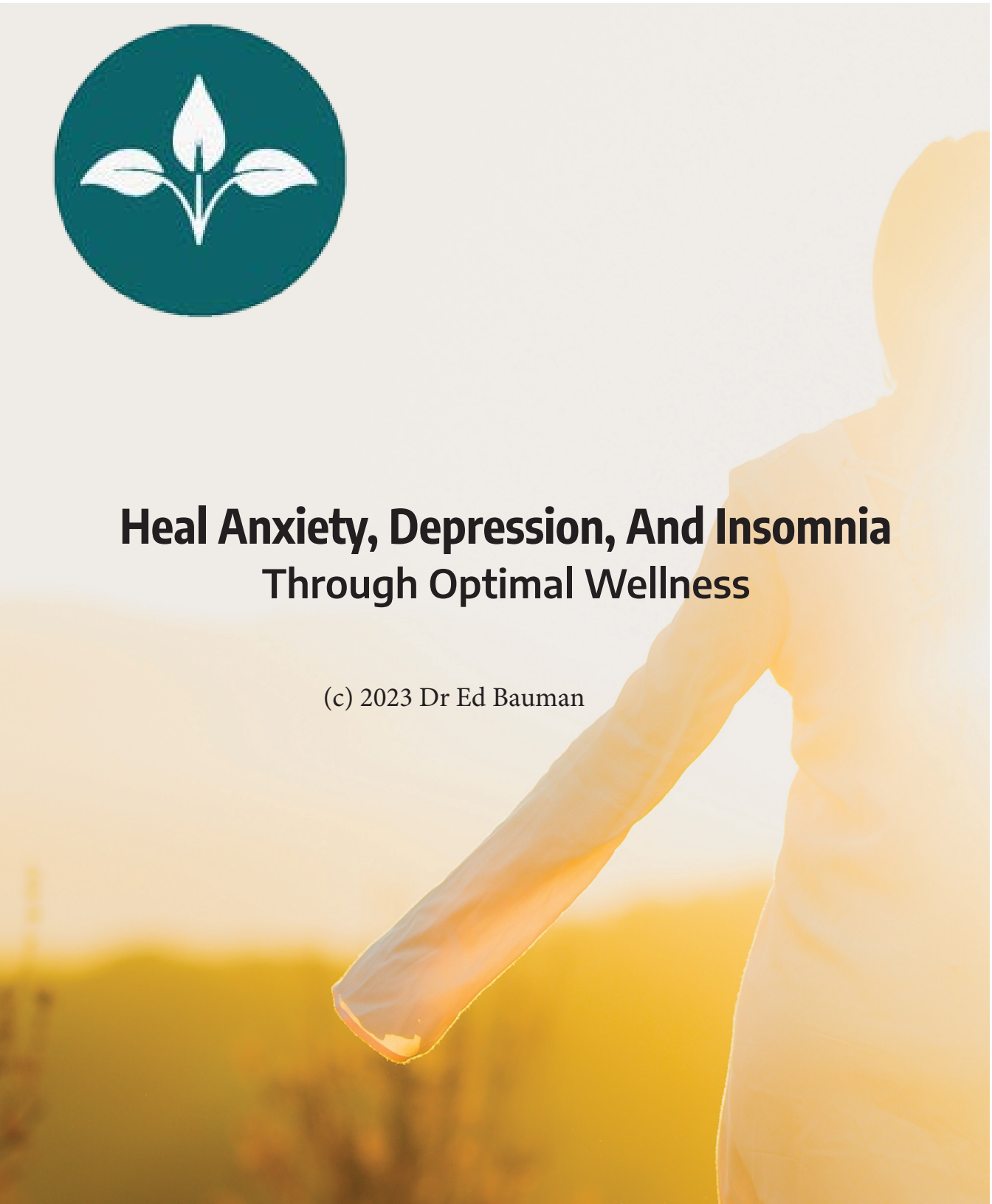

Heal Anxiety, Depression, And Insomnia
Through Optimal Wellness

Acknowledgments

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Brighten Up

Manage Depression Through Nutrition and Self Care

Depression and anxiety are complex psychiatric disorders that affect 18-36% or more of the population (Anxiety and Depression Association, 2018). Insomnia, while not considered a psychiatric issue, is equally prevalent (30%), and a contributor to fatigue, mood disorder, and neuro-endocrine depletion. Recent findings suggest that these conditions are not merely a product of stress, and unpleasant past and current life experiences, but rather are an consequence of epigenetic and metabolic disturbances responsible for neurotransmitter dysfunction, altered receptor sensitivity, hyper immune activity, mental processing and coping deficiencies.

The current array of psychotropic drugs are only effective for 50-60% of the population and take 4-6 weeks to become fully active, have adverse side effects, and rarely bring a durable resolution, even with concomitant psychotherapy and/or cognitive behavioral therapy. (Proefrock, 2018) According to British psycho-pharmacologist Professor David Healy, 29 clinical trials of antidepressant use in young people found no benefits at all. These trials revealed that instead of relieving symptoms of anxiety and depression, antidepressants caused children and young people to feel suicidal. (Caveye, 2018)

Mental health watchdog group **Citizens Commission on Human Rights** is drawing attention to the alarming fact that more than a million kids younger than six in our nation are currently taking psychiatric drugs. While around half of these children are four to five years old, an incredible 274,804 of them are younger than a year old. That's right: babies are being given psychiatric drugs. The number rises for toddlers aged two to three, with 370,778 kids in this category taking psychiatric drugs overall. Data from IMS Health shows that the situation only gets worse as kids get older, with 4,130,340 kids aged 6 to 12 taking some type of psychiatric drug.

A depressing sequence that is all too common:

1. Medically diagnose a person with a mental health disorder. The symptoms could actually be as simple as youthful attention deficit disorder, or impulsivity.
2. Treat their symptoms pharmacologically without a deeper investigation of underlying causes.
    a. Psychotherapy is often advised, but not sufficient to alter the depth of disturbance.
    b. Insufficient involvement with family and significant others, not attention to environmental and metabolic factors.
3. Label them as being a difficult patient when they don't respond to therapy as expected.
    a. Labeled as defiant of authority when they request integrative or natural health services.
4. Administer more powerful pharmaceuticals, and / or symptom suppressive treatments such as shock therapy.
5. Minimize or unsuccessfully investigate adverse drug effects, such as weight gain, metabolic disease, cognitive impairment, addiction, and self-destructive, anti-social behavior
6. Confer disability status that provides a modest stipend, and limited services.
    a. Disability confers secondary gain: no longer does person have to work for a living or believe in recovery.
7. Enable low self-esteem, narcissism, cynicism, frustration, alienation, and aberrant behavior, such as violence.
8. Blame them, not the culture, media and care system for the cost of their disease and progressive decline.

Research clearly indicates a link between spending extended time on social media and experiencing negative mental health outcomes. Whether it's distracted attention from using multiple social media outlets or the emotional consequences of a negative online experience, it's the quality— not so much the quantity—of social media engagement that may affect mood and well-being. The use of multiple social media platforms is more strongly associated with depression and anxiety among young adults than time spent online. (Computers in Human Behavior, 2016) The Journal of Adolescent Health (2016) reported a clear association between negative Facebook experience and depressive symptoms. The report stated future work should examine: (1) whether negative FB experiences cause incident depression or exacerbate preexisting depression; and (2) who is most prone to being upset by negative FB experiences. Recommendations for limiting or altering FB use among high-risk subpopulations could be useful in reducing depressive symptoms.

For many people, especially the young, the disaffected and the elderly, social media and television have replaced family, friends and outdoor activity as the core connection to love, life and spirituality.

Fear, sadness and loneliness are facts of life for all human beings, a natural reaction to circumstances that bring us pain or unexpected change. The stresses of 21st century life affect us all — wars, ecological disasters, economic downturns, illnesses, relationship dramas, and fast-paced living — and we naturally react to these situations with a mixture of emotions that includes anger, fear, and sadness. Acknowledging these painful feelings and allowing them expression is an important part of leading a life that has depth, meaning, and inner peace. Yet who among us hasn't experienced at least mild depression before moving beyond the pain? For millions of people, however, deep sadness is a constant companion, resulting perhaps from abuse experienced in childhood, or from ongoing losses or stress, or occurring for no apparent reason at all. It may come and go seemingly with a will of its own or it may take up permanent residence, darkening every thought and experience. At this point sadness has become something more insidious — deep depression — and can result in changes in brain chemistry powerful enough to create a chronic sinkhole of hopelessness and despair.

A mentoring relationship can be a lifeline to pull a depressed and/or anxious person out of their dark and withdrawn place into the light of hope, commitment to recovery, and fulfillment of their life purpose.

This is the antidote to learned helplessness and suicidal ideation. A bonded, but not enmeshed healing relationship, plus nutrition, lifestyle, and mindfulness are the core ingredients to empower a person to 'Brighten Up'.

The purpose of this report is to highlight the many variables contribute to and need to be addressed to understand why a person is depressed, and how to resolve it. Diet, herbal and nutritional supplements, and lifestyle practices alleviate depressive symptoms, not by suppressing them but rather by feeding the neuroendocrine system to support the re-integration of the mind, body, heart and soul to experience life fully.

What is Depression

Mental illnesses, and the subset of mood disorders that includes all types of depression, are formally diagnosed according to criteria defined in the Diagnostic and Statistical Manual of Mental Disorders, fourth edition (DSM-IV). An American handbook first published in 1952 and last revised in 2000, is used worldwide by clinicians, researchers, insurance, and drug companies, and others to standardize our definitions of mental and emotional suffering. Mortality, as well as incomplete or delayed recovery from illness or disability. Joan Mathews Larson (2006) has developed an excellent list of common signs of depression. This list can be especially useful for clients unaware of their depression, who prefer to call it something else, as people sometimes feel a social stigma attached to the word, "depression", or be in complete denial.

Depression's Common Red Flags

- Withdrawal from activity; isolating oneself
- Continual fatigue, lethargy
- Indecisiveness
- Lack of motivation, boredom, and loss of interest in life
- Feeling helpless, immobilized
- Sleeping too much, using sleep to escape reality
- Insomnia, particularly early morning insomnia (waking very early and being unable to get back to sleep)
- Lack of responsiveness to good news
- Loss of appetite or binge eating
- Ongoing anxiety
- Silent and unresponsive around people
- An "I don't care" attitude
- Easily upset or angered, lashing out at others
- Inability to concentrate
- Self-destructive behavior (including promiscuity)
- Lack of interest in sex
- Loss of interest in people and activities previously considered important
- Unusual impatience, hostility
- Suicidal thoughts or plans

When depression is situational, i.e., caused by external factors such as the death of a loved one or loss of a job or a relationship, we can expect symptoms to be self-limiting. When the situation improves, so too does the depression. But when depression is ongoing and can't be traced to any specific life event, or when the event has resolved but the mood hasn't lifted, this is a good sign that there is a physiological basis for the depression — that the chemistry of the mind-body has become unbalanced.

The Brain Amine Theory of Depression

Beginning in the 1940s, doctors began noticing that certain medications prescribed for various maladies also improved depression in their patients. Research ensued to discover the chemical basis of depression and what changes were occurring as a result of these treatments. They discovered that depressed people often have alterations of several chemicals in their blood, spinal fluid, and urine. Such alterations are now called "chemical markers" for depression, though there are currently no established criteria for determining depression from blood tests, and diagnosis is based on subjective criteria, guided by the DSM-IV.

ANTIDEPRESSANT	SIDE EFFECTS
Prozac (Fluoxetine)	Nausea; agitation & restlessness; **insomnia;** daytime sedation; sexual dysfunction; **weight gain**; can precipitate mania; increased side effects of other meds**; suicidal behavior**
Zoloft (Sertraline)	**More GI side effects than other SSRIs (nausea, diarrhea, esophageal reflux); agitation;** sexual dysfunction; **can precipitate mania;** decreased side effects with other meds; more **constipating** than other SSRIs
Paxil (Paroxetine)	Insomnia; sleepiness; nausea; fatigue; tremors; sexual dysfunction; secreted in milk; **violence**
Celexa (Citalopram)	Similar side effects profile as other SSRIs; fewer med-drug interactions
Luvox (Fluvoxamine)	More nausea, vomiting than other SSRIs; headache, insomnia, sedation, sexual dysfunction; **(anti-anxiety meds can cause further side effects if taken with Luvox)**
Effexor (Venlafaxine) SSNRI	Anxiety or nervousness; side effects similar to SSRIs; sedation; dizziness; constipation; sweating; **increased blood pressure; nausea; fatigue; loss of appetite**

Neurotransmitters

While research into depression progressed, other neurological scientists were discovering a group of substances in the brain that came to be known as the neurotransmitters, and it is in these that most professionals have felt the greatest promise lies for understanding and treating neuropsychiatric disorders. Neurotransmitters are chemical messengers, as are hormones. Every chemical reaction that takes place in a cell is based on information-loaded signals from these chemical messengers. Neurotransmitters are the key molecules effecting communication within the brain, though they are also found in many other areas of the body. Their job is to relay, amplify, and modulate electrical signals between two neurons to influence the behavior of other cells. They relay messages that tell the heart to beat, the lungs to breathe, and the GI tract to digest, for example. They also affect mood, sleep, concentration, and weight, and must be in good supply to carry out their functions. They must also be in balance for the body to be in good health. If there is an excess of one neurotransmitter, neuron synapses (the gaps between nerve cells) become flooded and signals do not travel well; if there is a deficiency, nerve signals lose the substance upon which they travel.

The brain amine theory of depression holds, then, that imbalances in the monoamine (single amino acid) class of neurotransmitters (serotonin and the catecholamines) can produce depression. Deficiencies of two of these neurotransmitters — serotonin and norepinephrine — are most associated with depression. Psychiatric drugs for depression have been geared in recent decades towards keeping higher levels of these substances in the neuronal synaptic clefts. There has been little focus neither on other causes of depression nor on the body's requirements for healthy neurotransmitter production.

Endorphins

One of the best-known neurotransmitters is endorphin, which is associated with the relief of pain and can also produce a euphoria-like state. The endorphins are considered to be the cause of the elation that runners commonly experience. Endorphin reacts or binds to the brain's opiate receptor, which is also responsible for the effects of potent pain killers such as Demerol®, morphine, and heroin. Candace Pert, one of the researchers who first identified the opiate receptor, points out in her book, The Molecules of Emotion (1997, pp. 63–64), that all receptors exist because substances produced in the body bind to them. When drugs, foods, or other substances elicit an effect within us, it is because they are binding to sites that will also accept endogenously produced chemicals. This concept helps explain the tangle of interactions between foods, drugs, and emotional states we often see in people.

Contributors of Depression

Genetics

Depression often runs in families and is moderately heritable (Levinson, 2006). "First degree relatives (parents, siblings, and children) of patients with major depression have been found to have a two to three times higher prevalence of major depression than their normal counterparts" (www.depression.about.com).

- Recurrence and early age of onset characterize greatest familial risk
- As of 2007, six Major Depressive Disorder susceptibility genes had been discovered (López-León et al., 2008), but most research is finding greater than expected complexity in the search for genetic susceptibility, and results found in one study often are not reproduced in others.
- As with any condition, gene-environment interplay is important. Many current studies focus on locating genetic polymorphisms, including those that might affect neurotoxic/neuroprotective processes and hypothalamic-pituitary axis (Levinson, 2006). But as this implies, genes only confer susceptibility. Environmental factors provide the trigger.

Blood Sugar Imbalances

Look to rule out the entire range of dysfunction: hypoglycemia, insulin resistance, metabolic syndrome, or diabetes. Several studies have linked impaired glucose tolerance and insulin resistance, as well as overt diabetes, to increased levels of depression (Timonen et al., 2004; Lombard, 2007).

- Hypoglycemia kills neurons!
- Initially thought to do so by depriving the brain of its main fuel, glucose, but has actually been shown to cause release of the excitatory NT, aspartate, leading to a cascade of chemicals that causes neuronal necrosis (Auer, 2004)
- Glucose dysregulation can result from stress as well as from diet, so be sure to pay attention to both possibilities.

Hypothyroidism

Well-known cause of depression in both its clinical and subclinical manifestations. Because obtaining a diagnosis for subclinical hypothyroidism can be difficult, if hypothyroid symptoms are present, it is prudent to find a competent practitioner who is familiar with the condition. Testing can be done with serum or blood spot analysis (ZRT labs — clients order directly). (Note: NCs can't order serum testing; clients can order directly from Direct Labs or through Bauman Nutrition.) When depression is present, low thyroid function will reduce responsiveness to antidepressant medication (Cole et al.,

2002), so it should always be considered.

- Hypothyroidism is often seen in postpartum depression, especially in its autoimmune form, Hashimoto's thyroiditis.
- Most of the current antidepressants contain a fluoride compound — fluorophenyl — and can cause reduced thyroid function (Antidepressant Facts, 2003). This can lead to a vicious cycle of ever greater doses of antidepressants and thyroid hormone. (See the article, "The Downside of Up," for a full discussion of this topic.)

Chronic Stress

Childhood experience of physical abuse and neglect is linked to greater risk and earlier onset of MDD than in non-neglected and non-abused children (Widom, Dumont, & Czaja, 2007); can lead to lifelong depression.

- Cortisol elevations lead to increased uptake of serotonin (Tafet et al., 2001) and then eventual depletion.
- Cortisol interacts with norepinephrine and dopamine; long-term activation can lead to depletions of these NTs, affecting focus, emotional memory, and decision making (Erickson, Drevets, & Schulkin, 2003).
- Chronic stress leads to blood sugar dysregulation/insulin resistance.
- Can also lead to chronic inflammation
- Depressed people have been found to have elevated levels of pro-inflammatory and inflammatory chemicals (Raison, Capuron, & Miller, 2006).

Unresolved Trauma

Epidemiologic studes indicate that children exposed to early adverse experiences are at increases risk for the development of depression, anxiety disorders, or both. Persistent sensitization of central nervous system (CNS) circuits as a consequence of early life stress, which are integrally involved in the regulation of stress of emotion, may represent the underlying biological substrate of increased vulnerability to subsequent stress as well as the development of depression and anxiety. (Heim and Nemeroff, 2001)

Lipid Imbalances

Cholesterol levels <160 have been linked to depression, suicides, aggression, and amnesia (Sinatra & Roberts, 2007, p. 36).

- Levels this low are often indicative of statin drug use, which can cause memory problems and Alzheimer's-like symptoms.

- Elevated triglycerides can be the sole cause of depression, and the more they are lowered, the more depression is alleviated (Mathews Larson, 2006).

Adrenal Depletion

Adrenal hormones are intimately involved in cognitive function and mood. Stress and high cortisol have been linked to anxiety and depression. Conversely, low cortisol has been linked to brain fog, depression and impaired memory. Adrenal Fatigue sufferers report feeling more frustrated and less tolerance, with an inability to handle every day stress.

Nutrient Deficiencies and Imbalances

People with depression have imbalances in specific amino acids, fatty acids, vitamins, minerals, enzymes and intestinal flora. This is often worsened by the intake of psychotropic medication that causes nutrient depletion and an array of side effects.

It is strongly advised to work with a certified Nutrition Consultant or qualified Integrative Medical Doctor as there are so many nutrients to consider, and the interaction with each other is complex, which will vary from person to person, age and stage of depression and current and prior use of medication.

Essential Fatty Acids

- The brain contains approximately 60% fat, much of which is long-chain polyunsaturated fatty acids (LCPFA). Many of these LCPFAs are omega-3 fatty acids, which help regulate cell membrane fluidity and contribute to smooth neurotransmission.
- Omega-3 fatty acids help manage inflammation, which is considered to play a central role in the pathogenesis of depression (Raison et al., 2006).
- Balance between omega-3 and omega-6 fats is critical. Look for clues in diet journal.

Vitamins

- Both functional (underactivity of a nutrient or increased requirement) and absolute B vitamin deficiencies are associated with depression, especially B12, folic acid, B1, B2, B6, and biotin (Hedaya, 2008). B3 (niacin) and B5 (pantothenic acid) have also shown association (Pizzorno, Murray, & Joiner-Bey, 2008, p. 16).
- B1 and B2 help regulate neuron glucose control and aid in the manufacture of myelinprotective fatty acids. Along with B5 (pantothenic acid), they help make acetylcholine (Murray, 2000, p. 243).
- Niacin (B3) is critical if a deficiency exists because it will preferentially be converted from tryptophan, possibly depriving the brain of its needed serotonin precursor.
- Vitamin B6 helps in the manufacture of neurotransmitters, particularly serotonin and GABA

(McCarty, 2000), by shuttling amino acids into the brain. It is also a factor in producing the myelin sheath that protects nerve cells (Murray, 2000, p. 243).

- B vitamins depleted by birth control pills.
- Insufficiency of Folic acid (folate) and B12 have been implicated in depression in several studies, as well as in the general population, possibly because they are both involved in the production of SAMe, which donates methyl groups crucial for neural function (Coppen & Bolander-Gouaille, 2005). Folic acid deficiency has been shown to lower brain levels of SAMe and serotonin (Young & Ghadirian, 1989). Additionally, Tolmunen et al. (2004) have found that low folate levels confer poor responsiveness to antidepressant medications. Substantial evidence has accumulated linking low folate and B12 levels to elevated homocysteine levels, and all three to depression (Coppen & Bolander-Gouaille, 2005), while other studies indicate folate deficiencies contribute to impaired metabolism of serotonin, dopamine, and norepinephrine (Bottiglieri et al., 2000).
- There is a genetic methylation defect connected to some folate deficiencies, called the MTHFR C677T polymorphism, that causes faulty homocysteine metabolism and is found disproportionately in depressed subjects (Coppen & Bolander-Gouaille, 2005), making supplementation with different forms of folate a good idea. Other methylation nutrient cofactors: glycine, serine, selenium, cysteine, methionine.
- Pernicious anemia, an autoimmune disease that prevents absorption of B12, can cause deep depression. B12 deficiency possible in those over 50, due to low HCl.
- Inositol is often classified as a B vitamin. In the form of myo-inositol or phosphatidylinositol it exerts a calming effect by increasing levels of GABA. It has also been shown to regulate serotonin and has shown efficacy for panic and obsessive-compulsive disorders when used in high doses (Mathews Larson, 1999, p. 158).

Vitamin C

- Coenzyme in neurotransmitter production; depletion can lead to depression, lassitude, hypochondria, and hysteria (Pizzorno et al., 2008, p. 16–17)
- Depression is the first symptom seen when humans are deliberately deprived of C for study purposes (LEF, 2003, pp. 695, 698)

Vitamin D

- Has been shown to have profound effects on the brain, including the neurotransmitters, and a small body of research exists that links depression to low levels. But D's effect on depression remains to be clarified (Cannell, 2004). Cannell points to studies that have shown that summer sunlight, because it increases levels of D, increases brain serotonin levels to twice that of winter sunlight and that it may play a role in catecholamine synthesis.
- Levels often low in those with autoimmune diseases, many of which are highly associated with depression, including Hashimoto's thyroiditi.
- Levels considered deficient (<35 ng/mL) are highly associated with depression (Hedaya, 2010).

Minerals

Deficiencies of calcium, magnesium, potassium, manganese, iron, copper, and zinc are all associated with depression (Hedaya, 2008; Mathews Larson, 2006). Additionally, copper and zinc must be in balance to avoid functional deficiency and excess.

Calcium

- Nerve cells contain voltage-dependent calcium channels that allow for rapid changes in calcium levels — necessary to mediate nerve cell transmission.
- Depletion affects the central nervous system, causing nervousness, depression, irritability, and apprehension.

Magnesium

- Required for active transport of ions like potassium and calcium across cell membranes, which helps mediate conduction of nerve impulses.
- Can be a mood stabilizer because it helps regulate electrical stability of cell membranes, including neurons.
- Deficiencies caused by stress, excessive calcium intake, dietary insufficiency, hypothyroidism, or insulin resistance can cause depression
- 125–300 mg magnesium at each meal and at bedtime, in glycinate and taurinate form, shown to alleviate all depressive symptoms (Eby & Eby, 2006).
- Often very helpful for premenstrual emotional symptoms.

Potassium

- Works with sodium to effect action potential — sodium-potassium pump.
- Manganese
- Needed for proper use of the B-complex vitamins and Vitamin C, therefore for proper NT production.
- Also plays a role in amino acid formation, so low levels could lead to inadequate NT production (Mathews Larson, 2006).

Iron

- Depression is often a symptom of chronic iron deficiency. Look for other symptoms of deficiency including general weakness, listlessness, exhaustion, lack of appetite, and headaches.

Zinc

- Zinc has strong effect on brain function and can act at times as a neurotransmitter

- Deficiency occurs in pyroluria.
- Deficiency associated with post-partum depression (Wójcik et al., 2006)
- Deficiency symptoms include white spots on nails, poor wound healing and immune function, poor appetite, apathy, lethargy.
- Deficiency can lead to copper overload in brain. Use zinc sulfate liquid as taste test.

Mineral Balance

Excesses of calcium, magnesium, and vanadium are also associated with depression (Hedaya, 2008). Pay attention to supplemental doses in addition to food sources is very important. All minerals must be in balance; excessive supplementation with one or a few can lead to imbalances in others.

Environmental Toxins

The following have affinity for nervous tissue (Pizzorno et al., 2008, p. 14):

- Metals — lead, mercury, cadmium, arsenic, nickel, and aluminum
- Solvents such as cleaning chemicals, formaldehyde, toluene, benzene, etc.
- Pesticides and herbicides
- Organophosphates in pesticides reduce serotonin receptors
- Chemical sensitivities of all kinds are highly associated with depression (Simon, Daniell, Stockbridge, Claypoole, & Rosenstock, 1993).
- Steroid hormone imbalances are exacerbated by toxins or poor liver function.
- Food allergies / sensitivities can cause severe mood reactions (Mathews Larson, 2006).
- Sensitive brains can react to chemicals and to foods with an allergic response, just as the rest of the body reacts with inflammation leading to metabolic disturbances.

Depression is common symptom in Celiac disease (Bushara, 2005). Look for clues in the foods clients binge on; depression may be a factor in food addiction. It is difficult to pinpoint precise mechanism of action, but some depressed people whose food sensitivities lead to addiction to the food, do experience improved mood when the food is removed (Levine, 2004).

Candida infection

Mathews Larson finds that depression will not lift until Candida problems have been eliminated (1999, p. 206).

Mold

If the home is damp and mold is suspected, have a professional do an extensive check. Damp and moldy homes have been shown to have an independent association with depression (Shenassa, Daskalakis, Liebhaber, Braubach, & Brown, 2007).

Drug Interactions

Benzodiazepines, chemotherapy drugs, beta blockers, statins, and stimulants can all cause depression. Marijuana can, too, because it induces hypoglycemia. And inquire about alcohol and caffeine use or abuse. Any drug, and all street drugs, should be suspect.

Illness

Long-term illnesses, such as cancer, hepatitis, and heart disease, can be profoundly and chronically depressing. This involves more than simply the depressing thoughts of long-term debilitation or death; the very fact of being ill literally depresses many bodily functions.

- Chronic illness leads to depressed thyroid function, specifically low T3 (Sanesco, 2008).

High Histamine (Histadelia)

Histadelics tend to be compulsive, obsessive, driven, high-energy types, who often suffer from ongoing depression and are prone to suicide if the depression cannot be alleviated (Mathews Larson, 2006).

- Joan Mathews Larson's book, Depression-Free, Naturally, contains a questionnaire to determine if medical testing for high histamine levels might be in order (1999, pp. 219–220).

The Path to Recovery

The repair and maintenance of our brain chemicals and our moods goes far beyond merely taking in the proper foods and supplements or doing the “right” form of exercise or meditation. Only then can restoration, balance, and healing take place by introducing healing factors.

Health Hazards to Address

- ✓ Stress
- ✓ Toxins
- ✓ Infections
- ✓ Allergens
- ✓ Poor diet
- ✓ Poor sleep
- ✓ Social disconnection
- ✓ Hormonal imbalances
- ✓ Lack of physical activity

Health Habits to Develop

- ✓ Light
- ✓ Healthful food
- ✓ Rest and sleep
- ✓ Beneficial exercise
- ✓ Supplemental nutrients
- ✓ Good quality air and water
- ✓ Cognitive behavioral therapy
- ✓ Love and gratitude
- ✓ Community

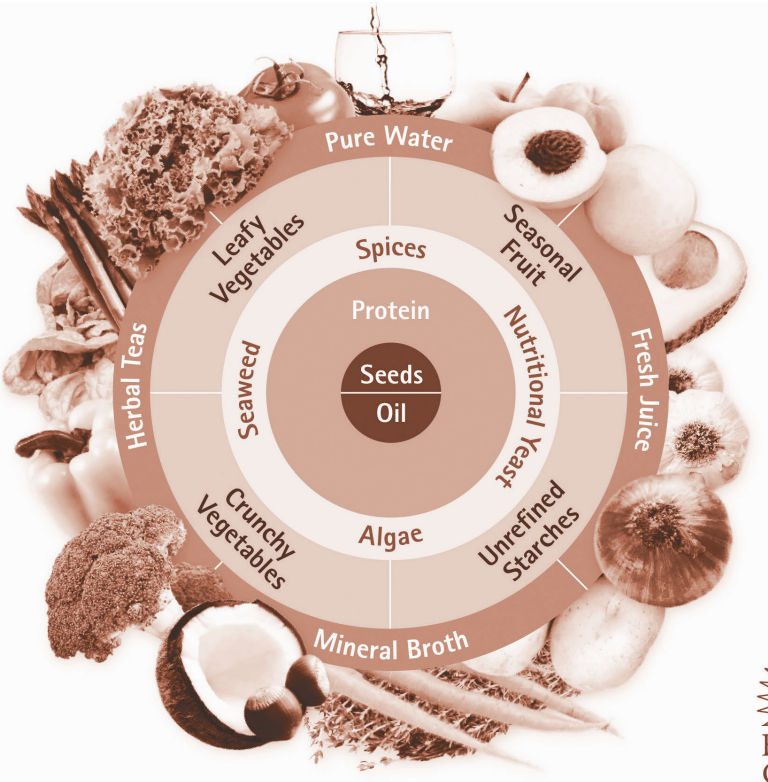
Nourishing Your Brain and Nerves

After adjustments for age, socioeconomic status, education, and health behaviors, a "traditional" dietary pattern characterized by vegetables, fruit, meat, fish, and whole grains was associated with lower odds for major depression or dysthymia and for anxiety disorders. A "western"diet of processed or fried foods, refined grains, sugary products, and beer was associated with a higher GHQ-12 score [General Health Questionnaire — high score = increased rate of adverse mood]. There was also an inverse association between diet quality score and GHQ-12 score that was not confounded by age, socioeconomic status, education, or other health behaviors. (Jacka et al., 2010)

A healthful and balanced whole foods diet is as essential to mental well-being as it is to physical health. The monoamine neurotransmitters — serotonin, dopamine, epinephrine, norepinephrine, etc. — are derived from dietary amino acids, making adequate protein and optimal digestion very important. But the neurotransmitters never work alone and require a wide range of dietary nutrient cofactors to perform the many functions they are called upon to do. So, when the diet consists of overly processed, nutrient-poor packaged and fast-foods — the ubiquitous source of meals and calories for so many Americans — it can't be a huge surprise that so many people are unable to obtain the nutrients required for optimal brain function and mood.

Additionally, much of what we eat is full of hormones, pesticides and fungicides, may be spoiled, contains damaged nutrients such as fats, or is overcooked. All of these qualities drain essential nutrients from our bodies, and neurotransmitter deficiencies and depression in general are associated with multiple nutrient deficiencies.

Eating for Health



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Eating for Health Serving Chart

Food Group	Seeds/Oils	Protein	Leafy Vegetables	Crunchy Vegetables	Unrefined Starches	Seasonal Fruit	Booster Foods
Daily Servings	2-3	2-4	2-3	2-3	2-4	2-4	2-4
Serving Size	1 Tbs oil 2 Tbs seeds	3 oz animal 6 oz vegetable	1 cup	½ cup	½ cup whole grain, 1 medium root vegetable	½ cup or 1 medium piece	1 tsp to 1 Tbs
Examples	flax, sunflower, sesame, almonds	poultry, fish, eggs, milk, beans	salad mix, spinach, kale	broccoli, string beans, onions, celery	grains, bread, yams, winter squash, corn, millet, rice	berries, apple, grape, citrus	nutritional yeast, algae, spices, seaweed

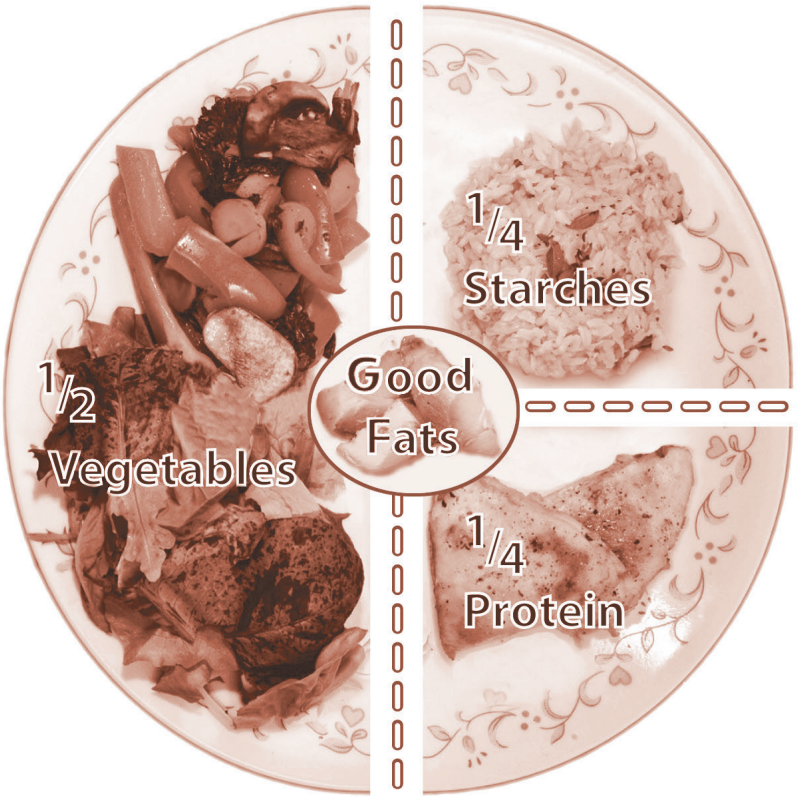
Created by Dr. Ed Bauman

Dietary Guide

General Recommendations

- Small, high-protein meals throughout the day
- Helps keep blood sugar levels stable
- Provides amino acid precursors for the neurotransmitters
- Higher proportion of proteins at breakfast and lunch, more carbohydrates later in the day provides more calm late in the day.
- Greens at each meal, including algae, calming to the nervous system
- No caffeine
- Booster Foods (algae, sea vegetables, yeast, herbs and spices) at least once in a day
- Low-glycemic, non-allergenic whole grains
- Fruit sections, including pulp; the skins of apples, onions, and potatoes
- Plentiful seeds and nuts
- Plentiful rich omega-3 foods
- Fresh fruit or vegetable snacks with nut butters
- Chocolate (1 oz per day is ok), as dark as possible (>70%). People with depression that includes irritability and social phobias tend to crave chocolate, and eating it does make them feel better (Bunce, 2007). L-phenylalanine, which converts to tyrosine, also converts to PEA (phenylethylamine), a chemical responsible for feelings of euphoria (Ross, 2002, p. 106).

Brighten Up Plate



- High Quality Protein: Julia Ross, in The Mood Cure (2002, p. 162), recommends 20–30 g of protein per meal, depending on individual requirements and size. Adequate protein is the vital first step for the production of neurotransmitters.
- Soft egg yolks every day (source of protein, choline, and vitamin D)

Dark meat turkey (source of tryptophan)

- Because tryptophan is a more difficult amino acid to get across the blood-brain barrier, and because it will be converted to niacin as needed, it is wise to provide plenty of tryptophancontaining foods.
- Studies show that approximately 60% of people who have already responded to a serotonin reuptake inhibitor will relapse within 5–6 days when tryptophan is removed from the diet, and that brain serotonin synthesis and release will be slowed (Hedaya, 2010).

- A high quality protein supplement, such as whey, can provide added NT-supporting amino acids for those who find eating adequate protein challenging or who require easily digestible protein. 1–2 servings daily.
- Even optimal protein intake can be inadequate if there is reduced stomach acid, excessive use of antacids, reduced secretion of pancreatic digestive enzymes, or bacterial overgrowth of the small intestine. Any of these can leave people deficient in essential amino acids.

Beneficial Fats

In our fat phobic frenzy, it is refreshing to note that Julia Ross (2002, p. 162) believes no restriction is necessary and finds that low-fat diets are often associated with depression (p. 134). Wells, Read, Laugharne, & Ahluwalia (1998), in a small study, found that changing to a low fat diet caused adverse mood changes within one month. It is, instead, high quality fats, and a good balance between omega-6s and 3s, that are crucial.

- Omega-3 rich foods, including wild-caught cold water fish, such as salmon; pastured beef, poultry, and eggs; flax*, pumpkin*, and chia* seeds; walnuts
- GLA (gamma-linolenic acid) rich foods, which are very limited but include organ meats and certain seed oils such as evening primrose, borage, black currant, and hemp (Enig, 2004)
- Extra virgin olive oil (preferably organic); organic, virgin coconut oil; and organic butter (pastured preferred)
- Nuts and seeds, avocados, olives, and coconut and its milk

B Vitamin Foods

According to Michael Murray, N.D., (2000, p. 243) all B vitamins are crucial for brain and nerve function, and Joan Mathews Larson, Ph.D. (1999, p. 195) has found deficiencies in vitamins B1, B2, B3, B5, B6, B12, and folic acid to directly result in depression. For vegetarians, B12 is more difficult to obtain in adequate and bioavailable forms, so supplementation is advised.

- Nutritional yeast* (must be fortified for it to contain adequate B12)
- Lean meats and organ meats; poultry; fish and shellfish
- Eggs and dairy, preferably pastured and raw (dairy)

Whole grains

- Nuts and seeds, including walnuts, peanuts, almonds
- Green and leafy vegetables, especially asparagus, broccoli, cabbage, kale, spinach

Beans and legumes

- Blue-green algaes* and kelp* contain some but should not be counted on as a main source (Mateljan, 2010).

- Vitamin D-rich foods: cod liver oil, egg yolks, (and sunshine)

Mineral cofactors

- Calcium, magnesium, potassium, manganese, iron, copper, and zinc-containing foods (Mateljan, 2010; Nutrition Data, 2007)
- Calcium: cheeses, canned sardines and salmon (w / bones), turnip and mustard greens, collards, almonds, spinach, sesame seeds, tahini, tofu, blackstrap molasses, hard water
- Magnesium: swiss chard, spinach, kelp, halibut, blackstrap molasses, pumpkin seeds*, summer squash, flaxseeds*, hard water
- Potassium: spinach, chard, crimini mushrooms, winter squash, honeydew and cantaloupe melons, blackstrap molasses
- Manganese: spinach, romaine, collard greens, raspberries, turnip and mustard greens, herbs and spices* (black pepper, cinnamon, cloves, thyme, turmeric)

Iron

- Liver, lean red meat, poultry, fish, oysters, shellfish, kidney, dried beans, fruits & vegetables
- Copper: seafood, organ meats, nuts, legumes (lentils, navy beans, peanuts), chocolate, mushrooms, bananas, avocado, water from copper pipes
- Low zinc / elevated copper associated with post-partum depression (Hedaya, 2008); consider mineral testing if copper overload is suspected

Zinc

- Calf 's liver, crimini mushrooms, spinach, sea vegetables*, pumpkin seeds*, nutritional yeast

Foods to Restrict

Refined carbohydrates of all types: sugars and refined flour products. Not only do they lead to blood sugar roller coaster rides but also to depletion of serotonin (Ross, 2002, p. 123). Complicating the issue is that these two non-foods also create stress and hormone imbalances, which further tax NT production (Mathews Larson, 2006; Ross, 2002, p. 124).

Aspartame

- Not a food but a chemical additive. Among its many other side effects is depression, and it has been shown to inhibit serotonin, while causing a rise in norepinephrine and epinephrine, often with severe effects (Ross, 2002, p. 134).

Bad Fats

- Trans fats: Formed during hydrogenation, trans fats block the brain from taking up the omega-3 fats, paving the way for the inflammatory omega-6s to take over (Ross, 2002, p. 130). Trans fats

are so bad that even if one eats or supplements good fats, eating trans fats nullifies their effect. There are no safe levels of trans fats.

- Most vegetable oils: They contain too much of the inflammatory omega-6s that we tend to over-consume, and they are generally rancid and damaged by the time they reach grocery store shelves, even if they're organic. Too much omega-6 can create inflammation in the brain, can compete with omega-3s for absorption, and can interfere with the brain's dopamine production (Ross, 2002, p. 129–130).
- Alcohol: Initially increases serotonin and melatonin release but over time will eventually reduce them, especially if stores are low to begin with (Ross, 2002, p. 246). Alcohol also negatively affects blood sugar levels and its calories may be replacing those of nutrient-rich foods.
- Caffeine: According to Braverman (2004, p. 83) caffeine is actually well tolerated in moderate amounts for those with dopamine deficiencies. However, he has found it may cause insomnia in the serotonin-deficient, nervousness and palpitations in the GABA deficient, and jumpiness and lack of clear thinking in the acetylcholine deficient. Ross, however (2002, p. 135), has found that even small quantities can deplete serotonin and melatonin, as well as cofactors such as B vitamins, vitamin C, potassium, calcium, and zinc.
- Pesticide-laden foods: Avoiding toxins of all kinds is always a good idea, but of particular importance are pesticides, many of which exert estrogenic effects that can throw hormones, and then neurotransmitters, out of balance. Some, as mentioned earlier, reduce serotonin receptors.
- Food additives: Colorings, preservatives, and chemical additives can all affect the brain's delicate chemical balance, especially Monosodium glutamate (MSG), an excitotoxin that can have very adverse effects on brain chemistry (Ross, 2002, p. 136). Many people may not recognize MSG as a threat to their health.
- Foods for which sensitivities have been detected - dairy and gluten-containing grains are of particular concern.

Supplements

According to brain function specialist Daniel Amen, M.D. (2006), no matter what problem the brain is having, multiple vitamin and mineral supplementation is required, because for so many of us a balanced diet is a thing of the past. Due to fast-food feasting and the decrease in nutrient content of even fresh whole foods, it is nearly impossible to adequately meet our nutrient requirements. This problem is compounded when our bodies have increased needs due to stress, illness, or aging.

High quality multi-vitamin/mineral with high potency B vitamins: The type of folic acid included is important. Because of variations in individual metabolism of folate, it may be wise to supplement with three types: folic acid, 5-formyl THF, and L-5-MTHF (Stahl, 2007). A high potency supplement is fine to quickly bring up nutrient levels and for those with numerous food sensitivities, but for long-term maintenance using a whole foods multiple is recommended for all its synergistic nutrient cofactors.

Essential Fatty Acids

- More than a dozen studies have been conducted looking into the efficacy of omega-3 supplementation for depression, and links between low omega-3 status and various types of depression have been established (Sontrop & Campbell, 2006), though not all studies have corroborated these conclusions, and the mechanism of action of these essential fats remains at least a partial mystery
- In four of seven double-blind randomized studies, supplementation with at least 1 g EPA significantly improved depressive symptoms (Sontrop & Campbell, 2006)
- Another study shows that even moderate doses of EFAs (300 mg each EPA and DHA) significantly improved depressive symptoms in elderly subjects (Tajalizadekhoob et al., 2011)
- Hedaya (2008) recommends 6 g/day DHA and 3 g/day EPA. Allow 3–4 months for effects.
- Lucas et al. (2011) followed 54,632 women from the Nurse's Health Study, 50–77 years old, for 10 years. Of those who eventually were diagnosed with depression, it was alpha-linolenic acid, not omega-3s from dietary fish sources, that was inversely related to depression. Those whose intake of linolenic acid was lowest experienced the greatest benefit. Unfortunately, there was no information on supplements.
- Though a large study, most other studies find efficacy for fish oils, not plant w-3s
- Other studies find that fish oils tend to be better utilized than flax oil due to the need for conversion by the delta-6 desaturase enzyme that is sometimes in short supply. Additionally, alpha linolenic acid (ALA) has been associated with mania (Hedaya, 2008), though in what doses is unknown.
- Start with low doses of fish or krill oil (1 g combined EPA/DHA) and work upwards if lack of dietary essential fats or imbalances discovered through testing warrant it
- Use high doses for 3–6 months; then reevaluate
- Test: bloodspot AA/EPA ratio (NCs can order)
- Another essential fat, GLA (gamma-linolenic acid), though an omega-6, contributes to the production of PGE1, an anti-inflammatory prostaglandin and a powerful brain antidepressant, which is often found deficient in depressed people (Mathews Larson, 1999, pp. 191–192)

Specific Nutrient Support

A fairly large body of research exists to support the benefits of specific nutrients to balance and replenish brain chemicals and their cofactors. High doses are best used for short-term replenishment, as large doses long-term may disturb other nutrient balances. Supplementing a diet that is nutrient poor may provide some support, but long-term benefits accrue from permanent shifts in diet and lifestyle and from working to develop an attitude of self-acceptance.

Amino Acid precursors

- Our neurotransmitters are either made from amino acids or, like GABA, are themselves amino acids. The best way to supply the body with NT amino acid precursors is through the intake of optimal amounts of high quality protein foods. When this fails to produce desired results, supplementing with the appropriate precursor amino acids, along with the nutrient cofactors that permit and enhance NT production, has been shown to improve depression. However, precursor loading to create balance in all NTs will provide a more beneficial effect than supplementing to build single neurotransmitters.

Vitamin C

- Vitamin C is a family of nutrients that includes the bioflavonoids; it is NOT ascorbic acid. Supplementing with a whole foods-based product will provide the entire range of nutrients. Or use a high-potency isolate product that also contains bioflavonoids; use with vitamin C-rich foods.

Vitamin D

- There is no consensus among researchers regarding the better means of raising levels of vitamin D — supplementation or sun exposure. Adequate sun exposure makes sense, as it's the way the human body has been manufacturing the vitamin throughout our evolutionary history, but when levels fall below optimal — about 50 ng/mL — supplementation may be the best means of raising it.

Minerals

- Iron, copper, potassium, and manganese are easily available in the food supply, and a multiple mineral supplement should provide any extra that's needed.
- Calcium, magnesium, and zinc may require higher supplementation. Both magnesium and zinc deficiencies are very common.
- Magnesium at 320 mg daily supplementation in addition to diet can aid sleep in those with a deficiency, helping prevent sleep deprivation-induced depression (Nielsen, Johnson, & Zeng, 2010).
- SAMe: Oral supplementation has been shown to be as effective as the tricyclic antidepressant, imipramine, but it is much better tolerated (Delle Chiaie et al., 2002). It has also been used successfully to augment depression medications in those who received no symptom relief from selective serotonin reuptake inhibitors (SSRIs) or a selective serotonin and norepinephrine reuptake inhibitor (SSNRI) (Alpert et al., 2004). Taking folic acid, B12, and B6 may enhance its effect.

POSSIBLE SIDE EFFECTS: dry mouth, elation, nausea, restlessness

WARNING: Not for use in bipolar depression because it may increase mania. Pregnant or nursing women, as well as those already on antidepressant medication, should use only under the supervision of a physician.

Herbs

- St. Johns Wort (Hypericum perforatum): An accepted alternative to synthetic antidepressant medications in several countries, most notably Germany. Many clinical studies have clearly shown it to have an inhibitory effect on the neuronal uptake of serotonin, norepinephrine, dopamine, GABA, and L-glutamate (Muller, 2003). This herb's efficacy for the relief of symptoms connected with mild depression has been demonstrated many times over (Muller, 2003) and has been shown in short-term studies to be effective and safe in children under 18 (Hübner & Kirste, 2001), for whom antidepressant medications are not recommended. Ross (2002, p. 46) finds that St. Johns Wort works when the amino acids do not, which is often when hypothyroidism is present.

SIDE EFFECTS: Though shown to be safe, St. Johns Wort may increase photosensitivity and may cause GI symptoms and/or fatigue.

WARNING: Because of possible interactions, St. Johns Wort should not be combined with monoamine oxidase (MAO) inhibitors or with SSRIs, SSNRIs or any other prescription medication, without medical supervision. It has also been shown to lower the blood levels of a growing number of drugs (LEF, 2003, p. 685).

- Magnolia officinalis: Honokiol and magnolol are the active components of the root and stem of various magnolia species, which have been used in traditional Chinese medicine to treat, among many other things, anxiety. It has been found that these active constituents act to modulate the GABA receptors and that honokiol, especially, is as effective an anxiolytic as the benzodiazepines, such as valium (Patočka et al., 2006).
- Oregano leaf extract: Has been shown to inhibit the reuptake and degradation of the monoamine neurotransmitters in a dose-dependent manner and to elicit behavioral responses in study mice that paralleled the mood-enhancing effects that humans experience when taking monoamine-enhancing compounds (Mechan et al., 2011).
- Gingko biloba: Increases serotonin levels, may help block the effects of cortisol (Schulz, 2005, p. 161), and may boost dopamine and acetylcholine levels (Braverman, 2004, pp. 88, 112)

SIDE EFFECTS: Nausea, headaches, occasional skin rashes (Schulz, 2005, p. 162)

WARNING: If taking blood thinners, use only under medical supervision.

Adaptogenics

The following adaptogenic herbs, all of which help quell stress, have also been found to be useful adjuncts to antidepressant therapy (Winston, 2002):

- Rhodiola rosea: Increases blood flow to the brain and may help boost dopamine (Braverman, 2004, pp. 88, 244)

- Siberian Ginseng (Eleuthrococcus senticosus): Changes the metabolism of dopamine, norepinephrine, and serotonin, and may make the brain more resilient to stress (Schulz, 2005, p. 162)
- Schisandra berry (Schisandra chinensis): Also has antioxidant properties and is mildly calming (Sahelian, 2007g)
- Ashwagandha (Withania somnifera): May raise levels of brain antioxidants, has anti-anxiety and mood lifting effects, and may enhance acetylcholine receptor activity (Sahelian, 2007h). Can also aid sleep.

Nervines

Nervines are herbs commonly used to help people manage stress, anxiety, insomnia, and mild depression. There are many nervine herbs that can be used every day as teas to refresh and soothe the nervous system. The following is a Bauman recipe for a nervine tea:

Brighten Up Tonic

◊ 2 parts Ashwagandha
◊ 2 parts skullcap
◊ 2 parts blue vervain
◊ 2 parts passion flower
◊ 1 part lemon verbena
◊ 1 part hibiscus flowers

Mix the above and use 1 Tbs to 1 pint of water; heat to boiling; take off the heat for 3 minutes to cool to about 185˚ F. Steep for 10 minutes. Drink ½ cup servings, 4 x/ day. Can add honey to taste.

Lifestyle Recommendations

The following have been shown to be especially beneficial for relieving depression.

◊ Detoxification to eliminate accumulated toxic metals, when indicated.

◊ Detoxification, in general, can also lead to better metabolism and balance of steroid hormones (Hedaya, 2010).

◊ Stress reduction in general is paramount. High levels of cortisol are seen across the board in all types of depression, which is known to negatively affect the uptake and production of serotonin.

◊ Exercise has been shown to be an effective antidepressant, as effective as antidepressant medications, according to the first study that demonstrated exercise's effects against that of a placebo (Norton, 2007). This article noted that physical activity has been shown to affect levels of both serotonin and norepinephrine.

- More recently, exercise has been shown to cause generation of new hippocampal cells, some of which are lost during prolonged episodes of depression (Yau, Lau, & So, 2011). The study authors and others have linked this to improved cognition and mood.

- Yoga, especially Iyengar yoga, was studied as an adjunct to antidepressant medications in people who had achieved only partial remission (Shapiro et al., 2007). Significant improvement was seen in all seventeen participants who completed the study, and complete post-study remission was seen in eleven. This particular style of yoga appears to be important because Iyengar stresses the opening of the chest, which facilitates deep breath work, possibly leading to stress reduction and improved mood.

- Meditation, relaxation techniques, and massage have all been shown not only to relieve depression but to sometimes be more effective than antidepressant medication (LEF, 2003, p. 696).

- Psychotherapy — Neurotransmitter imbalances occur for a reason, and sometimes that reason is one or more life events that have not been resolved. Childhood traumas, especially, have been shown to change both function and structure in the brain, including alterations in neurotransmitters (Patten-Hitt, 2000). Therapy's role in resolving past issues may help reduce stress and its deleterious effects on brain chemicals.

- Acupuncture

- Bright light for both SAD and non-seasonal depression, negative air ions, and vagus 27 nerve stimulation (Richard, 2007)

Conclusion

Depression is not about neurotransmitters alone, and it is especially not about single neurotransmitters, because moods are complicated states of behavior. So it stands to reason that the "magic bullet" medical approach of prescribing medications to prolong neurotransmitter actions doesn't always succeed and is, at times, downright dangerous. But this is not to say that medication can't at times be efficacious and sometimes even life-saving; for some people it provides relief from unbearable suffering. It also stands to reason that simply replenishing neurotransmitters by nutritional means is not a panacea. Each human being is uniquely complex, made up of interrelated systems with multiple feedback loops. Imbalances in the brain that result in altered moods and cognitive abilities result from systemic disorders that affect the brain and then affect the body, creating a vicious, never-ending circle. In order to encourage true healing, we must always look at the vast array of variables: nutritional deficiencies; digestive dysfunction; metabolic imbalances; inflammation; immune challenges, including food sensitivities, toxins, and oxidative stress; lifestyle choices; physical and emotional stress and trauma; and hormonal imbalances. Restoring health means working to restore balance in all of these areas.

As Mark Hyman, M.D. (2007a) notes: Dis-ease is a disconnection from our sense of place in the world, from a loss of control and meaning as we drift on the television, channel to channel, looking for a program to satisfy us and consume food that is disconnected from its origins, processed and unidentifiable from its natural state, as our families separate, disconnect, and communicate through text messaging and e-mail.

Any protocol that aims to ease depression will encompass all parts of the human experience — mind, body, soul, and culture. From the functional medicine perspective this would involve identifying imbalances in the body's various systems and then helping to remove the factors that have created and supported them.

Recommended Resources

The Edge Effect by Eric R. Braverman, M.D.

The Yeast Connection or The Yeast Connection Handbook by William Crook, M.D.

The Antidepressant Solution by Joseph Glenmullen, M.D.

Depression Free, Naturally by Joan Mathews Larson, Ph.D.

The Mood Cure by Julia Ross, M.A.

The New Feminine Brain by Mona Lisa Schulz, M.D, Ph.D.

Thyroid Power and Feeling Fat, Fuzzy, or Frazzled? by Richard Shames, M.D. and Karilee Shames, Ph.D., R.N.

Adrenal Fatigue by James L. Wilson, N.D., D.C., Ph.D.

Websites

www.healthrecovery.com — Joan Mathews Larson's very informative site.

www.moodcure.com — Julia Ross' informative site.

www.stopthethyroidmadness.com — good articles regarding thyroid problems of all types, including thyroid and depression.

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