

## Using Herbs that Enhance Acetylcholine is a "Bright" Idea by Steven Home, RH(AHG)



Brain and nerve cells communicate with each other via chemical messengers called neurotransmitters. During the last 20-30 years tremendous strides have been made in understanding the body's chemical communication system. As a result of this research, landmark books like *Molecules of Emotion* (Candace Pert) put forth the idea that human behavior is affected by these chemicals.

Personally, I don't believe that chemicals and electrical impulses create consciousness. I actually believe that consciousness expresses itself through these chemical messengers and electrical impulses. In other words, we are not ruled by hormones and neurotransmitters.

Changing our thinking and healing our emotional wounds can alter these chemicals as effectively as any drug.

Nevertheless, there is no question that chemicals can influence our mood and thinking. For example, hallucinogenic plants contain chemicals that mimic certain neurotransmitters (such as endorphins), giving rise to a change of consciousness.

There are also plants that contain compounds that can enhance our memory and cognitive ability by affecting neurotransmitters such as acetylcholine, which is involved in memory and muscle movement. But, before I tell you about acetylcholine and some plants that can enhance this important neurotransmitter, let's talk briefly about how the whole system works.

### Understanding Neurotransmitters

When the dendrites (receiving ends) of a nerve cell are stimulated, the nerve fires an electrical impulse down its axon (the sending end). At the end of the axon are synapses, gaps which separate that nerve cell from other nerve cells. When the electrical impulse reaches the end of the axon, it releases neurotransmitters into the synapse, which stimulates or inhibits the next nerve cell.

Neurotransmitters work on a system similar to a "key and lock." Keys work because they have a specific shape that inserts in a specific lock and allows that lock to turn on or off. Like a key, each chemical messenger has a three-dimensional shape. Like a lock, a receptor site also has a specific shape into which the messenger chemical fits. When the two are joined, cellular processes are activated or inhibited, like turning a keyed switch on or off.

Drugs and compounds from plants can affect neurotransmitters in a number of ways. First, they can mimic the effect of the neurotransmitter because they possess a similar molecular shape, which allows them to fit into the receptor. It's sort of like having a counterfeit key.

Secondly, chemical drugs or phytonutrients from plants can also sensitize the receptor sites (sort of like lubricating the lock to make the key fit easier). Finally, they can also influence enzymes that create neurotransmitters or break them down or influence their release or re-uptake (absorption back into the cell that released them).

The beautiful thing about plants is that they contain numerous compounds, which can influence these systems in very subtle and complex ways. This prevents them from having the serious side-effects of drugs. With that understanding, let's look at the neurotransmitter involved in memory, acetylcholine, and the herbs we can use to influence it.

### Boosting the Memory Molecule

Acetylcholine was the first neurotransmitter to be discovered. It's the neurotransmitter that is deficient in Alzheimer's disease and acetylcholine deficiency is known to cause memory loss and depression. Acetylcholine is also released by muscle neurons (nerve cells) to cause muscle contraction.

Choline, a substance that is grouped with the B-vitamins, is the base used to produce acetylcholine. Choline-rich foods, such as egg yolks, green leafy vegetables and legumes (peanuts, soybeans and other beans) will automatically increase the amount of acetylcholine in the brain.

Phosphatidyl-choline, found in lecithin is known to enhance acetylcholine production, as is DMAE. Both of these substances cross the blood brain barrier more easily than choline, so they are better at enhancing acetylcholine production than straight choline. Vitamins B1 and B5 are also needed to synthesize acetylcholine.

Nerve synapses that house and release acetylcholine are termed cholinergic and the receptor sites for them are cholinergic receptors. Cholinergics are substances that promote the release, prevent the degradation of, or otherwise enhance the action of acetylcholine. Herbs with cholinergic activity include lemon balm, sage, rosemary, ginkgo, gotu kola and Chinese club moss.

Lemon balm has a reputation for creating alertness and lifting sadness and melancholy. It contains a compound that makes cholinergic receptors more sensitive.

Sage has long been considered an herb to improve memory (hence, the term "sage" in reference to someone who is wise). Sage inhibits the enzyme cholinesterase, which breaks down acetylcholine.

Rosemary is another herb that has a reputation for enhancing memory. It contains about a half-dozen compounds that are reported to prevent the breakdown of acetylcholine. Furthermore, rosemary contains antioxidants that protect the brain.

Some of the memory-boosting compounds in these three herbs are aromatic. Smelling lemon balm, sage and rosemary will immediately make you feel more mentally alert, so a blend of these oils, plus a little peppermint could help you stay alert and focused when you need to study or concentrate.

## **Ginkgo/Gotu Kola**

My favorite herbs for enhancing memory and cognition are Ginkgo and Gotu Kola. I have used them with a number of elderly people with beneficial results, including one of my uncles. It made a huge difference in his memory, one that my cousins found very noticeable. I have taken them myself, with positive effects, when I felt I needed to improve my concentration.

Ginkgo appears to enhance both the release of acetylcholine and the sensitivity of acetylcholine receptors. It definitely can enhance cognitive function in the elderly and helps prevent memory decline associated with aging. You can read more about this formula on our website.

Gotu kola is another herb with a long history of use in enhancing memory. It's unclear whether it affects acetylcholine. It does act as an antioxidant and studies show it does enhance cognitive function, but it's difficult to determine exactly how it does this.

Ginkgo and Gotu Kola are not likely to help younger people with good mental function to be "smarter," but it's great for slowing age-related memory decline. It also has positive effects on circulation and has some anti-aging effects.

## **Chinese Club Moss and Huperizine**

One of the most important cognitive-enhancing herbs is Chinese club moss (*Huperzia serratta*), which has been used in Oriental medicine to treat dementia, schizophrenia and mental confusion. It contains huperizine alkaloids, which inhibit the enzyme acetylcholine esterase, which breaks down acetylcholine.

A standardized extract of Chinese club moss is one of the key ingredients in Brain Protex, which also contains a complex from soybean lecithin that includes the acetylcholine precursor phosphatidyl-choline. This formula also contains ginkgo, lycopene, alpha lipoic acid and rhododendron extract.

The ingredients in Brain Protex can help prevent or slow the progress of cognitive decline in the elderly. They may also help to improve memory and concentration.

When your memory goes, forget it! So, before your memory goes, remember to take some acetylcholine-enhancing herbs to keep you smart.