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Real Food Is a Potent Ally Against Depression

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STORY AT-A-GLANCE

- Depression is the leading cause of ill health and disability worldwide, affecting an estimated 380 million people globally, including more than 17 million Americans, with prevalence more than three times higher during the COVID-19 pandemic
- Research shows nutrition is a crucial factor in depression, and researchers have suggested diet is an important yet overlooked aspect of psychiatry
- Research found seniors who followed the DASH diet were 11% less likely to develop depression over the following six years, whereas those following a standard Western diet had the highest rates of depression
- Other studies have shown that unprocessed foods, especially fermented foods, help optimize your gut microbiome, thereby supporting optimal mental health, whereas sugar, wheat (gluten) and processed foods have been linked to a greater risk for depression, anxiety and even suicide
- Your gut communicates to your brain via your vagus nerve and the stress pathway in your endocrine system, and by producing mood-boosting neurotransmitters. These links help explain why your gut health has such a significant impact on your mental health

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According to the World Health Organization, depression is a leading cause of ill health and disability worldwide,[1,2] affecting an estimated 280 million people globally, including

more than 17 million Americans,[3] with prevalence for depressive episodes more than three times higher during the COVID-19 pandemic.[4]

Statistics also reveal we're not being particularly effective when it comes to prevention and treatment. Worldwide, rates of depression increased by 18% between 2005 and 2015.[5] In the wake of the pandemic, that number increased by another 27.6%.[6]

If you or someone you love is struggling with depression or some other mental health problem, remember that your diet is a foundational aspect that must not be overlooked. As noted in a 2015 study[7] published in the medical journal Lancet:

> *"Although the determinants of mental health are complex, the emerging and compelling evidence for nutrition as a crucial factor in the high prevalence and incidence of mental disorders, suggests that diet is as important to psychiatry as it is to cardiology, endocrinology and gastroenterology."*

The Compelling Link Between Food and Mood

Research[8,9,10] looking at the effects of the antihypertensive DASH diet on mental health concluded that this kind of dietary pattern, which is low in sugar and high in fresh fruits and vegetables, can help reduce the risk of depression in seniors. Overall, people who followed the DASH diet were 11% less likely to develop depression over the following six years, whereas those following a standard Western diet, high in red meat and low in fruits and vegetables, had the highest rates of depression.

It's worth noting that while many conventional experts recommend the DASH diet, it is not necessarily ideal for optimal health, as it also promotes whole grains and low-fat foods, including low-fat dairy.

Healthy fats, including saturated animal and plant fats and animal-based omega-3, are quite crucial for optimal brain health. I believe the reason the DASH diet produces many beneficial results is because it is low in sugar and high in unprocessed foods — not because it's low in fat.

Other studies have shown that unprocessed foods, especially fermented foods, help optimize your gut microbiome, thereby supporting optimal mental health,[11] whereas sugar, wheat (gluten) and processed foods have been linked to a greater risk for depression, anxiety and even suicide. The primary information highway between your gut and your brain is your vagus nerve, which connects the two organs.[12]

Your gut also communicates to your brain via the endocrine system in the stress pathway (the hypothalamus, pituitary and adrenal axis), and by producing mood-boosting neurotransmitters like serotonin, dopamine and gamma-aminobutyric acid or GABA. These communication links help explain why your gut health has such a significant impact on your mental health.

The Strong Link Between Sugar and Depression

A number of food ingredients can cause or aggravate depression, but one of the most significant is sugar, particularly refined sugar and processed fructose.[13]

For example, in one study, men consuming more than 67 grams of sugar per day were 23% more likely to develop anxiety or depression over the course of five years compared to those whose sugar consumption was less than 40 grams per day (which is still far higher than the 25 grams per day recommended for optimal health).[14]

This held true even after accounting for other contributing factors, such as socioeconomic status, exercise, alcohol use, smoking, other eating habits, body weight and general physical health. Lead author Anika Knüppel,[15] a research fellow and epidemiologist at University College London, commented on the findings, saying:[16]

> *"Sweet food has been found to induce positive feelings in the short-term. People experiencing low mood may eat sugary foods in the hope of alleviating negative feelings. Our study suggests a high intake of sugary foods is more likely to have the opposite effect on mental health in the long-term."*

Research[17] published in 2002, which correlated per capita consumption of sugar with prevalence of major depression in six countries, also found "a highly significant

correlation between sugar consumption and the annual rate of depression." A Spanish study[18] published in 2011 linked depression specifically to consumption of baked goods.

Those who ate the most baked goods had a 38% higher risk of depression than those who ate the least. This makes sense when you consider baked goods contain both processed grains and added sugars.

How Sugar Wreaks Havoc on Your Mood and Mental Health

Sugar has been shown to trigger depression and other mental health problems through a number of different mechanisms, including the following:

Feeding pathogens in your gut, allowing them to overtake more beneficial bacteria.
Suppressing activity of a key growth hormone in your brain called brain-derived neurotrophic factor (BDNF). BDNF levels are critically low in both depression and schizophrenia, and animal models suggest this may actually be a causative factor.
Triggering a cascade of chemical reactions in your body that promote chronic inflammation, which over the long term disrupts the normal functioning of your immune system and wreaks havoc on your brain.
Contributing to insulin and leptin resistance, which also plays a significant role in your mental health.
Affecting dopamine,a neurotransmitter that fuels your brain's reward system[19] (hence sugar's addictive potential[20,21,22]) and is known to play a role in mood disorders.[23]
Damaging your mitochondria, which can have bodywide effects. Your mitochondria generate the vast majority of the energy (adenosine triphosphate or ATP) in your body.

When sugar is your primary fuel, excessive reactive oxygen species (ROS) and secondary free radicals are created, which damage cellular mitochondrial membranes and DNA. As your mitochondria are damaged, the energy currency in your body declines and your brain will struggle to work properly.

Healthy dietary fats, on the other hand, create far fewer ROS and free radicals. Fats are also critical for the health of cellular membranes and many other biological functions, including and especially the functioning of your brain.

Among the most important fats for brain function and mental health are the long-chained animal-based omega-3 fats DHA and EPA. Not only are they anti-inflammatory, but DHA is actually a component in every cell of your body, and 90% of the omega-3 fat found in the *n*-3 PUFAs in brain tissue is DHA.[24]

Eating Real Food Is Key

A paper[25] published in Nutritional Neuroscience in 2018 looked at evidence from laboratory, population research and clinical trials to create "a set of practical dietary recommendations for the prevention of depression, based on the best available current evidence." According to this paper, the published evidence reveals five key dietary recommendations for the prevention of depression:

- Following a "traditional" dietary pattern such as the Mediterranean, Norwegian or Japanese diet
- Increasing consumption of antioxidant-rich fruits, vegetables, legumes, wholegrain cereals, nuts and seeds (note that autoimmune diseases are rampant and whole grains and legumes are loaded with lectins and best avoided
- Eating plenty of omega-3-rich foods
- Replacing unhealthy processed foods with real, wholesome nutritious foods
- Avoiding processed foods, fast food, commercial baked goods and sweets

Processed Foods Are Problematic in More Ways Than One

Three brain- and mood-wrecking culprits you'll automatically avoid when avoiding processed foods are added sugars, artificial sweeteners[26] and processed vegetable oils — harmful fats known to clog your arteries and cause mitochondrial dysfunction. Gluten also appears to be particularly problematic for many. If you're struggling with depression or anxiety, you'd be well-advised to experiment with a gluten-free diet.

Certain types of lectins, especially wheat germ agglutinin (WGA), are also known for their psychiatric side effects. WGA can cross your blood brain barrier[27] through a process called "adsorptive endocytosis," pulling other substances with it. WGA may attach to your myelin sheath[28] and is capable of inhibiting nerve growth factor,[29] which is important for the growth, maintenance and survival of certain target neurons.

Processed foods are also a significant source of genetically engineered (GE) ingredients and toxic herbicides like Roundup. In addition to being toxic and potentially carcinogenic, glyphosate, the active ingredient in Roundup, has been shown to preferentially decimate beneficial gut microbes. Many grains need to dry in the field before being harvested, and to speed that process, the fields are doused with glyphosate a couple of weeks before harvest.

As a result of this practice, called desiccation, grain-based products tend to contain rather substantial amounts of glyphosate. This reason alone is enough to warrant a grain-free diet, but if you do choose to eat whole grain products, make sure it's organic to avoid glyphosate contamination.

Your beverage choices may also need an overhaul, as most people drink very little pure water, relying on sugary beverages like sodas, fruit juices, sports drinks, energy drinks and flavored water for their hydration needs. None of those alternatives will do your mental health any favors.

Anti-Inflammatory Foods Support Good Mental Health

As mentioned above, one of the mechanisms by which good nutrition bolsters mental health is by cutting down inflammation in your body, and a high-sugar diet is exceptionally inflammatory. A number of studies have linked depression with chronic inflammation.[30,31]

For example, a study[32] published in the Journal of Clinical Psychiatry in 2016 concluded that depressed patients had 46% higher levels of the inflammatory marker C-reactive protein in their blood. Interestingly, they also had 16% lower levels of low fractional exhaled nitric oxide, which adds further support for doing exercises that boost nitric oxide cycling. As explained in the study:

> *"Nitric oxide (NO), in addition to being an inflammatory mediator, is also a neurotransmitter at the neuron synapses. It modulates norepinephrine, serotonin, dopamine and glutamate and thus is speculated to play a role in the pathogenesis of depression. Nitric oxide is also currently seen as a marker of airway inflammation and can be measured during exhalation.*
>
> *Fractional exhaled nitric oxide (FeNO) may represent both constitutive and inducible NO. Small studies suggest that subjects with depressed mood have low levels of FeNO … Subjects with depression also have low levels of plasma and platelet NO.*
>
> *The low systemic levels of NO have been postulated to be responsible for the increased risk of cardiovascular events observed in subjects with depression, as NO produces vasodilatation …*
>
> *In summary, this large population-based study found that depression is associated with high levels of CRP and low levels of FeNO. These findings corroborate the premise that inflammation could play a role in the pathophysiology of major depression and that major depression may be seen as a psychoneuroimmunological disorder."*

Four Powerful Dietary Interventions

In addition to transitioning from a diet of processed fare to real food, consider:

- **Implementing a cyclical ketogenic diet** high in healthy fats, low in net carbs with moderate amounts of protein. This kind of diet will optimize your mitochondrial function, which has significant implications for mental health.

  In fact, one noticeable effect of nutritional ketosis is mental clarity and a sense of calm. The reason for this welcome side effect has to do with the fact that when your body is able to burn fat for fuel, ketones are created, which is the preferred fuel for your brain.

- **Intermittent fasting** will also help optimize your brain function and prevent neurological problems by activating your body's fat-burning mode, preventing insulin resistance and reducing oxidative stress and inflammation, the latter of which has been identified as a causative factor in depression.[33,34]

  While you may achieve some of the benefits from intermittent fasting simply by respecting the time boundaries, regardless of the foods you consume, it is far better if you consume high-quality unprocessed food.

  Since you'll be eating less, it's vitally important that you get proper nutrition. Healthy fats are essential because intermittent fasting pushes your body to switch over to fat-burning mode. Particularly if you begin to feel tired and sluggish, it may be a sign that you need to increase the amount of healthy fat in your diet.

- **Water fasting —** Once you're starting to burn fat for fuel, gradually increase the length of your daily intermittent fasting to 20 hours per day. After a month of 20-hour daily fasting, you're likely in good metabolic shape and able to burn fat as fuel. At that point, you can try a four or five-day water-only fast.

  I now do a quarterly five-day fast, as I believe this is one of the most powerful metabolic health interventions out there. A five-day fast will effectively clean out senescent cells that have stopped duplicating due to aging or oxidative damage,

which would otherwise clog up your optimal biologic function by causing and increasing inflammation.

- **Exercise** and get regular movement throughout your day. Exercise is one of the most effective antidepressant strategies out there, beating most medical interventions for depression.

EMF Exposures Could Be Wreaking Havoc With Your Mental Health

Another foundational strategy to prevent or treat depression and anxiety is to limit exposure to electromagnetic fields (EMFs). Studies have linked excessive EMF exposure to an increased risk of both depression and suicide.[35] Addiction to or "high engagement" with mobile devices can also trigger depression and anxiety, according to recent research from the University of Illinois.[36]

Research[37] by Martin Pall, Ph.D., reveals a previously unknown mechanism of biological harm from microwaves emitted by cellphones and other wireless technologies, which helps explain why these technologies can have such a potent impact on your mental health.

Embedded in your cell membranes are voltage gated calcium channels (VGCCs), which are activated by microwaves. When activated, a cascade of biochemical effects occurs that result in the creation of extremely destructive hydroxyl free radicals.

Hydroxyl free radicals decimate mitochondrial and nuclear DNA, their membranes and proteins. The end result is mitochondrial dysfunction, which we now know is at the heart of most chronic disease. The tissues with the highest density of VGCCs are your brain, the pacemaker in your heart and male testes. Hence, health problems such as Alzheimer's, anxiety, depression, autism, cardiac arrhythmias and infertility can be directly linked to excessive microwave exposure.

So, if you struggle with anxiety or depression, be sure to limit your exposure to wireless technologies, in addition to addressing your diet and exercise. Simple measures include turning your Wi-Fi off at night, not carrying your cellphone on your body and not keeping portable phones, cellphones and other electric devices in your bedroom. The electric wiring inside your bedroom walls is probably the most important source to address.

Your best bet here is to turn off the power to your bedroom at night. This will work if there are no adjacent rooms. If there are, you may need to shut those rooms off also. The only way to know would be to measure the electric fields. For additional lifestyle guidelines that can help prevent and/or treat depression, see the nondrug solutions section at the end of this previous article on depression.

Sources and References

- [1] WHO June 17, 2021
- [2] Fortune Magazine March 30, 2017
- [3] Medicinenet.com, Depression in the Elderly
- [4] JAMA September 2, 2020
- [5] Reuters March 30, 2017
- [6] Journal of Pediatrics and Child Health December 30, 2021
- [7] Lancet Psychiatry March 2015; 2(3): 271-274
- [8] Rush.edu, February 26, 2018
- [9] Daily Mail February 26, 2018
- [10] Telegraph February 25, 2018
- [11] Psychiatry Research April 28, 2015 [Epub ahead of print]
- [12] The Atlantic June 24, 2015
- [13] Time June 29, 2015
- [14] Scientific Reports July 27, 2017; 7, Article Number: 6287
- [15] Anika Knüppel Bio
- [16] Medical News Today July 28, 2017
- [17] Depression and Anxiety October 30, 2002, DOI: 10.1002/da.10054
- [18] Public Health Nutrition March 2012; 15(3): 424-432
- [19] PLOS One August 1, 2007
- [20] The Atlantic February 21, 2012
- [21] Current Opinion in Clinical Nutrition & Metabolic Care 2013 Jul; 16(4): 434-9
- [22] CNN Health March 2, 2017
- [23] Comprehensive Psychiatry 1992 Mar-Apr;33(2):115-20
- [24] Nutritional Neuroscience 2017 Apr;20(3):161-171

- [25] Nutrients. 2016 Feb; 8(2): 99
- [26] Biological Psychiatry July 1993: 34(1); 13-17
- [27] Proc Natl Acad Sci U S A. 1988 Jan;85(2):632-6
- [28] Histochem J. 1996 Jan;28(1):7-12
- [29] Cell Struct Funct. 1989 Feb;14(1):87-93
- [30, 33] International Breastfeeding Journal March 2007; 30; 2:6
- [31, 34] Orvosi Hetilap 2011 Sep 11;152(37):1477-85
- [32] Journal of Clinical Psychiatry 2016;77(12):1666–1671
- [35] EMFs.info, EMF and Depression Abstracts
- [36] Illinois News Bureau March 2, 2016
- [37] Rev Environ Health 2015;30(2):99-116