

TIGER Protocol for Autoimmune Disease

Blending Ayurveda and Allopathy



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Part I: Understand the TIGER protocol

Toxins: The Missing Puzzle Piece

Infections: Disrupting Immune Balance

Gut: The Foundation of (Immune) Health

Eating: Food Sensitivities & The Phase One Diet

Rest: Understanding Mental & Emotional Rest + Your Nervous System





This is Maria*

40-year-old Hispanic woman dealing with:

- Psoriasis
- High blood pressure
- Obesity
- Insulin resistance
- Fatty liver

***Disclaimer:** This is a fictional name/character and the information provided is only an example of typical patient case.



This is Maria*

- Diagnosed with gestational diabetes after her first pregnancy
- Developed metabolic syndrome
(characterized by high blood pressure, insulin resistance, and obesity)
- Showed signs of a fatty liver
(identified by abnormally high liver enzyme blood tests, which was likely related to the insulin resistance)
- Now, at 40 years old, even daily use of topical steroids did not solve her psoriasis.

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This is Maria*

Had no GI symptoms, but her microbiome was highly disrupted with her tests showing:

- Significant intestinal permeability
- High levels of the harmful bacteria pseudomonas
- Low levels of bifidobacteria and lactobacillus
- Absence of the beneficial bacteria Akkermansia
- Low levels of butyrate

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1 in 5

Americans suffers
from some form of
autoimmune condition

300%

increase in some
autoimmune diseases
over the past 10 years

Silent Epidemic

Hundreds of millions of people worldwide
are struggling with autoimmunity.

The prevalence and cost of autoimmune disease
are **greater than heart disease, cancer,
and diabetes—combined.**

Toxins – The Missing Puzzle Piece



Toxins – The Missing Puzzle Piece

- Globally, over **350,000** chemicals are registered for use
- EPA's Toxic Substances Control Act lists **86,000** compounds, of which **42,000** are in active use
- Most of these have not been tested for safety; chemicals are considered *“innocent until proven guilty”* in the U.S.
- Chronic, low-level exposure to multiple toxins is the norm

Water



45 states
had perchlorate
contamination in the
water system

(Government Accountability Office report)

>50 million

Americans get their drinking water
from groundwater potentially
contaminated by pesticides and
other agricultural chemicals

(U.S. Department of Agriculture)



6 million
people exposed to
markedly elevated PFAs in
the drinking water supplies

(Harvard study)

>40 million

Americans' drinking water contained
pharmaceuticals including
antibiotics, hormonal drugs, and
psychiatric medicines

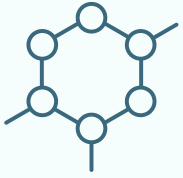
(Associated Press investigation)



Rob Smith, "Study Finds Drugs Seeping into Drinking Water," interview by Joan Rose,
Talk of the Nation, NPR, March 10, 2008

“Most of the risk of autoimmunity comes from environmental exposures rather than from genetic susceptibilities”

Dr. Douglas Kerr, MD, neurologist and autoimmune disease researcher at Johns Hopkins University



OBESOGENS

DES
BPA
TBT
Phthalates
DDT
PFOA
PCBs



DIABETOGENS

BPA
POPs
TBT
PFOS



CARDIOVASCULAR DISRUPTORS

TCDD
DDT
BPA



OBESITY

TYPE 2 DIABETES

HEART DISEASE





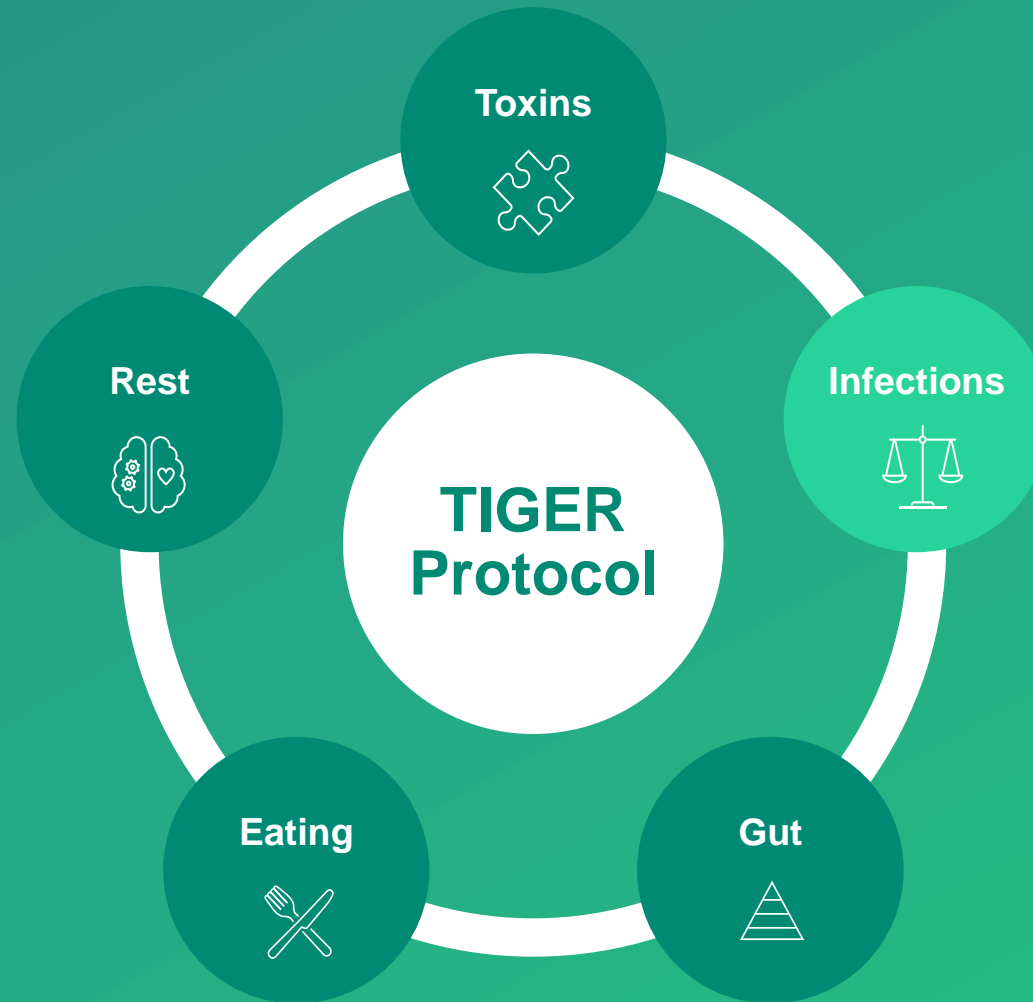
The Power of Healing Toxins

Clearance of heavy metals can often help with autoimmune symptoms:

- In one published case, a woman with rheumatoid arthritis saw a complete resolution of symptoms after a year of chelation therapy removed high levels of cadmium from her system.

Fabrizia Bamonti et al., "Metal Chelation Therapy in Rheumatoid Arthritis: A Case Report. Successful Management of Rheumatoid Arthritis by Metal Chelation Therapy," *BioMetals* 24, no. 6 (December 2011): 1093-1098

Infections – Disrupting Immune Balance



Infections – Disrupting Immune Balance



- Bacterial imbalance is most common and well-studied
- Other infections: mycobacteria, viruses, and fungi
- Parasites

Gut – The Foundation of (Immune) Health

- The microbiome contains **40** trillion microorganisms from >1000 species (50% bacterial)
- 23,000 vs > 1 million genes
- **60%** of our immune system is located in our gut
- Increased intestinal permeability (leaky gut) is a key factor

Classic gut findings in autoimmune disease

- Reduced microbiome diversity
- Dysbiosis
- Increased intestinal permeability – leaky gut syndrome

Romain Gerard et al., “An Immunological Link Between Candida Albicans Colonization and Crohn’s Disease,”
Critical Reviews in Microbiology 41, no. 2 (June 2015): 135-139

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Symptoms of leaky gut syndrome

- Digestive symptoms – bloating, gas, indigestion, nausea
- Food sensitivities
- Fatigue
- Aches and pains, muscle or joint pain
- Headaches
- Skin issues like eczema, acne, or other rashes
- Elimination problems – constipation, loose stools, diarrhea
- Weight gain

Symptoms of Ama in Ayurveda

- “The signs and symptoms of ama are clogging of channels, sense of heaviness, low energy, restlessness, lethargy, indigestion, congestion/expectoration, accumulation of waste, loss of taste and sexual debility.”

– Ashtanga Hridaya Su. 30.23

Ayurvedic concepts – Ama and Agni

- All disease begins in the gut
- Ama is the root cause of all disease
- Problems with Agni, such as weakening, vitiation or imbalance, predispose to creation of Ama
- Sama Agni, optimal metabolism and balanced digestion, can degenerate into one of 3 imbalanced forms of Agni.

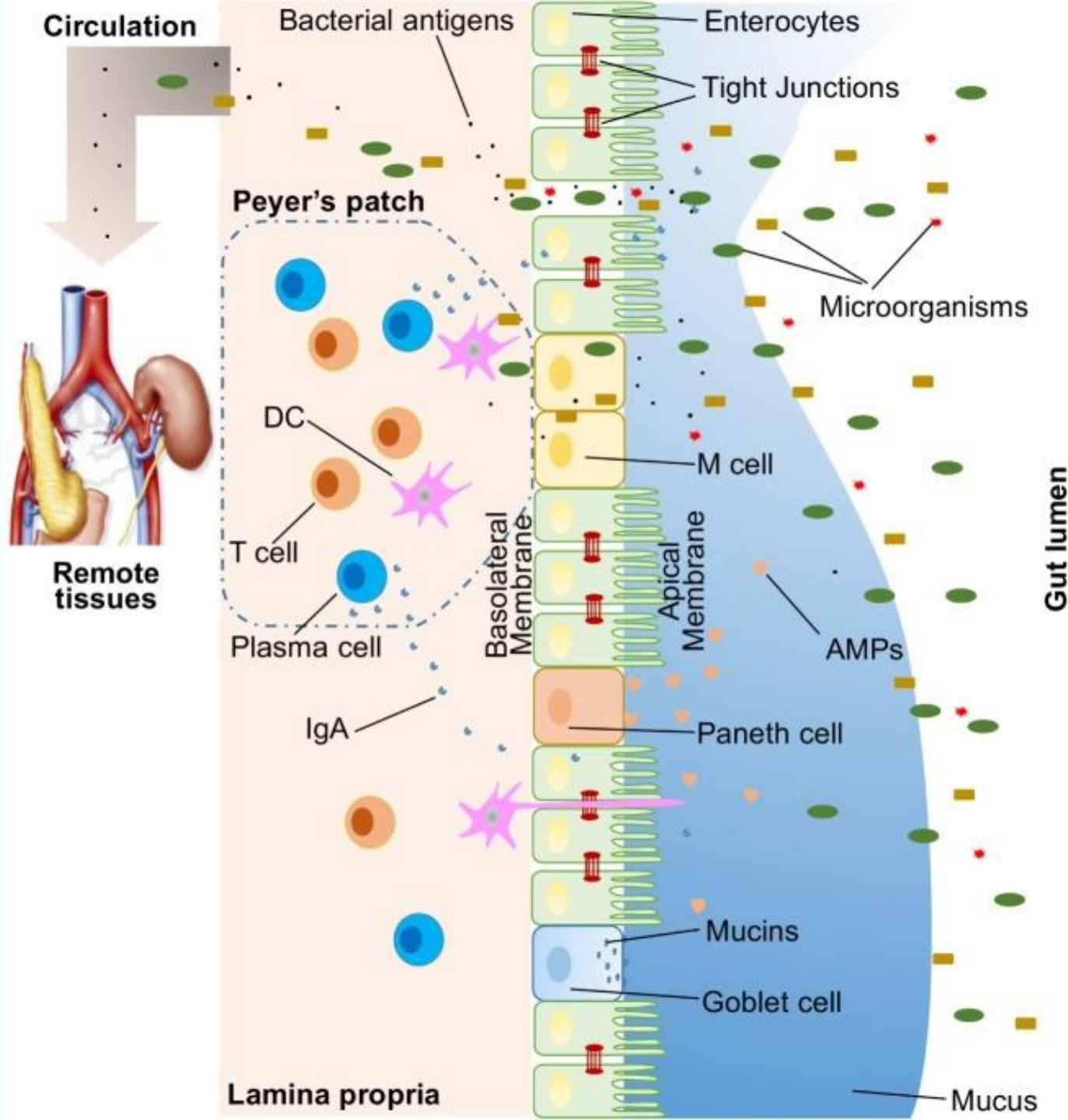


Ayurvedic Samprapti (pathogenesis)

- Ama is formed in the gastrointestinal tract and then enters the general circulation
- Systemic ama can then enter and penetrate into the dhatus, depending on the khavaigunya (defects or weak areas in the tissues which are likely to be first affected)
 - E.g. rheumatoid arthritis, where the khavaigunya is in the joints

Amavata (rheumatoid arthritis)

- Agni is vitiated, and develops irregular metabolism and variable digestion
- Ama is produced
- **Ama leaves the G.I. tract and travels to the dhatus, where the khavaigunya is in the joints**
- Ama penetrates the khavaigunya (defective space) and covers the cells that line the joints
- Immune system fails to recognize these ama-covered joint lining cells and attacks them



“perturbation of gut microbiota can lead to **increased intestinal permeability** and translocation of bacterial components and products.

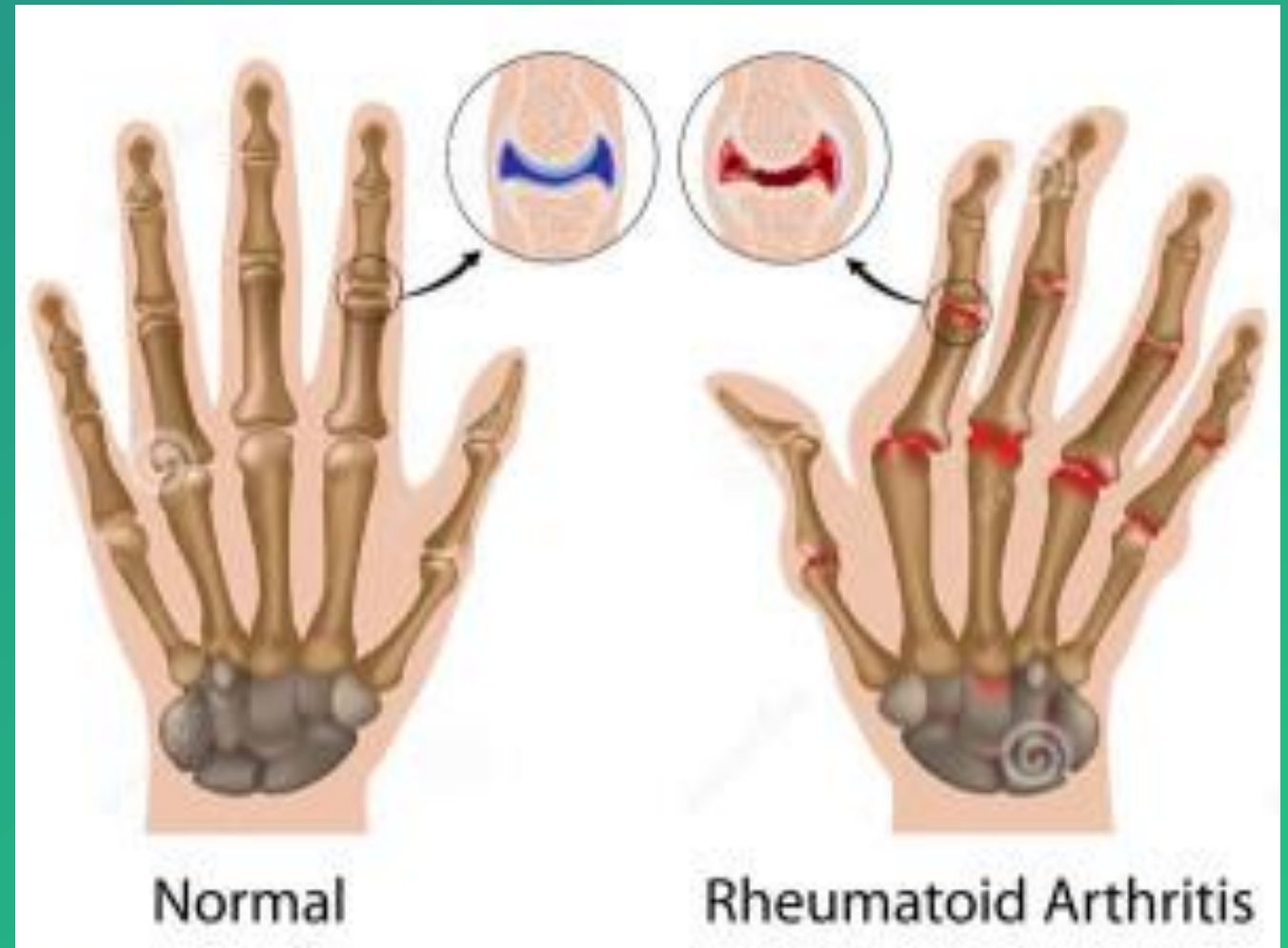
Such microbial translocation can subsequently trigger an abnormal immune response, causing inflammation and/or tissue damage in extraintestinal organs.”

Mu, Qinghui et al. “Leaky Gut As a Danger Signal for Autoimmune Diseases.” *Frontiers in immunology* vol. 8 598. 23 May 2017

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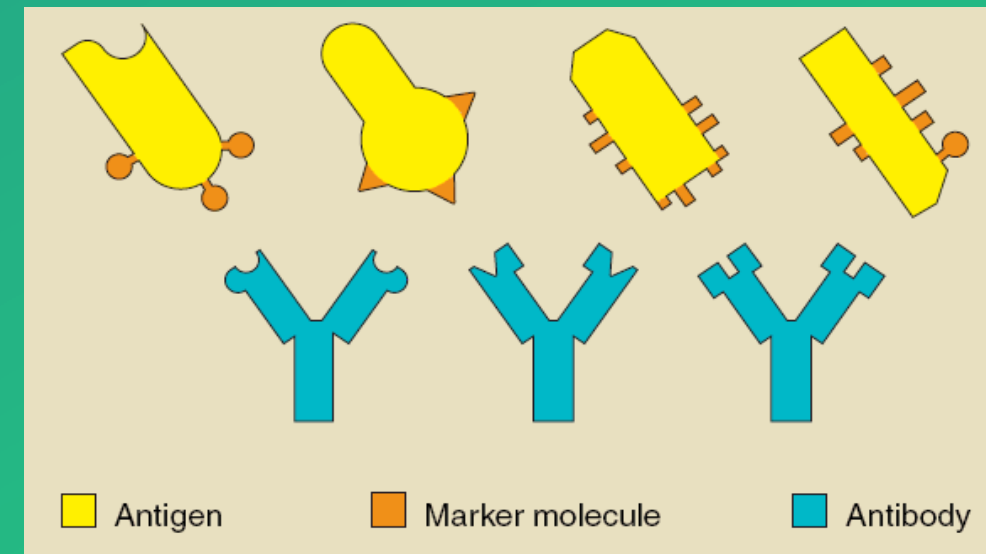
Amavata (rheumatoid arthritis)

- Initially, inflammation causes swelling and painful joints
- Continued inflammation can eventually lead to joint erosions and permanent deformity

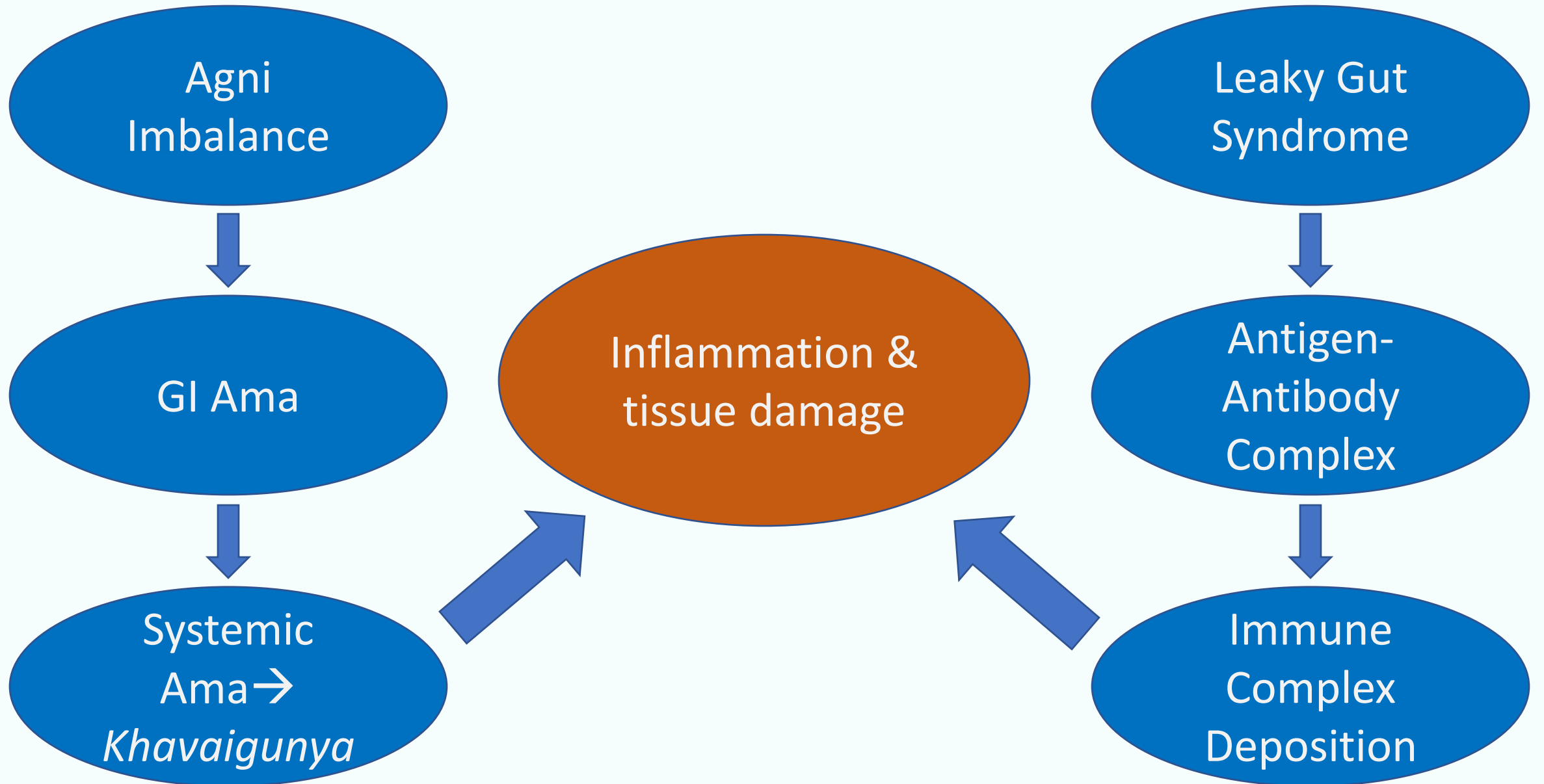


Antigen-Antibody Complex aka Immune Complex

- Antigen – protein markers on cell surface that immune system recognizes, on either human or microbial cells like bacteria
- Antibodies, or immunoglobulins – proteins produced by the immune system in response to antigens, identifying and binding to them.
- Part of normal immune response, but also a factor in certain autoimmune diseases



Ayurveda correlation with Allopathy



Part II: Implement the TIGER Protocol

Toxins: Detoxify and Improve Liver Function

Infections: Identify and Eliminate Infections

Gut: Healing Your Gut (and Oral) Microbiome

Eating: Prebiotic Foods and the Phase Two Diet

Rest: Tools for Optimizing Rest





Remember Maria?*

As we discussed, Maria was struggling with obesity, fatty liver, and psoriasis that was not responding to topical steroid creams.

Started gut-healing protocol with prebiotic foods and supplements:

- Neem capsules
- red quinoa
- red rice
- pomegranate
- cranberry

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Remember Maria?*

Repeat testing 2 months later:

- Pseudomonas overgrowth had resolved
- Akkermansia levels above average
- Keystone bacteria improved
(including lactobacillus and bifidobacteria)
- Short-chain fatty acids and butyrate increased significantly
- Intestinal permeability was normalizing

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Remember Maria?*

Conclusion of case:

- Previous ineffective weight loss strategies began to work
- Lost weight and returned to normal BMI
- Blood sugar and blood pressure improved
- Abnormal liver enzymes returned to normal levels
- Psoriasis finally respond to the topical steroids and condition improved

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Toxins – Detoxify and Improve Liver Function



Toxins – Reduce Toxin Exposure

- Opt for organic food when possible
- Filter your drinking water
- Open windows at home for increased air exchange
- Remove shoes indoors (reduces lead, pesticides, harmful bacteria)
- Regularly dust and vacuum
- Decline receipts or choose electronic receipts

Jonathan Wilson et al., “An Investigation into Porch Dust Lead Levels,” Environmental Research 137 (February 2015): 129-135, <https://www.sciencedirect.com/science/article/abs/pii/S0013935114004289>.

The Power of Reducing Toxin Exposure

Studies show that:

- Consuming a mostly organic diet can **lower** pesticide levels in the urine **by 80% in 5 days**
- Avoiding personal care products with phthalates, parabens, triclosan can **lower levels by 45% in 3 days**
- Handwashing and removing dust in the home can **lower** flame retardants in urine **by 43% in 1 week**



Hyland C. Organic diet intervention significantly reduces urinary pesticide levels in U.S. children and adults. Environ Res. 2019 Apr;171:568-575

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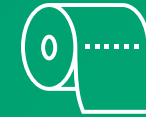
Toxins – Detoxify and Improve Liver Function

- “Pre-tox” is essential:

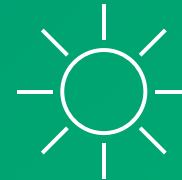
- Hydration



- Daily elimination



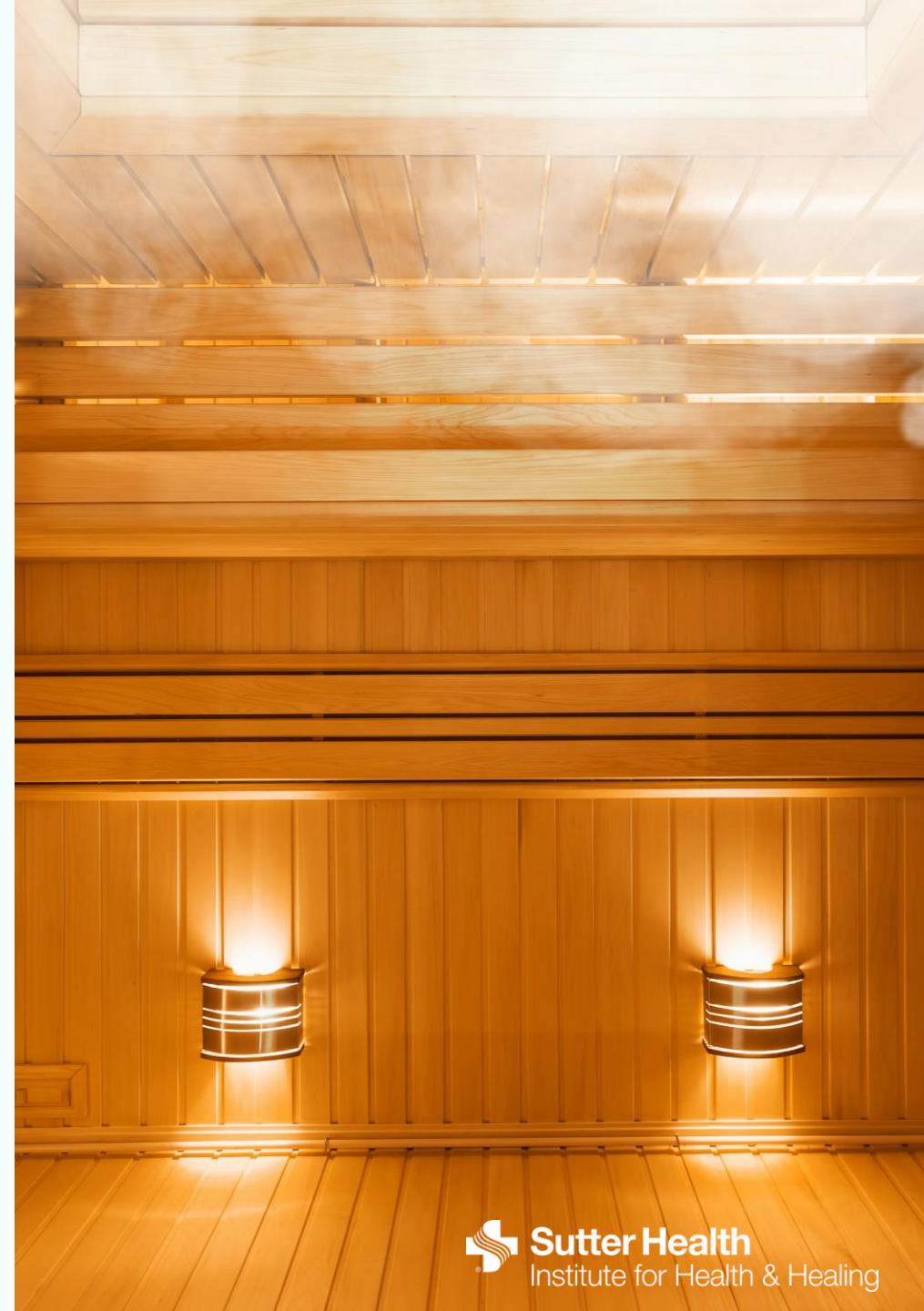
- Sweating



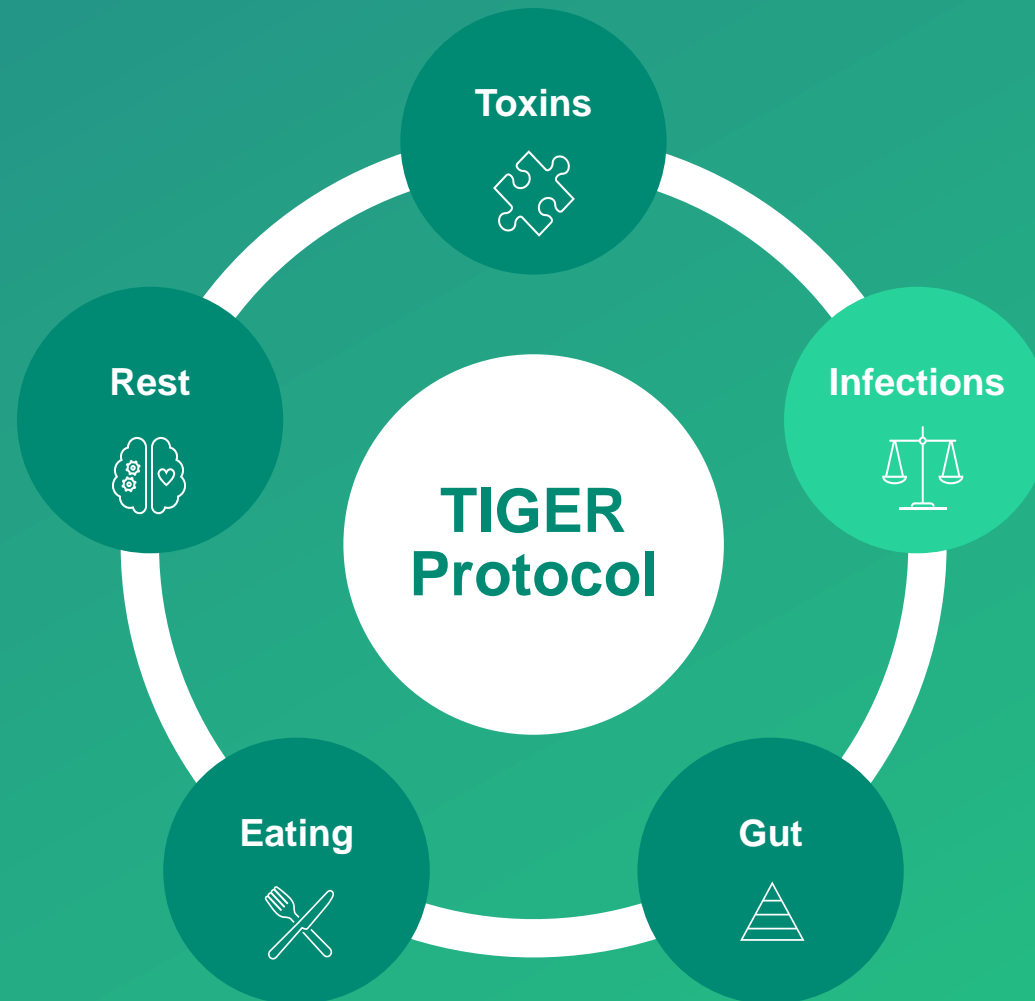
Research on Saunas

- Sweating excretes lead, mercury, arsenic, cadmium, pesticides, flame retardants (PBDEs), BPA, phthalates and PCBs
- A study compared sweating from a sauna to sweating induced by exercise and found that sauna use led to better excretion in the sweat for several toxins.

Margaret E. Sears, "Arsenic, Cadmium, Lead, and Mercury in Sweat: A Systematic Review," Journal of Environmental and Public Health 2012



Infections – Identify and Eliminate Infections



Infections – Identify and Eliminate Infections

- Make your body environment i.e. the “terrain” inhospitable to pathogens
- Ensure acidic intestinal pH which limits growth of dysbiotic bacteria/yeast
- One of the biggest contributors to healthy pH are short-chain fatty acids (SCFAs), which are produced by our healthy bacteria
- Fermented foods contain organic acids such as lactic acid and acetic acid, that contribute to maintaining healthy GI acidity

Antimicrobial Spices and Herbs

- **Garlic** – best to crush and then wait 10 minutes for the active ingredients to be synthesized before using
- **Black cumin** – has been shown to be beneficial in Hashimoto's, broad-spectrum antimicrobial and anti-inflammatory
- **Ajwain** – stimulates digestive fire according to Ayurveda



Curcumin

- While turmeric is best known for its anti-inflammatory effects, it is a surprisingly potent antimicrobial.
- Research shows that it has significant antibacterial, antiviral, and antifungal effects.
- A study involving patients with rheumatoid arthritis (RA) found that curcumin was as effective as the anti-inflammatory diclofenac at reducing pain and disease activity in RA.

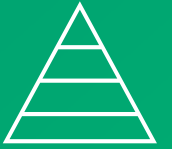


Binu Chandran and Ajay Goel, "A Randomized, Pilot Study to Assess the Efficacy and Safety of Curcumin in Patients with Active Rheumatoid Arthritis," *Phytotherapy Research* 26, no. 11 (November 2012): 1719-1725

Gut – Healing Your Gut (and Oral) Microbiome

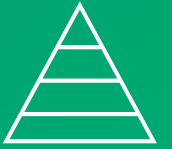


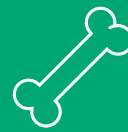

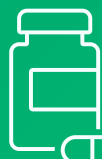
Gut – Healing Your Gut (and Oral) Microbiome



- Recall, we need to address dysbiosis (in the gut and the oral microbiome), leaky gut, and reduced diversity
 - **Infections** – address dysbiosis, reduce pathogen overgrowth
 - **Gut** – heal increased intestinal permeability
 - **Eating right** – my phase 2 diet high in prebiotic foods boosts **DIVERSITY**

Gut – Healing Your Gut (and Oral) Microbiome



- Acidify intestinal pH in order to reverse dysbiosis and boost beneficial bacteria
 - Bone broth
 - Fermented foods
 - Prebiotic foods and fibers
 - Supplements – glutamine or colostrum

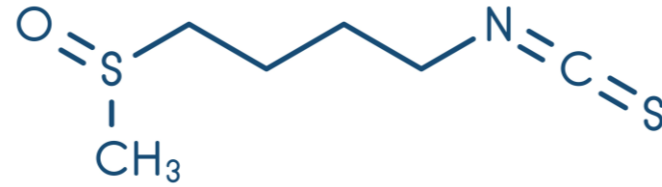
Eating – Prebiotic Foods and the Phase Two Diet



Eating – Prebiotic Foods and the Phase Two Diet

- Nutrient-dense diet including prebiotic foods, fermented foods, and increased plant diversity
- Our ancestors evolved eating up to 100 different plant foods every single week.
- Each plant food contains different types of micronutrients that each feed different types of bacteria in your microbiome.

Sulforaphane



- >2,000 research studies documenting benefits:
 - Reduces inflammation by activating the Nrf-2 pathway
 - Boosts the immune system by increasing activity of natural killer cells
 - Enhances brain function
 - Minimizes oxidative stress
 - Encourages antimicrobial activity

Greer McGuinness, "Sulforaphane Treatment for Autism Spectrum Disorder: A Systematic Review," EXCLI Journal 19 (June 26, 2020): 892–903

Broccoli Sprouts and Cruciferous Vegetables

- Broccoli sprouts are the **richest food source of sulforaphane**.
- A trick to **increase sulforaphane** in cooked cruciferous vegetables is to **add a source of myrosinase enzyme**, such as **mustard seed powder**, to them.
- When 1g of brown mustard powder was added to cooked broccoli, the bioavailability of sulforaphane was **increased by more than 400%**.



Olukayode Okunade et al., "Supplementation of the Diet by Exogenous Myrosinase via Mustard Seeds," Molecular Nutrition & Food Research 62, no. 18 (September 2018): e1700980

Eating – the Phase Two Diet

- Try to eat at least **30-40** different types of plant foods every week, this includes:
 - fruits
 - vegetables
 - grains
 - legumes
 - nuts and seeds
 - spices



| Food | Polyphenol content, mg per 100 grams (3.5oz) |
|------------------|---|
| Black elderberry | 1359 mg |
| Blueberry | 836 mg |
| Black currant | 758 mg |
| Plum | 377 mg |
| Cherry | 274 mg |
| Blackberry | 260 mg |
| Strawberry | 235 mg |
| Raspberry | 215 mg |
| Black grape | 169 mg |
| Apple | 136 mg |
| Peach | 59 mg |
| Apricot | 34 mg |

Best-tolerated prebiotic foods contain polyphenols.

POLYPHENOL CONTENT IN FRUITS



| Food | Polyphenol content, mg per 100 grams (3.5oz) |
|-----------------|---|
| Ground flaxseed | 1528 mg |
| Chestnut | 1215 mg |
| Hazelnut | 495 mg |
| Pecan | 493 mg |
| Soybean | 246 mg |
| Almond | 187 mg |
| Black bean | 59 mg |
| White bean | 51 mg |
| Walnut | 28 mg |



Best-tolerated prebiotic foods contain polyphenols.

POLYPHENOL CONTENT IN BEANS, NUTS AND SEEDS



Prebiotic foods you may not be aware of...

- Inulin: leeks and jicama
- Galacto-oligosaccharides: black beans and Jerusalem artichoke
- Resistant starch (three different types):
 - millet
 - plantain
 - cooked and chilled potatoes
- Arabinogalactans: radish and coconut



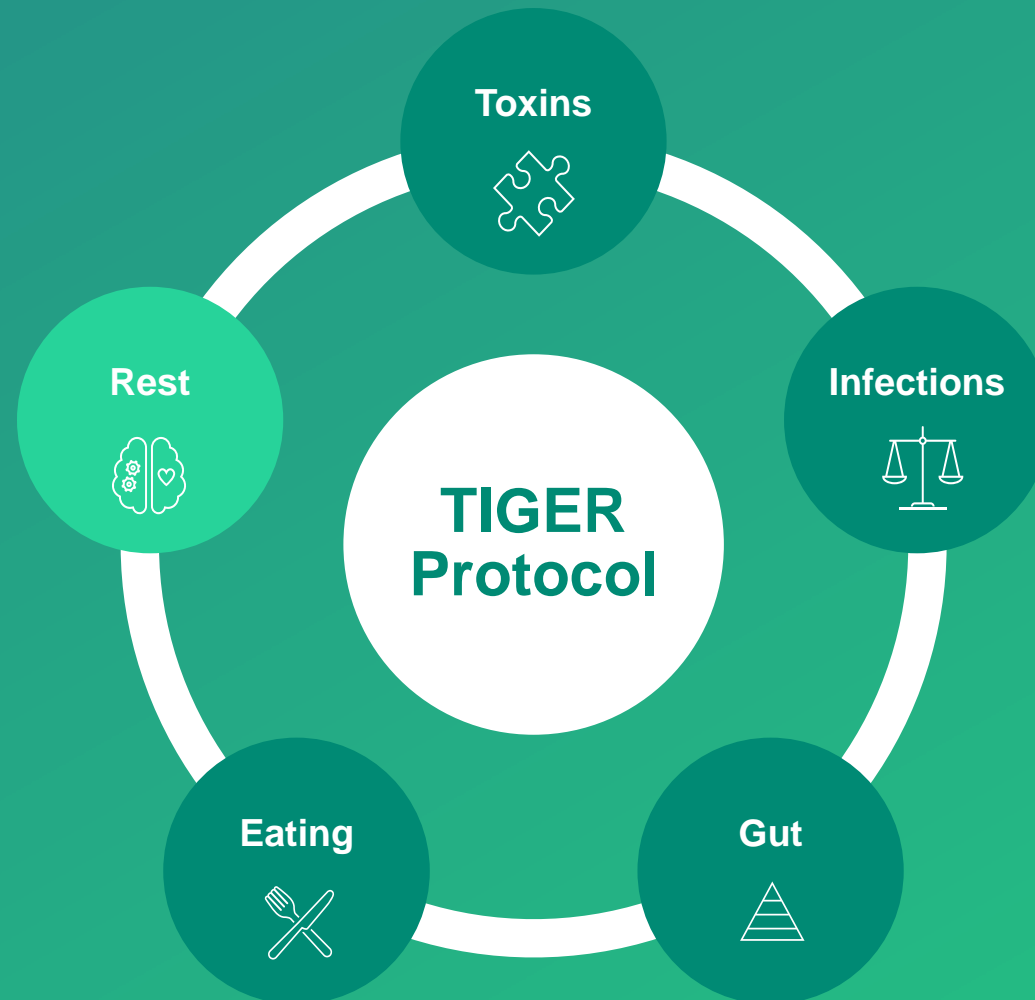
Fermented foods

- Can boost microbiome diversity
- Study showed that **six** weeks of fermented foods
 - significantly reduced inflammation and markers of immune system dysregulation
 - while enhancing microbiome diversity



Hannah C. Wastyk et al., "Gut-microbiota-targeted Diets Modulate Human Immune Status," Cell 184, no. 16 (July 12, 2021): 4137-4153, <https://doi.org/10.1016/j.cell>

Rest – Tools for Optimizing Rest



Rest – Tools for Optimizing Rest



- Psychotherapy
- Counseling
- Biofeedback
- Guided imagery
- MBSR / Mindfulness
- Meditation
- Deep breathing
- Hypnosis

Meditation changes brain structure

- Research on participants undergoing an 8-week MBSR program found increased gray matter in the hippocampus and the cingulate cortex
- Another study showed expansion of white matter brain regions that govern emotional reactivity
- Meditation increases the size of the prefrontal cortex, the area involved in cognition and decision-making

Adrienne A., "Dispositional Mindfulness Co-Varies with Smaller Amygdala and Caudate Volumes in Community Adults," PLoS One 8, no. 5 (May 22, 2013): e64574

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Review of Part II: Implement the TIGER Protocol

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Next steps...

Modulate the Immune System: Fasting and Other Tools

Rheumatoid Arthritis (RA)

- A review of four controlled studies concluded that fasting in patients with RA is likely to have a clinically significant benefit

Psoriasis

- A study of 108 people doing IF during Ramadan found that the skin significantly improved over that time

Modulate the Immune System: Fasting and Other Tools

Multiple Sclerosis (MS)

- A randomized trial in 60 patients with MS found that FMD was safe and associated with improvements in quality-of-life measures, showing that it has the potential to improve autoimmunity, as has been shown in animal studies with MS



What to do if you're not getting better...

Low dose naltrexone

Low-level laser light therapy

PEMF – pulsed electromagnetic field therapy

Evaluate for SIBO

Investigate hormones

Try traditional Chinese medicine or Ayurveda



Questions?

TIGER Protocol for Autoimmune Disease