

# PharmaGABA®

Fermented, Bioavailable GABA Chewables



By David M. Brady, ND, DACBN, IFMCP, FACN and Colleen Ambrose, ND, MAT

THIS INFORMATION IS PROVIDED AS A MEDICAL AND SCIENTIFIC EDUCATIONAL RESOURCE FOR THE USE OF PHYSICIANS AND OTHER LICENSED HEALTH-CARE PRACTITIONERS ("PRACTITIONERS"). THIS INFORMATION IS INTENDED FOR PRACTITIONERS TO USE AS A BASIS FOR DETERMINING WHETHER TO RECOMMEND THESE PRODUCTS TO THEIR PATIENTS. ALL RECOMMENDATIONS REGARDING PROTOCOLS, DOSING, PRESCRIBING, AND/OR USAGE INSTRUCTIONS SHOULD BE TAILORED TO THE INDIVIDUAL NEEDS OF THE PATIENT CONSIDERING THEIR MEDICAL HISTORY AND CONCOMITANT THERAPIES. THIS INFORMATION IS NOT INTENDED FOR USE BY CONSUMERS.

PharmaGABA® is bioidentical gamma-aminobutyric acid (GABA). GABA is a naturally occurring amino acid in the brain and a major inhibitory neurotransmitter in the central nervous system. GABA serves as a critical calming agent for the body, helping to support mild or occasional stress and anxiety.\* The GABA in PharmaGABA® is made through the fermentation of the amino acid glutamic acid (glutamate) by *Lactobacillus hilgardii*, the beneficial bacteria also used to ferment the vegetables in kimchi and other fermented foods.

### Ingredient Highlights

- Provides 200 mg of GABA per 2-tablet serving
- Chewable tablet delivery that allows for rapid and efficient absorption and assimilation
- Vegetarian, dairy-free, gluten-free, soy-free, and non-GMO

As an inhibitory neurotransmitter, GABA blocks nerve impulses, slowing down the activity of nerve cells and preventing them from overfiring. Upon binding with the GABA receptors, a negative change in the transmembrane potential occurs, which leads to hyperpolarization and a decrease in the excitability of neurons. The brain synthesizes GABA from glutamate, an excitatory neurotransmitter. These two neurotransmitters work together in a beautifully orchestrated system of checks and balances to achieve homeostasis.<sup>1</sup>

It remains under investigation whether orally digested GABA gets through the blood-brain barrier (BBB), but some studies demonstrate that oral administration of GABA leads to quick results, which may indicate transit across the BBB.<sup>2</sup> Additionally, supplemental GABA may provide beneficial effects through peripheral action and its impact on the gut-brain axis.<sup>3</sup> Although the majority of GABA is in the brain, there are also GABA receptors in the peripheral system, endocrine system, and non-neural tissues, demonstrating that GABA acts outside the brain.<sup>1</sup> The commensal bacteria in the gut microbiome, especially Lactobacilli and Bifidobacteria, also synthesize GABA.<sup>1,4</sup>

### The Role of GABA with Stress and Sleep

In stressful situations, GABA levels in the body can decrease, leading to an imbalance in the excitatory/inhibitory system. In a study on humans, prefrontal brain GABA levels decreased by 18% after acute psychological stress.<sup>5</sup> Studies have found an association between lower levels of GABA and mental health conditions, including anxiety, depression, postpartum depression, bipolar depression, post-traumatic stress disorder (PTSD), trauma exposure, schizophrenia, autism spectrum disorders, and chronic stress.<sup>6-15</sup> Low GABA levels have also been associated with poor sleep quality, especially in patients with PTSD.<sup>12</sup>

GABA can be calming, which may help to benefit stress, mood, and sleep. In a study of 13 subjects, alpha and beta brain waves were evaluated by electroencephalogram after oral intake of GABA. Alpha waves are produced during meditation and any time the body is relaxed and alert. Beta waves, on the other hand, are seen in situations of high stress where focus and concentration are difficult. Results after 1 hour showed that GABA increased the production of alpha waves while decreasing beta waves, indicating that GABA may help induce relaxation and reduce anxiety.<sup>16</sup> This may be due to GABA supplementation activating the parasympathetic nervous system, a division of the autonomic nervous system responsible for a variety of involuntary bodily processes involved in relaxation.<sup>17</sup> A systematic review found promising evidence for potential benefits of oral GABA consumption on stress and sleep, especially on inducing and improving early stages of sleep.<sup>3</sup>

### Benefits\*

- Supports a healthy mood
- Supports occasional anxiety
- Supports a healthy stress response
- Supports healthy sleep
- Supports immune health during stressful times

### Supplement Facts

Serving Size 2 tablets  
Servings Per Container 30

Amount Per Serving	% Daily Value
gamma-Aminobutyric acid (as PharmaGABA®)	200 mg *

\*Daily Value not established.

**Other Ingredients:** Xylitol, F-MELT®, vegetable stearates, microcrystalline cellulose, citric acid, natural flavors, stevia leaf extract (*Stevia rebaudiana*), pharmaceutical glaze.

GABA may also support cognitive function, especially in stressful situations. It plays a role in attention, and studies have found a correlation between lower GABA levels in the occipital cortex and self-reported cognitive failures in daily life. The inhibitory processes invoked by GABA may improve the ability to filter out irrelevant stimuli to promote enhanced attention.<sup>18</sup> In a randomized controlled trial, acute GABA supplementation resulted in benefit to temporal attention, and the effects of the acute supplementation may support GABA crossing the blood-brain barrier.<sup>2</sup> It may also play a role in the neuromodulation of action control processes, assigning of the information encoding and behavioral control, regulation of motor functions, and motor learning. In a clinical study, participants took 800 mg of GABA, which led to a reduction in the time necessary to change to an alternative response, demonstrating the role of GABA in action cascading.<sup>19</sup> GABA may also reduce the stress associated with mental tasks. In one randomized controlled trial, participants took either 100 mg of GABA or a placebo. GABA intake led to a diminished decrease of the alpha and beta waves compared to a placebo and demonstrated a smaller reduction in vigor activity after mental tasks.<sup>20</sup> Another study found that consuming 50 mg of GABA in a beverage led to a reduction in markers of physical fatigue (including cortisol), lower psychological fatigue, and improved task-solving ability.<sup>21</sup>

### **Immune-Supportive Properties of GABA**

Stress, depression, and anxiety impact the immune response and are associated with immunosuppression. GABA has been shown to play a role in promoting immune function in stressful situations. In one study, eight acrophobic subjects (those with a fear of height) were asked to cross a suspended bridge. Salivary immunoglobulin A (IgA) was monitored during the crossing of the bridge. Stress lowers salivary IgA, whereas relaxation raises this marker. The placebo group showed a marked decrease in their IgA levels, whereas the study participants who were given GABA showed significantly higher IgA levels.<sup>16</sup> Studies have also found that GABA may have immunomodulating properties, including potentially modulating cytokine release in patients with major depression.<sup>22</sup>

**Recommended Use:** Chew 2 tablets per day or as directed by your health-care practitioner.

*For a list of references cited in this document, please visit:*

<https://www.designsforhealth.com/api/library-assets/literature-reference---pharmagaba-tech-sheet-references>

**\*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.**

**To contact Designs for Health, please call us at (860) 623-6314, or visit us on the web at [www.designsforhealth.com](http://www.designsforhealth.com).**

## References

1. Sarasa SB, Mahendran R, Muthusamy G, Thankappan B, Selta DRF, Angayarkanni J. A brief review on the non-protein amino acid, gamma-amino butyric acid (GABA): its production and role in microbes. *Curr Microbiol.* 2020;77(4):534-544. doi:10.1007/s00284-019-01839-w.
2. Leonte A, Colzato LS, Steenbergen L, Hommel B, Akyürek EG. Supplementation of gamma-aminobutyric acid (GABA) affects temporal, but not spatial visual attention. *Brain Cogn.* 2018;120:8-16. doi:10.1016/j.bandc.2017.11.004.
3. Hepsomali P, Groeger JA, Nishihira J, Scholey A. Effects of oral gamma-aminobutyric acid (GABA) administration on stress and sleep in humans: a systematic review. *Front Neurosci.* 2020;14:923. doi:10.3389/fnins.2020.00923.
4. Yunes RA, Poluektova EU, Dyachkova MS, et al. GABA production and structure of gadB/gadC genes in *Lactobacillus* and *Bifidobacterium* strains from human microbiota. *Anaerobe.* 2016;42:197-204. doi:10.1016/j.anaerobe.2016.10.011.
5. Hasler G, van der Veen JW, Grillon C, Drevets WC, Shen J. Effect of acute psychological stress on prefrontal GABA concentration determined by proton magnetic resonance spectroscopy. *Am J Psychiatry.* 2010;167(10):1226-1231. doi:10.1176/appi.ajp.2010.09070994.
6. Lonstein JS, Maguire J, Meinschmidt G, Neumann ID. Emotion and mood adaptations in the peripartum female: complementary contributions of GABA and oxytocin. *J Neuroendocrinol.* 2014;26(10):649-664. doi:10.1111/jne.12188.
7. Mann JJ, Oquendo MA, Watson KT, et al. Anxiety in major depression and cerebrospinal fluid free gamma-aminobutyric acid. *Depress Anxiety.* 2014;31(10):814-821. doi:10.1002/da.22278.
8. Ford TC, Nibbs R, Crewther DP. Glutamate/GABA+ ratio is associated with the psychosocial domain of autistic and schizotypal traits. *PLoS One.* 2017;12(7):e0181961. doi:10.1371/journal.pone.0181961.
9. Schür RR, Draisma LW, Wijnen JP, et al. Brain GABA levels across psychiatric disorders: a systematic literature review and meta-analysis of (1) H-MRS studies. *Hum Brain Mapp.* 2016;37(9):3337-3352. doi:10.1002/hbm.23244.
10. Romeo B, Choucha W, Fossati P, Rotge JY. Meta-analysis of central and peripheral  $\gamma$ -aminobutyric acid levels in patients with unipolar and bipolar depression. *J Psychiatry Neurosci.* 2018;43(1):58-66. doi:10.1503/jpn.160228.
11. Wang Z, Zhang A, Zhao B, et al. GABA+ levels in postmenopausal women with mild-to-moderate depression: a preliminary study. *Medicine (Baltimore).* 2016;95(39):e4918. doi:10.1097/MD.0000000000004918.
12. Meyerhoff DJ, Mon A, Metzler T, Neylan TC. Cortical gamma-aminobutyric acid and glutamate in posttraumatic stress disorder and their relationships to self-reported sleep quality. *Sleep.* 2014;37(5):893-900. doi:10.5665/sleep.3654.
13. Sheth C, Prescott AP, Legarreta M, Renshaw PF, McGlade E, Yurgelun-Todd D. Reduced gamma-amino butyric acid (GABA) and glutamine in the anterior cingulate cortex (ACC) of veterans exposed to trauma. *J Affect Disord.* 2019;248:166-174. doi:10.1016/j.jad.2019.01.037.
14. Prévot T, Sibille E. Altered GABA-mediated information processing and cognitive dysfunctions in depression and other brain disorders. *Mol Psychiatry.* 2021;26(1):151-167. doi:10.1038/s41380-020-0727-3.
15. Song X, Wang H, Zheng L, Chen D, Wang Z. The relationship between problem behavior and neurotransmitter deficiency in adolescents. *J Huazhong Univ Sci Technolog Med Sci.* 2010;30(6):714-719. doi:10.1007/s11596-010-0646-7.
16. Abdou AM, Higashiguchi S, Horie K, Kim M, Hatta H, Yokogoshi H. Relaxation and immunity enhancement effects of gamma-aminobutyric acid (GABA) administration in humans. *Biofactors.* 2006;26(3):201-208. doi:10.1002/biof.5520260305.
17. Fujibayashi M, Kamiya T, Takagaki K, Moritani T. Activation of autonomic nervous system activity by the oral ingestion of GABA. *Nippon Eiyō Shokuryō Gakkaishi.* 2008;61(3):129-133. doi.org/10.4327/jsnfs.61.129.

18. Sandberg K, Blicher JU, Dong MY, Rees G, Near J, Kanai R. Occipital GABA correlates with cognitive failures in daily life. *Neuroimage*. 2014;87(100):55-60. doi:10.1016/j.neuroimage.2013.10.059.
19. Steenbergen L, Sellaro R, Stock AK, Beste C, Colzato LS.  $\gamma$ -Aminobutyric acid (GABA) administration improves action selection processes: a randomised controlled trial. *Sci Rep*. 2015;5:12770. doi:10.1038/srep12770.
20. Yoto A, Murao S, Motoki M, et al. Oral intake of  $\gamma$ -aminobutyric acid affects mood and activities of central nervous system during stressed condition induced by mental tasks. *Amino Acids*. 2012;43(3):1331-1337. doi:10.1007/s00726-011-1206-6.
21. Kanehira T, Nakamura Y, Nakamura K, et al. Relieving occupational fatigue by consumption of a beverage containing  $\gamma$ -amino butyric acid. *J Nutr Sci Vitaminol (Tokyo)*. 2011;57(1):9-15. doi:10.3177/jnsv.57.9.
22. Bhandage AK, Cunningham JL, Jin Z, et al. Depression, GABA, and age correlate with plasma levels of inflammatory markers. *Int J Mol Sci*. 2019;20(24):6172. doi:10.3390/ijms20246172.

To contact Designs for Health, please call us at (860) 623-6314, or visit us on the web at [www.designsforhealth.com](http://www.designsforhealth.com).