

The FOOD-MOOD Connection

YES, YOUR EATING HABITS PLAY A BIG ROLE IN DETERMINING YOUR DISEASE RISKS. BUT DID YOU KNOW THAT THEY ALSO HAVE A HUGE EFFECT ON YOUR STATE OF MIND?

By JACK CHALLEM

You don't need a study to tell you the obvious: There are a lot of people out there who just aren't feelin' the love. We see it all around us: The coworker who's always in a snit. Impatient people in the supermarket line. Aggressive and downright vindictive drivers. Somehow, we've turned ourselves into Bad Mood Nation.

It's estimated that 9.5 percent of American adults, or nearly 21 million, have mood disorders, and 18.1 percent, about 40 million, have anxiety disorders. Psychologists blame everything from our self-centered habits to the breakdown of traditional family structures. But could food also have something to do with our moods?

Stop for a moment and think about how food affects your mood. If you're like many people, you feel fuzzyheaded and sleepy after lunch. That's because your blood-sugar levels, which rise after you eat, suppress orexin, a brain chemical responsible for feeling alert. On the other hand, when you're really hungry and your blood sugar is low, more-primitive regions of the brain start taking charge, and you're more likely to become impatient, irritable and angry. After all, your distant ancestors had to be aggressive hunters if they wanted to survive.

When it comes to the food-mood connection, blood-sugar fluctuations are only the beginning. The quality and quantity of the nutrients available in our food also go a long way toward determining our emotional resiliency and stability.

The past 30 years have seen a steady nutritional erosion of the standard American diet. As we've become more dependent on convenience and fast foods, which are loaded with sugars, refined carbs and empty calories, we've

neglected the well-being of not just our bodies, but also of some very complex mood machinery that resides within it.

It turns out that our moods, like our bodies, simply do much better with fresh, whole foods that provide a wealth of protein, vitamins, minerals and healthy omega-3 fats. Why? Because, at root, what we eat affects everything from our production of neurotransmitters and hormones to our energy levels and the quality of our synaptic connections — all of which can determine how well we respond to the stresses and demands of daily living.

NEUROTRANSMITTERS ON TAP

Brain chemicals, called neurotransmitters, are the front-line regulators of our moods. Some neurotransmitters, such as serotonin and gamma aminobutyric acid (GABA), help calm us. Others, such as dopamine, stimulate us. Having the right balance of various neurotransmitters available helps ensure that our responses and moods are appropriate to the given situation. And there's an important connection between the food you eat and the neurotransmitters your brain produces.

Protein (think fish, chicken and other kinds of meat, as well as eggs, nuts and legumes), for example, provides chemical units known as amino acids, which form the foundation of our neurotransmitters. From there, via a series of enzymatic reactions, vitamins and minerals help convert amino acids to the full-fledged neurotransmitters our brains use to regulate mood.

Take a look at just a few representative snapshots of the relationship between neurotransmitters, nutrients and mood:

■ **Serotonin** is a neurotransmitter that keeps your mood upbeat. It's made from tryptophan, an essential amino acid abundant in fish, eggs, chicken, turkey and other meats. Iron, zinc,



and vitamins B3, B6 and C help facilitate the enzymatic reactions that convert tryptophan to serotonin.

■ **GABA** helps the brain filter out extraneous information, enabling you to stay focused and calm. The amino acid glutamine is the principal building block of GABA and is found in halibut, legumes, brown rice and spinach. Vitamins B3, B6 and B12 work in a number of enzyme reactions to help convert glutamine to GABA.

■ **Dopamine**, the most powerful of your stimulating neurotransmitters, is responsible for many of the “highs” you feel. The brain converts the amino acid tyrosine — found in protein — to dopamine with the help of folic acid, vitamin B6, magnesium and zinc. You’ll find extra tyrosine in almonds, avocados, dairy products, and pumpkin and sesame seeds. A related compound, tyramine, is rich in aged cheeses, such as aged cheddar and Stilton.

■ **Norepinephrine** (also known as noradrenaline) is another stimulating neurotransmitter. The brain makes it from dopamine, with the help of the mineral copper and vitamins B6 and C. Like dopamine, norepinephrine is ultimately derived from the amino acid tyrosine.

HAPPY FATS

Although the healthy omega-3 fatty acids found in cold-water fish are not technically neurotransmitters, they, too, are essential for normal brain function and mood regulation. Recent research on omega-3 fats reflects growing interest in their mood-enhancing benefits.

The brain, about 70 percent of which is composed of fat, needs omega-3s for normal brain development in infants, for maintaining balanced moods throughout life and, especially, for moderating aggressive behavior.

Researchers believe that omega-3s and other healthy fatty acids help improve neurotransmitter activity by assisting brain cells in communicating with each other, enhancing brain-cell plasticity (adaptability) and reducing inflammation that can damage brain cells. Specifically, three studies published in the June 2006 issue of the *American Journal of Psychiatry* found that omega-3 fish oils can ease depression and mood disorders and lower suicide risk.

HOW STRESS STARVES US

Many of our modern-day mood issues result from a collision between stress and poor eating habits. Stress, whether we’re talking about being stuck in traffic or having a bad day at the office, actually boosts levels →



IN THE MOOD FOR SOME NUTRIENTS?

Dietary improvements can help moderate several common mental or emotional states. Sticking with fresh, whole foods helps you get the protein you need to build neurotransmitters. It also supplies healthy fats, fiber, vitamins and minerals.

ANGER most often expresses itself through irritability and emotional outbursts. To moderate excessive anger, it’s important to wean yourself off caffeine and sugary foods, which promote bouts of low blood sugar and negative feelings. Alcohol also plays with blood sugar, and it loosens inhibitions, encouraging aggressive behavior and reactivity.

It’s easy to become irritable when your energy drops, so strive to keep your blood sugar stable. Eat smaller, more frequent meals that emphasize fresh, whole foods. Avoid refined grains. Start your day with some protein — eggs, a protein-boost smoothie or yogurt, for example. Have chicken on a mixed-greens salad (sans croutons) or grilled fish for lunch. For dinner, prepare the protein of your choice with veggies and brown rice. Take a high-potency multivitamin and consider a B-complex vitamin supplement.

ANXIETY expresses itself through jumpiness, tension, fear, sleeplessness

and panic attacks. Counter these tendencies by eating regular meals of fresh, whole foods. Beware of large amounts of caffeine, which can create an edgy feeling that mimics the early stages of anxiety and panic attacks, triggering a full-blown attack. Many soft drinks contain caffeine, and some popular commercial coffee brews contain 500 mg of caffeine in a 20-ounce cup. Stick with water, caffeine-free iced herbal teas and green tea. Although green tea contains some caffeine, it also provides theanine, an amino acid that increases GABA activity, which helps us stay focused and calm. Theanine (200 mg) and GABA (100 mg) supplements may be beneficial for some.

DEPRESSION reflects feelings of profound sadness and hopelessness. Consider whether lifestyle factors such as an unhappy marriage or a bad job may be behind your feelings of depression. Recognize also that anger may be a symptom of depression.

Depressed people are often low in serotonin, dopamine and norepinephrine, and they may not be eating enough protein to make adequate levels of these neurotransmitters. Again, eating

high-quality food-based proteins and avoiding excess sugars may help. Supplements of 5-HTP (5-hydroxytryptophan), 50 mg three times daily, may also prove useful for some.

ADULT ADHD. Attention deficit hyperactivity disorder is not limited to children. Adults who have racing thoughts, who multitask excessively, and who can’t wean themselves from email on weekends and vacations may have adult ADHD. Emphasize fresh cold-water fish, such as salmon and tuna, which are rich in the omega-3 fats that help regulate our moods. These essential fats can reduce impulsive behavior. Stay away from fried fish and chicken, fries, and onion rings, which are cooked in unhealthy trans fats that suppress omega-3 activity in our bodies. Consider supplementing with omega-3 fish oils (1 to 3 grams daily), a high-potency B-vitamin complex (with 10 times, or 1,000 percent, of the recommended daily value) and theanine (200 mg daily).

Consult your health or nutrition professional before altering your supplementation strategy, particularly if you take prescription medications.

of epinephrine (adrenaline) and other stimulating neurotransmitters, while suppressing calming ones.

This shift in our neurotransmitter balance is made worse because our eating habits tend to slide when we're stressed. We skip meals, consume more caffeine and sugar for energy, and succumb to fast-food meals rich in sugars (soft drinks and shakes) and sugar-like carbs (buns and fries).

In addition to messing with our blood-sugar and hormone levels, these foods provide little in the way of high-quality protein, vitamins and minerals. As a result, they put stress on our bodies and demand metabolic resources without offering us any benefit in return. (For more on stress and nutrition, see "Crunch Time" in the June 2005 archives at lifetimefitness.com/magazine.)

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BRAIN FOOD

Wondering about the proper care and feeding of your emotions? Not surprisingly, the same general dietary habits recommended for good general health, and heart health in particular, also lay the biochemical foundation for better mood management and emotional resilience.

First, as a general rule, opt for whole foods that are rich in protein, complex carbohydrates, healthy fats, vitamins and minerals — all the ingredients you need for making neurotransmitters. Focusing on such foods will help limit your intake of calorie-dense sugary and starchy processed foods that offer little or no nutritional value. If you exercise and need extra carbs for energy, eat more fruit and carb-dense vegetables.

Second, eat a protein-rich breakfast, such as eggs with whole-grain toast or fresh fruit. Skipping breakfast or eating a bagel on the run wreaks havoc on your blood sugar and leaves you more sensitive to stress. The protein in eggs quickly stabilizes your blood sugar and provides amino acids for your neurotransmitters.

Third, eat regular meals and make sure each includes some high-quality protein. Doing so keeps your blood sugar stable and also gives you the building blocks you need for making neurotransmitters.

Fourth, when you cook foods, cook them lightly, either by sautéing or stir-frying. Overcooking alters the protein structure, leaving it resistant to normal digestion and assimilation for neurotransmitter production.

Fifth, do your best to avoid fast foods, such as burgers, fries and fried chicken, as well as packaged microwave meals. All of these foods tend to be high in sugars, sugar-like refined carbs and unhealthy trans fats. (Trans fats interfere with how your body uses omega-3s.) Avoid soft drinks: The sugary ones can affect your blood sugar, and there's some evidence (albeit controversial) that those sweetened with aspartame can negatively affect neurotransmitters (see "Excitotoxins" in the March/April

2003 archives at lifetimefitness.com/magazine). Similarly, go easy on coffee and, especially, sweetened coffee drinks (some contain a whopping 730 calories — almost half of a woman's daily needs). Taking in excess calories in liquid form tends to discourage people from eating regular, nutritious meals.

SUPPLEMENTAL INSURANCE

Although a diet rich in whole, fresh foods should always form the basis of your nutritional foundation, selective supplementation with vitamins, minerals, amino acids and healthy fats can be very helpful to those who are suffering from dietary shortfalls.

Taking supplements doesn't have to be complicated. A good place to start is with a high-potency multivitamin or B-complex vitamin. Either way, make sure it contains about 10 times (or 1,000 percent) of the recommended daily value for vitamins B1, B2, B3 and B6, since they play important roles in the synthesis of mood-regulating neurotransmitters. Supplementing with omega-3 fish oils, about 1 to 3 grams daily, is also widely recommended for most people.

One word of caution: If you take prescription medications for a mood disorder (for example, Zoloft or Paxil) and want to add supplemental GABA, theanine, tryptophan or tyrosine, please consult your doctor. These amino acids can amplify the drug's effects. Fish oils can also interfere with some blood thinners and other medications. So ask your doctor before adjusting your supplementation regimen.



No matter what your health status, though, consider whether your current mood status deserves some attention. And next time you're fueling your body, don't forget that you're also feeding your brain. ☉

Jack Challem is the author of *The Food-Mood Solution: All-Natural Ways to Banish Anxiety, Depression, Anger, Stress, Overeating, and Alcohol and Drug Problems* (www.foodmoodsolution.com), which will be published in February 2007 by John Wiley & Sons.

WEB EXTRA!

For links to studies, collected research and other resources referenced here, see the online version of this article at lifetimefitness.com/magazine.