HEAL YOUR GUT, HEAL YOUR MIND:
15 Gut-Healing Remedies
FOR OPTIMAL MENTAL HEALTH
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HEALING systems have long emphasized the importance of the connection between the mind and body. As long ago as over 2400 years ago, Hippocrates proclaimed that health is dependent on a balance of body, mind and environment.¹

Today we are finding that not only is this tenet still true, but it may hold the key to preventing infectious illness, healing chronic disease and increasing our longevity.

Even though we still have much to learn about the intricate world of intestinal microbiota and their influence on our health, treatment paradigms are being overturned as we realize the scope and depth of the relationship between the gut and the brain.

We tend to think of our guts, if we think of them at all, as nothing more than a tube for transforming food into poop.

We pay little attention to the wondrous functions of half a dozen organs and thirty feet of tissue performing countless constant actions to keep us feeling happy and healthy, that is, until something goes wrong.

When we suffer from poor digestive health, it’s impossible not to pay attention to our guts!

Between the pain, embarrassment and inconvenience of diarrhea, constipation, bloating, flatulence and cramping, and carefully avoiding foods that we once enjoyed, our guts take over our lives when we are not well.

The truth is, the gut exerts a strong influence on our wellbeing at all times.

From cardiac health to weight management, diabetes to
premature aging, cancer to autoimmune disorders, our experience of health or disease is largely determined by the state of our gut.

And our mental health is no exception!

Cutting edge research is finding that the gut communicates with the brain and has a powerful influence over both the physical condition of the brain and our cognitive function.

In order to understand the connection between our guts and our brains, we must understand the microbiome.

**THE MICROBIOME**

What do your DNA, your fingerprints and the bacteria residing in your digestive tract all have in common?

We all know that both the patterns on our fingers and the sequencing of our genes are unique aspects of our physiology that no one else shares. Our fingerprints and DNA are sufficiently individual for forensic labs and courts of law to rely on them to solve crimes and identify remains. Thanks to recent research, we now know that the same is true of our microbiomes. Although we all have millions of microbial species in our guts, the precise makeup of this intestinal community differs from one person to the next.

The explanation for this variation might not be interesting to a forensic investigator or a criminal prosecutor, but it has big implications for our health and how we behave, think and feel.
As we explore the relationship between our guts and our brains, we’ll be learning all about why each of us has a unique microbiome. We’ll find out what these differences mean for our overall health and, particularly, for our minds. We’ll even learn how we can influence our mental state by adjusting the composition of our microbiome.

So, what exactly is the microbiome?

There are billions upon billions of tiny organisms living inside of each and every one of us, creatures that make their homes inside our bodies and consume our food to meet their nutritional needs. These microscopic squatters have a tremendous influence on our day to day wellbeing and are, in fact, intricately connected to our long term health because they’ve evolved to manipulate our thoughts and behavior in order to ensure their own survival.

The good news is that, most of the time, this microscopic community is our symbiotic partner, assisting us in managing the millions of critical actions that must take place every day to maintain our homeostasis.

The microbiome consists of trillions of microscopic creatures of thousands of different species. The majority are bacteria, but there are also some fungi, parasites and viruses.²

When this community is composed of the right balance of microbials, they support healthy metabolism, immune function, digestion, hormone production and cognition. But when beneficial species exist in low numbers or are completely missing, opportunistic pathogens take over. In this case, the microbiome still has a powerful influence over many of our bodily systems, except now it has a detrimental effect on our health and wellbeing.
Maintaining a diverse population of microbial species along with appropriate proportions of specific species within that community is the key.

While relatively little is known about the other microbial creatures that live inside us, extensive research has been dedicated to our intestinal bacteria and the ways in which they impact our health.³

Although they mostly reside in a pocket of our large intestine known as the cecum, our microbiota have a major influence on the function of our entire digestive tract and, in fact, are responsible for major bodily functions like immune response, weight management and cardiac health.⁴

The microbiome also exerts a tremendous influence over our brains and behavior.⁵ Fascinating research has recently revealed direct correlations between the species at home in our guts and the personality traits that we exhibit. Specific links were established, for instance:

- An abundance of gammaproteobacteria were found in people who exhibit high neuroticism.

- High levels of proteobacteria were found in people who displayed low conscientiousness.

- High levels of lachnospiraceae and other butyrate-producing bacteria were found in people with high conscientiousness.⁶

We still have much to learn about the microbiome and its implications for our health, but the wait may not be long. Researchers and doctors alike are working hard to make sense of the microbial riddle.
Funding for such research shows how important the potentials in this field could be. In 2015 the US National Institute of Health awarded one million dollars to a research program intended to reveal the relationship between the microbiome and the brain. Meanwhile, ongoing breakthroughs are challenging our understanding of nutrition, immune response and the nervous system. We’re also having to reconsider everything we thought we knew about memory, cognition and mental health.

The microbiome communicates with the brain via three principal pathways: electrical stimulation of the vagus nerve, production of neurotransmitters and modulation of immune response.

"THE WANDERER"
The vagus nerve is known as the wandering nerve because it separates into numerous branches that meander through our abdomen, connecting to our hearts and all of our major organs.

The vagus nerve directly links our vital organs to our brains. It transmits information to the brain about the condition and needs of the organs and relays signals from the brain back to the body to maintain homeostasis.

We once thought the primary function of the vagus nerve was to carry motor commands from the brain to the organs, but scientists have discovered that a shocking 90% of the fibers in the vagus nerve are actually dedicated to relaying information from the gut to the brain! The vagus nerve relays intuited and emotional information, our “gut
feelings,” to the brain which protects us from potentially threatening situations. When we “sense” an imminent danger, the brain responds by stimulating the sympathetic nervous system which triggers a sequence of physiological changes to optimize our survival odds.

On the other hand, when the messages from the body to the brain indicate that we are safe, the brain instigates the parasympathetic response. Activating the parasympathetic nervous system initiates the “rest and digest” mode and gives our bodies a chance to focus on nutrient allocation, tissue repair and detoxification while there is no immediate threat to our wellbeing.

The vagus nerve is the main component of the parasympathetic nervous system. It is the longest nerve, running from the brainstem all the way to the colon. It acts on all of the organs of the digestive tract, as well as the heart and lungs, and regulates involuntary bodily processes like heart rate, breathing and peristalsis.

Scientists believe that the most important function of the vagus nerve is carrying information about the organs to the brain and have concluded that our digestive tract, which is our largest surface that interacts with the outer world, could be considered an especially important sensory organ.

The gut bacteria of our microbiome directly stimulate the vagus nerve, influencing our moods, memory and cognition.

**CHEMICAL MESSENGERS**

A healthy gut is key to mental health. The trillions of microbial organisms that make their home in our guts produce molecules that influence our brain, moods and behavior.

*Serotonin:* Known is the “feel good hormone,” serotonin acts as both a hormone and a neurotransmitter and governs feelings of wellbeing, contentment, satiety, anxiety and fear.
Alterations in serotonin levels are associated with moodiness, depression, anxiety and autism.\textsuperscript{17}

Pharmaceutical therapies for depression have traditionally focused on increasing the amount of serotonin in the body. We used to think that serotonin was produced in the brain, but recent research has found that 90\% of our serotonin is actually produced in our gut!\textsuperscript{18}

**Dopamine:** Dopamine is a neurotransmitter that is associated with feelings of euphoria, bliss, motivation and concentration. Our brains release dopamine when we experience pleasure. It also contributes to essential bodily functions including movement, sleep, learning, mood, memory and attention.

Half of the dopamine that we require to be well is produced in our guts!\textsuperscript{19} Low dopamine is associated with lack of focus, fatigue, mood swings, poor sleep, low energy and loss of sex drive. It also correlates to mental health conditions including anxiety, depression, schizophrenia and Parkinson's.\textsuperscript{20}

**GABA:** Gamma-Aminobutyric Acid, better known as GABA, is produced or consumed by multiple species of intestinal bacteria. GABA is the body's principal inhibitory neurotransmitter. That means that it slows brain activity, which increases relaxation, reduces stress, calms nerves, balances mood, soothes pain and improves quality of sleep.

GABA is “the breaks for the brain.” It helps our minds and bodies to relax and rest. GABA is great for our guts too. It promotes intestinal motility, reduces inflammation and enhances immune function.\textsuperscript{21} Low levels of GABA are linked to depression and mood disorders.\textsuperscript{22}

Short Chain Fatty Acids (SCFAs): Short chain fatty acids, often referred to as SCFAs, are the product of fermentation
of dietary fibers by bacteria in our guts. SCFAs nourish the cells that make up the wall of the intestine, boost the protective capacity of our intestinal wall lining and support healthy digestive motility. SCFAs are also powerful anti-inflammatory agents.\(^{23}\)

The most famous of the short chain fatty acids produced by the gut is butyrate. It is especially effective at reducing inflammation - not just in the gut, but in the brain as well! Groundbreaking treatments are using butyrate to treat neurodegenerative diseases, depression and cognitive impairment.\(^{24}\)

Butyrate produced by bacteria in our guts enters our bloodstream and crosses the blood-brain barrier, where it facilitates production of **Brain Derived Neurotrophic Factor (BDNF)**. BDNF supports our ability to learn, remember and form new memories. It is regarded as “fertilizer for the brain” because of the way it enhances our neuroplasticity. Loss of neuroplasticity causes the trademark mental decline associated with Alzheimer’s and dementia.

Thus, the microbiome produces essential molecules that we require in order to regulate our cognition, moods and behavior. When our guts are healthy, all goes according to plan. But, when we lack sufficient and appropriate bacterial colonies, we cannot produce the chemicals that we rely on to think clearly and feel happy.

**MICROBES & THE IMMUNE SYSTEM**

The final known pathway that our gut bacteria use to influence the brain is through the immune system. Our microbiome signals vital functions of our immune response that are essential to maintaining homeostasis. It influences both inflammation and our immune response by controlling what gets absorbed from our digestive tract to our bloodstream and what gets excreted.\(^{25}\)
When the immune system is overstimulated we develop chronic inflammation. Inflammation in the intestines causes the junctions in the cell walls to become more porous which leads to Leaky Gut. Food particles, bacteria and toxins are then able to enter the bloodstream, causing bodywide inflammation.

Some digestive bacteria produce Lipopolysaccharide (LPS). LPS is inflammatory and toxic. It can enter our bloodstream when our gut is hyperpermeable. Leaky Gut causes “leaky brain.” As the intestinal wall becomes more permeable, the blood-brain barrier weakens, leading to inflammation in the brain that influences the way we think and feel. Brain inflammation plays a role in depression, anxiety, brain fog and autoimmune brain disorders.26

Psychologists are now treating depression by prescribing anti-inflammatory diets. In fact, many conventional therapies for mental disorders and neurological diseases are being revamped as experts uncover the intricate relationship between the microbiome and mental health.

A healthy gut is indispensable to a happy mind. The conclusion of a recent study from the Chinese Academy of Sciences aptly describes the shift that is taking place in the treatment of mental disorders:

“Mental disorders and neurological diseases are becoming a rapidly increasing medical burden. Although extensive studies have been conducted, the progress in developing effective therapies for these diseases has still been slow. The current dilemma reminds us that the human being is a superorganism. Only when we take the human self and its partner microbiota into consideration at the same time, can we better understand these diseases.”27
IMBALANCE in the microbiome creates stress in the body that not only triggers inflammation but can also lead to significant mental health problems. Recent research at Stanford University revealed that even short-term digestive problems can contribute to mental health issues later in life. People who suffer from IBS are much more likely to experience anxiety, depression and other mental health conditions.²⁸

A healthy gut supports a healthy mind. Scientists at Pacific Northwest National Laboratory have demonstrated that boosted levels of *Lactobacillus* are directly linked to enhanced memory. Higher levels of GABA, which of course, is produced by some species of gut bacteria, are also associated with better memory.²⁹

Unfortunately, we are susceptible to many threats that can diminish the diversity of our microbiome. Remember how the composition of each of our microbiomes is unique? The baseline microbial species we start with are determined by our birth and early childhood experiences. However, most of us don’t keep all of them. Throughout our lives many things can happen which deplete our microbiomes and leave us vulnerable to pathogenic infections:

- Antibiotic overuse
- Inflammatory diet
- Lack of dietary fiber
- Chronic stress
- Traumatic experiences, especially in childhood
- High alcohol consumption
- Exposure to environmental toxins
- Pathogenic infections
- Parasites
- Nutrient deficiencies
- Insufficient sleep

When the microbiome-gut-brain axis is dysfunctional, we experience physical and mental symptoms. We can learn more
about how such imbalances manifest, and support a healthy mental state, by examining the links between specific mental disorders and the gut.

DEPRESSION & ANXIETY
The microbiome influences the way we respond to stress and our susceptibility to mood disorders like depression and anxiety. Studies have revealed differences in gut microbiome compositions in both animals and humans with mood disorders.

Particularly, low levels of butyrate-producing *Faecalibacterium* are linked to more severe depression. Also, pathogenic infections in the gut, like *Campylobacter jejuni* or *Citrobacter amalonaticus*, contribute to anxiety. Absence of beneficial bacterial species was similarly correlated with anxiety.

These findings led researchers to conclude that the loss of diversity in the microbiome following the use of antibiotics is correlated with increased incidence of mood disorders, which is reversed upon restoring a healthy bacterial diversity to the gut.
Another recent large scale study analyzed the microbiomes of more than one thousand Belgians. Scientists found that those with depression were completely missing two species of microbes: Coprococcus and Dialister. There was also a higher incidence of bacteria associated with Crohn’s disease in depressed people, which researchers suggest points to inflammation as a causative factor in mood disorders.31

As scientists gain a greater appreciation for the influence of the microbiome on our mental health, experts are calling for a new paradigm for the treatment of depression and anxiety that emphasizes a healthy, diverse microbiome.32

**DEMENTIA & ALZHEIMER’S DISEASE**

Dementia is a category of brain diseases which affect an individual’s ability to function on a day-to-day level. Alzheimer’s is the most well-known and most commonly experienced form of dementia. Dementia impairs memory and cognitive functions. New research shows that the gut microbiota directly contribute to the progression of dementia by triggering inflammation.33

One of the hallmarks of Alzheimer’s is the buildup of amyloid plaques between the nerve cells in the brain. Amyloids are fibrous clumps of protein that are linked to many diseases. Gut bacteria can produce amyloid which crosses the blood-brain barrier and impairs our cognition. Our microbiota also release LPS which stimulates inflammatory processes and contributes to the development of Alzheimer’s.34
Ongoing studies confirm that imbalances in the microbiome lead to increased permeability of both the gut and the blood-brain barrier which supports the development of Alzheimer’s. Such weakened barrier function, along with chronic inflammation and deposits of amyloid plaque, are the primary known ways that our microbiome can contribute to dementia, Alzheimer’s and the decline in memory and cognition that is associated with old age. Increasing understanding of these mechanisms promises to lead to new approaches to the prevention and treatment of dementia.\textsuperscript{35}

**PARKINSON’S DISEASE**

Growing appreciation for the gut’s role in the development of Parkinson’s promises to lead to more effective treatments for the 10 million people living with the disease today. Just last fall, the United States Army Medical Research and Materiel Command awarded $2.5 million to a team at University of Alabama at Birmingham to study the relationship between the microbiome and Parkinson’s.\textsuperscript{36}

Parkinson’s disease is a brain disorder in which patients lose control over their muscles as brain cells die, leading to a characteristic tremor. Medical microbiologist Sarkis Mazmanian of Caltech is changing the way we think about Parkinson’s by showing that gut bacteria are involved in its development and progression.

Professor Mazmanian has revealed significant differences between the microbiomes of people with Parkinson’s and those without the disease. He has performed studies in animals that confirm that certain gut bacteria are necessary for the disease to emerge.\textsuperscript{37}
Additionally, microbiologist Dr. George Tetz has demonstrated that people with Parkinson’s have fewer lactic acid-producing bacteria in their guts. This broad category includes many different species of intestinal bacteria. Dr. Tetz observed that people with Parkinson’s are particularly lacking in *Lactococcus* and suggests a connection between dairy consumption in early life and the later development of Parkinson’s.³⁸

**SCHIZOPHRENIA & BIPOLAR DISEASE**

Advances in microbiology are also changing our approach to neuropsychiatric disorders. Significant levels of gastrointestinal inflammation have been found in people who suffer from schizophrenia and bipolar disease. Antibiotic use is another common denominator, leading researchers to speculate that loss of microbiome diversity is a causative factor in the development of neuropsychiatric disorders.

Dysbiosis, whatever the source, is believed to be the cause of inflammation among people who have neuropsychiatric disorders. Specific alterations in the microbiome that are associated with these conditions include:

- Elevated levels of *Saccharomyces cerevisiae*
- Elevated levels of *Candida*
- Presence of a pathogenic protozoa, *Toxoplasma gondii*³⁹
AUTISM

Gastrointestinal disorders are commonly experienced by people who’ve been diagnosed with autism. Compared to other children, those with autism experience 20% more diarrhea and constipation.40

The strong correlation between dysbiosis and autism has led experts to suspect a causative link. Subsequent research has found that changing the microbiome by eliminating wheat and dairy products as well as supplementing with prebiotics (nourishment for beneficial bacteria) resulted in a significant improvement in antisocial behavior and a decrease in digestive complaints.41

Researchers believe that dysbiosis may directly cause, or at the very least sustain, autism. Ongoing research continues to probe the microbiome in search of new treatments.42
ALCOHOLISM

Alcohol is the third leading preventable cause of death in the US, accounting for the loss of 88,000 lives every single year. According to a 2014 report from the World Health Organization, alcohol contributes to more than 200 diseases and health conditions.

Oxford University conducted a study on the relationship between the microbiome and alcoholism. They observed a strong correlation between the composition of the microbiome and both likelihood of relapsing and overall well being. Nearly half of the participants in the study had Leaky Gut and a low amount of intestinal bacteria. This group still presented high levels of anxiety, depression and alcohol cravings, even after completing rehab.

In comparison, the remainder of the study group, those who did not have Leaky Gut or dysbiosis, scored low on measures of depression, anxiety and alcohol cravings at the completion of the treatment program. Their scores were actually comparable to people who do not have a drinking problem. The researchers
concluded that the state of the microbiome was a strong indicator of the probability of relapse. These findings carry exciting implications for treating and managing alcoholism by targeting the gut.  

Consumption of alcohol destroys intestinal bacteria, damages the digestive organs and incites systemic inflammation. Thus, chronic and excessive consumption alters the composition and function of the microbiome, increases intestinal permeability and compromises immune response. A vicious cycle can manifest in which alcoholism creates changes in the microbiome that make it harder to get and stay sober.

**PTSD**
Post-traumatic Stress Disorder (PTSD) is a condition of persistent mental and emotional stress resulting from an injury or severe psychological shock. It typically involves disturbance of sleep and constant vivid recall of the traumatic experience. Although most people experience shocking, terrifying or dangerous events at some time in their life, only a small portion of them develop PTSD later in life.

Inquiries into why some people manifest PTSD in the wake of a traumatic experience while others do not has led to more revelations about the influence of the microbiome on our mental health. Researchers at Stellenbosch University in South Africa identified low levels of three species of bacteria in people with PTSD: *Actinobacteria, Lentisphaerae* and *Verrucomicrobia*.

Two of those bacteria (*Actinobacteria* and *Verrucomicrobia*) were even lower among people who had experienced trauma as a child. These particular microbes are key for regulating inflammation. Researchers concluded that loss of microbial diversity as a result of childhood trauma could set the stage for PTSD in adulthood.
AS you can see, the microbiome has a strong influence on our cognition and mental wellbeing. Loss of diversity or abundance in our intestinal species predisposes us to a host of mental disorders, loss of memory and inability to concentrate. Due to the nature of our modern lifestyles, our microbiomes are steadily assaulted by chronic stress, environmental toxins, prescription antibiotics and processed foods.

There is good news, though, for anyone who wants to take their mental wellbeing into their own hands. Imbalance and inflammation in the brain can be remedied by restoring a healthy diversity to the microbiome. Thus, protocols that are targeted to heal the gut can have substantial benefits for our mental health as well.

In order to heal our guts we have to make some fundamental lifestyle changes, like improving our diets, reducing stress and learning healthier ways to cope with stress that can’t be avoided. We also need to be exercising regularly, going to bed early and getting plenty of rest.

These changes can be difficult, but are well worth it when you consider the payoff: health, happiness and peace of mind.

Fortunately, we don’t have to do it on our own!

Many natural, gentle and effective remedies are available that help to nudge our body in the direction of healing. From vitamins and minerals that fill nutritional gaps in our diets to probiotics and amino acids that help us restore homeostasis to herbal medicines that soothe symptoms and speed up the healing process, there are many remedies at our disposal.

Here’s the best part: the health and function of the gut is so intricately connected to our mental state that many gut healing remedies have direct and significant benefits for the brain.
VITAMINS & MINERALS

Diet is the foundation for our health. Yet, try though we might, we can’t always get all of our nutrients from food alone. That’s in part because modern farming practices have depleted soil nutrient levels, so our foods just don’t have the same composition that they once did. Even if we are able to consume all of the nutrients we need to thrive, if our guts are compromised, we will not be able to extract and absorb these vital healing elements.

1. **B-vitamins:** B vitamins boost our energy levels, promote emotional stability and sharpen our mental focus. Many healthy foods do not have adequate levels of B vitamins. Stress and anxiety deplete our levels of B vitamins. Over time, this impairs our ability to muster a healthy response to stressful triggers. B vitamins are essential to many bodily processes, especially our mental functioning. B vitamins support healthy nerve function, deliver oxygen to the brain, produce energy for brain cells and protect our brains from oxidative damage. They also help us to relax by calming excited neurons at times of emotional stress. Last, but not least, we simply cannot produce serotonin if we are deficient in B vitamins. Researchers have found that alcoholics are deficient in B vitamins and believe this contributes to cravings for alcohol.

2. **Magnesium:** Even if we strive for a balanced diet, it can be difficult to meet our needs for this essential nutrient. Soil levels of magnesium have become especially depleted by modern farming practices and cooking decreases bioavailability of the magnesium in our food. Magnesium supports a healthy gut, and a healthy mind as well! We require magnesium for healthy peristalsis, which protects us from Leaky Gut, and for production of glutathione. When we are deficient in magnesium we are likely to suffer from constipation and indigestion and we become more vulnerable to anxiety and depression. Autistic children are commonly deficient in magnesium. Early studies show promise for magnesium supplementation for decreasing hyperactivity and stabilising behaviour.
3. **Vitamin C**: Vitamin C is a powerful antioxidant that slows the aging process and protects us from many chronic and serious diseases. It is essential to the production of serotonin, boosts our immune function and is utilized by nearly every cell in our body to repair damaged tissue. Vitamin C supports healthy immune function and helps maintain an optimal composition of our microbiome.\(^5^1\) A deficiency of vitamin C can cause neurological damage, whereas the addition of vitamin C to the diet can improve or reverse symptoms of anxiety, depression and bipolar disorder.\(^5^2\)

4. **Zinc**: Zinc is well known for supporting immune function and is an important nutrient for the gut and the brain. Low levels of zinc are associated with Leaky Gut, whereas zinc supplementation has been shown to repair the intestinal lining.\(^5^3\) Zinc deficiencies are associated with a host of mental disorders: autism, schizophrenia, Attention Deficit Disorder, alcoholism and depression. Healthy zinc levels enhance short term memory, but when we don’t have enough, it’s hard to remember places and faces.\(^5^4\)

5. **Selenium**: Selenium doesn’t get a lot of attention. It’s a trace mineral which means we don’t need a lot of it to thrive, but when we don’t have enough, it can mean big problems for our digestive health and our mental wellbeing. Selenium regulates the gut flora, protects our cells from oxidation, reduces levels of inflammation and heals Leaky Gut. A deficiency of selenium is associated with fatigue, mental fog, depression and an increased risk of Alzheimer’s disease.\(^5^5\)

**PROBIOTICS**
Probiotic supplementation is nothing new. The concept was introduced by Nobel laureate Elie Metchnikoff, the “Father of Probiotics,” in the early 20th century.\(^5^6\) Today, doctors are harnessing the power of beneficial bacteria to heal the brain by treating mental illness with probiotic supplementation.

Probiotics could even replace pharmaceutical drugs like Benzodiazepines and Selective Serotonin Reuptake Inhibitors.

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(SSRIs). These drugs affect the mind by prolonging the life of GABA and serotonin in the body, whereas fortifying the microbiome will actually increase our production of these essential neurotransmitters, giving us reprieve from anxiety and depression.\textsuperscript{57}

6. Specific Combinations of Probiotics: Dr. Jason Hawrelak is using specific strains of probiotics for supporting mental health in his patients. You’ll notice coding after the name of the bacterial species, which is very important to keep in mind as you shop for remedies as it details the exact and genetically unique strains that have been proven effective in resolving anxiety and depression. Other strains, even within the same species, will not have the same effect. The combinations of strains that Dr. Hawrelak recommends are:

- \textit{Lactobacillus helveticus} R0052 and \textit{Bifidobacterium longum} R0175 (in combination)
- \textit{Lactobacillus acidophilus} La5 and \textit{Bifidobacterium lactis} Bb12 (in combination)
- \textit{Bifidobacterium bifidum} W23, \textit{Bifidobacterium lactis} W52, \textit{Lactobacillus acidophilus} W37, \textit{Lactobacillus brevis} W63, \textit{Lactobacillus casei} W56, \textit{Lactobacillus salivarius} W24, and \textit{Lactococcus lactis} W19 and W58 (in combination)

AMINO ACIDS
We rely on our guts to produce amino acids that modulate our metabolism, immune systems and brain function. But if our microbiome is imbalanced and we are in a state of chronic inflammation, we simply won’t be able to produce what we need to be well. Fortunately, remedies are available to fill the gaps in our nutritional requirements so that our guts and minds can operate at their ideal capacity until we’re able to restore our own production.
7. **Short Chain Fatty Acids:** Short chain fatty acids like butyrate, acetate and propionate are typically produced by our microbiome as a by-product of fermentation of dietary fiber in the colon. They nourish and heal the cells that line our colon, reduce bodywide levels of inflammation and cross the blood-brain barrier to facilitate the production of BDNF, a molecule that is necessary for forming and recalling memories.

BDNF protects from the loss of neuroplasticity associate with Alzheimer’s and dementia. Because it is so intricately involved in the growth and connection of neurons in the brain, low levels of BDNF also contribute to the pathogenesis of major depressive disorder, schizophrenia and addiction, as well as other psychiatric and neurodevelopmental diseases.\(^\text{58}\)

SCFAs are not only the primary source of energy for our colon cells, but can, in fact, produce 10% of the energy for our entire body!\(^\text{59}\) No wonder we get so fatigued when our guts are dysfunctional! Fortunately we can use supplemental forms of key SCFAs to heal Leaky Gut, reduce inflammation and stimulate production of BDNF until our microbiome is able to produce enough to keep us healthy.

8. **L-Glutamine:** L-glutamine is the most common amino acid in the body. It rebuilds the mucosal lining of the gut and is the supplement of choice for repairing Leaky Gut. L-glutamine is also the preferred food of not only some of the beneficial bacteria in our colon, but also directly nourishes the brain cells. The brain uses L-glutamine to produce and balance GABA. L-glutamine boosts mental performance, enhances memory and can also be used to ease cravings.\(^\text{60}\) However, for some people with certain genetic dispositions, L-glutamine can cause actually cause anxiety. If you begin taking L-glutamine and experience this, discontinue use.

9. **Glutathione:** Glutathione is the master detoxifier and the body’s main antioxidant. It is commonly used to support gut repair. Best
known for rejuvenating the liver and protecting our cells from oxidative damage, glutathione also increases our energy levels, relieves muscle and joint pain, strengthens our immune system and improves mental focus and clarity.\textsuperscript{61} Glutathione also has sedative effects. It helps us to relax, improves our quality of sleep and reduces anxiety. Glutathione is commonly depleted in people with Parkinson’s. Promising studies show that glutathione supplementation may improve motor symptoms and slow progression of the disease.\textsuperscript{62}

\textbf{10. 5-Hydroxytryptophan (5-HTP):} 5-HTP increases microvilli in the intestinal walls and encourages timely movement of food through the digestive tract.\textsuperscript{63} The body uses 5-HTP to produce serotonin and it is a popular supplement for raising serotonin levels. It should come as no surprise, then, that 5-HTP is being used to effectively treat anxiety and depression. It also improves the quality of our sleep, especially when combined with GABA.\textsuperscript{64}

\textbf{11. L-theanine:} Unlike the other amino acids we’ve discussed, L-theanine is not produced by our bodies and we do not require it to be healthy. Nonetheless, it’s become a popular component in gut repair protocols. L-theanine is best known for being the active ingredient that gives green tea its signature relaxed-yet-focused effect. It relieves anxiety, reduces stress levels, improves sleep, increases attention span, protects memory and enhances cognition.\textsuperscript{65}

\textbf{HERBAL MEDICINES}

Plants have been used to maintain and restore health since ancient times. Herbal medicines offer the dual benefit of relieving symptoms while simultaneously healing the root cause of imbalance. Many traditional formulas are regaining popularity as remedies for modern ailments.

\textbf{12. Aloe Vera:} Aloe vera is anti-inflammatory and loaded with vitamins, minerals and amino acids. Consuming aloe vera improves digestion and supports detoxification. Aloe vera relieves symptoms
of acid reflux while also healing the root of the problem. Aloe vera supports a healthy mental state, too. Researchers have found that aloe vera supplementation enhances learning, improves memory and alleviates depression.\textsuperscript{66}

13. Slippery Elm: Slippery elm is a preferred herbal support for gut health because it soothes the throat, esophagus and intestines, calms reflux, supports peristalsis and encourages movement from the esophagus all the way through the digestive tract. Slippery elm contains mucilage, which turns into a slippery, thick gel when wet which helps to soothe and coat our digestive tracts. Slippery elm boosts our production of SCFAs, relieves stress and reduces anxiety.\textsuperscript{67}
14. **Turmeric:** Turmeric is best known for its ability to reduce inflammation. Its active compound, curcumin, is also a potent antioxidant. Frequently used to soothe reflux, repair the lining of the intestines and heal stomach ulcers, turmeric is also being used to treat and prevent Alzheimer’s. Thanks to its ability to increase our production of BDNF, it improves our ability to learn, remember and form new memories. Early research shows promise for the effectiveness of turmeric for treating depression and suggests that it may enhance production of serotonin and dopamine.\(^{68}\) Turmeric may also reduce symptoms of Parkinson’s and slow progression of the disease.\(^ {69}\)

15. **Chamomile:** One of the best-known herbs for stress reduction, chamomile soothes the nerves and settles a nervous stomach. Its bitter nature promotes strong digestion. Chamomile supports stable moods by regulating blood sugar and improving quality of sleep and is an effective treatment for anxiety and depression.\(^ {70}\)
WE have only been able to scratch the surface on the topic of the gut, and even IBS. However, we hope the information you have learned in this ebook will assist you in understanding the importance of a healthy gut, and help you adjust your daily habits to improve your health.

However, we hope your journey doesn’t end here. You need to know the full story.

As such, we’d like to officially invite you to the free screening of The Gut Solution, which airs on July 1st, 2019.

The Gut Solution is an 8-part documentary series that discovers that the hidden root cause behind obesity, depression, anxiety, skin issues, autoimmune disease, and even cancer, can be in the gut. This cutting-edge series draws from the wisdom of over 40 world-leading experts, who share how to reverse all of these common ailments that we face today by sharing the tools to heal the gut.

If you are frustrated with your health, and you don’t know what’s wrong, do not ignore your gut. For many people, gut health is the missing piece of the puzzle.

So, take action today. Watch this groundbreaking series, and learn what you can do to truly restore your health.

If you haven’t already, secure your free spot to watch the series by entering your name and email on www.gutsolutionseries.com or clicking the button below.

GET ACCESS NOW

We’ll see you on July 1!
HEAL YOUR GUT, HEAL YOUR MIND: 15 GUT-HEALING REMEDIES FOR OPTIMAL MENTAL HEALTH


CONCLUSION


