

# GUT HEALTH Series, Part 3

Fatigue, Fogginess, Fear and Food  
*What Your Brain May Be Telling You*



THE HOLISTIC  
HEALTH APPROACH

# FATIGUE, FOGGINESS, FEAR AND FOOD

- A “Gut” Feeling
- Your Body on Stress
- A Refined Brain
- A Vicious Cycle
- Food as Thy Medicine
- Find Your Om
- Last Minute Thoughts

# **A GUT FEELING**

Understanding the gut-brain connection



# ENTERIC NERVOUS SYSTEM

## Your Gut-Brain Connection

- ENS is the system of nerves that run throughout the digestive system.
- Vagus Nerve connects the brain directly to the ENS.
- *Hundreds of millions* of neurons connect the brain to the ENS.
- ENS consists of 2 layers of nerves in the intestinal wall – controlling muscles and secretions of neuropeptides, neurotransmitters and nitric oxide.
- 90% of the neurotransmitter serotonin is produced in the digestive tract.



# ENTERIC NERVOUS SYSTEM

## Your Gut-Brain Connection



This connection provides constant feedback:

- Hunger and Satiety
- Cephalic phase of digestion
- Trusting your “gut“
- “Butterflies” in your stomach

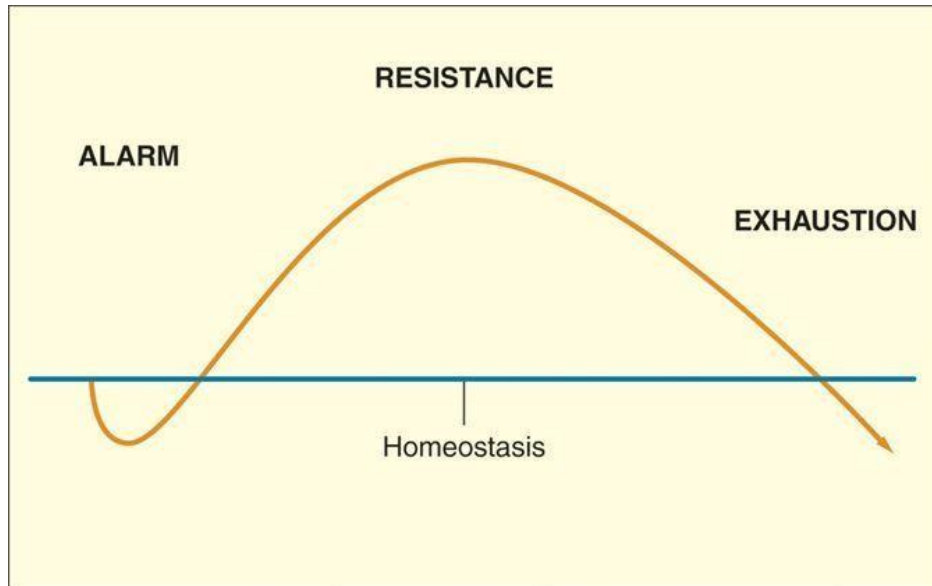


# **YOUR BODY ON STRESS**

The reality of stress and how it affects the body.

# THE STRESS RESPONSE

## Your Gut-Brain Connection



- **Alarm Phase** – the initial response, typically known as the fight or flight response, lasts for a short duration.
- **Resistance Phase** – the next phase allows the body to keep fighting that stressor long after the initial stress is gone.
- **Exhaustion Phase** – if there is continued stress and a prolonged resistance phase it can lead to collapse of a body function or organ.

*Frequent and prolonged stress leads to the exhaustion phase and keeps the body out of balance.*



# REGULATING THE STRESS RESPONSE – HPA AXIS



- **Sympathetic Nervous System Activation** – “fight or flight” response
- **HPA Axis** – Hypothalamus-Pituitary-Adrenal Axis. Regulates long-term stress response.
- **Hypothalamus** – releases hormone CRF
- **Pituitary** – releases hormone ACTH
- **Adrenals** – release hormone cortisol
- **Prolonged Stress increases risk of HPA Axis dysfunction.** Increased CRF also leads to intestinal permeability, low-grade inflammation and more stress.

Guilliams, TG. The role of stress and the HPA axis in chronic disease management. Stevens Point, WI: Point Institute; 2015.  
Additional resources available on request.



# NUTRITION AND PSYCHOLOGICAL STRESSORS



- **Poor Diet** – Comfort foods; “stuffing” emotions
- **Eating too Fast** – Skipping the cephalic phase of digestion
- **Toxic Beliefs** – “I’m too fat,” “I’m not good enough”
- **Pleasure Deprivation** – Lacking enjoyment with food choices
- **Food Allergies** – Increased inflammation
- **Stress** – from work, relationships, finances and Full-Plate Syndrome affect digestion



# PHYSICAL STRESSORS



- **Toxic Environment** – heavy metals, industrial pollutants, plastics, formaldehyde
- **Toxic Foods** – artificial ingredients, processed foods, pesticides, conventional meats, sugars, trans fat
- **Uncontrolled Blood Sugar** – insulin spikes
- **Overtraining** – inadequate rest and recovery
- **Sleep Deprivation** – cortisol issues
- **Injury and/or Illness** – immune response



# HOW STRESS AFFECTS THE BODY

## Stress **DECREASES**

- Nutrient absorption
- Healthy gut flora population
- Digestion and speed of digestion
- Ability to use oxygen
- Calorie burning
- Energy level
- Hormone production
- Muscle mass
- Kidney function
- Immune function

## Stress **INCREASES**

- Nutrient deficiencies
- Cholesterol and heart disease risk
- Salt retention and bloating
- Cortisol levels and fat storage
- Heartburn and risk of ulcers
- Food sensitivities and allergies
- Insulin resistance
- Oxidative stress and aging
- Inflammation
- Risk of infection and disease



# STRESS AND GUT DYSBIOSIS



- Gut and brain communicate through neurons, hormones and neurotransmitters. These also control food transit time and mucus production in the gut lining.
- Regular transit time and a healthy gut lining allow friendly and commensal bugs to thrive.
- Stress alters hormones and neurotransmitters produced by the gut and brain.
- Stress also increases inflammation and damages gut lining.

***Stress damages the gut lining and leads to gut dysbiosis.***



# STRESS AND MICROBIOTA DYSBIOSIS



Crumeyrolle-Aria V, Jaglind V, Bruneaud A, Vancasself S, Cardona A, Dauge V, Naudon L, Rabot S. Absence of the gut microbiota enhances anxiety-like behavior and neuroendocrine response to acute stress in rats. *Psychoneuroendocrinology*. 2014; 1001-1014 Additional resources available on request.

## Numerous studies have shown:

- A lack of commensal bacteria increased levels of anxiety and impaired the stress response.
- Altered microbiota was linked to depression.
- Different types of psychological stress altered microbiota composition.
- HPA axis activity was increased in microbiota-deficient animals.
- The stress response normalized after commensal bacteria were introduced.

**The bidirectional communication between brain and microbiota can influence and be influenced by stress.**



# THE REFINED BRAIN

Understanding food's effects on brain health

# SUGAR

- Sugar has no fiber, vitamins, minerals, proteins, fats or enzymes – it only has empty calories.
- Your body actually needs to use its own stores of nutrients to process sugar.

## **Sugar negatively effects your body in several ways:**

- Compromises your immune system.
- Increases risk of insulin resistance, metabolic syndrome, diabetes, stroke, heart attack and kidney dysfunction.
- Increases wrinkles and speeds up aging.
- *Creates inflammation in the brain leading to depression, anxiety and impaired memory.*
- *Increases systemic inflammation which many lead to arthritis, skin conditions and leaky gut syndrome.*



# REFINED FLOURS



- Little to no nutritional value.
- Artificially stimulate dopamine receptors in the brain.
- Blood sugar rollercoaster ride.

## **Consuming a mostly processed food diet leads to:**

- Nutrient deficiencies, including nutrients key to brain health
- Overeating, addiction and mood swings around food
- Systemic inflammation, leaky gut, anxiety and depression



# GLUTEN AND DAIRY



- Two most common food allergies.
- Allergy or sensitivity can increase inflammation in the body.
- Inflammation can lead to leaky gut and more allergies.

## **Gluten and dairy can be addicting.**

- Caseomorphins from the breakdown of casein
- Gluteomorphins from the breakdown of gluten
- Both are morphine-like opioids that have a sedating and addictive effect on the brain.

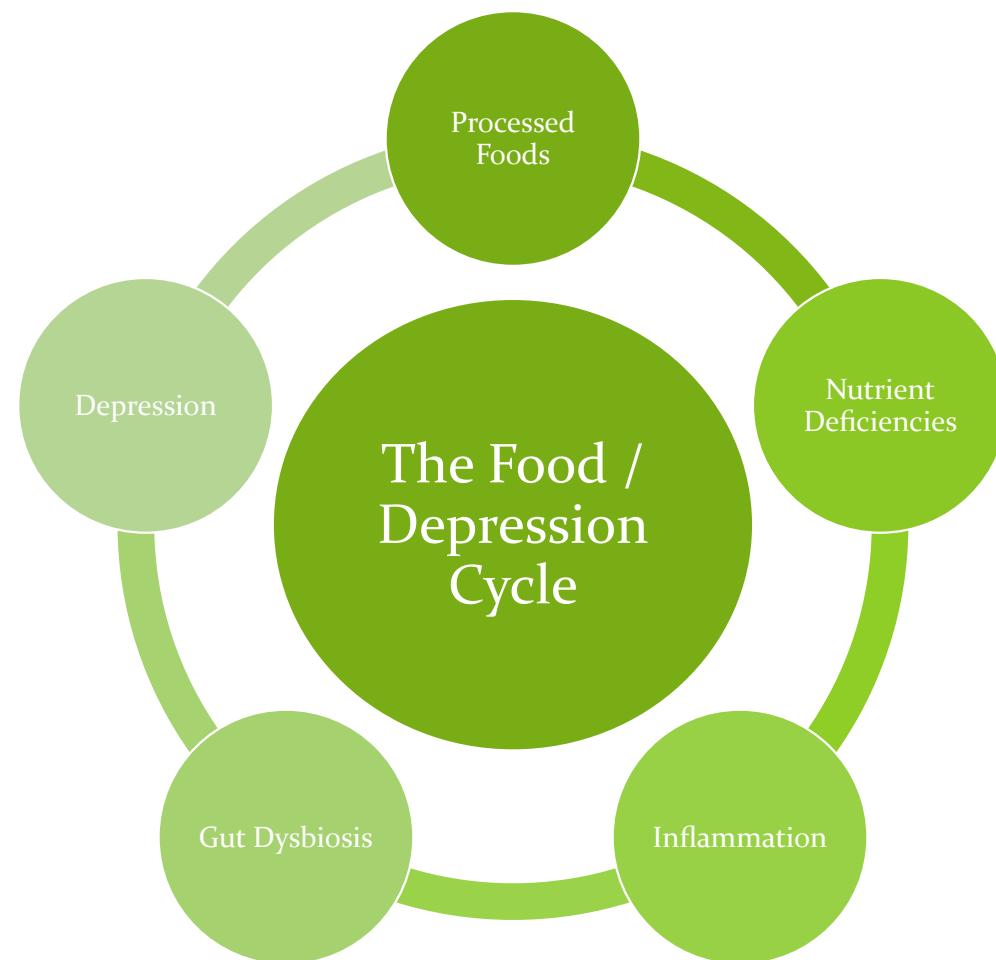


# THE VICIOUS CYCLE

Understanding depression/anxiety and the food connection

# FOOD AFFECTS YOUR HAPPINESS

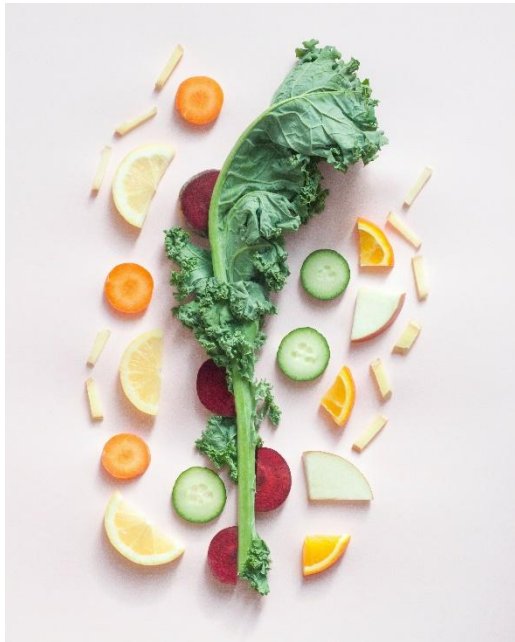
- **Processed Foods and Sugars** – depletes the body of key nutrients and increases inflammation in the body.
- **Nutrient Deficiencies** – reduce the ability to maintain gut integrity and compromise immunity increasing risk of systemic inflammation.
- **Inflammation** – damages the gut lining, leading to gut dysbiosis and leaky gut.
- **Gut Dysbiosis** – affects the body's serotonin levels.
- **Decreased Serotonin** – reduces feelings of happiness and increases risk of depression.
- **Depression** – increases cravings for processed foods and sugars.



# FOOD AS THY MEDICINE

Using food and supplements for brain and gut health

# NUTRITION TO REGULATE STRESS RESPONSE



- **Focus on quality whole foods** – organic fruits and vegetables, free-range and organic lean meats, whole unrefined grains, raw or sprouted nuts and seeds, cold-pressed and unrefined oils. Work to eliminate processed and high sugar foods.
- **Eat slowly** to activate the rest and digest parasympathetic nervous system.
- **Take a high quality multivitamin.**
- **Consider cortisol-modulating supplements** such as magnolia bark and theanine.
- In times of high stress, **consider short-term use of adaptogen herbs** such as ginseng, ashwagandha, schisandra, rhodiola and astragalus.



# FEEDING THE BRAIN

- **B vitamins (B6, B12, folic acid)** – necessary for production of neurotransmitters and protecting brain function.

*Food Sources: clams and shellfish, wild caught fish (mackerel, herring, sardines, tuna, salmon), crab and lobster, eggs, turkey and chicken, seeds (sunflower, pumpkin, flax), nuts (pistachios, walnuts), beans and lentils, bananas, avocados, asparagus, broccoli and greens*

- **Omega-3 fatty acids** – brain is 60% fat, most of which is DHA. Important for connectivity of brain circuits, energy production in neurons and reducing free radical damage to nervous tissue.

*Food Sources: Flaxseed oil, fish oil, chia seeds, walnuts, wild caught fish, oysters, soybeans (organic)*

- **Consider antioxidant supplements** such as Vitamins A, C, D, E and K; as well as alpha lipoic acid.



# NATURAL ANTIDEPRESSANTS

- **The same vitamins, minerals and EFAs important for brain health also assist with mood regulation.**
- **Magnesium** – may help with anxiety.
- **Protein** – provides amino acids necessary for making neurotransmitters, also stabilizes blood sugar.
- **Exercise** – releases endorphins and boosts dopamine and serotonin, calming anxiety and easing depression.
- **Consider targeted supplements**

*5-HTP, St. John's Wort, L-tyrosine, L-theanine, GABA, phosphatidylserine*

**WARNING:** Do NOT take 5-HTP or St. John's Wort together or with an SSRI. Always discuss supplements with your doctor.



# FIND YOUR OM

Using stress management to improve gut and brain health

# STRESS MANAGEMENT



Grundmann O, Saunjoo LY. Complementary and alternative medicines in irritable bowel syndrome: An integrative view. World J Gastroenterol. 2014 January 14; 20(2): 346-362  
Additional resources available on request.

- **Exercise** – Studies showed less or improved IBS symptoms for physically active patients.
- **Yoga** – Yoga decreased anxiety levels, pain levels and GI symptoms in IBS patients.
- **Hypnotherapy** – Research showed hypnotherapy reduced pain, decreased symptom severity and improved overall symptoms and quality of life in IBS patients.
- **Cognitive Behavior Therapy** – Using goal-oriented psychotherapy reduced symptom severity, especially visceral pain, and improved other IBS symptoms.
- **Biofeedback Therapy** – One study revealed biofeedback therapy improved IBS symptoms in 50% of participants.



# STRESS MANAGEMENT

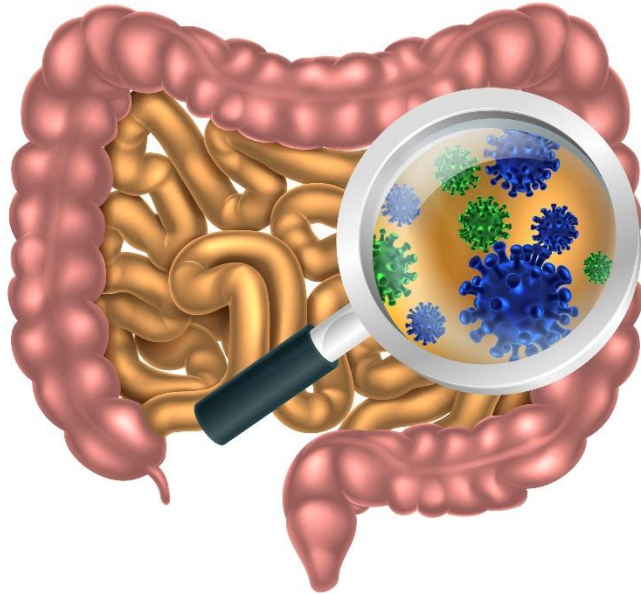
Several strains of probiotics have been shown to reduce the body's stress response.

PROBIOTICS

- **L. rhamnosus** – reduced stress hormones.
- **L. helveticus** – boosted resilience to stress and improved emotional response.
- **L. farciminis** – reduced activity of HPA axis stress response, stopped stress-induced intestinal permeability and decreased inflammation.
- **B. infantis** – reversed an exaggerated HPA stress response in mice.
- **B. longum** – reduced cortisol output in response to an acute stressor, boosted resilience to stress and improved emotional response.
- **Prebiotics FOS and GOS** – decreased stress response and anxiety related behavior.

Grundmann O, Saunjo LY. Complementary and alternative medicines in irritable bowel syndrome: An integrative view. World J Gastroenterol. 2014 January 14; 20(2): 346-362  
Additional resources available on request.

# REBALANCING THE GUT MICROBIOTA



- Stress management helps rebalance the microbiota.
- Probiotics and their metabolites keep pathogenic species under control.
- Two important groups of probiotics are Bifidobacterium and Lactobacillus.
- If there is a reduction in either of these species and an increase in pathogenic species, dysbiosis occurs which increases risk of developing or having a relapse of IBS.
- However, when these and other probiotics are replenished in the gut microbiota, digestive symptoms improved.



# LAST MINUTE THOUGHTS

- Your brain and gut are intimately connected.
- Excessive stress on the body can disrupt balance in your gut and lead to digestive issues, brain disorders and other health conditions.
- Sugars, refined flours, gluten and dairy can negatively affect gut and brain health.
- Stress management and rebalancing the microbiota both positively affect gut and brain health.
- Targeted supplementation may help regulate stress, nourish the brain and reduce depression/anxiety.
- **Choosing whole foods that are mostly organic and eating slowly** will have a huge impact on your gut, brain...and overall health.



# RESOURCES

- Digestive Wellness, 4th Ed., Elizabeth Lipski, PhD, CCN, CHN
- The Slow Down Diet, Marc David
- <https://www.scientificamerican.com/article/gut-feelings-the-second-brain-in-our-gastrointestinal-systems-excerpt/>
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5146205/>
- <http://www.mayoclinic.org/diseases-conditions/depression/in-depth/antidepressants/art-20046273>
- <https://www.drugs.com/drug-class/ssri-antidepressants.html>
- <https://drjosephalaimo.wordpress.com/2011/06/23/casomorphins-and-gluteomorphins-%E2%80%93-the-food-opioids/>

## Photos Courtesy of:

- <https://draxe.com/gut-brain-connection/>
- <https://you.stonybrook.edu/sbuisoblog/2014/11/02/butterflies/>
- <http://liveyourlifeinbalance.com/index.php/balanced-life>
- <http://www.nhs.uk/Livewell/Goodfood/Pages/what-are-processed-foods.aspx>
- <https://www.medicalpress.es/aditivo-alimentario-altera-bacterias-del-intestino-y-parece-causar-cancer-colorrectal/>
- <http://www.weightlossforall.com/refined-flour-should-we-avoid-it-while-dieting.htm>
- <http://www.herballove.com/guide/impotence-caused-anti-depressant-drugs>
- <https://dailyhealthpost.com/fish-oil-study-shows-promising-results-in-cancer-treatment/>



**THANK YOU**



THE HOLISTIC  
HEALTH APPROACH