaet, A. A., Ceulemans, B., Verhelst, H., Van West, D., De Bruyne, T., Pieters, L., Savelkoul, H. F., & Hermans, N. (2017). Effect of Pycnogenol® on attention-deficit hyperactivity disorder (ADHD): study protocol for a randomised controlled trial. Trials, 18(1), 145. https://doi.org/10.1186/s13063-017-1879-6
6. Jia F. Yue M and Chandra D. et al. Taurine Is a Potent Activator of Extrasynaptic GABAA Receptors in the Thalamus. Journal of Neuroscience 2 January 2008, 28 (1) 106-115; DOI: https://doi.org/10.1523/JNEUROSCI.3996-07.2008
7. Jakaria, M., Azam, S., Haque, M. E., Jo, S. H., Uddin, M. S., Kim, I. S., & Choi, D. K. (2019). Taurine and its analogs in neurological disorders: Focus on therapeutic potential and molecular mechanisms. Redox biology, 24, 101223. https://doi.org/10.1016/j.redox.2019.101223

Basic Supplements useful in Eating Disorders

- Good multivitamin with iron for females (I use metagenics phytomulti or DFH twice daily).
- Possibly extra B vitamins (DFH B supreme with Betaine TMG and biotin)
- Zinc chelate 30-60 mg total in all supplements
- Magnesium 250-500 mg (depends on age and bowel function)
- Fish Oils-2000-5000 mg per day
- Vit D3 2000 IU unless you have test to suggest more is needed (always test kids before you give vit D3)
- Probiotics
- Digestive Enzymes and possibly HCL
- Balanced amino acid blend on an empty stomach to support neurotransmitter synthesis that contains (Consider using a protein powder such as whey protein for added neurotransmitter support if tolerated). (10-15 gm free form amino acid powder)

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Additional Supplements to the Basics

Start with SAMe and 5 HTP and see if that helps. If not, build around that combination.

- SAMe (200mg 1-2x per day), 5 HTP at bedtime (50-100 mg to start)- starting point
- NAC (600-2500 mg start low) and myoinositol (cennitol—1/2 tsp to start, dose up slowly)- OCD, panic, anxiety, depression
- Theanine (100 mg 1-2 x per day and/or Taurine (100-500+mg)—insomnia, anxiety
- Possibly Tyrosine to balance 5 HTP and directly boost dopamine and support the thyroid
- Phenylalanine (for binge eating)—supresses appetite and decreases food intake by inducing feelings of fullness.
- Study in Germany on anorexia (both weight recovered and acutely ill) showed lower plasma tryptophan and phenylalanine levels compared to healthy controls (Greenblatt, J.)
- Run a nutraval test, it is best to always have a free form amino acid blend as a starting point).

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Examples of Using Targeted Amino Acids

- 5 HTP(50-200mg) and DL- Phenylalanine (300-3000 mg)-regulation of appetite for binge eating/weight loss, increases serotonin, dopamine and CCK (for appetite control).
- Glycine (500-2000 mg) and glutamine (500-1000mg 3x per day)—sugar cravings
- Pair with free form amino acid blend to prevent an imbalance (10-15 gm/day).
- Do not use amino acids if taking MAO inhibitors

Source: Greenblatt, J and Ross Taylor V. Answers to Appetite Control, p 124-127. CreateSpace Independent Publishing Platform April 24th, 2014

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My Usual Supplements for Eating Disorders

- DopaPlus if low catecholamine markers and symptoms (B6, zinc, L Tyrosine, Macuna puriens, rhodiola, grapeseed, green tea). Start ½ capsule and work up.
- SeroPlus if low serotonin markers and symptoms (5 HTP, inositol, taurine, zinc, magnesium, folate, B6, niacin, vitamin D). Start with 1 capsule.
- SAMe if still need more of a boost or I use this as a stand alone. Start with 200 mg.
- Pure Tranquility Liquid-liquid GABA/Theanine/Glycine- start 1 dropper.
- Thorne Daily 2 caps or a 1 a day multivitamin/mineral

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Case Study #1 PCOS, Pelvic Pain, Binge Eating

Female:

-PCOS (taking OC), possibly endometriosis

-Hypothyroidism

- Extremely painful cycles, could not leave the bed for 7 days (could not work or continue school, wanted her PhD)

-Binge eating, very high carb diet

-Severe depression for as long as she can remember, confusion, apathy, poor concentration

-Insomnia (ambien)

-Overweight

Depression since age 15

-Extreme fatigue, fibromyalgia, chronic muscle/bone pain

-Pelvic pain

-Symptoms started at age 16

Meds: Birth control, Ambien,synthroid, percocet, ultram, metformin

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Case Study #1 Tests

Conventional labs
Ferritin 21L
Protein 6.5L
BUN 8 L
hsCRP 4.7H
Lipids H
Potassium 3.5L
Alk phos 38L
GGT 9L

Gene for celiac+
TSH random
Wbc 7.3 H
Calcium 8.9L
Cortisol 24H
homocysteine 7.4 (ok)

GI Effects
Showed hook worm infection

ALCAT revealed sensitivity to gluten but severe sensitivity to rice

First visit - gut healing and SAMe/5HTP for depression/sleep. Very cautious with her medications.

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Outcome Case #1

- After two weeks started sleeping and was able to work with doc to taper off Ambien. Felt joy for the first time in her life.
- We started carb controlled ALCAT meal plan and she was able to record food and get ahold of binging. She has lost possibly over 80 pounds by now.
- We used a whole balanced approach with supplements, supporting insulin levels, inflammation, cycles, mood, energy, GI tract, etc.
- Continued to have painful menstrual cycles but with homeopathic treatment was able to stay out of bed, take only one dose of Motrin at the beginning of her cycle, go back to school.
- She was able to move away and get her masters degree in nutrition (changed her career path)
- All her labs normalized. She follows paleo style of eating.
- Was able to work with Dr. to discontinue all meds.

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CASE #2 Bulimia and Multiple Addictions and Impulsivity

20 year old female:

- Bulimia
- Multiple addictions and diagnoses
- PCOS
- Difficulty concentrating and impulsivity.
- Just got out of rehab
- Unable to afford any functional testing.

Case #2 Lab Findings

- Negative Antigiadin AB and negative gene test run through doc (some genes were left off)
- 19/12 serotonin (needs more), 6/6 catecholamines (fine), 10/6 lacking endorphines (needs aminos).
- Chol 152
- Ferritin 16
- Vit D 23
- Homocysteine 9.3
- Unable to get much lab work

Case #2 cont

- Based on symptoms we started SAME, B Supreme with Betaine, multivitamin/mineral, iron bisglycinate, magnesium, 5 HTP, Fish Oil, high dose probiotics. No diet restrictions due to bulimia.
- In four months--the binging and purging have mostly stopped, working full time, in a stable relationship, not using substances, enrolling for college next year. Encouraging her to follow gluten free diet at this point. We are also using homeopathy (constitutional).

Case #3 OCD, Vegetarian

- 36 y/o male
- Had to quit work due to severe OCD, anxiety, insomnia, and extreme urgency and frequency of bladder.
- Can't remember anything about his childhood. Difficulty with concentration and memory.
- Childhood asthma.
- Taking SAMe 400 mg 2x per day, 2000 mg tryptophan at night for sleep, B vitamin, 5000 IU Vit D 3 (from a psychiatrist). Sleeping now on these supplements.
- Mood questionnaire (Ross) scored 20 out of max of 8 for serotonin deficiency (this is while he in on SAMe and tryptophan).

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Case #3 OCD, Cont.

Lab Work Findings:

- Positive for Gene for celiacs (ALCAT GHP testing), although negative antibody test. Alcat showed we can add dairy so we added it in.
- Low testosterone-256 (low in zinc, chol, previously Vit D)
- Slightly Elevated Homocysteine – 9.8 (despite B vit, SAMe)
- Protein a bit low (6.9), Abs lymph 1.8 (ideal 2000)
- Very low serum calcium – 8.3 (relation with bladder?)
- Low cholesterol 155
- Previous Low Vit D, this test was normal
- Low Zinc (nutraval) and elevated copper:zinc ratio (veg diet)
- Moderate need for B vitamins despite taking them (nutraval)
- Low EFA (based on nutraval)
- Stool Culture: Good except for low diversity of commensal bacteria and opportunistic infection of pathogen

Case #3 OCD, Cont

Interventions:

- NAC 600-2500 mg (built up slowly)-huge difference
- Myoinositol (Cenitol from Metagenics)—this made another dramatic difference, especially with social anxiety and his rate of speech, he is able to think faster and respond quicker.
- High dose probiotics and Kefir
- Added calcium, changed brand B vitamin, added multivitamin/mineral, 30 mg zinc., Fish oil
- ALCAT diet and strict gluten free
- More protein in mealplan also added fish, greek yogurt, cheese

  (no return of asthma symptoms with dairy added)

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Case #3 Outcome

- In 8 weeks he stated his OCD is about 70-75% better, social anxiety is the best it has been his entire life.
- Able to interview confidently for a new job and moved away
- He has been referred to doctor with bioidentical hormone specialty.
- Bladder function is the best it has been yet—we are using homeopathy but it seemed to him that myoinositol was also helping the flow and volume.

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Case #4

- Female
- 1 year out of recovery
- Struggling with some binge eating now
- Extreme exhaustion and low motivation
- Anxiety
- Very flat speech and slow rate of speech
- Extreme gas and bloating

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Case #4 NutraEval

- Revealed less than detectable levels of HVA (dopamine) and Vanilmandelic Acid (VMA-epinephrine and norepinephrine)
- In general insufficient catecholamine production
- Normal serotonin marker 5 HIAA—she noted she could never tolerate SSRIs or any anti-depressant
- Stool Culture unremarkable except for elevated Secretory IgA (suggesting food sensitivities)
- Positive for IgG AB Food Sensitivity Testing: Egg, dairy and wheat and gluten

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Case #4 Intervention

- Dopaplus product (tyrosine, grapeseed extract, zinc, B6, macuna puriens) in the morning. Had her start slow
- GABA/Theanine at night for sleep and anxiety (Liquid tranquility by Pure Encapsulations)
- SAMe 200 mg
- Multivitamin

Case #4 Outcome 1 month follow up

- GI Symptoms normalized on diet
- Much more energy and motivation
- Hardly any anxiety and can sleep
- Very happy with the outcome

Case #5 16 y/o Female with Anorexia

Kept her on same meal plan from hospital, worked on issues surrounding food but also added:

- Amino Acids—free form (we also testing her levels)
- B Vitamins + children's multivitamin with iron
- Fish Oil
- Zinc 50 mg
- Recovered very fast once we started supplements.
- 5 years later she contacted me to tell me she had been diagnosed with celiac's. "Just saying……"

Know Your Limits

- Bipolar—I provide basic nutrition support based on testing, but I don't use amino acid therapy, SAMe, etc. I use diet changes, Fish Oil, Multivitamins, probiotics, etc.
- Schizophrenia—Out of my scope. Diet only, maybe probiotics, fish oil, multivitamin.
- Pregnant/breastfeeding women—I do minimal (EFA, Multi, iron, Vit D, diet, run tests), don't want the risk of using extra supplements untested in developing fetuses and infants.

Summary

Nutrition and Lifestyle:

- Opioid System—Exercise
- Adrenal System—Sleep, meditation, gentle exercise, adrenal support for stress
- Dopamine-Nutrients to boost dopamine production
- Low serotonin-Nutrients to boost serotonin production
- Regulation of eating patterns
- Executive function skills to help with overeating, planning of healthy meals, planning exercise, etc.

Summary

- Fix the body, fix the brain
- Integrative care can compliment conventional eating disorder treatment
- Consider becoming a certified eating disorder specialist to provide maximum support for your patients. As an alternative become part of a multidisciplinary professional team.

Additional Resources