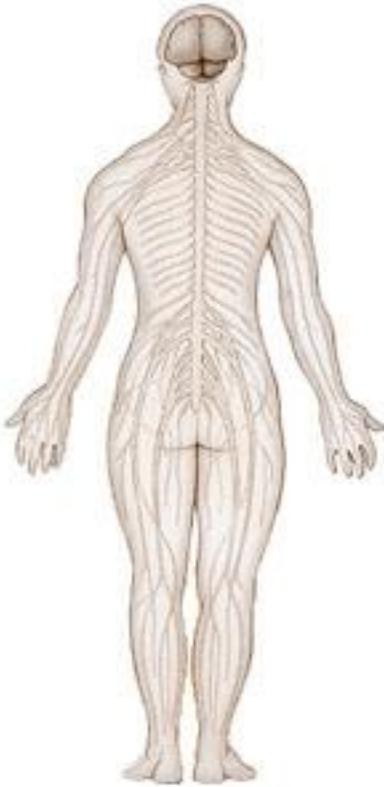


CERTIFIED ADVANCED HERBALISM COURSE - SESSION 17: The Nervous System

The nervous system is an internal communication system, relaying signals with short electrical impulses. The central nervous system is composed of the brain and spinal cord. The peripheral nervous system extends to all other parts of the body.



Health problems related to the nervous system include stress, insomnia, depression, nervous disorders, headaches and multiple sclerosis.

Examining the Nervous System

The nervous system is made up of groups of cells called neurons. A neuron is a cell body with a nucleus, a dendrite (which receives input) and an axon (which relays signals to other cells).

Neurons transmit information through the body in a manner similar to the way electricity flows through a wire. A nervous impulse begins with the reversal of the concentrations of sodium and potassium both inside and outside the neuron. Sodium rushes into the cell and potassium rushes out, generating momentum that conducts an impulse down the axon and toward the dendrite of the next neuron. This transmission continues from cell to cell until the message is delivered. All this takes place at incredible speed.

Some of the spaces between nerve cells, called junctions, are so small that the impulse can travel from one nerve to the next very quickly. These are called gap junctions. However, most neurons relay signals across larger spaces called synaptic junctions. These require chemical messengers called neurotransmitters.

Neurotransmitters are released into a synaptic junction by one cell and bond with receptors on the membrane of the neighboring cell. After the electronic signal has been relayed, the neurotransmitters are deactivated and recycled.

Some neurotransmitters include serotonin, acetylcholine, dopamine, GABA (gamma amino butyric acid) and norepinephrine (noradrenaline). Abnormal levels of neurotransmitters can cause an assortment of complications. For instance, abnormally low levels of serotonin are associated with obesity, depression. Sleep disorders anxiety and migraine headaches.

Many neurons are surrounded by special cells that form an outer layer called the myelin sheath. The myelin is composed mostly of lipids. It insulates the neurons to speed up the conduction of impulses, as it prevents “short circuits” between adjacent neurons. Deterioration of the myelin sheath is associated with many degenerative disorders of the nervous system.

The nervous system has two major divisions – the central nervous system (CNS) and the peripheral nervous system (PNS). The CNS is composed of the brain and spinal cord and is the body’s main signal-processing unit. The nerves of the PNS extend to other parts of the body, including internal organs, skeletal muscles and glands.

The PNS subdivides into the somatic and autonomic pathways. Somatic-pathway responses are voluntary or conscious. For example, use of arm or leg muscles and sensory perceptions are controlled by somatic nerves. Autonomic pathways deal with involuntary actions like digestion, excretion, heartbeat and the contraction of the smooth muscles. These are all things we can’t control.

Autonomic pathways divide again into the sympathetic and parasympathetic branches of the nervous system. These branches work independently and opposite of one another. The sympathetic nervous system, which secretes the neurotransmitter noradrenaline, initiates “fight or flight” responses when stimulated by physical, emotional or environmental stress. This is a primitive, instinct-like ability that allows a person to maximize energy in order to most effectively react to stress. It raises blood sugar, heart rate, blood pressure and metabolism, constricts blood vessels and stops less vital functions like digestion. The parasympathetic nervous system normalizes the body by balancing it to the state it was in before the stimulus occurred. The neurotransmitter acetylcholine restores non-vital functions. The reciprocating actions of the sympathetic and parasympathetic nervous systems allow the body to cope with stress without being overwhelmed by its physiological effects.

Stress can have many negative effects on the body. In addition to the uncontrollable, physical reactions described above, stress can also deplete levels of water-soluble vitamins (C and B complex) and

vitamins A and E. These vitamins are essential to the proper development and function of nervous-system tissue because they act as co-enzymes in chemical reactions and raw materials for nerve cells. Adequate vitamin and mineral intake can help provide the body with the nutrients it needs to function properly, even under stress.

Did You Know?

- The average adult brain weighs about three pounds.
- Some nerve fibers with myelin sheaths conduct impulses as fast as 600 feet per second.
- An estimated 10,000 neurons die each day from aging, disease, injury or poisons.

Nervous System Analysis

If you have four or more of the following indications, you may consider nutritional aid to the nervous system.

- Lack of energy
- Regular consumption of alcohol
- Frequent mood swings
- Poor concentration or memory
- Stressful lifestyle
- Feeling low, uninterested or depressed
- Too little sleep or restless sleep
- Unsettled, apprehensive, pressured
- More than 2 cups of caffeinated beverages/day
- Feeling out of control
- Suffer from anxiety or worry
- Easily irritated or angered

Nervous System Suggestions

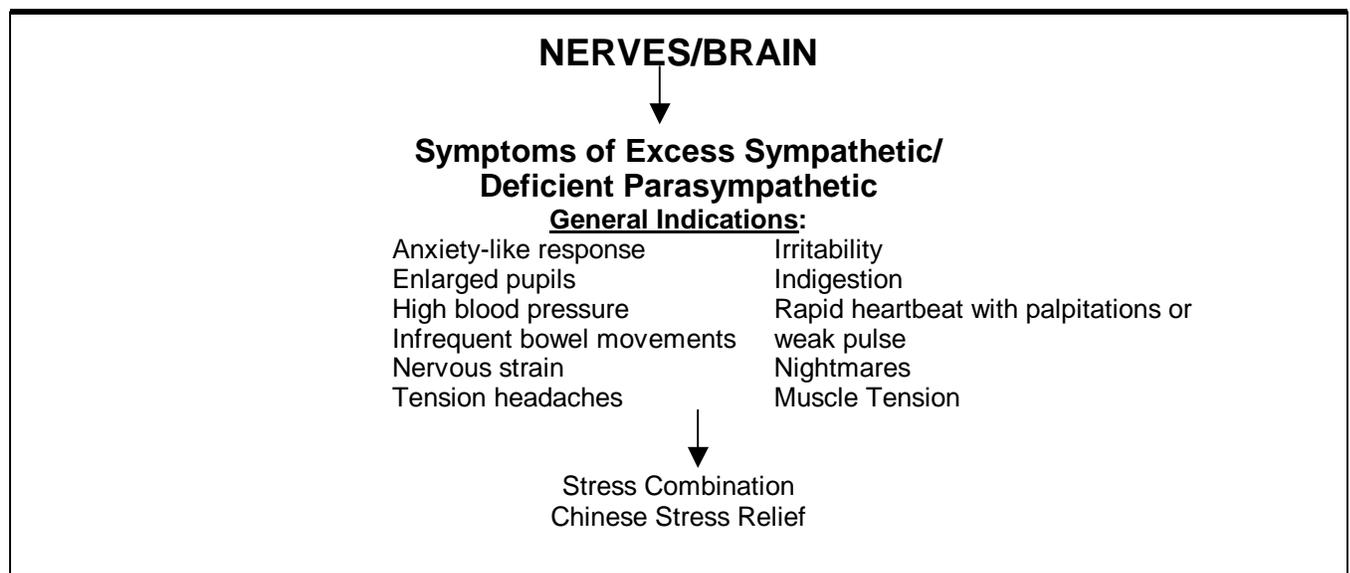
- Eat regular, wholesome meals.
- Avoid smoking, alcohol and stimulants.
- Exercise regularly.
- Manage your stress.
- Eat a lot of green, leafy vegetables, fruits, whole grains and nuts.

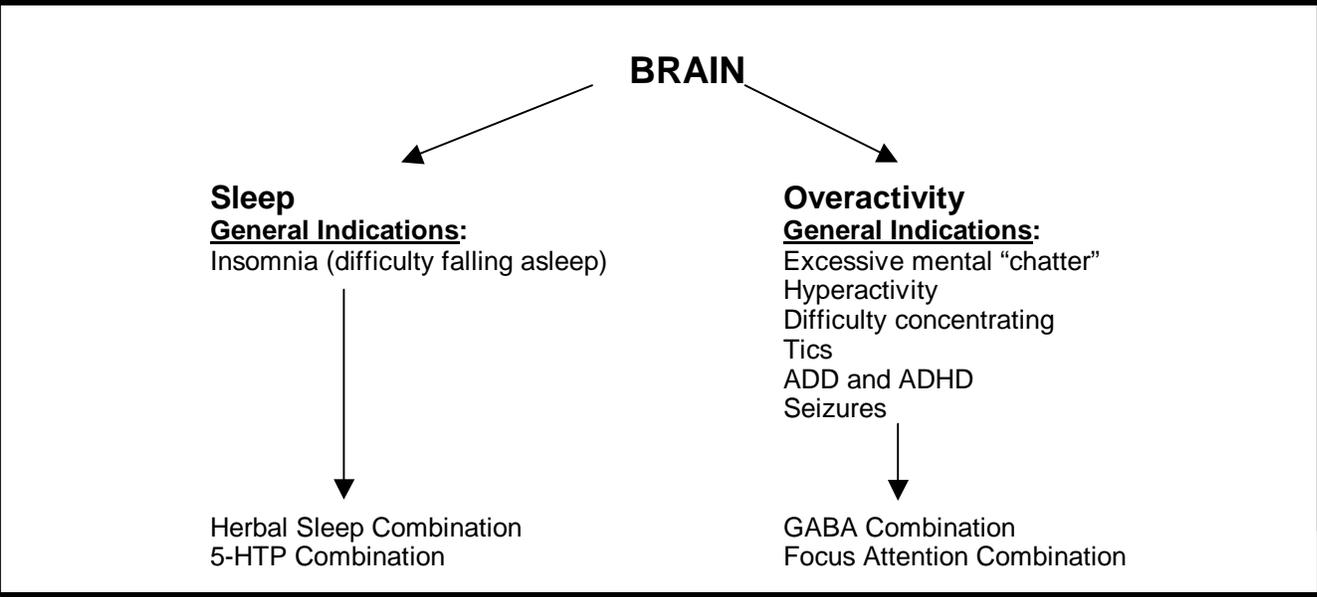
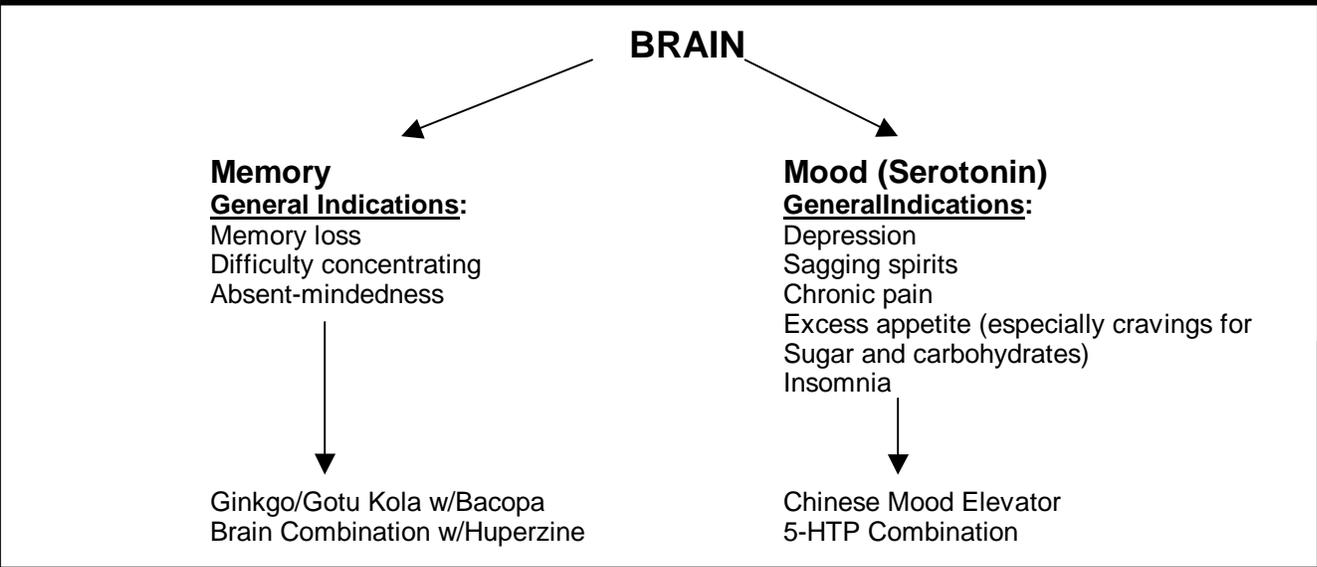
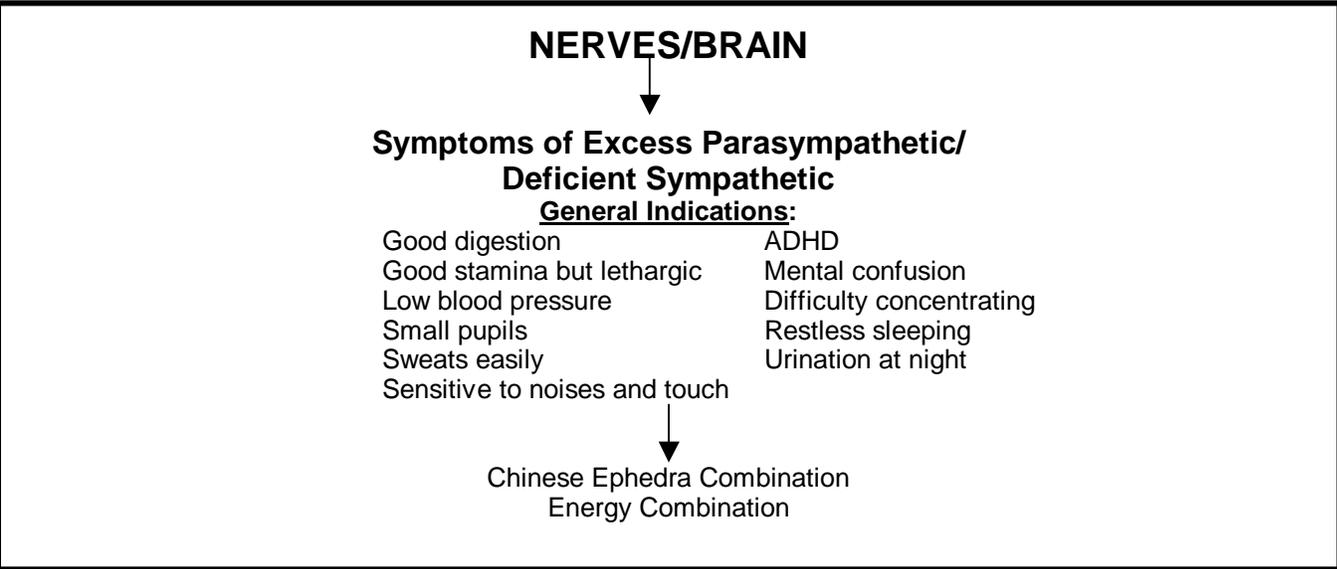
Nervous System Products

The following products are listed with ingredients only as not to sell any particular product line. These ingredients can be purchased at any store you wish. If you are interested in the actual combinations listed below, please contact JLS directly.

- **Nerve Calming** – A combination of herbs and essential B-complex vitamins, which nourishes the nerves to help the body cope with stress. Contains generous amounts of vitamin C, B-complex vitamins, plus schizandra fruit, choline bitartrate, wheat germ, inositol, PABA, bee pollen, citrus bioflavonoids, hops flowers, passion flower and valerian root to help reduce tension, stress and insomnia.
- **Stress Combination** – This combination contains one of the most favored herbs of Europe for relaxation – chamomile. High in chromium, magnesium and vitamins A and C, the stress combination works well with other supplements like B-complex vitamins, bee pollen and vitamin C.
- **Chinese Stress Relief Combination** – This Chinese stress relief combination combines 16 herbs and natural substances to support emotional balance. Its primary nutrients – polygonum, dragon bone, oyster shell, haliotis shell and fushen – help normalize mental function and strengthen the cardiovascular system. This formula helps nourish the nervous system and improve gastric function, in addition to strengthening the urinary system.
- **Chinese Ephedra Combination** – This powerful weight-loss aid contains Chinese ephedra (ma huang), which possesses constituents that stimulate the central nervous system. It activates the heart, increases blood pressure and speeds up metabolism.
- **Energy Combination** – This energy combination supports the body's own energy-building system. It works with the glandular, nervous and circulatory systems to help relieve stress and promote energy metabolism and glucose utilization. The combination provides a variety of nutrients needed for optimal vitality – some that nourish the glands (kelp and licorice) and some that nourish the brain and nervous system (gotu kola).

- **Ginkgo/Gotu Kola w/Bacopa** – Ginkgo contains flavonoid glycosides like quercetin and other key compounds similar to gotu kola. It boosts circulation to the brain. Gotu kola herb has been called “brain food” by many herbalists. Bacopa is from bacopin, an Ayurvedic compound that stimulates memory. Studies show that people who took bacopin supplements had reduced memorization time, increased memory time and decreased retrieval time. Bacopa may also help boost concentration.
- **Brain Combination w/Huperzine** – This combination aids the brain in two ways. First, it utilizes three powerful antioxidants that cross the blood-brain barrier to protect cells from free radical damage. Second, it feeds this vital organ with the specialized “brain food” nutrients of Ginkgo biloba, phosphatidyl serine and huperzine.
- **Chinese Mood Elevator** – This combination of 18 Chinese herbs has nervine, sedative and stimulant properties. These herbs help build and strengthen the liver, stimulate circulation and improve “sagging” feelings. Chinese Mood Elevator helps with tension, depression and other nervous disorders.
- **5-HTP Combination** – This combination contains hydroxytryptophan, a precursor to serotonin, an important neurotransmitter that helps regulate appetite, mood and sleep. 5-HTP combination is blended with three adaptogenic herbs – Siberian ginseng, ashwaganda and suma – that work synergistically with 5-HTP to help the body adjust to changes, control hunger and achieve restful sleep.
- **St. John’s Wort** – This popular herb has gained national attention for its ability to alleviate mild to moderate depression. It contains an active constituent, hypericin, which appears to prolong the activity of serotonin (a neurotransmitter) in the brain. St. John’s Wort may also lengthen the performance of dopamine and norepinephrine, two brain chemicals that are linked to depression. In Europe, many doctors prescribe this herb instead of prescription antidepressant drugs.
- **Herbal Sleep Combination** – This combination of valerian root, passion flower and hops flowers supports restful sleep and provides soothing and calming properties.
- **GABA Combination** – GABA combination helps “tone down” excessive brain activity and promotes a state of relaxation and peace. This unique formula also contains glutamine for mental energy, taurine to stabilize and protect brain tissue, spirulina for its abundance of brain nutrients, and passion flower, an herb long used to relieve stress.
- **Focus Attention Combination** – This combination provides nutrients essential for normal brain-stimulation levels while supporting blood circulation and neurotransmitters in the brain. This special formulation helps protect the body from undesirable side effects caused by drugs or exposure to toxic chemicals, food additives, pesticides and other harmful influences.





CERTIFIED ADVANCED HERBALISM COURSE – SESSION 17 – QUESTION & ANSWERS

NAME: _____

ADDRESS: _____

PHONE: _____

FAX: _____

E-MAIL: _____

Please be sure to fill out the information above, complete the test and e-mail or fax it back to us at 425-955-4639 (US) or at +353 1 647 5705 (EU) or e-mail it to us at joyful@best.com (US) or at answers@med-herbs.com (EU). We will grade your question & answer session and will let you know if we have any questions or concerns.

1. Neurons (nerve cells) generate _____ that travel down axons from one cell to another.
2. Many nerve cells are insulated with _____ to speed up impulses and prevent cross firing.
3. _____ are chemicals used to transmit impulses from one neuron to another.
4. Stress depletes our bodies' reserves of vitamins _____, _____, _____ and _____ - _____. Regular replenishment of these nutrients helps maintain optimal nervous-system health.
5. What are three indications that this system is weak and may need nutritional aid?
6. Who can I help? List five people who exhibit the above indications and who may benefit from nutritional aid to the nervous system.