

Balance Your Brain

Natural ways to
balance neurotransmitters
and improve your mind
and mood

At this very moment, the trillions of cells in your body are talking to each other. They're not conspiring against you; they're actually trying to help you by attempting to keep your body functioning at its best. Your cells are talking to each other using three types of chemical messengers—eicosonoids, hormones and neurotransmitters. Neurotransmitters are the messengers of your nervous system. Your nerve cells (neurons) use them to communicate with each other and with other body tissues, such as your muscles and senses.

You're probably familiar with some of these messengers, such as serotonin, which has become well-known for its role in depression. Other neurotransmitters include endorphins, dopamine, GABA, epinephrine and norepinephrine. Modern psychiatry focuses heavily on the modification of neurotransmitters through various drugs that stimulate or inhibit them to treat mood disorders like anxiety and depression, as well as various forms of mental illness.

Unfortunately, these drugs are a rather crude way to balance neurotransmitters. Barry Jacobs, a neuroscientist at Princeton University has said, "So far, the tools used to manipulate serotonin in the human brain are more like pharmacological machetes than they are like scalpels—crudely effective but capable of doing plenty of collateral damage." We call that collateral damage, side effects.

The good news is that there are natural methods to get your brain cells communicating in healthy ways. These include improved nutrition, specific herbs and nutritional supplements, counseling, flower essences, aromatherapy and lifestyle modifications. These natural methods can help build permanent improvement in brain function without the harmful side effects of synthetic drugs. So, in this issue of *Sunshine Sharing* we'll discuss the functions of the major neurotransmitters and offer natural solutions to optimize their function.

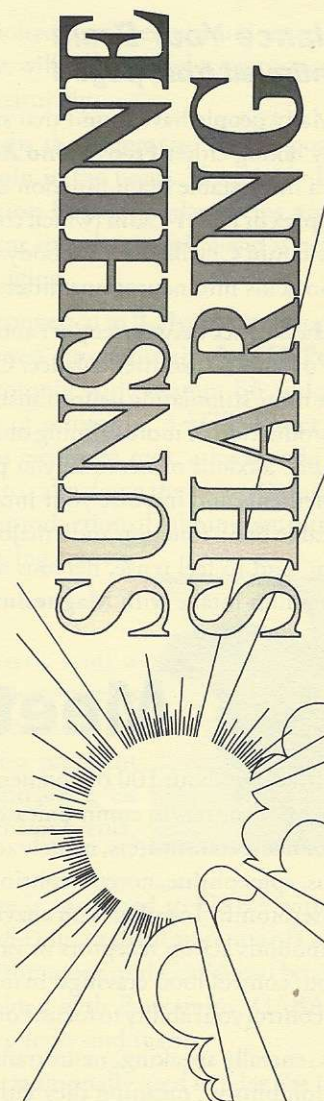
General Tips for Neurotransmitter Balance

To understand how the body manufactures neurotransmitters, think of the following formula: amino acids (from protein) + vitamins + minerals = neurotransmitters. The high carbohydrate diets of most Americans, coupled with a lack of quality protein, vitamins and minerals is a major factor in the rise in depression, anxiety and other disorders that signal imbalances in neurotransmitters.

Amino acids, from properly digested proteins, are the building blocks of all neurotransmitters. Amino acids necessary for neurotransmitter production include tryptophan, tyrosine, phenylalanine, glutamate, glycine and glutamine. Vitamins, most notably vitamin C and the B-Complex vitamins (especially B6) and minerals like zinc, copper and magnesium are critical to the process of converting these amino acids to neurotransmitters.

So, if you suffer from irritability, depression, anxiety, excessive sadness and other imbalances of mood, or you have problems with memory, concentration, learning, balance, coordination or other nervous system imbalances, the place to start is with a better diet. Make sure you get quality protein in your diet every day. Eat nutritionally dense foods like whole grains, nuts, seeds, fruits and vegetables and avoid refined sugars, stimulants like caffeine and processed vegetable oils.

Continued on page 2



Important Notice

The information in *Sunshine Sharing* is for educational purposes only and should not be used to diagnose and treat diseases. If you have a health problem, we recommend you consult a competent health practitioner before embarking on any course of treatment.

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Your guide to better health the natural way.

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Continued from page 1

Many people have found that supplementing their amino acids by taking either **Free Amino Acids** or **Super Algae** that they have a more stable brain function and mood. Taking **Balanced B Complex** or **Nutri-Calm** (which contains the B-complex vitamins and vitamin C) will give your body nutrients it needs to turn these amino acids into neurotransmitters.

The balance between copper and zinc in the body is very important to neurotransmitter balance. Copper helps in the production of the more stimulating neurotransmitters, while zinc is essential to the production of more calming ones. So, if you tend to feel angry, irritable, anxious or nervous, you probably need to avoid copper supplements and increase your intake of zinc. Magnesium is also critical to brain function and a majority of Americans are deficient. If you tend to feel tense, nervous and "on edge," increasing your magnesium intake with **Magnesium Complex** may be helpful.

Good fats are also essential to healthy brain function. So, in addition to avoiding processed fats like refined vegetable oils, margarine and shortening, increase your intake of good fats like fatty fish, nuts, seeds, avocados, eggs, butter and coconut oil. You may also find it helpful to supplement with **Super Omega-3 EPA** or even **DHA**, which is the most prevalent fatty acid in the brain.

An unhealthy lifestyle is going to result in imbalances in neurotransmitters, so make sure that you stay adequately hydrated, get sufficient sleep and get some kind of regular physical activity. It's also important to keep your mind focused on the positive, rather than the negative. This means focusing your mind on what you want to do that's constructive and good, and taking your mind off of what you don't want and don't like. All of these healthy activities will help keep your neurotransmitters and your brain balanced. You can also try some of the more specific supplements and practices listed below.

Meet Your Neurotransmitters

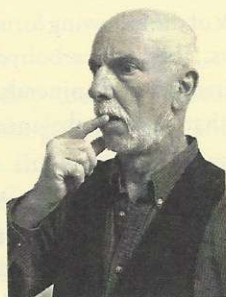
There are about 100 billion neurons in the human brain using neurotransmitters to communicate with each other. There are ten major neurotransmitters, namely acetylcholine, dopamine, endorphins, epinephrine, norepinephrine, GABA, histamine, oxytocin, and serotonin. Together with enzymes and other chemicals, these compounds act on receptors in various body systems to regulate mood, control food cravings, manage cycles of activity and sleep and control your ability to focus, concentrate and remember things.

Generally speaking, neurotransmitters are either "excitatory" or "inhibitory," meaning they either excite the receptors on the target nerve cell, causing it to fire electrically, or they inhibit the receptors on the target nerve cell, causing the nerve cell not to fire. Some of these neurotransmitters are associated with increased levels of alertness and stress, while others promote relaxation and sleep. Here are some of the major neurotransmitters and what they do, as well as ways to enhance or inhibit them.

Acetylcholine

Acetylcholine was the first neurotransmitter to be discovered and is the principal neurotransmitter in the parasympathetic nervous system. It is essential for memory and muscle movement. When acetylcholine is released by muscle neurons (nerve cells) it causes muscle contraction. Substances that block the action of acetylcholine will relax the muscles.

Choline in the presence of vitamins B1 and B5 is needed to produce acetylcholine. Choline rich foods, such as egg yolks, green leafy vegetables and legumes (beans, soy and peanuts), help to increase the amount of acetylcholine produced in the brain. Phosphatidylcholine, a component of lecithin, crosses the blood brain barrier better than choline, and is used as a supplement to enhance acetylcholine levels.



The formula **Brain Protex** contains a soy lecithin complex, which supplies choline along with antioxidants to inhibit free radical damage to the neurons that produce it. It also contains Chinese club moss, which has been used for treating memory loss, dementia and mental illness in traditional Chinese medicine. Modern research has found a compound in the plant called huperzine, which inhibits acetylcholinesterase, the enzyme that breaks down acetylcholine. This enhances levels of acetylcholine in the brain.

Research suggests that huperzine-A may be helpful in Alzheimer's disease, which is caused by free radical damage to the neurons in the brain that produce acetylcholine. In one US study where 29 Alzheimer's patients were given huperzine-A, more than half seemed to show improvement. Research in China suggests that 60 percent of people with Alzheimer's disease show significant cognitive improvement when given huperzine-A.

Other herbs that enhance acetylcholine include lemon balm, **sage** and rosemary. The term "sage" refers to someone who is wise, and the saying "rosemary for remembrance," highlight their reputation for memory enhancement. Both are found in **HSN-W**, which can strengthen brain function as well as build healthier hair, skin and nails.

Gotu kola, bacopa and ginkgo also appear to enhance acetylcholine in the brain, helping to enhance memory. The formula **Mind Max** contains these herbs plus a special form of magnesium—magnesium l-threonate, which has been shown to help enhance the development of the new synapses. This is necessary when we are learning new skills. Mind Max may be helpful in diminishing age-related memory loss.

Focus Attention is another formula that can help acetylcholine. It was designed to help children with learning problems like ADHD, but can also help adults. It contains lemon balm and ginkgo along with a substance called DMAE, which enhances acetylcholine in the brain.



Epinephrine and Norepinephrine

These substances are the principle mood-elevating and alertness transmitters. They are also hormones that are released by the adrenal glands under stress.

Epinephrine elevates blood pressure by increasing cardiac output and peripheral vasoconstriction and increases respiration by dilating passageways. It also increases the efficiency of muscular contractions and raises blood sugar and fatty acid levels by stimulating the breakdown of glycogen into glucose. Norepinephrine elevates blood pressure by creating generalized vasoconstriction. It also increases respiration, efficiency of muscular contraction, and blood sugar and fatty acid levels, but to a lesser degree than epinephrine.

Both epinephrine and norepinephrine are created from the amino acid tyrosine, found in poultry, fish, almonds and dairy. Vitamins B3, B6, C and the minerals copper and iron are needed for its synthesis.

Stimulant drugs ("uppers") such as amphetamines bind to or otherwise stimulate receptor sites for epinephrine and norepinephrine. Although this is energizing, high levels of these neurotransmitters are also responsible for feelings of anxiety, irritability and stress, so most of us don't need to enhance them.

As mentioned earlier, high levels of copper, coupled with low levels of zinc and magnesium, tend to increase these stimulating neurotransmitters and reduce levels of the more calming neurotransmitters. So, taking **zinc** and **Magnesium Complex** is often helpful in calming down the nerves. **AnxiousLess** contains these minerals along with an extract of *Sceletium tortuosum* that enhances serotonin, a calming neurotransmitter. This can be very helpful in easing feelings of stress and nervousness.

Also, lobeline, found in **lobelia**, binds to receptor sites for epinephrine and norepinephrine. It also inhibits acetylcholine receptors. This makes it antispasmodic, so it relaxes muscle tension, while lowering blood pressure and heart rate. Lobelia also dilates the bronchials, making it useful for asthma.

Serotonin

Low levels of serotonin are associated with depression. This calming neurotransmitter is an antagonist to epinephrine and norepinephrine and aids sleep. It also helps to reduce pain and improve appetite. Selective serotonin reuptake inhibitors (SSRIs), like Prozac, Zoloft and Paxil are commonly prescribed for depression and anxiety, but there are more natural ways to enhance serotonin.

Serotonin is created from the amino acid tryptophan, with the help of vitamin B3 and B6. Tryptophan is found in high levels in egg whites, meats and cheeses. Herbs high in tryptophan include passion flower and spirulina.

Low serotonin levels trigger an increase in our cravings for carbohydrates. Hence, people who crave sweets may be low in



serotonin. Eating complex carbohydrates like fruits and vegetables, instead of sugar and white flour, will help to produce a more stable serotonin level and lift mood naturally.

There are a number of herbs that appear to have a positive influence in enhancing serotonin in the brain. These include **St. John's wort**, **gingko** and **passion flower**. Ginkgo helps prevent breakdown of serotonin receptor sites due to aging and is helpful for depression associated with aging.

In the brain, tryptophan is converted to 5-Hydroxytryptophan or 5-HTP, which is then converted into serotonin. **5-HTP Power** combines this precursor to serotonin with vitamin B6 and zinc, which enhances the synthesis of serotonin. 5-HTP Power also contains the adaptogenic herbs eleuthero root, ashwaganda root and suma bark, which can help to calm down the more stimulating neurotransmitters and enhance production of calming neurotransmitters, lifting mood and reducing anxiety.

GABA

GABA (Gamma amino butyric acid) is an inhibitory neurotransmitter that prevents chronic anxiety and promotes concentrated mental focus. GABA is the most prevalent neurotransmitter in the brain and low levels are associated with epilepsy, schizophrenia, Parkinson's disease and tics.



The amino acid l-glutamine is converted to GABA with the help of vitamin B6. Several foods contain small amounts of GABA including pineapples, peas and tomatoes, and GABA can be taken as a supplement. When combined with B-vitamins, GABA has been helpful in some cases of epilepsy and mania.

Many herbs that have been traditionally used to relax the body and calm the mind appear to enhance GABA receptors. These include valerian, passion flower and ashwaganda. Hops, lemon balm and kava kava also appear to enhance activity of GABA in the brain.

GABA Plus is a formula that combines GABA with l-glutamine, passionflower and the amino acid-rich herb spirulina. It can be helpful for calming brain activity and aiding sleep. It may also be helpful, along with B-vitamins, for more serious problems like tics, epilepsy and mania.

Other Neurotransmitters

Glutamic acid is a major excitatory neurotransmitter involved in mental activity and learning. It stimulates neurons to fire. Vitamin B6 is used to convert the amino acid l-glutamine into glutamic acid.

Continued on page 4

Additional Help and Information

For more information about balancing neurotransmitters and improving mood contact the person who gave you this newsletter. You can also consult the following resources:

The Comprehensive Guide to Nature's Sunshine Products, 6th edition by Steven Horne and Kimberly Balas
Meet Your Happy Chemicals by Loretta Graziano Breuning, PhD

Balance Your Brain

At this very moment your nerve cells (neurons) are sending messages to each other, and to your body, via neurotransmitters. These chemical messengers, which include serotonin, acetylcholine, dopamine, epinephrine, GABA and endorphins, are helping to keep your body functioning and regulate your mood and emotions.

Modern science is using drugs that alter neurotransmitters in the treatment of mood and mental health disorders, but there are also natural ways to balance these important biochemicals.

Learn more in this issue of *Sunshine Sharing*.

Continued from page 3

Monosodium glutamate (MSG) is widely used as a flavor enhancer in foods. It may have an impact on glutamic acid and contribute to a "hyper" state of brain activity. This process is known as excitotoxicity. For this reason, avoid MSG whenever possible.

Dopamine is essential for sexual arousal and for initiating coordinated movement. This neurotransmitter is deficient in the case of Parkinson's disease, which is characterized by the destruction of the neurons that produce dopamine. Dopamine is created from the amino acid phenylalanine. Vitamins B3, B6, C and the minerals copper and iron are also required for its synthesis. Its levels are also stimulated by increased blood levels of tyrosine, which increase a neurotransmitter called dopa. Dopa is converted to dopamine with the help of B6 and magnesium.

Endorphins are neurotransmitters that help to elevate mood and numb pain. They are released naturally when we are doing things

that are good for the body, such as exercising, getting a massage, meditating or making love. Acupuncture also releases endorphins.

Substance P is a major transmitter of sensory neurons that convey pain sensations. It is found in parts of the brain. Capsaicin (found in **capsicum**) deplete the supply of substance P transmitters from synapses, thereby temporarily inhibiting the pain response. It is likely that other topical analgesics, like those found in **Tei Fu oil** act in a similar way.

Science is constantly learning more about the messenger chemicals our cells use to talk to each other. However, we don't have to be scientific researchers to learn that the best way to keep our neurotransmitters and other messenger chemicals in balance is to adopt a healthy diet and lifestyle. It only makes sense that when our cells are well cared for; they're going to be sending positive and happy messages to each other.

