

How Methylene Blue's Antioxidants Can Slow Cognitive Decline

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Introduction to Methylene Blue

Although Methylene Blue isn't a new antioxidant, medical professionals and researchers are finding powerful new ways to use this synthetic dye in the human body. Studies have shown that Methylene Blue may especially benefit neurological function as we age because it increases blood flow and oxygenation of the brain. [1]

In a 2021 study entitled "The Potentials of Methylene Blue as an Anti-Aging Drug," the authors found that mitochondrial dysfunction is observed in systematic aging that affects many tissues, including the brain and skin, which can lead to increased oxidative stress. [2] The brain has, by far, one of the highest concentrations of mitochondria, considered the "powerhouse" of the cells. Methylene Blue normalizes compromised mitochondrial function in the brain, which can improve brain cell energy production. This can result in improved memory retention. [3]

How it Works

The brain is composed primarily of neurons, each having as many as 100,000 mitochondria. There is a complex biochemical pathway on the mitochondria's inner membranes called the electron transport chain. Electrons are shuttled down the transport chain through three complexes and then are rapidly released into the ATP-forming fourth complex. ATP is an enzyme that transports energy to our cells.

Methylene Blue efficiently passes through the blood-brain barrier and is rapidly taken up by brain cells in high concentrations. As an electron transporter, Methylene Blue increases the number of ATPs produced by the brain's mitochondria. More available electrons also help to lower the concentration of undesirable free radicals.

Brain-Related Conditions Helped by Methylene Blue

The net result of using Methylene Blue is more efficient brain functioning with better control of chronic brain disorders such as:

- Depression
- Parkinson's disease
- ALS (Lou Gehrig's disease)
- Alzheimer's disease

Alzheimer's is one of society's most feared cognitive impairments. Abnormal accumulations of proteins can form plaque around brain cells and form tangles, or twisted strands of protein, within the brain. Oxidative stress and the resultant inflammation of these abnormalities can contribute to cognitive dysfunction.

Methylene Blue has a powerful impact on neurological or cognitive problems. In 2019, scientists gave Alzheimer's patients 8-16mg of Methylene Blue daily while monitoring their brain function. They witnessed the Methylene Blue treatment stop Alzheimer's disease dead in its tracks. [4] Treatment with 8-16mg of Methylene Blue daily reduced cognitive decline by more than 85%! Just as importantly, the study found that drugs currently approved for managing symptoms of Alzheimer's disease interfere with the therapeutic benefit of Methylene Blue when administered together. [5]

Methylene Blue and Vitamin C

Methylene Blue and vitamin C have a special synergy in the body – a kind of give-and-take that assists in maintaining healthy cellular energy. Ascorbic acid is the reduced form of vitamin C. On the other hand, the dark blue methylene dye is an oxidized form. When the two are combined, it creates a clear liquid form called leukoMethylene Blue with increased antioxidant power. Antioxidants are molecules that "put out the fire of oxidation," thereby reducing oxidative stress and its resulting damage at the cellular level.

How to Boost Methylene Blue's Brain Benefits

Electrons are important to Methylene Blue's function, and eating quality food of plant origin is also important. Plants derive and store electron-rich antioxidants from photosynthesis. Therefore, a quality diet consistently brings in new electrons that help to maintain good micronutrients throughout the cells in your body. These micronutrients are especially important to the optimal functioning of your brain.

What Else Can Methylene Blue Do?

Help in treatment of:

- Malaria
- Shock
- Ifosfamide-induced encephalopathy, a brain disorder caused by a chemotherapy medication [8]
- Antidote for cyanide and carbon monoxide poisoning, which is also known as methemoglobinemia, a condition in which blood loses its ability to carry oxygen through the body

History

Heinrich Caro was a German chemist who was the first head of research of Badische Anilin & Sodafabrik (BASF). While working there in 1876, he synthesized a pure blue dye for cotton, Methylene Blue. A year later, BASF was awarded Germany's first patent for a coal tar dye for Methylene Blue. [6] German biochemist Paul Ehrlich studied many dyes for their therapeutic properties. Ehrlich presented a chemical theory to explain the formation of antitoxins and their benefit to the immune response. He shared the Nobel Prize for Physiology or Medicine with Elie Metchnikoff in 1908. [7]

Resources

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2. <https://www.nature.com/articles/nrd2582#:~:text=During%20his%20work%20with%20dyes,proof%20of%20principle%20in%201904>.
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4. New study by TauRx shows a minimum dose of hydro methylthionine could slow cognitive decline and brain atrophy in mild-to-moderate Alzheimer's disease. PRNewswire. 2019. Source: <https://www.prnewswire.com/news-releases/new-study-by-taurx-shows-a-minimum-dose-of-hydromethylthionine-could-slow-cognitive-decline-and-brain-atrophy-in-mild-to-moderate-alzheimers-disease-300965395.html>
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