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Nutrition Notes

A Monthly Newsletter About Health and Nutrition

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Nutritional Boosters

Have you ever wondered whether it is more nutritious to eat your vegetables raw or cooked, or whether to eat foods on their own or combined with other foods? Many people have asked me about how they can get the most health benefits out of the foods they eat. It is an intriguing topic, since the amount of nutrients in a food does not necessarily reflect the amount of nutrients your body will absorb, but how you eat them can be a determining factor in their nutritional power.

Bioavailability is the term used to describe how much of a nutrient within a food is usefully absorbed and used by the body. Certain nutrients are more bioavailable if they are heated, while other nutrients are destroyed by heat. There are still other nutrients that will not be absorbed without the presence of other nutrients in a meal. Cooking and eating to maximize bioavailability usually depends upon which nutrients we are interested in maximizing.

To cook or not to cook?

That is the question on everyone's mind. Unfortunately, there are few definitive answers to this quandary. Research indicates that using dry heat methods, such as roasting and microwaving with minimal amounts of water, are better for preserving some heat-sensitive nutrients, since fewer nutrients are leached out into cooking water than from moist heat methods, such as boiling and steaming.

Since plant foods contain an array of nutrients, chances are that some nutrients will be enhanced by cooking. Plants are often made up of tough cell walls that are fibrous and difficult for our bodies to break down on their own. These tough cell walls usually contain phytonutrients (plant nutrients that can act as antioxidants) that are only released through cooking, since the heat can soften and break down these walls to release and activate the nutrients. Nutrients in the carotenoid family, including beta carotene, lutein and lycopene, are made more bioavailable by cooking.

Certain other plant nutrients will be destroyed by heat. This can be a good thing when those nutrients pose health risks, as with raw mushrooms and celery; raw white and button mushroom varieties contain natural toxins and celery contains psoralens (which sensitize the skin to the sun's harmful ultraviolet radiation) that are each deactivated by cooking.

However, there are other plant nutrients that you should try to avoid destroying by cooking, as their health benefits are most bioavailable

when left either raw or slightly cooked. For instance, anthocyanins, vitamin C and the B vitamins thiamin, riboflavin, niacin, biotin, pantothenic acid, vitamin B6, folate and vitamin B12 are nutrients that do not like heat and can be destroyed by high-heat cooking. Foods such as broccoli should be cooked briefly, if at all, in order to avoid destroying their vitamin C and cancer-fighting sulfur-based nutrients like sulforaphane. When it comes to foods rich in vitamins B and C, it is best to eat them cooked sometimes and raw at other times, just to cover your bases. Berries, for example, which are prized for their anthocyanins, are best when eaten raw but may also provide certain other health benefits when cooked.



Grinding is great

Other foods need to have their tough cell walls broken down by cutting or grinding instead of by cooking. Flax seeds and garlic are two good examples.

Flax seeds need to be ground or crushed in order to release their lignans (which are weak phytoestrogens that help protect against certain hormone-related cancers) and omega-3 fatty acids; otherwise they are just a source of fiber.

Garlic contains enzymes that form several sulfur compounds called allyl sulfides that are released through chopping and crushing. Allowing chopped or crushed garlic to stand for ten minutes maximizes the formation of these heart-healthy, cancer-protective compounds.

Fat free = nutrient free

Remember the days of fat-free salad dressings? Contrary to popular belief, you may actually be better off with a dressing that contains a fair amount of fat (as long as it is a healthful type of fat). Research shows that when you eat a salad that contains no fat, you don't absorb any of the wonderful nutrients that the salad has to offer. Certain nutrients—specifically vitamins A, D, E and K, as well as beta carotene, lutein, zeaxanthin and lycopene—are fat-soluble, meaning that they travel in fat. Fats such as olive oil, avocado and nuts are necessary for the absorption and storage of many plant nutrients. Therefore, for many red, orange and green produce items, some healthful fat is a necessary addition if you want to reap their benefits.

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In This Issue:

- Nutritional Boosters
- Change Your Mood With Food
- Food of the Month: Eggs

Nutritional Boosters continued...

Dynamic duos

Some nutrients require that you eat another nutrient with it in order to maximize their benefits. For example, certain plant foods are excellent sources of iron (called non-heme iron), but the iron is not readily absorbed without vitamin C. That means that you can eat lentils, the best source of dietary iron, every day of the week and twice on Sunday, but if you don't add a chopped tomato or some red bell pepper to your meal then you may not absorb much, if any, of the iron. In fact, vitamin C can boost non-heme iron's bioavailability by six-fold!

Inulin, a prebiotic fiber that occurs naturally in onion family foods, like leeks and garlic, asparagus, artichokes, bananas, legumes and whole intact grains, like oats and barley, can aid in the absorption of calcium. Studies have shown that increasing your insulin intake can increase bone mineral density by boosting calcium absorption.

Research has also recently shown that in order to get the most benefit out of the catechins in green or black tea, it is best to add a generous amount of acidic citrus juice. It seems that drinking a tea blend that contains 20-50% vitamin C-rich juice can make the cancer-fighting properties of tea up to 13 times more potent than when they are consumed without vitamin C.

Since bioavailability is not set in stone, I've prepared a handy chart that lists important foods and their nutrients and if they should be eaten cooked, raw or in combination with other foods in order to maximize their nutrients. I also have a key of important complimentary nutrients and their function.

Food	Major Nutrients	How To Prepare
Beans, tofu, dark leafy greens, dried fruit	Iron	Add vitamin C-rich foods
Berries	Anthocyanins	Raw
Broccoli	Vitamin C, sulforaphane, indoles	Raw and lightly cooked
Carrots	Beta carotene	Add olive oil; cook until slightly tender
Dark leafy greens, canned salmon and sardines with bones, black-eyed peas, nonfat milk	Calcium	Add onion family foods, asparagus, artichokes, bananas, legumes and whole intact grains
Flax seeds	Lignans, omega 3s	Grind or crush; eat raw
Garlic	Allyl sulfides	Chop and let stand 10 minutes before eating raw or cooking
Green and black tea	Catechins	Add lemon, orange, grapefruit or lime juice
Red bell peppers	Beta carotene, vitamin C	Add olive oil, nuts or avocado; cook until slightly tender and eat raw
Spinach, other leafy greens	Beta carotene, lutein	Cook lightly, add olive oil or nuts
Tomatoes	Lycopene, vitamin C	Add olive oil or avocado; cook and eat raw
Zucchini	Vitamin C, beta carotene, lutein	Add olive oil or nuts; cook and eat raw

Nutrient	Nutrient Function
Allyl sulfides	Help lower cholesterol and blood pressure; antibacterial
Anthocyanins	Antioxidants; protect against heart disease, cancer and aging of the brain
Beta carotene	Antioxidant; maintains health of eyes, skin, lungs, immune system; protects against certain cancers; can be converted into vitamin A in the body
Calcium	Mineral that helps build strong bones and teeth, important for muscle and blood vessel function
Catechins	Antioxidants; help neutralize free radicals; reduce risk of skin, esophageal, and stomach cancers
Indoles	Antioxidants that help protect against cancer
Iron	Component of enzymes and proteins in the body; helps form hemoglobin
Lignans	Act as weak phytoestrogens in the body to help protect against certain hormone-related cancers
Lycopene	Protects against heart disease and many types of cancers, especially prostate cancer
Sulforaphane	Antioxidant that helps protect against breast, lung, stomach, esophageal and colon cancers
Vitamin A	Maintains health of eyes, skin, lungs and immune system
Vitamin C	Antioxidant; reduces risk of cancer and cataracts

Now you know the little tricks for boosting your absorption of nutrients from your diet. Don't let this information overwhelm you, though; just let it guide you in making better choices. As I said before, the safest and most moderate approach is to eat a variety of cooked and raw produce items and, when you do cook, be sure not to overdo it. Cook for the shortest time possible, using no water or the smallest amount of water that you can. Bake, grill, roast, sauté and microwave most often and steam with the smallest amount of water possible; boil only when necessary. Understanding bioavailability means that you can put optimal nutrition into action. Eat your plant foods with these tips in mind and the benefits will add up to more than the sum of their parts!

Change Your Mood With Food

Have you ever noticed how sluggish and grumpy you feel if you skip breakfast? Conversely, think of the pure joy you may feel when biting into a piece of luxuriously rich chocolate. Perhaps you have suspected that what you eat—or don't eat—can influence how you feel for the rest of the day. The foods we eat don't just supply us with energy; they trigger chemical reactions in our bodies that can affect our blood sugar levels, our serotonin levels and other aspects of our brain chemistry.

Having deficiencies in certain nutrients has been shown to affect mood. Skipping meals or making the wrong food choices for our bodies can also mess with our mood-related chemistry.

The emotional power of food should never be discounted in the role it plays in our moods. Food is woven into the fabric of our lives and therefore can have many emotions and memories tied to it. I believe that there are four common food-mood relationships that can be manipulated with food in order to change your mood.



1. First thing's first: breakfast. Have I not hammered the importance of breakfast into your head after all these years? Aside from breakfast's slimming benefits, it can also perk up your mood. Ideally, you will sit down to a bowl of oatmeal with some milk, nuts and fruit within one hour of waking up. This balanced meal of whole-grain carbohydrates, healthful fat and protein makes your brain secrete positive neurotransmitters like serotonin, dopamine, norepinephrine, and acetylcholine that perk up your mood. The balanced nutrients in the meal will help further by making you feel focused and satiated for about four or five hours.

Unfortunately, most people either just skip breakfast altogether or run out the door with some sugary pastry or bagel and wash it down with a few cups of coffee. If you fill up your body with refined carbohydrates and caffeine, you probably feel irritable, sluggish, stressed out, and cranky—not to mention jittery and hungry. Without the proper fuel or the right balance of foods, your brain doesn't readily produce the neurotransmitters that increase alertness. Skipping your morning meal after an overnight fast can send your body into starvation mode, where your brain, your blood sugar and the rest of your body function erratically and your mood and energy levels dip. To avoid starting off the day feeling like a grouch, take my advice and eat a good breakfast like the one described above.

2. Kick the caffeine and carb habit. If you find that you require several cups of coffee to get your brain started in the morning, and/or you crave carbohydrates throughout the day, then your body may be telling you something. Specifically, you may need to break the cycle of food- and caffeine-related highs and lows. After chugging a few cups of coffee, you may initially feel more alert and focused, but soon afterward you'll hit bottom, possibly with a headache or heart palpitations and almost certainly with drowsiness and irritability. If you can't live without your morning coffee, then eight to 16 ounces of coffee or tea a day is considered acceptable, but try to have them either with or soon after a balanced meal. Since you can build up a tolerance to caffeine, take breaks over the weekend so it takes less of it to get you going on Monday morning; you'll sleep better, too.

In terms of refined carbohydrates and sugary foods, both basically work the same way inside your body. They are easily and quickly converted into

blood sugar (glucose), requiring a rush of insulin to deliver it to your cells. Once the sugar is delivered, glucose levels drop dramatically and your body begins craving more refined foods to help bring the levels back up. At the same time, your mood is on a blood sugar-related rollercoaster—up when blood sugar levels are high, and down when levels are low. It's normal to want the quick pick-me-up that sugar can provide at certain times of the day, but ultimately it slows you down. Try to fight the craving with balanced meals and limited amounts of refined carbohydrates and added sugar. Instead of eating a candy bar for a snack, try a piece of fruit with an ounce of nuts to help control your blood sugar and your mood.

3. End emotional eating. Almost all of us have turned to food for comfort at some time in our lives—we feel sad, so we reach for a cookie to help cheer us up; we feel happy, so we celebrate with a slice of cake—but some people do it regularly and they inevitably choose foods that perpetuate the cycle of emotional eating. If it's your heart that's hungry and not your stomach, then food should not enter into the equation. Indulging your urge to eat when you're not hungry can provoke feelings of guilt, failure, and shame on top of the negative emotions that you may have already been feeling. If you tend to fall into this cycle of trying to restrain your emotions with food, then you need to break the cycle. Keep a food journal and include notes on what and where you eat, your mood at the time, and the social setting. This will alert you to any triggers that may set off an emotional eating episode. Once you know your triggers, work out a plan for avoiding them and coping with them differently. For example, if you're feeling frustrated or sad, don't eat cake. Go for a walk instead to release the same soothing endorphins that eating the cake would have—the result will be an extended high without the subsequent blood sugar crash.

4. Fix nutrient deficiencies. If your diet contains a lot of junk foods, fast food and highly processed foods, then it is likely to be low in important nutrients. Getting adequate amounts of specific nutrients in your diet can clinically improve your mood. Research has repeatedly shown that eating a diet rich in omega 3 fatty acids can help fight depression. Omega 3s are found in fatty fish like salmon, sardines, tuna, herring, striped bass, black cod, and to a lesser degree in some plant foods like walnuts, flax seeds, chia seeds, and fortified eggs.

Try to include these foods in your regular diet and consider a high-quality omega 3 supplement, too. Also include foods rich in folate, such as beans, bananas, cantaloupe, asparagus, broccoli and spinach, since research indicates that folate is important for regulating chemical reactions in the brain that affect mood. For women who suffer from PMS, including foods rich in calcium and magnesium and sources of vitamin D can improve mood swings and other emotional symptoms. Calcium and magnesium are found together in dark leafy green vegetables, like kale, swiss chard, spinach, collard, beet, turnip, dandelion and mustard greens, as well as almonds. The best sources of vitamin D are supplements and/or a few minutes of sun exposure daily.

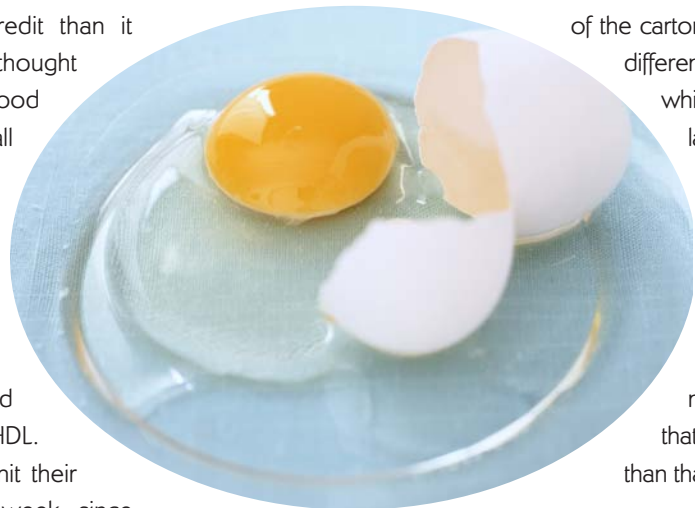
It is possible to improve your mood by altering what you eat. Of course, your diet is not always going to be the solution to your bad mood if it is not a part of the cause, but it may be more involved than you think. Keep in mind that if your mood is negative, then you will be less likely to make healthful food choices. Try to motivate yourself to eat regularly, minimize caffeine and refined carbohydrates, break emotional eating cycles and eat a nutrient-dense diet. The benefits couldn't be anything but happy.

**Food
of the
Month**

Eggs

For the last several years I've noticed that a lot of people order egg whites instead of whole eggs at restaurants and that the "egg white only" option is prominently advertised on menus. It surprises me that a food like egg whites that is typically so dry and tasteless is so popular — and all in the name of "health." This month, I want to set the record straight and let you know that if you truly want to get the health benefits of eggs, you should order them with the yolk (and request that they be cooked in extra virgin olive oil).

Eggs have long been villainized for being high in cholesterol. However, the detrimental effect of dietary cholesterol on blood cholesterol has been given more credit than it deserves. Many years ago, scientists thought that eating dietary cholesterol raised blood cholesterol, but that is only true for a small group of people who are particularly sensitive to dietary cholesterol. Even for these people, though, eggs are not truly harmful, since the blood cholesterol produced as a result of eating food with cholesterol is comprised of both HDL ("good" cholesterol) and LDL ("bad cholesterol"), so the LDL is offset by the HDL. People with type 2 diabetes should limit their whole egg consumption to three per week, since the risk of coronary artery disease increases with greater egg intake for this group, but for the rest of us, today's research indicates that eating one whole egg a day is more than safe, as long as you don't cook it in unhealthy fats and oils or serve it with bacon or sausage or white bread; it is the saturated and trans fats found in butter, margarine, some oils, cheese, bacon, sausage, along with some highly processed carbohydrates like most breads, that really increase cholesterol in a dangerous way. Therefore, keeping your egg habit healthful requires hard boiling or poaching in water, sautéing in extra virgin first cold press olive oil, and adding vegetables. Whole-grain toast, especially the flourless varieties, can also be a good side to your eggs. If you want to eat eggs for a meal every day, try cooking one whole egg with two or three egg whites. Alternatively, you can eat two eggs every other day.



Egg yolks contain zinc, riboflavin, folate, vitamin B12, vitamin D, iron, lutein, zeaxanthin and choline. Lutein and zeaxanthin are carotenoids that are important for preventing macular degeneration and other vision problems. Choline is an essential nutrient that is important for preserving memory and for fetal brain development. Eggs as a whole are an excellent source of protein (in both the yolks and the whites)—in fact, they are the "gold standard" for all other proteins since they are so complete and rich in amino acids. One whole large egg contains 70 calories, 6 grams of protein, 2 grams of fat and 1.5 grams of saturated fat.

When selecting eggs, open the carton and gently jiggle each egg to make sure it has no cracks and it isn't stuck to the bottom of the carton (a sure sign of a leaky egg). The only difference between a brown egg shell and a white egg shell is the breed of chicken that laid it. However, darker orange yolks may indicate that the eggs are richer in carotenoids and omega 3 fatty acids than those with pale yellow yolks, since the yolk color often reflects what the chickens ate. Organic eggs and omega 3-fortified eggs may be more nutritious since the diet of the chickens that lay those eggs is more tightly controlled than that of conventional chicken.

Store eggs in the coldest part of the refrigerator and never in the door, since they're repeatedly exposed to warm air when the door is opened. Eggs can be stored for four or five weeks, but if you're wondering whether your eggs are fresh, submerge the egg in cold water; a fresh egg will sink. If it floats, it's too old to use. If you're cooking with eggs, you need at least two bowls — one to crack the egg into so you can check for any discoloration, blood, or odor, and the second to transfer the acceptable eggs into. Use three bowls if you're separating the yolks from the whites. Patience and low heat are essential for producing tender fried or scrambled eggs, since high heat produces tough, watery eggs. Additionally, for more tender scrambled eggs, add just a little water or milk before cooking to help tenderize the eggs even more. This month, try my recipe for Mediterranean Frittata.

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