

SEROTONIN

Happiness, the Brain & the Gut

by Dr. Carol Jamison



Imagine day after day, year after year, gray clouds looming over the landscape, so thick and dense not a shred of sunlight can peak through. Dreary and unpleasant is the continual forecast. This is life without enough serotonin.

Serotonin is like that ray of sunlight that warms your skin on a cool day and lightens your heart.

In all reality, serotonin is known to contribute to your ability to have feelings of well-being and happiness. A deficiency is linked to depression, low mood, aggression and obsessive compulsive disorder.



Serotonin does not just have an important role in the brain in your head but also the brain in your gut. A gut deficiency can create irritable bowel syndrome. Plus, it happens to be a key player in intestinal movement involved in digesting and eliminating food.

We do know that our human bodies, along with animals, insects, fungi and plants, make serotonin from scratch. Certain fruits and seeds contain serotonin, which is what causes a nice laxative effect when eaten. “Scratch” actually means that serotonin is produced from the conversion of L-tryptophan, an amino acid (or building block of protein), to 5-hydroxytryptamine then to 5-hydroxytryptophan (5-HTP). 5-HTP then converts to serotonin with the help of vitamin B6, vitamin C and magnesium. Serotonin then further metabolizes to melatonin (the hormone that sets your body clock) or small amount of niacin (B3). Both substances have essential roles in living cells including DNA repair and adrenal gland function. Serotonin to melatonin conversion requires riboflavin and B6.

What is the link between the brain and the gut? Serotonin is a neurotransmitter or chemical messenger that is a fast acting molecule. Its job is to activate secondary messengers that affect 1) the gut and part of the brain involved in pleasure and motivation and 2) the central nervous system regulation of mood, appetite and sleep. Serotonin also has a role in memory and learning. Interestingly, as important as serotonin is to our outlook on life, only 1% of your body’s serotonin is made in the brain, while 95% is made in the bowels, the rest being elsewhere in the central nervous system, according to Dr. M. Gershon author of *The Second Brain*.

Interestingly, melatonin production may be the reason why taking 5-HTP seems to reduce some symptoms in fibromyalgia and chronic fatigue syndrome related to poor sleep.



Serotonin knowledge is relatively young in the grand scope of understanding body functioning. It was first discovered in 1935 by Vittorio Erspamer as a substance that made the intestines contract. This substance was later named serotonin in the early 1950s. Initially, serotonin was only thought to be found in the brain. It took extensive research in the 1950s and '60s by doctors like M. Gershon and other pioneer scientists to uncover and accept that serotonin has a huge function in the intestines affecting digestion, mood and general health.

Interestingly, melatonin production may be the reason why taking 5-HTP seems to reduce some symptoms in fibromyalgia and chronic fatigue syndrome related to poor sleep. Melatonin is a powerful antioxidant that is secreted in response to darkness. It has a significant role in memory and has been shown to prevent migraine headaches and mood disorders.

The serotonin molecules as mentioned, are fast acting. They don't leisurely hang out on the neurons, signaling events. They get in, get out and are broken down quickly, never accumulating. There is wisdom to serotonin being so fast acting. If serotonin accumulates too much for too long, it causes a nasty sickness called “Serotonin Syndrome”. This does not occur easily; it is induced by



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Serotonin

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medications mostly or a tumor that secretes serotonin. The symptoms of Serotonin Syndrome are confusion, agitation, profuse sweating, high fever, high blood pressure and muscle rigidity.

Now that you know that you can get too much serotonin, knowing about L-tryptophan and 5-HTP is even more important. Many physicians and researchers believe these are a safe way to naturally increase the production of serotonin. L-tryptophan is an essential amino acid that can not be made by humans; it must be consumed, luckily found in large amounts in dietary protein. Foods high in L-tryptophan are nuts, eggs, meat, fish and dairy, spirulina, cod, raw soybeans, pumpkin seeds, Parmesan cheese, sesame and sunflower seeds, pork, turkey and more.

Low serotonin may be behind your craving of bread and pasta. We know that serotonin is made from L-tryptophan and that it's found in protein foods. We should just eat more protein, right? Wrong. Other amino acids found in high protein foods compete with L-tryptophan. Ironically, a meal low in protein but rich in carbohydrates is what causes an increase in brain L-tryptophan and therefore serotonin. This confirms the importance of eating a variety of foods with both protein and healthy complex carbohydrates.

A more controlled and reliable way to try to increase serotonin would be to take 5-HTP as a supplement. A typical dose of 5-HTP is effective starting at 50 mg a day, taken away from protein foods. Unlike a prescription SSRI

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(antidepressant medication), 5-HTP is safe to start and stop abruptly, although it is always best to slowly increase and decrease.

There are some safety issues to know about. Due to the risk of Serotonin Syndrome, it is not safe to take 5-HTP with some medications, especially antidepressants, without discussing it with your doctor. Also, if taking 5-HTP, you should avoid alcohol. 5-HTP should not be used if you have liver damage or diseases like cirrhosis. Some people experience gastrointestinal side effects when first taking 5-HTP such as gas, nausea, diarrhea and upset stomach. This usually tapers off a few days after taking it, or can be avoided by starting with a lower dose (25 mg) or taking with food. Ginger tea or supplements may also be a tummy tonic. For some, a side effect may be grogginess so 5-HTP is best taken at bedtime.

If you are not a candidate for taking 5-HTP or want to know how else you can naturally increase your own serotonin levels, then first know what reduces it. Alcohol lowers serotonin levels, as does NutraSweet (aspartame) by decreasing tryptophan accessibility. Other ways to enhance your own production of serotonin is to use probiotics which are important for the gut immunity and are often destroyed by food allergies, anger and stress, so identifying those, can get your brain and gut back to happy.

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