

The Natural Effects of Melatonin

By John Upledger, DO, OMM

As manual therapists, it's vital that we continue to study the human organism - inside and out - to fully understand our role in helping individuals achieve optimal health and well-being.

As part of that quest, I've been researching a helpful natural chemical called melatonin. This lipophilic indole, chemically known as 5-methoxy-N-acetyl-tryptamine, is a derivative of serotonin, which in turn is derived from the amino acid tryptophan.

Until recently, researchers thought melatonin was secreted only by the pineal gland. Since it was synthesized within and secreted by a gland, it became known as a hormone. Scientists have also speculated that melatonin was only secreted at night and primarily to induce sleep, and that artificial light could reduce the amount of melatonin secreted by the pineal gland. Since then, we've learned a lot more about the powers of melatonin. Yes, it's confirmed: The pineal gland is a major source of melatonin, which does indeed induce sleep. And yes, when the eyes take in artificial light, sleep is somewhat inhibited.

About 30 years ago we discovered that the appendix also generously synthesizes and secretes melatonin, which suggested that appendectomies might reduce melatonin levels. We've since found out that melatonin is also produced by the intestines, the fundus of the stomach, the testes, the spinal cord, the raphe nuclei of the brain stem, and the striatum areas of the brain. We now also understand that a significant amount of melatonin is synthesized within the body cells. Many of these melatonin molecules do not even leave their cells of origin, but instead remain inside them to protect them from being damaged by oxygen and nitrogen radicals and other toxicants.

You might even call melatonin a "double whammy" protector. After it neutralizes damaging reactive species, the metabolites that are produced in the process are even more effective at protecting the cells than the original melatonin molecules. In general, melatonin seems especially protective of DNA inside the

nuclei and mitochondria. It also protects cell-membrane lipids and cytosol-contained proteins.

Personally, I believe every cell in our body contains some melatonin, whether it was produced in that cell or, less likely, entered through extracellular body fluids. Yet there are also other sites in the body with high levels of melatonin. The level of melatonin in the bile of the liver and gallbladder exceeds that of the blood and bone marrow. And the level of melatonin in cerebrospinal fluid (CSF) is much higher than that of the blood. In the CSF, melatonin is greatest in and around the third ventricle of the brain, probably because of the pineal-gland secretions. CSF melatonin levels are also greater at night, as is the pineal gland's production of melatonin. It's also interesting to note that the fluid in the Graafian follicle is higher than the blood level of melatonin.

Now let's look at some of the positive effects melatonin offers in specific disease processes. Probably most important at this time is the fact that melatonin reduces degenerative activities in the brain, spinal cord and spinal nerve roots. Degeneration of these nerve tissues and cells often occur from the effects of reactive oxygen species and reactive nitrogen species, as well as excessive or prolonged inflammation.

Beta amyloid peptides (BAP) are metabolic byproducts of the degradation of amyloid precursor proteins (APP). When these proteins (which are normally part of cell membranes) are metabolized as they wear out and lose their functional abilities, they break down into BAP. When these peptides aren't effectively cleared away by the natural flushing of CranioSacral Therapy (CST) or other fluid-moving techniques, they can form plaques and tangles that cause neuronal dysfunction and death. The result? Increased tissue inflammation that leads to cerebral and/or spinal cord degeneration. The name of any resulting disease depends on the location of the degeneration. When it takes place in the hippocampus and cerebral forebrain, it's called Alzheimer's disease. When it takes place in the lower aspect of the brain (the substantia nigra), it's called Parkinson's disease.

Melatonin helps by neutralizing BAP to keep the peptides from forming disease-producing plaques and tangles. It also removes metals that may be involved in the plaques and tangles. These metals include cobalt (often found at higher levels with Alzheimer's disease) and aluminum. Occasionally, high levels of iron may damage the brain or spinal cord, while excessive copper may affect the central nervous system (CNS) in a similar way. Melatonin removes excess iron and copper as needed.

On the opposite side of the fence, melatonin may link up with zinc. This combination seems to enhance thymus-gland function and the whole immune system secondarily. When CNS neurons have been damaged, melatonin also promotes the production of neuronal growth factor, which may help reestablish neuronal circuits that have been injured or interrupted. (I have also had success dialoging with stem cells and getting them to replace damaged or dead neurons as needed.)

Other conditions I believe to be helped by melatonin: stroke damage; damage due to ionizing radiation; diabetic neuropathy; heavy-metal toxicities; non-metallic toxicities; viral infections; seizures; excitotoxicities; homocysteine damage; ischemic damage; reperfusion injury; degenerative CNS diseases, such as Alzheimer's, Parkinson's, multiple sclerosis, amyotrophic lateral sclerosis, senility and so on.

From a therapeutic perspective, I've found the following tactics helpful in enhancing melatonin effectiveness:

1. CranioSacral Therapy
2. Stem-cell dialogue
3. Melatonin oral supplements* - 6 mg qhs minimum
4. Vitamin E oral supplements* - 2,000 iu daily
5. Vitamin C oral supplements* - 10,000 mg daily
6. Alpha-lipoic acid oral supplements* - 600 mg daily
7. CoQ₁₀ oral supplements* - 100 mg daily

* I administer these in divided doses as tolerated by the client. *Please note:* The information presented here is strictly intended for educational purposes only, and is not to be construed as medical advice.

By continuing to explore the valuable role of melatonin in our bodies and by learning tools to enhance its effectiveness through complementary care, we give our clients more opportunities to enjoy good health, naturally.

Click [here](#) for more information about John Upledger, DO, OMM.



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