

# EpiGenic

Epigenetic Longevity Support

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# EpiGenic

## Epigenetic Longevity Support

EpiGenic is a cutting-edge longevity supplement that supports epigenetic changes, influencing gene expression without altering DNA. By activating Sirtuin genes and promoting histone modifications via HDAC inhibitors, EpiGenic optimizes genetic expression for healthier aging.



Whole Body



Immunity



Metabolism



Detox

## Health Indications

- Clear Senescent Cell Buildup
- Improve Proper Gene Expression
- Support Mitochondrial Function and Regeneration
- Enhance Cellular Resilience
- Reduce Oxidative Stress
- Alleviate Inflammation
- Support Healthspan and Longevity

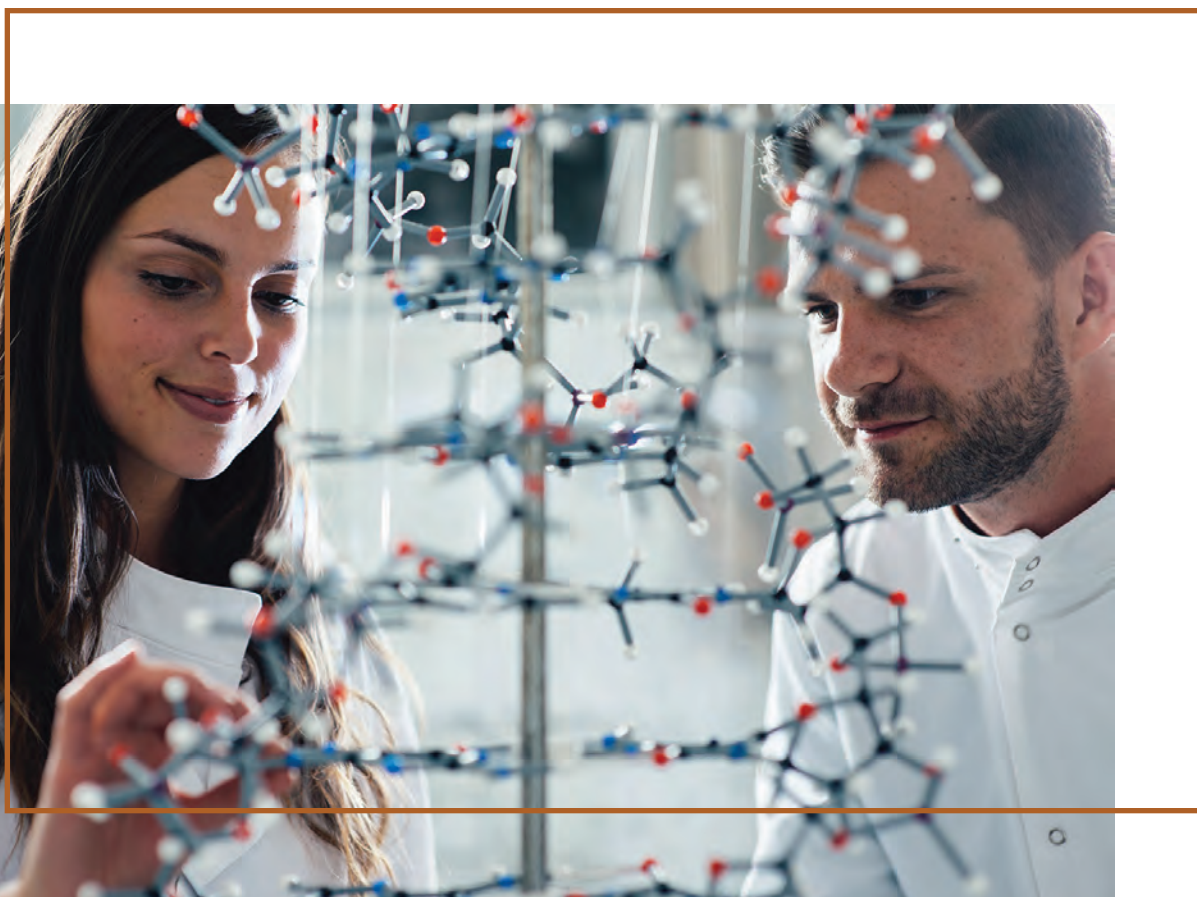
## Instructions For Use

Take 2 capsules daily, or as directed by your health care provider.

\*\*Individual needs may vary; please consult your practitioner before altering the prescribed doses or protocols.

## Product Description

Cellular aging is a complex and multifaceted process, driven by an interplay of factors that compromise cellular integrity and function over time. At its core, aging is characterized by the dysregulation of critical gene pathways, where the delicate balance of gene expression, essential for maintaining cellular health and responsiveness, is disrupted. This dysregulation is often exacerbated by poor epigenetic control, a consequence of harmful environmental exposures, suboptimal lifestyle choices, or even problematic gene mutations that alter how our DNA is read and utilized without changing the underlying genetic code. As cells become damaged and lose their ability to properly repair and regenerate, a significant contributor to the aging phenotype is the build-up of senescent cells. These "zombie" cells, which have lost their ability to divide but remain metabolically active, secrete pro-inflammatory factors that contribute to chronic inflammation and tissue dysfunction, further accelerating the aging process throughout the body.



Fortunately, emerging scientific understanding and targeted interventions offer promising avenues to alleviate the complications of cellular aging. These new anti-aging strategies focus on re-establishing healthy gene expression, improving epigenetic control, and clearing harmful senescent cells. This can involve lifestyle modifications, such as adopting a balanced, anti-inflammatory diet and engaging in regular exercise, which are known to positively influence epigenetic markers and reduce cellular stress. Excitingly, ground-breaking research has uncovered specific compounds that can help recalibrate cellular pathways, protect against oxidative damage, and reduce chronic inflammation, thereby promoting a more youthful cellular environment and extending healthspan.

Alimentum Labs' EpiGenic formula is a groundbreaking advancement in the pursuit of healthy aging, meticulously developed by blending compounds known to address the root causes of cellular decline. This potent, holistic solution goes beyond merely alleviating the visible symptoms of aging, its comprehensive approach targets dysregulated gene pathways, improves epigenetic control, promotes mitochondrial health, and combats oxidative stress and inflammation at a fundamental cellular level. EpiGenic is thoughtfully formulated to provide proactive support well before age-related symptoms appear. It brings together a synergistic blend of ingredients, including senolytics like Fisetin and Quercetin, epigenetic modulators such as Alpha-ketoglutarate and ButyraGen™, mitochondrial boosters like Spermidine and Uridine, and potent antioxidants like Apigenin and Ergothioneine. This forward-thinking formulation empowers the body's intrinsic mechanisms for repair and rejuvenation, aiming to optimize cellular function and extend healthspan, rather than simply managing the consequences of aging.





## Key Elements and Features of EpiGenic

### Clear Senescent Cells

EpiGenic's formula includes hand-selected senolytic compounds that target and eliminate senescent cells, often called "zombie" cells, that no longer divide but accumulate with age, contributing to inflammation and age-related diseases. These plant-derived ingredients directly clear these problematic cells by inducing apoptosis, or programmed cell death, in senescent cells and modulating cell cycle regulators.

Eliminating senescent cells aids in reducing age-related inflammation and systemic dysregulation.

### Improve Epigenetic Management of Genes

Epigenetic modifications play a crucial role in regulating gene expression and are significantly impacted by aging. The curated compounds provided by EpiGenic can positively influence these processes, helping to maintain youthful cellular function. EpiGenic's ingredients work on multiple levels to support healthy aging: they help regulate DNA and histone demethylation to directly influence gene expression patterns associated with cell renewal, activate sirtuin and histone deacetylase genes to enhance DNA repair and maintain chromatin stability, shift gene expression toward anti-inflammatory and antioxidant responses, and combat age-related declines in histone acetylation in the brain.

## Promote Mitochondrial Health and Function

Mitochondrial function and regeneration is crucial for sustained energy production and cellular resilience. EpiGenic promotes mitochondrial regeneration and metabolic function by influencing *SIRT1* signaling, which is closely linked to enhanced longevity. Additionally, ingredients in EpiGenic support mitochondrial and cellular resilience during aging by preserving mitochondrial function and protecting against oxidative stress.

## Reduce Age-Related Oxidative Stress and Inflammation

Oxidative stress and chronic inflammation are hallmarks of aging, both contributing to cellular damage and disease. Many of EpiGenic's compounds offer significant protection against these detrimental processes. By reducing oxidative stress and neuroinflammation, EpiGenic helps protect the aging brain, while also supporting the body's natural systems that combat age-related complications caused by senescent cell buildup and systemic inflammation.



## Gene Spotlight

Modulating genes involved in key cellular pathways can support healthy aging by enhancing epigenetic regulation, mitochondrial function, and stress resilience. Genes that regulate nutrient sensing (*mTOR*), mitochondrial regeneration (*PGC-1α*), and remodeling gene accessibility (sirtuins, *HDACs*) influence how cells respond to environmental and metabolic cues. EpiGenic uses a targeted approach to adjust the expression or activity of these genes to promote beneficial epigenetic changes. Additionally, gene modulation can optimize mitochondrial dynamics, reduce oxidative stress, and activate autophagy to reduce the load of senescent cells, all of which are crucial for preserving tissue function and metabolic homeostasis with age. Through targeted genetic and epigenetic interventions, EpiGenic makes it possible to slow age-related decline and enhance healthspan.

## Genetic Interactions

### SIRT (Sirtuin) Genes

Sirtuin genes (*SIRT1–SIRT7*) play a crucial role in promoting longevity and maintaining epigenetic stability by regulating key cellular processes such as DNA repair, mitochondrial function, inflammation, and metabolic homeostasis. These *SIRT* genes encode NAD<sup>+</sup>-dependent deacetylases and ADP-ribosyltransferases, which modify histones and non-histone proteins, thereby influencing chromatin structure and gene expression. Sirtuins help silence transposable elements, maintain telomere integrity, and modulate stress responses, all of which are essential for genomic stability and healthy aging.<sup>1</sup>

### **HDAC (Histone Deacetylase) Genes**

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*HDAC* genes encode histone deacetylase enzymes. These enzymes remove acetyl groups from histones, the packing material of DNA. Removal of these acetyl groups makes the DNA molecules pack tightly together, rendering the genes in those areas inaccessible and effectively turns them “off”. HDAC inhibition supports longevity and epigenetic regulation by promoting a more available DNA molecule that enhances gene expression linked to cellular stress resistance, DNA repair, and metabolic balance. This shift supports cellular homeostasis, reduces inflammation, and delays age-related decline by enhancing cellular clearance, mitochondrial function, and neuroprotection. HDAC inhibition also helps maintain epigenetic plasticity, which is critical for adapting to environmental changes and preserving genomic stability during aging.<sup>2</sup>

### ***mTORC1 (Mechanistic Target of Rapamycin Complex 1) Gene***

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Targeted or transient activation of *mTOR*, particularly *mTORC1* in specific tissues or contexts, can support longevity and epigenetic regulation by promoting tissue repair, protein synthesis, and stem cell renewal when needed. For example, short-term *mTOR* activation following injury or during nutrient refeeding can enhance anabolic processes that maintain muscle mass, immune competence, and regenerative capacity, which are essential for healthy aging. This controlled activation can also stimulate histone acetyltransferase activity and influence chromatin remodeling, thereby facilitating epigenetic programs involved in cell growth and differentiation.<sup>3</sup>

***PGC-1 $\alpha$*  (Peroxisome proliferator-activated receptor gamma coactivator 1-alpha) Gene**

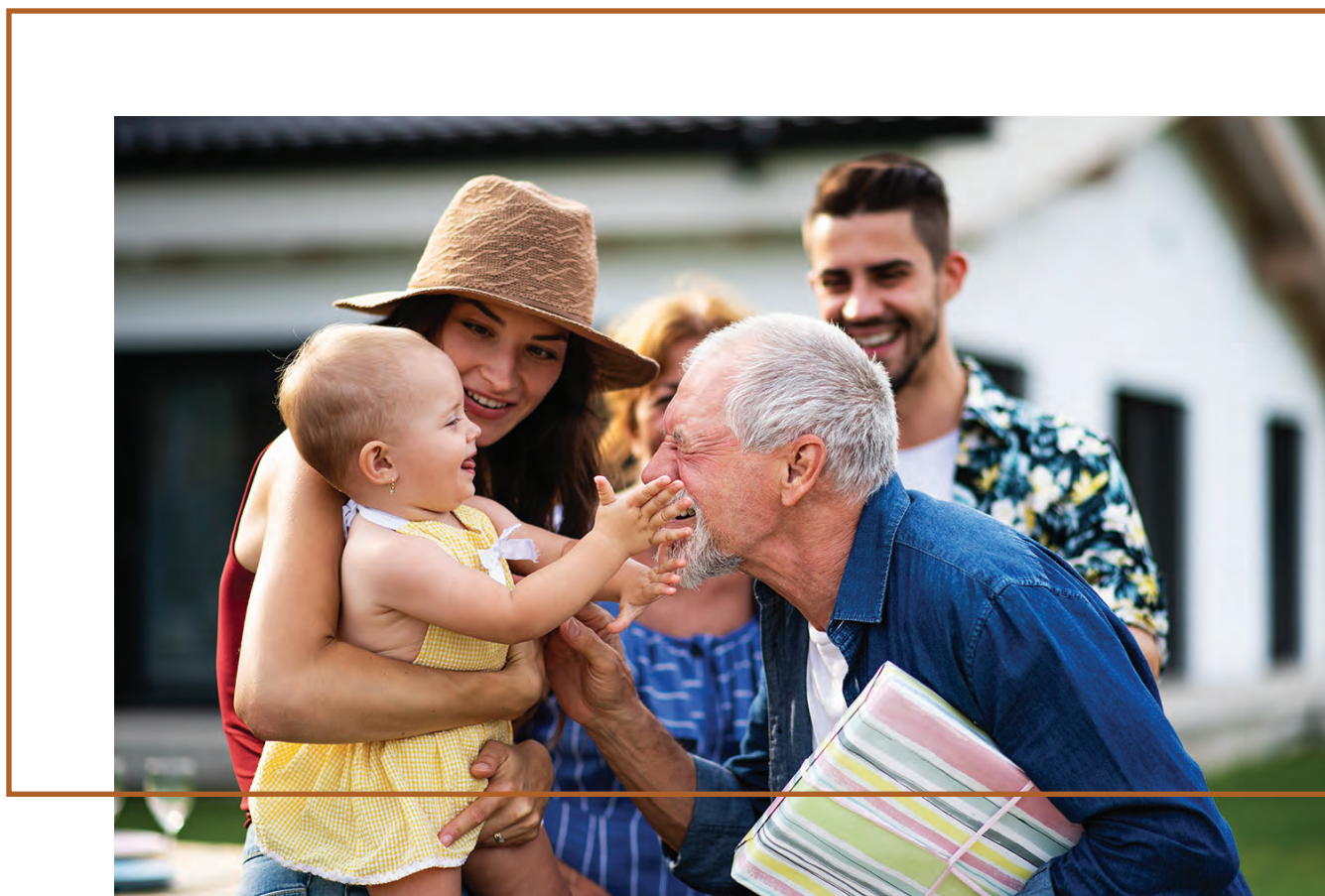
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Activation of *PGC-1 $\alpha$*  supports longevity and epigenetic regulation by enhancing mitochondrial regeneration, oxidative metabolism, and cellular stress resistance, key processes that maintain energy balance and reduce age-related cellular damage. *PGC-1 $\alpha$*  acts as a transcriptional coactivator that interacts with nuclear receptors and transcription factors to upregulate genes involved in mitochondrial function and antioxidant defense. It also influences epigenetic regulation by recruiting histone acetyltransferases (HATs) and interacting with sirtuins like SIRT1, modulating gene accessibility and gene expression in response to environmental cues such as exercise, fasting, and cold exposure.<sup>4</sup>



## How EpiGenic Works

Alimentum Labs' EpiGenic formula was developed through careful identification of compounds known to combat the complications of cellular and systemic aging and blending them to provide a potent, multifaceted solution for healthy aging. These ingredients target genetic pathways that regulate cell cycles, gene expression, and mitochondrial function to provide resilient and robust cellular health as you age.





## Key Ingredients

### Chamomile Ext 98% Apigenin

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Apigenin, a naturally occurring flavonoid found in parsley, chamomile, celery, and other plant-based foods, has emerged as a promising compound for promoting longevity through its antioxidant, anti-inflammatory, and senotherapeutic actions. It exerts neuroprotective effects by reducing oxidative stress and neuroinflammation, largely through inhibition of NF- $\kappa$ B and activation of the Nrf2 antioxidant response pathway.<sup>5-7</sup> Apigenin has also been shown to downregulate CD38, an enzyme that depletes NAD<sup>+</sup>, a critical cofactor for sirtuin activity and mitochondrial function, which in turn preserves NAD<sup>+</sup> levels and supports healthy aging. Additionally, apigenin may induce apoptosis in senescent cells and modulate cell cycle regulators such as p53 and p21, suggesting senolytic or senostatic potential.<sup>8</sup>

### Alpha- ketoglutarate

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Alpha-ketoglutarate (AKG), a key intermediate in the Krebs (Tricarboxylic Acid) cycle, has garnered significant interest for its role in promoting longevity and extending healthspan through metabolic, epigenetic, and anti-inflammatory mechanisms. As a central metabolite, AKG supports cellular energy production and amino acid metabolism, but recent studies reveal broader anti-aging functions.<sup>9</sup> AKG acts as a cofactor for dioxygenases involved in DNA and histone demethylation, thereby influencing gene expression patterns associated with cellular aging and rejuvenation.<sup>10</sup>

Supplementation with AKG has been shown to extend lifespan and compress morbidity, primarily by reducing systemic inflammation and senescence-associated secretory phenotype (SASP) factors such as IL-6 and TNF- $\alpha$ . AKG also helps maintain stem cell function and mitochondrial health while reducing oxidative stress, which are critical for tissue regeneration and metabolic resilience during aging.<sup>11</sup>

### Fisetin

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Fisetin is a natural flavonoid that is found in strawberries, cucumbers, apples, onions, and more. It supports longevity through two mechanisms: senolytic activity and direct epigenetic regulation. Fisetin clears senescent cells, which are aging cells that can no longer divide, accumulate in the body, and contribute to age-related diseases.<sup>12</sup> Fisetin modulates epigenetic pathways by activating sirtuin genes which are a type of histone deacetylases (HDACs). This activation enhances DNA repair, maintains chromatin stability, and optimizes cellular metabolism, all crucial for healthy aging.<sup>13</sup>

### Quercetin

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Quercetin, a naturally occurring flavonol found in many fruits and vegetables, has been shown to support longevity through its potent antioxidant, anti-inflammatory, and senolytic properties. Research indicates that quercetin reduces oxidative stress by scavenging reactive oxygen species and upregulating endogenous antioxidant defenses such as superoxide dismutase (SOD) and catalase.<sup>14</sup> Additionally, quercetin modulates key signaling pathways involved in aging, including *AMPK* and *SIRT1*, promoting mitochondrial function and metabolic health. Importantly, quercetin has senolytic effects, selectively eliminating senescent cells that accumulate with age and drive chronic inflammation.<sup>15–17</sup>

### Uridine 5'-monophosphate

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Uridine 5'-monophosphate (UMP), a nucleotide found naturally in breast milk and certain foods, plays a vital role in brain health, mitochondrial function, and cellular membrane synthesis, factors that collectively support longevity. UMP serves as a precursor for the synthesis of phosphatidylcholine, which is essential for maintaining neuronal membrane integrity and synaptic function. In aging models, UMP supplementation has been shown to enhance synaptic formation, improve cognitive performance, and potentially delay neurodegeneration.<sup>22</sup> Additionally, uridine contributes to mitochondrial health and supports energy metabolism, thereby promoting cellular resilience under metabolic stress.<sup>23</sup>

## Spermidine

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Spermidine, a naturally occurring polyamine found in foods like wheat germ, soybeans, and aged cheese, has been shown to promote longevity by enhancing autophagy, improving mitochondrial function, and modulating cellular aging pathways. One of its primary mechanisms involves the activation of autophagy, a cellular recycling process essential for removing damaged organelles and proteins.<sup>18</sup> Spermidine also supports mitochondrial regeneration and metabolic function by influencing *SIRT1* signaling, which is closely linked to lifespan extension and age-related disease resistance.<sup>19,20</sup> Studies have demonstrated that dietary spermidine extends lifespan in model organisms such as mice, flies, and yeast, with human epidemiological data suggesting that higher spermidine intake correlates with reduced all-cause mortality.<sup>21</sup>

## Ergothioneine

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Ergothioneine is a unique sulfur-containing amino acid derivative predominantly found in mushrooms and certain bacteria, and it has garnered increasing attention for its potential role in promoting longevity and healthy aging. Unlike many antioxidants, ergothioneine is actively transported into cells via the OCTN1 (*SLC22A4*) transporter, where it accumulates in mitochondria and tissues vulnerable to oxidative damage, such as the brain, liver, and heart.<sup>24</sup> Ergothioneine acts as a potent cellular protectant by neutralizing reactive oxygen species, preserving mitochondrial function, and reducing chronic inflammation through sirtuin (*SIRT1* and *SIRT6*) signaling.<sup>25</sup> Due to its ability to alleviate oxidative stress, it has been shown to mitigate telomere shortening, another key component of aging.<sup>26</sup>

## Forskolin

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Forskolin, a bioactive compound derived from the root of *Coleus forskohlii*, supports longevity and metabolic health primarily through its ability to activate adenylate cyclase, thereby increasing intracellular cyclic adenosine monophosphate (cAMP) levels, a key second messenger involved in cellular energy regulation, mitochondrial regeneration, and gene expression. Elevated cAMP signaling has been linked to enhanced lipolysis, improved insulin sensitivity, and activation of protein kinase A (PKA), which in turn modulates critical longevity-associated pathways such as AMPK and CREB.<sup>27</sup> Forskolin has been shown to promote mitochondrial function and protect against oxidative stress, suggesting its potential role in mitigating age-related metabolic and energy dysfunction.<sup>28</sup> Additionally, forskolin may be protective against glaucoma, likely through its antioxidant effects.<sup>29</sup>

## L-Leucine

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L-Leucine, a branched-chain amino acid (BCAA), plays a pivotal role in promoting muscle maintenance, metabolic health, and cellular repair; key factors in healthy aging and longevity. It is a primary activator of the mechanistic target of rapamycin complex 1 (*mTORC1*), a signaling pathway that stimulates muscle protein synthesis and supports tissue regeneration. While chronic *mTOR* overactivation may be linked to aging, intermittent or targeted activation, such as through leucine supplementation, can help prevent sarcopenia (age-related muscle loss), preserve functional independence, and improve metabolic flexibility in aging populations. Studies have shown that leucine-rich diets or supplements can improve muscle mass and strength in elderly individuals, even in the absence of increased total protein intake.<sup>34,35</sup> Leucine also supports mitochondrial regeneration via its interplay with insulin signaling and *PGC-1α* activation, contributing to improved energy metabolism and reduced oxidative stress.<sup>36,37</sup>

## ButyraGen™

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ButyraGen™ is a proprietary form of tributyrin, which is a precursor to butyrate. Butyrate is a short-chain fatty acid crucial for gut health, metabolic regulation, and systemic inflammation control, all of which are central to healthy aging and longevity. Butyrate supports intestinal barrier integrity by enhancing tight junction proteins and promoting mucin production, thereby reducing endotoxemia and chronic low-grade inflammation, key drivers of age-related diseases. It also serves as a histone deacetylase (HDAC) inhibitor, modulating gene expression to favor anti-inflammatory and antioxidant responses, as well as modulate hippocampal synaptic plasticity and prevent spatial memory deficits in animal models. This mechanism helps to counteract age-related declines in histone acetylation observed in the brain and mitigates neurodegenerative processes, as evidenced by improved cognitive function and reduced neuropathology in models of Alzheimer's disease. Additionally, butyrate has been shown to activate *AMPK* and improve mitochondrial efficiency, offering metabolic and cognitive benefits that support longevity.<sup>30-33</sup>



## Warnings/Contraindications

When used as directed there are no known contraindications for EpiGenic.

**\*\***It is always recommended that you consult your practitioner prior to adding any new supplement to your regimen if you are pregnant, breastfeeding, experiencing renal failure, undergoing an organ transplant(s), managing diabetes with insulin, or are taking medication(s) for any pre-existing conditions. **\*\***

## Safety

All ingredients are tested before use for:

- Pathogenic microbial contaminants
- Heavy metals and/or chemical contaminants
- Purity

## Additional Information

- Gluten Free
- Dairy Free
- Vegan
- No Sugar
- Non-GMO
- cGMP Facility



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