Casual Friday Series

Acid Reflux and GERD Part 2

A Biogenetix Clinical Presentation

BIOGENETIX.COM

Disclaimer

- *Information in this presentation is not intended to diagnose, treat, reverse, cure, or prevent any disease. While this presentation is based on medical literature, findings, and text, The following statements have not been evaluated by the FDA.*
- *The information provided in this presentation is for your consideration only as a practicing health care provider. Ultimately you are responsible for exercising professional judgment in the care of your own patients.*

National Library of Medicine
National Center for Biotechnology Information

Impaired Lower Esophageal Sphincter (LES) Function and Transient Lower Esophageal Sphincter Relaxations (TLESRs)

Hiatal hernia

Defective esophageal peristalsis

Impaired esophageal mucosal defense against the gastric refluxate

https://www.ncbi.nlm.nih.gov/books/NBK441938/

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- Proton Pump Inhibitor Trial
- Gastro-endoscopy
- Ambulatory studies

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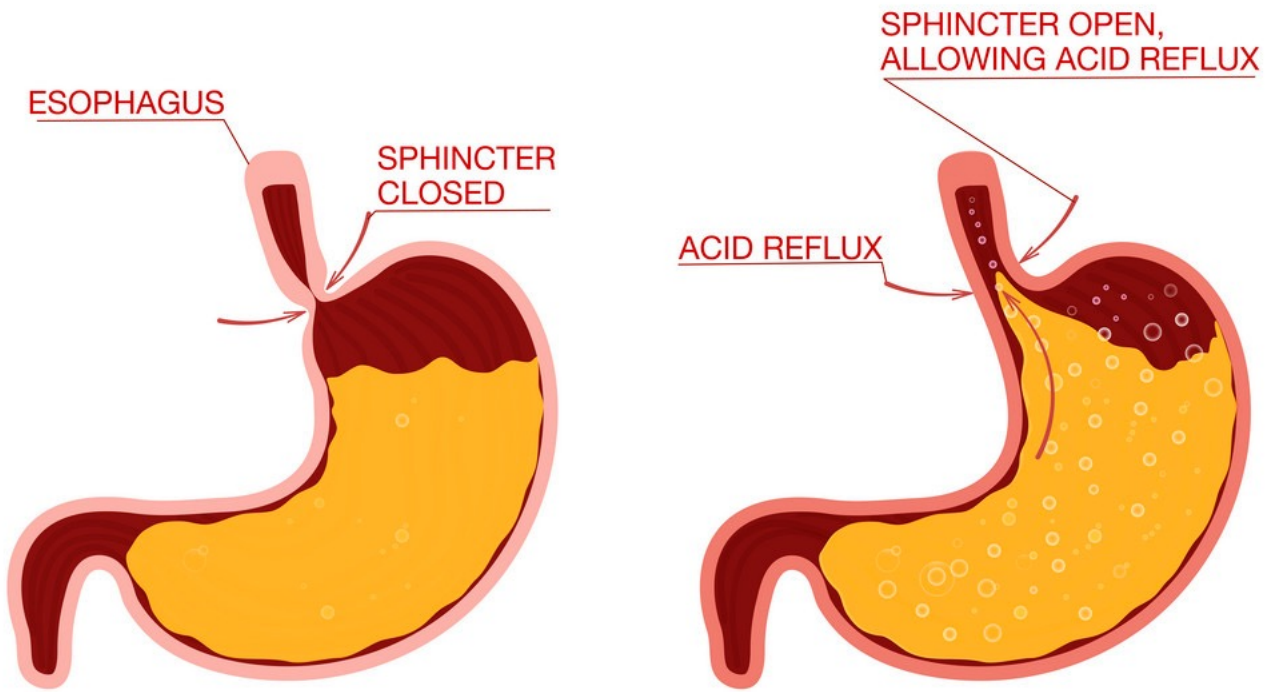
Pathological/Mechanical GERD



https://cdn3.vectorstock.com/i/1000x1000/88/82/heartburn-and-gastroesophageal-reflux-disease-gerd-vector-31078882.jpg

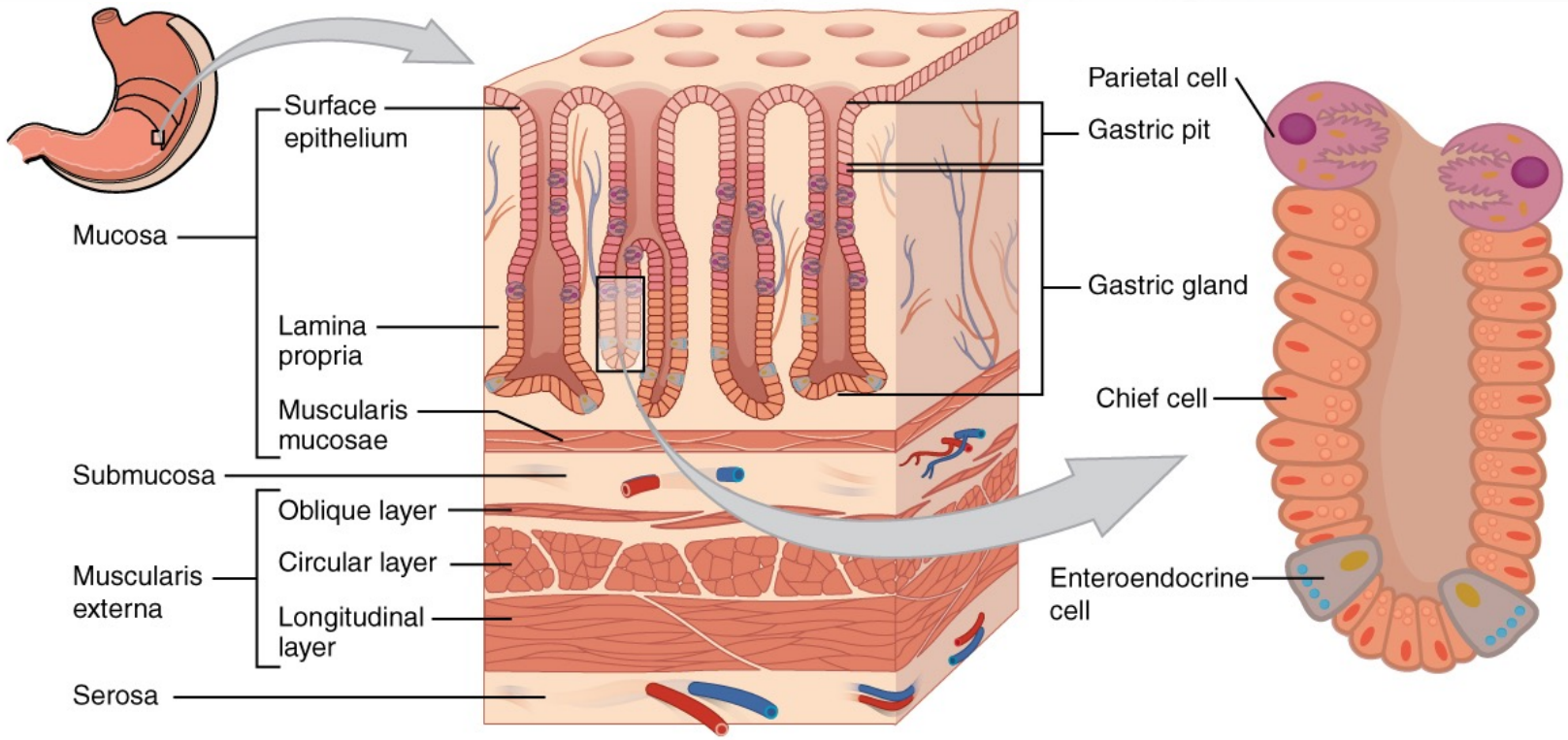
- Lifestyle modifications: lose weight, don't lay down after a meal, elevate the head of your bed, don't eat 3 hrs. prior to bedtime.
- Don't eat peppers, tomatoes, spicy food, etc.
- PPI's.

Partially digested proteins triggers gastrin release from G cells of the antrum of the stomach and the duodenum.

Gastrin triggers HCL production from parietal cells.

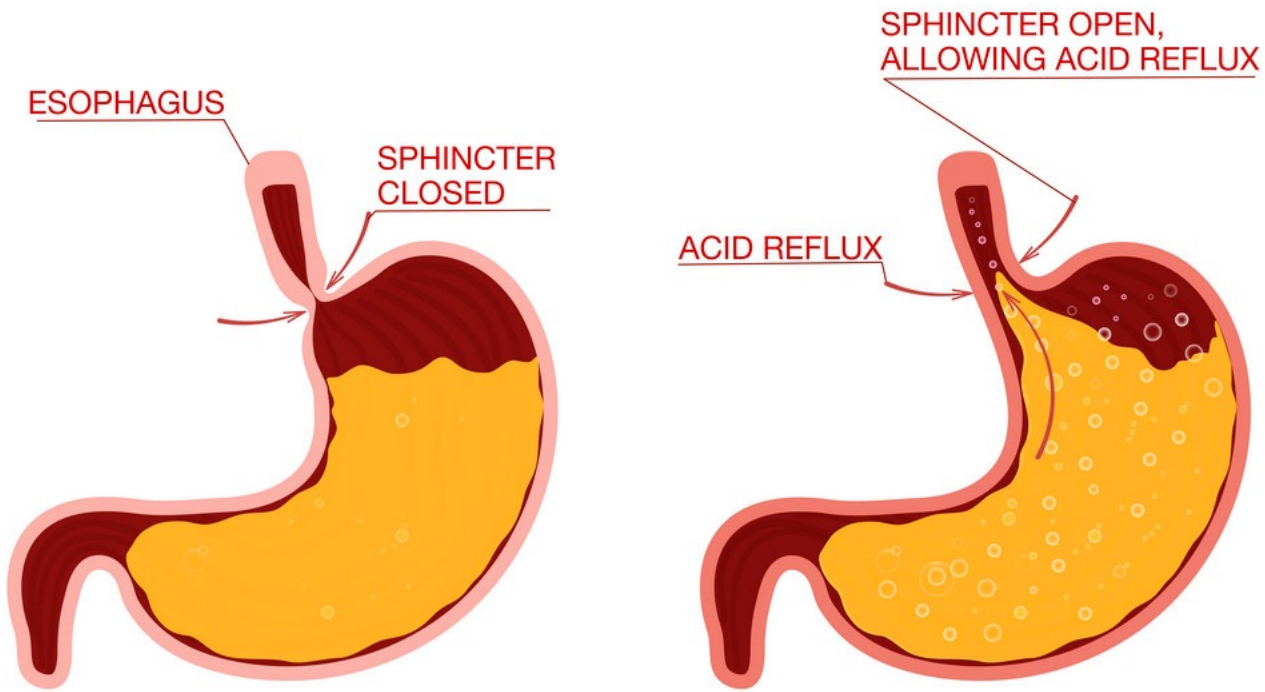
HCL enhances food degradation.

HCL decreases the pH of the stomach, turning off gastrin.



https://useruploads.socratic.org/fiDqosUjQpOy52v8ZA5K_2415_Histology_of_StomachN.jpg

Functional Mechanisms of GERD



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The 4 (typical) Scenarios

1. Normal HCL/enzymatic production + kindafood = slowed digestion, inorganic acid production/rot. Trend toward constipation.

2. Normal HCL/enzymatic production + excessively acidic food = increasingly acidic environment, increased pressure, chemically erosive, faster transit. Trend toward diarrhea.

3. Increased HCL production in relation to high fatty acid intake, specifically garbage fats (trans fats) = trend toward diarrhea, malabsorption.

4. PPI induced hypochlorhydria + kindafood = slowed digestion, inorganic acid production/rot, malabsorption issues, SIBO/IBS/IBD. Alternating constipation, diarrhea, large amount of gas production.

77 yo female
5’3” 200 lbs.

DX:
DM2
hypothyroid
GERD

Meds:
Pepcid
Nexium
Prilosec (OTC)
Ozempic
NP Thyroid
Gabapentin

SSX: fatigue, cold, weight gain, Neuropathy, constipation, digestive upset.

	Test	Current Result and Flag		Previous Result and Date	Units	Reference Interval
	Glucose [01]	98			mg/dL	65-99
	BUN [01]	10			mg/dL	8-27
▲	**Creatinine** [01]	**1.05**	**High**		mg/dL	0.57-1.00
▼	**eGFR**	**55**	**Low**		mL/min/1.73	>59
▼	**BUN/Creatinine Ratio**	**10**	**Low**			12-28
	Sodium [01]	139			mmol/L	134-144
	Potassium [01]	4.4			mmol/L	3.5-5.2
	Chloride [01]	102			mmol/L	96-106
	Carbon Dioxide, Total [01]	25			mmol/L	20-29
	Calcium [01]	9.2			mg/dL	8.7-10.3
	Protein, Total [01]	7.1			g/dL	6.0-8.5
	Albumin [01]	4.0			g/dL	3.7-4.7
	Globulin, Total	3.1			g/dL	1.5-4.5
	A/G Ratio	1.3				1.2-2.2
	Bilirubin, Total [01]	0.3			mg/dL	0.0-1.2
	Alkaline Phosphatase [01]	75			IU/L	44-121
	AST (SGOT) [01]	14			IU/L	0-40
	ALT (SGPT) [01]	7			IU/L	0-32

	Test	Current Result and Flag		Previous Result and Date	Units	Reference Interval
▲	**C-Reactive Protein, Cardiac** [01]	**6.46**	**High**		mg/L	0.00-3.00

Relative Risk for Future Cardiovascular Event

Low	<1.00
Average	1.00 - 3.00
High	>3.00

Homocyst(e)ine

	Test	Current Result and Flag		Previous Result and Date	Units	Reference Interval
▲	**Homocyst(e)ine** [01]	**23.9**	**High**		umol/L	0.0-19.2

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Fibrinogen Activity

Test	Current Result and Flag	Previous Result and Date	Units	Reference Interval
Fibrinogen Activity [01]	432		mg/dL	193-507

Insulin

Test	Current Result and Flag	Previous Result and Date	Units	Reference Interval
Insulin [01]	14.2		uIU/mL	2.6-24.9

Test	Current Result and Flag	Previous Result and Date	Units	Reference Interval
Thyroid Peroxidase (TPO) Ab [01]	**52 High**		IU/mL	0-34
Thyroglobulin Antibody [01]	<1.0		IU/mL	0.0-0.9
Thyroglobulin Antibody measured by Beckman Coulter Methodology				

Test	Current Result and Flag	Previous Result and Date	Units	Reference Interval
Hemoglobin A1c [01]	**6.1 High**		%	4.8-5.6
Please Note: [01]				
Prediabetes: 5.7 - 6.4				
Diabetes: >6.4				
Glycemic control for adults with diabetes: <7.0				
Estim. Avg Glu (eAG)	128		mg/dL	

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Functional Imbalance Scores

Key: < 2 : Low Need for Support | 2-3 : Optional Need for Support | 4-6 : Moderate Need for Support | 7-10 : High Need for Support

	Need for Digestive Support	Need for Inflammation Modulation	Need for Microbiome Support	Need for Prebiotic Support	Need for Antimicrobial Support
	MALDIGESTION	INFLAMMATION	DYSBIOSIS	METABOLIC IMBALANCE	INFECTION
	1	6	7	3	0
Biomarkers	Pancreatic Elastase ● Products of Protein Breakdown ● Fecal Fats ●	Secretory IgA ▲ Calprotectin ● Eosinophil Protein X ● Occult Blood ●	IAD/Methane Score △ Reference Variance △ PP Bacteria/Yeast ● Total Abundance ●	SCFA (%) ▼ Beta-glucuronidase ▼ n-Butyrate Conc. ▽ Total SCFA's ●	Parasitic Infection ● Pathogenic Bacteria ● PP Bacteria/Yeast ● Total Abundance ●
Therapeutic Support Options	• Digestive Enzymes • Betaine HCl • Bile Salts • Apple Cider Vinegar • Mindful Eating Habits • Digestive Bitters	• Elimination Diet/ Food Sensitivity Testing • Mucosa Support: Slippery Elm, Althea, Aloe, DGL, etc. • Zinc Carnosine • L-Glutamine • Quercetin • Turmeric • Omega-3's • GI Referral (If Calpro is Elevated)	• Pre-/Probiotics • Increase Dietary Fiber Intake • Consider SIBO Testing • Increase Resistant Starches • Increase Fermented Foods • Meal Timing	• Pre-/Probiotics • Increased Dietary Fiber Intake • Increase Resistant Starches • Increase Fermented Foods • Calcium D-Glucarate (for high beta-glucuronidase)	• Antibiotics (if warranted) • Antimicrobial Herbal Therapy • Antiparasitic Herbal Therapy (if warranted) • *Saccharomyces boulardii*

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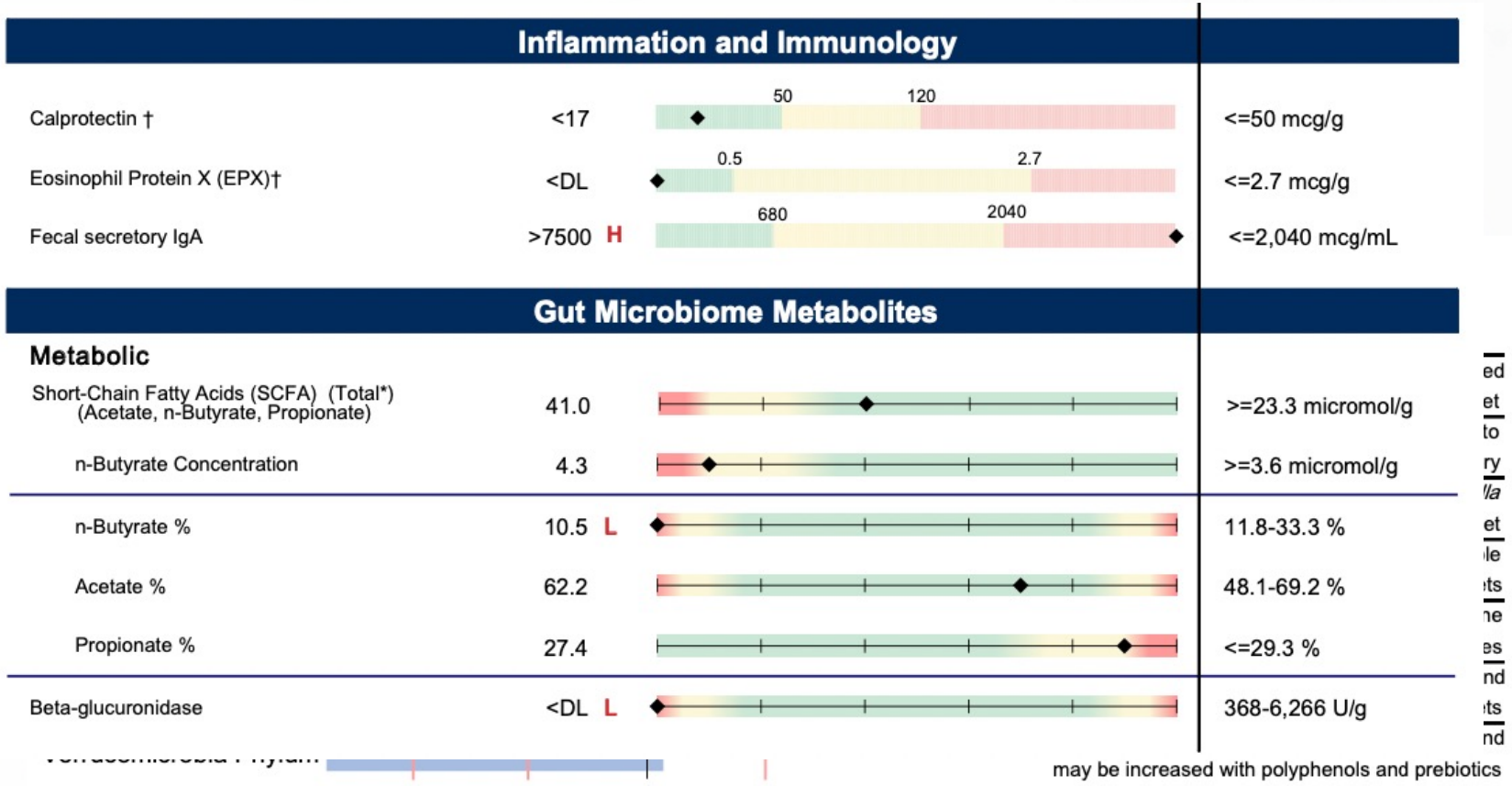

Inflammation and Immunology

Calprotectin †	<17	50 / 120	<=50 mcg/g
Eosinophil Protein X (EPX)†	<DL	0.5 / 2.7	<=2.7 mcg/g
Fecal secretory IgA	>7500 H	680 / 2040	<=2,040 mcg/mL

Gut Microbiome Metabolites

Metabolic

Short-Chain Fatty Acids (SCFA) (Total*) (Acetate, n-Butyrate, Propionate)	41.0		>=23.3 micromol/g
n-Butyrate Concentration	4.3		>=3.6 micromol/g
n-Butyrate %	10.5 L		11.8-33.3 %
Acetate %	62.2		48.1-69.2 %
Propionate %	27.4		<=29.3 %
Beta-glucuronidase	<DL L		368-6,266 U/g

may be increased with polyphenols and prebiotics

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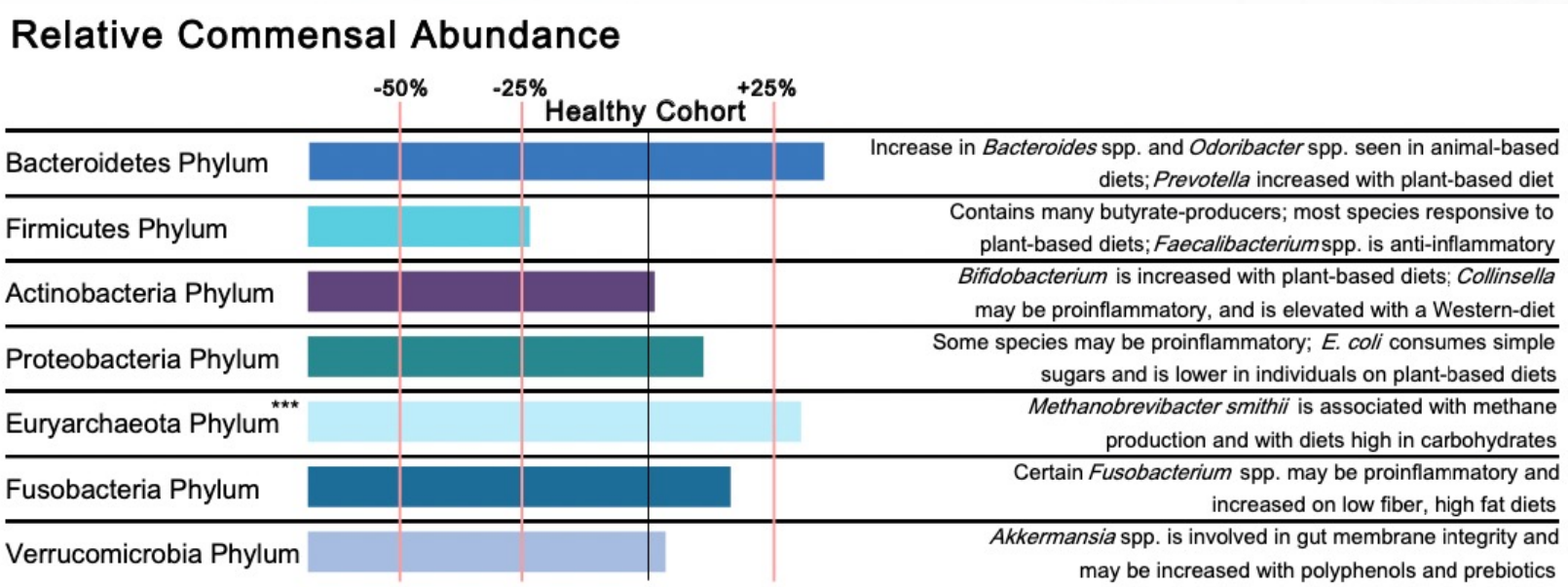

Methodology: EIA

	Result	Expected Value
HpSA - *H. pylori*	Negative	Negative

HpSA (*Helicobacter pylori* stool antigen)
Helicobacter pylori is a bacterium that causes peptic ulcer disease and plays a role in the development of gastric cancer. Direct stool testing of the antigen (HpSA) is highly accurate and is appropriate for diagnosis and follow-up of infection.

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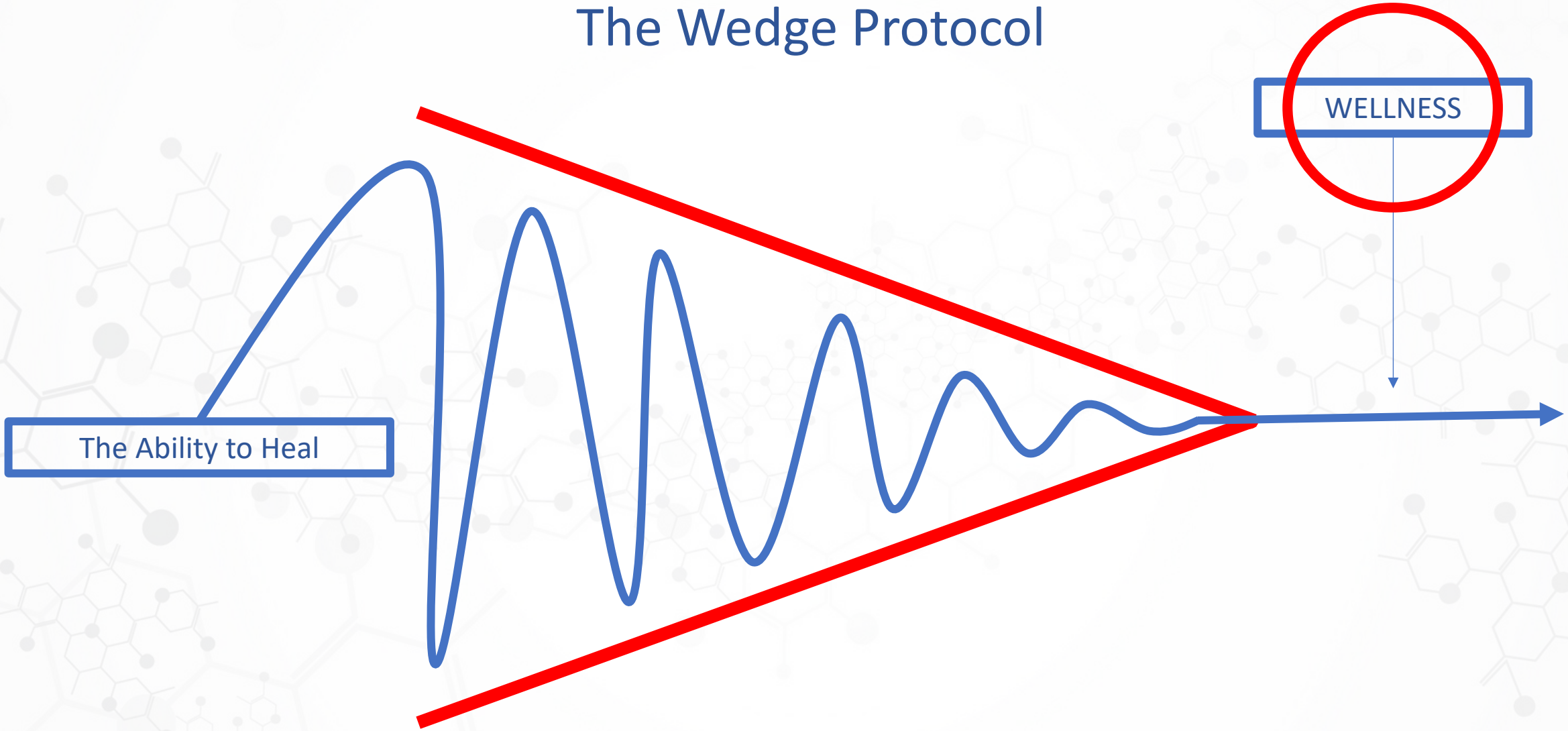
Toxins Summary

		Current	Previous Result
Environmental Toxins	Organochlorine pesticides		
	Organophosphate pesticides	Diethylthiophosphate (DETP) ●	
	Other pesticides/herbcides	Glyphosate ●	
	Phthalate Metabolites	mono-2-ethylhexyl phthalate (MEHP) ●	
	Parabens		
	Acrylic Metabolites		
	Other Metabolites	Tiglylglycine (TG) ●	
	Alkylphenol	Bisphenol A (BPA) ●	
	Volatile Organic Compounds (VOCs)		
	Urine Creatinine		
Mycotoxins V2	Aflatoxin	Aflatoxin M1 ●, Aflatoxin B1 ●	
	Other	Mycophenolic Acid ●	
	Trichothecenes		
	Urinary Creatinine		
Heavy Metals	Heavy Metals (Creatinine)		

The Wedge Protocol



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~~NP Thyroid~~
Gabapentin

SSX: less neuropathy, GI improving, energy improved, -10 lbs.

Test	Current Result and Flag	Previous Result and Date	Units	Reference Interval
Glucose [01]	82		mg/dL	65-99
BUN [01]	16		mg/dL	8-27
Creatinine [01]	0.93		mg/dL	0.57-1.00
eGFR	63		mL/min/1.73	>59
BUN/Creatinine Ratio	17			12-28
Sodium [01]	138		mmol/L	134-144
Potassium [01]	4.6		mmol/L	3.5-5.2

Test	Current Result and Flag	Previous Result and Date	Units	Reference Interval
▲ **Hemoglobin A1c** [01]	**5.8 High**		%	4.8-5.6
Please Note: [01]	Prediabetes: 5.7 - 6.4 Diabetes: >6.4 Glycemic control for adults with diabetes: <7.0			
Chloride [01]	102		mmol/L	96-106
Carbon Dioxide, Total [01]	22		mmol/L	20-29
Calcium [01]	9.7		mg/dL	8.7-10.3
Protein, Total [01]	6.9		g/dL	6.0-8.5
Albumin [01]	4.0		g/dL	3.7-4.7
Globulin, Total	2.9		g/dL	1.5-4.5
A/G Ratio	1.4			1.2-2.2
Bilirubin, Total [01]	0.3		mg/dL	0.0-1.2
Alkaline Phosphatase [01]	58		IU/L	44-121
AST (SGOT) [01]	26		IU/L	0-40
ALT (SGPT) [01]	16		IU/L	0-32

*3-month check-in

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SSX: less neuropathy, GI improving, energy improved, -10 lbs.

Test	Current Result and Flag	Previous Result and Date	Units	Reference Interval
Iron Bind.Cap.(TIBC)	328		ug/dL	250-450
UIBC [01]	275		ug/dL	118-369
Iron [01]	53		ug/dL	27-139
Iron Saturation	16		%	15-55

Insulin

Test	Current Result and Flag	Previous Result and Date	Units	Reference Interval
Insulin [01]	8.9		uIU/mL	2.6-24.9

Ferritin

Test	Current Result and Flag	Previous Result and Date	Units	Reference Interval
Ferritin [01]	29		ng/mL	15-150

*3-month check-in

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Meds:
~~Pepcid~~
~~Nexium~~
Prilosec (OTC)
Ozempic
~~NP Thyroid~~
~~Gabapentin~~

SSX: less neuropathy, GI improving, energy improved, -25 lbs., size 22 down to size 14.

		Fasting reference interval	
UREA NITROGEN (BUN)	16	7-25 mg/dL	
CREATININE	0.82	0.60-1.00 mg/dL	
EGFR	74	> OR = 60 mL/min/1.73m2	
The eGFR is based on the CKD-EPI 2021 equation. To calculate the new eGFR from a previous Creatinine or Cystatin C result, go to https://www.kidney.org/professionals/kdoqi/gfr%5Fcalculator			
BUN/CREATININE RATIO	NOT APPLICABLE	6-22 (calc)	
SODIUM	139	135-146 mmol/L	
POTASSIUM	4.4	3.5-5.3 mmol/L	
CHLORIDE	106	98-110 mmol/L	
CARBON DIOXIDE	26	20-32 mmol/L	
CALCIUM	9.5	8.6-10.4 mg/dL	
PROTEIN, TOTAL	6.7	6.1-8.1 g/dL	
ALBUMIN	3.8	3.6-5.1 g/dL	
GLOBULIN	2.9	1.9-3.7 g/dL (calc)	
ALBUMIN/GLOBULIN RATIO	1.3	1.0-2.5 (calc)	
BILIRUBIN, TOTAL	0.4	0.2-1.2 mg/dL	
ALKALINE PHOSPHATASE	58	37-153 U/L	
AST	21	10-35 U/L	
ALT	12	6-29 U/L	
HEMOGLOBIN A1c	5.4	<5.7 % of total Hgb	IG
For the purpose of screening for the presence of diabetes:			
<5.7% Consistent with the absence of diabetes			
5.7-6.4% Consistent with increased risk for diabetes (prediabetes)			
> or =6.5% Consistent with diabetes			

Test Name	In Range	Out Of Range	Reference Range	Lab
IRON AND TOTAL IRON BINDING CAPACITY				IG
IRON, TOTAL	59		45-160 mcg/dL	
IRON BINDING CAPACITY	327		250-450 mcg/dL (calc)	
% SATURATION	18		16-45 % (calc)	
FERRITIN	30		16-288 ng/mL	IG

*6-month check-in

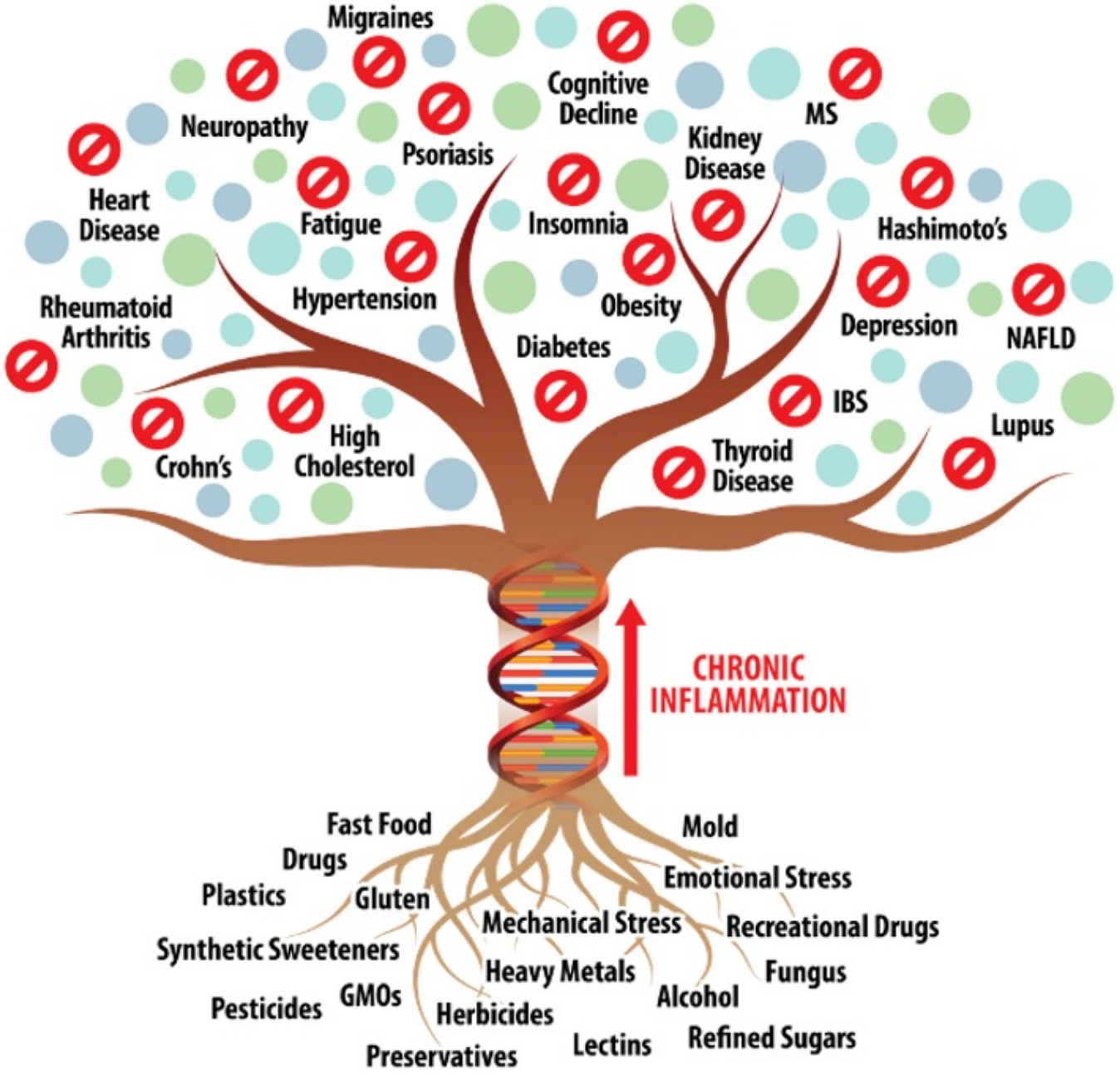
The 4 (typical) Scenarios

1. Normal HCL/enzymatic production + kindafood = slowed digestion, inorganic acid production/rot. Trend toward constipation.

2. Normal HCL/enzymatic production + excessively acidic food = increasingly acidic environment, increased pressure, chemically erosive, faster transit. Trend toward diarrhea.

3. Increased HCL production in relation to high fatty acid intake, specifically garbage fats (trans fats) = trend toward diarrhea, malabsorption.

4. PPI induced hypochlorhydria + kindafood = slowed digestion, inorganic acid production/rot, malabsorption issues, SIBO/IBS/IBD. Alternating constipation, diarrhea, large amount of gas production.

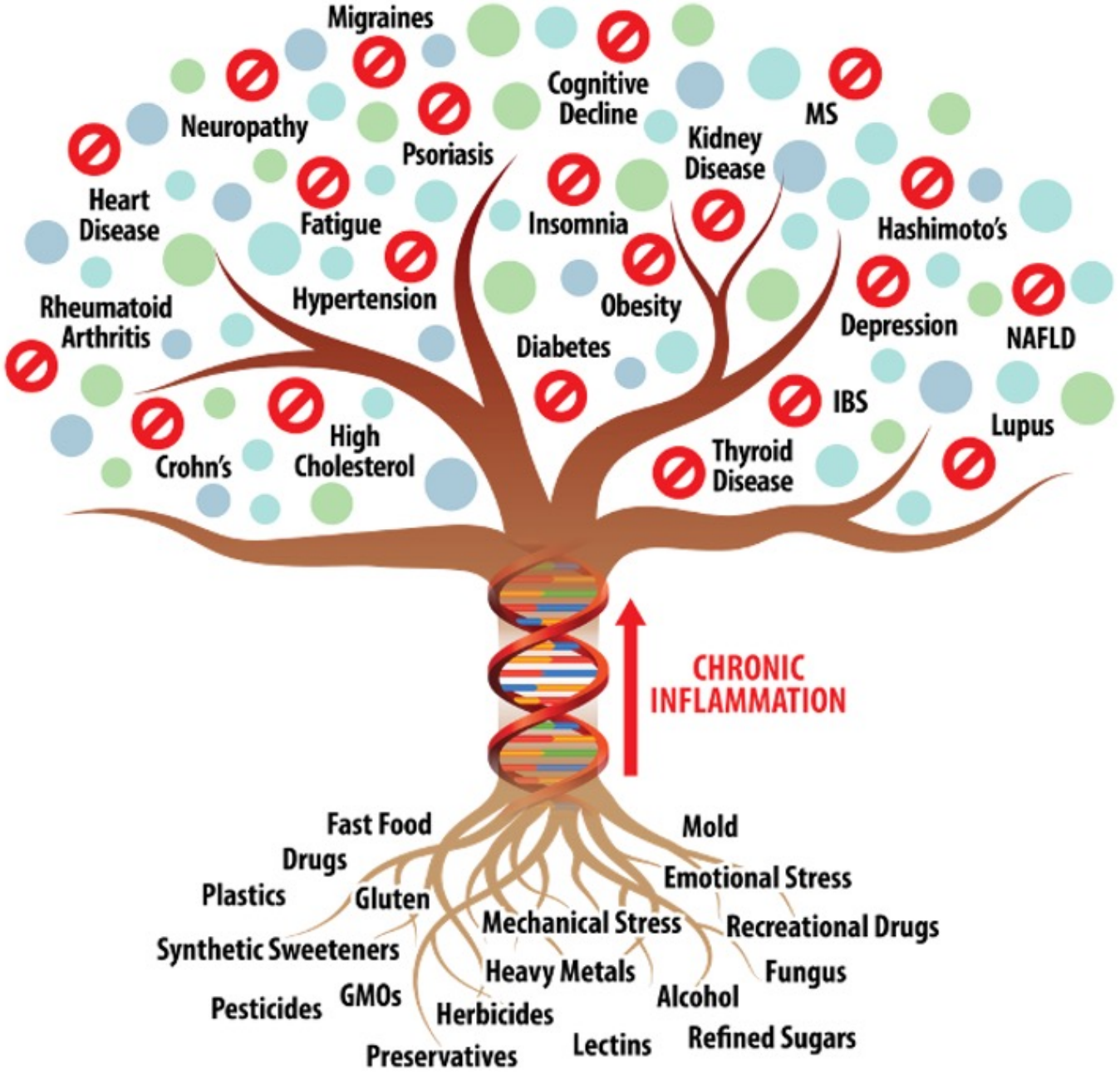

Migraines
Neuropathy
Psoriasis
Cognitive Decline
MS
Kidney Disease
Heart Disease
Fatigue
Insomnia
Hashimoto's
Hypertension
Obesity
Depression
NAFLD
Rheumatoid Arthritis
Diabetes
IBS
Lupus
Crohn's
High Cholesterol
Thyroid Disease
CHRONIC INFLAMMATION
Fast Food
Mold
Drugs
Emotional Stress
Plastics
Gluten
Mechanical Stress
Recreational Drugs
Synthetic Sweeteners
Heavy Metals
Fungus
Pesticides
GMOs
Herbicides
Alcohol
Preservatives
Lectins
Refined Sugars

SUPPLEMENT FACTS

Serving size: 2 Capsules Servings per container: 60	Amount Per Serving	% Daily Value
Protease (pH 3.0-9.0)	120,000 HUT	**
Papain (from papaya)	50,000 TU	**
Bromelain (from pineapple)	120 GDU	**
Amylase	4,000 SKB	**
Amyloglucosidase (glucoamylase)	30 AG	**
Cellulase	4,000 CU	**
Beta-Glucanase	50 BGU	**
Alpha-Galactosidase	400 GAL	**
Invertase	2,000 Sumner	**
Peptidase (29 DPPIV)	2,400 HUT	**
Pectinase	70 Endo PG	**
Lactase	700 ALU	**
Phytase	20 U	**
Acid Stable Protease (pH 2.0-3.5)	400 HUT	**
Lipase	1,200 FIP	**
Xylanase	300 XU	**
Hemicellulase	200 HCU	**

** Daily Value Not Established

Other Ingredients: HPMC (capsule), microcrystalline cellulose, stearic acid, magnesium stearate, and silica.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