# PHYSICIANS PREFERENCE

## MAXIMIZING Health Span with **Compounded Methylene Blue**

There is a stark difference between increasing lifespan and maximizing health span. Health span is more than longevity. It is the difference between thriving and improving your quality of life versus merely surviving. That is why we are focusing on methylene blue.

Methylene blue was originally developed in the 19th century as a dye for the textile industry but was soon found to be useful for identifying bacteria, parasites, and yeasts under a microscope. In World War II, soldiers in the Pacific were required to take methylene blue as an anti-malaria medicine. It is used in hospitals to treat a rare blood disorder and as an antidote for chemical poisoning, and it has been on the World Health Organization's List of Essential Medicines for many years.

How can one compound have such a broad range of uses? It's because methylene blue enhances mitochondrial function, cellular energy and vitality, and other basic processes that are essential for optimal health. As a result, methylene blue has the potential for improving lifespan, health span, and quality of life.

## **How Does Methylene Blue Work?**

Mitochondria are the powerhouses of your cells, the organelles inside each cell where energy is produced. In a process called cellular respiration, oxygen and glucose are used to generate energy-rich molecules of ATP, which fuel all cellular processes. When mitochondrial function is compromised, whether it is due to aging, chronic inflammation, trauma, excess nitric oxide, or other toxins, energy production lags and your health suffers.

Methylene blue stimulates the activity of a crucial enzyme required for cellular respiration, thus enhancing mitochondrial function and ATP production. It is particularly helpful when tissue levels of oxygen are low and has been shown to boost cellular oxygen consumption by 30–70%. This remarkable compound has also been demonstrated to increase the lifespan of human cells and reverse premature senescence, or age-related deterioration.<sup>1</sup>

When you take compounded methylene blue, it seeks out and helps repair cells with damaged or dysfunctional mitochondria. It even crosses the blood-brain barrier, making it particularly effective for improving conditions affecting the brain and central nervous system.

## Who Can Benefit from Methylene Blue?

#### Memory and Mood:

Research reveals that methylene blue enhances memory and mood. Just one low dose of methylene blue has been shown to improve memory retrieval speed, concentration, and focus on attention-related tasks.<sup>2,3</sup> In another study, severely depressed patients who took low-dose methylene blue daily had significantly better improvements in mood, compared to those in a placebo group.<sup>4</sup>

## **HOW TO ORDER**

## You may place refills:

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## TAKE A **VIRTUAL TOUR**

 <u>An inside look at our new</u> <u>compounding labs</u>

Physicians Preference Pharmacy standards are more stringent than those of the United States Pharmacopeia (USP). In addition to onsite weight testing, we send multiple samples per week to an outside laboratory for potency testing. Physicians Preference Pharmacy ranks first in Houston for the number of samples sent for potency testing and in the top 8% of pharmacies nationwide.

Physicians Preference Pharmacy is a Houston-based, PCAB-accredited compounding pharmacy serving physicians and patients since 2001. We are licensed to work with doctors and ship to patients in 48 states (excludes NV, AL).

## Alzheimer's:

Mitochondrial function is impaired in patients with Alzheimer's disease.<sup>5</sup> Methylene blue's positive effects on oxidative stress, inflammation, elevated nitric oxide, and neurotoxicity may help correct these damaging effects, restoring oxygen supply and cellular metabolism in the brain.

## Viral Illnesses:

Methylene blue has antimicrobial activity against a range of viruses, parasites, bacteria, and fungi.<sup>6</sup> Cancer patients, the elderly, and others with a weakened immune response, plus those at increased risk for contracting a viral infection may benefit from the antimicrobial benefits of methylene blue. In a French study that included 2,500 cancer patients, none of those treated with methylene blue developed viral illnesses or flu-like syndromes during the recent pandemic.<sup>7</sup>

## Pain:

Post-op pain, chronic shooting pain, arthritis, migraines, chronic low back pain, and pain due to ischemia (inadequate blood supply) may respond to methylene blue. A few hours after taking oral methylene blue, painful inflammation of nerves is also reported to subside.<sup>8</sup>

## Autism:

Individuals with autism are far more likely to have metabolic dysfunction and deficiencies in cellular energy production.<sup>9</sup> Treatment with methylene blue may improve mitochondrial function and energy production.

## Is Methylene Blue Right for You?

In summary, methylene blue promotes mitochondrial function and cellular energy production, which are essential for maintaining high levels of energy and protecting against infectious diseases, chronic inflammation, and premature cellular aging.

If you are interested in increasing your health span, talk to your doctor about methylene blue. Low doses of compounded methylene blue are safe, well tolerated, and an excellent therapy for protecting against age-related degeneration and supporting healthy aging.

#### REFERENCES

<sup>1</sup>Atamna H, et al. Methylene blue delays cellular senescence and enhances key mitochondrial biochemical pathways. FASEB J. 2008;22(3):703-712. doi10.1096/fj.07-9610com <sup>2</sup>Rodriguez P, et al. Multimodal Randomized Functional MR Imaging of the Effects of Methylene Blue in the Human Brain. *Radiology*. 2016;281(2):516-526. doi:10.1148/ radiol.2016152893

<sup>3</sup>RSNA. Methylene Blue Shows Promise for Improving Short-Term Memory. June 28, 2016. https://press.rsna.org/timssnet/media/pressreleases/14\_pr\_target.cfm?ID=1888
<sup>4</sup>Naylor GJ, et al. A controlled trial of methylene blue in severe depressive illness. *Biol Psychiatry*. 1987;22(5):657-659. doi:10.1016/0006-3223(87)90194-6
<sup>5</sup>Sonntag KC, et al. Late-onset Alzheimer's disease is associated with inherent changes in bioenergetics profiles. *Sci Rep.* 2017;7(1):14038. doi:10.1038/s41598-017-14420-x
<sup>6</sup>Ansari MA, et al. Antifungal Action of Methylene Blue Involves Mitochondrial Dysfunction and Disruption of Redox and Membrane Homeostasis in C. albicans. *Open Microbiol J.* 2016 Feb 25;10:12-22. doi:10.2174/1874285801610010012

<sup>2</sup>Henry M, et al. A cohort of cancer patients with no reported cases of SARS-CoV-2 infection: the possible preventive role of Methylene Blue. *Substantia*. 2020;4(1) Suppl 1:888. doi:10.13128/Substantia-888

<sup>®</sup>Ueber schmerzstillende Wirkung des Methylenblaus (About the analgesic effect of methylene blue). 1980. pp. 493–494. https://www.zvab.com/servlet/ BookDetailsPL?bi=1239519850&searchurl=an%3Dleppmann%2Ba%26sortby%3D20&cm\_sp=snippet-\_-srp1-\_-title6 <sup>®</sup>Giulivi C, et al. Mitochondrial Dysfunction in Autism. *JAMA*. 2010;304(21):2389–2396. doi:10.1001/jama.2010.1706

