

CALM & COOL AID

NORTH CENTURY PHARMACY

Clinical Applications

- Supports Relaxed Mood*
- Provides Nutrients Associated With Inhibitory Neurotransmitter and Second Messenger Functions*
- Provides Nutrients Associated With Neurotransmitter Balance and Neuronal Stabilization*
- Provides Nutrients Associated With Brain Osmotic Regulation, Glial Cell Function, and Neuronal Transmission*
- Supports a Healthy Stress Response*

***Calm & Cool Aid** features a carefully selected blend of ingredients designed to promote calm, relaxation, and a well-balanced mood and to support a healthy stress response. This formula provides nutrients associated with neurotransmission and second messenger functions, neuronal stabilization, brain osmotic regulation, and glial cell function.**

All North Century Pharmacy Formulas Meet or Exceed cGMP Quality Standards

Discussion

GABA (gamma-aminobutyric acid)

GABA is a nonproteinogenic amino acid and the most common inhibitory neurotransmitter, making it critical to the central nervous system (CNS) functioning. Through an enzymatic reaction, it is made from glutamate, the main excitatory neurotransmitter. GABA inhibits chemical messages among nerve cells, whereas glutamate permits them; a delicate balance of these neurotransmitters must be maintained for a properly functioning brain. GABA also exists in various foods, including tea, germinated rice, soybeans, and some fermented foods.*^{1,2}

As an inhibitory neurotransmitter, GABA increases the production of alpha waves (related to a relaxed yet mentally focused state) while decreasing beta waves (associated with hyperactivity, nervousness, and fleeting thoughts). Sufficient GABA results in the smooth, calming, regular rhythmic flow of electrical impulses in the brain needed for emotional well-being.³ Low GABA levels have been associated with stress, mood, and sleep disturbances, with oral doses ranging from 20 mg to 300 mg having been studied as beneficial for these behavioral responses. However, many human studies did not use GABA alone but examined the effect of eating GABA-containing foods.*^{1,4}

In a 2-part study evaluating the effect of GABA on brain waves, healthy fasting subjects (N = 13) given 100 mg of GABA demonstrated a significant increase in alpha waves and decreased beta waves, indicating an induction of relaxation within 60 minutes of administration. In the second part of this study, the role of relaxant and anxiolytic effects of GABA on immunity was assessed in stressed volunteers (N = 8). When compared with the placebo group, those given GABA showed significantly higher levels of immunoglobulin A, suggesting enhanced immunity under stressful conditions.*³

Another study investigated the physiological and psychological influence of 100 mg of GABA when healthy subjects (N = 63) were exposed to mentally stressful conditions. The activity of the CNS was assessed through measurement with an electroencephalogram (EEG), and the Profile of Mood States (POMS) and visual analogue scale (VAS) were used as subjective ratings of mental state. A decrease in alpha- and beta-band brain waves as measured by EEG suggests that GABA played a role in alleviating mental stress induced by cognitively challenging tasks, whereas POMS scores indicated a mood-improving effect. The 5-point VAS assessing feelings of fatigue, relaxation, arousal, pressure, and tension showed no significant difference between the GABA group and placebo.*⁴

L-Theanine

A naturally occurring, biologically active, free-form amino acid, L-theanine is found almost exclusively in green tea and is the primary component contributing to green tea's characteristic umami taste.⁵ L-theanine has been widely researched for its specific and positive effects on modulating aspects of brain function and the nervous system.⁶ L-theanine, provided as Suntheanine®, is protected by both US and international patents for its various physiological efficacies and L-isomer-specific production processes that ensure safety and stability.*⁵

L-theanine's ability to relax the mind without inducing drowsiness has been documented by an increase in alpha wave activity during EEG recording.^{5,6} In animal and laboratory studies, L-theanine has been suggested to play a role in lowering glutamate levels by preventing the transport of glutamate's precursor, glutamine. It may also inhibit neurotransmission, cause inhibitory neurotransmission via glycine receptors, and thereby reduce neuronal overstimulation.*^{7,8}

In a study of healthy participants (N = 16), EEG was measured at baseline and at 45, 60, 75, 90, and 105 minutes after ingesting 50 mg of L-theanine. Results demonstrated a greater increase in alpha activity across time with L-theanine compared with placebo when at rest or when engaged in passive activity. These data indicate a significant effect on a relaxed yet alert mental state.*⁶

A 4-arm, single-dose, repeated study explored the effects of 50 mg to 200 mg of L-theanine (Suntheanine) on physiological measures of relaxation in female subjects (N = 50) divided into high- and low-anxiety groups. Both doses generated alpha brain waves, which promote relaxation.*⁵

Taurine

Taurine is a conditionally essential nonproteinogenic amino acid with a ubiquitous presence in the body and diverse physiological functions. It is present in high amounts in shellfish, red meat, organ meats, chicken, turkey, and eggs.⁹ Taurine maintains cell volume via osmoregulation, which is the process that corrects excessive or insufficient concentrations of electrolytes.¹⁰ It also stabilizes cell membranes in the heart and brain—2 electrically active tissues.^{9,11} In addition to its antioxidant and cytokine-balancing functions, taurine is important to neurotransmission and neuroregulation and is considered neuroprotective because of the role of glial taurine in supporting neurons.^{9,10} It is also noted that doses of taurine from 1 g/d to 6 g/d show promise for supporting healthy blood pressure levels that are already in a healthy range.*^{12,13}

***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.**

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Supplement Facts

Serving Size: 4 Capsules
Servings Per Container: 30

	Amount Per Serving	%Daily Value
Calories	10	
Total Carbohydrate	2 g	1%†
Magnesium (as di-magnesium malate) ^{S1}	75 mg	18%
myo-Inositol	2 g	**
Taurine	500 mg	**
GABA (gamma-aminobutyric acid)	100 mg	**
L-Theanine ^{S2}	50 mg	**

† Percent Daily Values are based on a 2,000 calorie diet.
** Daily Value not established.

Other Ingredients: Capsule (hypromellose and water), hydroxypropyl cellulose, ascorbyl palmitate, and silica.

S1. Albion® is a registered trademark of Balchem Corporation or its subsidiaries.

Suntheanine © S2. Suntheanine®, a patented form of L-Theanine, is a trademark of Taiyo International, Inc.

Directions

Take four capsules once or twice daily, or use as directed by your healthcare professional.

Consult your healthcare professional before use. Individuals taking medication should discuss potential interactions with their healthcare professional. Do not use if tamper seal is damaged.

Formulated To Exclude

Wheat, gluten, corn, yeast, soy, animal or dairy products, fish, shellfish, peanuts, tree nuts, egg, ingredients derived from genetically modified organisms (GMOs), artificial colors, artificial sweeteners, or preservatives.

Inositol

Inositol is a group of 6-carbon cyclic molecules involved in cellular signaling. The most plentiful inositol isomer found in mammalian cells and synthesized in the body is myo-inositol, which acts as an osmolyte to ensure adequate cellular defense.^{14,15} Inositol is also obtained from foods like fruits, beans, grains, and nuts. More than half of the nearly 100% of ingested myo-inositol absorbed in the gastrointestinal tract becomes lipid bound. In contrast to low-plasma concentration, the peripheral nerves have an extraordinarily high concentration of myo-inositol.^{*16}

Inositol is a precursor for the second-messenger phosphatidylinositol system, affecting mood status differently than neurotransmitter precursors.¹⁷ Although further evidence is needed to solidify a positive effect and an optimal dose, several studies using 6- to 18-g doses have explored the role of inositol in mood modulation.^{*14,17,18}

Magnesium

Magnesium has numerous critical roles in human physiology, and its intake is imperative for supporting overall health. It is a cofactor in more than 300 enzymatic reactions that regulate essential functions, including energy production, blood pressure, blood glucose, bone development, and muscle and nerve function. Magnesium is widely available in foods such as whole grains, nuts and seeds, legumes, and green leafy vegetables.^{*19}

Specific to the nervous system, magnesium is important for nerve transmission, and it protects against excitotoxicity within cells. Magnesium is often referred to as the relaxation mineral because it helps to control neurotransmitter balance and neuronal stabilization in the nervous system.^{*20}

Calm & Cool Aid features a unique blend of ingredients designed to support a relaxed mood and a healthy stress response. This versatile formula is conveniently available in capsules or powdered form.*

1. Hepsomali P, Groeger JA, Nishihira J, et al. *Front Neurosci*. 2020;14:923. doi:10.3389/fnins.2020.00923
2. Oketch-Rabah HA, Madden EF, Roe AL, et al. *Nutrients*. 2021;13(8):2742. doi:10.3390/nu13082742
3. Abdou AM, Higashiguchi S, Horie K, et al. *Biofactors*. 2006;26(3):201-208. doi:10.1002/biof.5520260305
4. Yoto A, Murao S, Motoki M, et al. *Amino Acids*. 2012;43(3):1331-1337. doi:10.1007/s00726-011-1206-6
5. Juneja LR, Chu DC, Okubo T, et al. *Trends Food Sci Tech*. 1999;10(6-7):199-204. doi:10.1016/S0924-2244(99)00044-8
6. Nobre AC, Rao A, Owen GN. *Asia Pac J Clin Nutr*. 2008;17 Suppl 1:167-168.
7. Kakuda T, Hinoi E, Abe A, et al. *J Neurosci Res*. 2008;86(8):1846-1856. doi:10.1002/jnr.21637
8. Yamada T, Terashima T, Okubo T, et al. *Nutr Neurosci*. 2005;8(4):219-226. doi:10.1080/10284150500170799
9. Qaradakhli T, Gadanec LK, McSweeney KR, et al. *Nutrients*. 2020;12(9):2847. doi:10.3390/nu12092847
10. Hussy N, Deleuze C, Desarménien MG, et al. *Prog Neurobiol*. 2000;62(2):113-134. doi:10.1016/s0301-0082(99)00071-4
11. El Idrissi A. *Amino Acids*. 2008;34(2):321-328. doi:10.1007/s00726-006-0396-9
12. Sun Q, Wang B, Li Y, et al. *Hypertension*. 2016;67(3):541-549. doi:10.1161/HYPERTENSIONAHA.115.06624
13. Waldron M, Patterson SD, Tallent J, et al. *Curr Hypertens Rep*. 2018;20(9):81. doi:10.1007/s11906-018-0881-z
14. Concerto C, Chiarenza C, Di Francesco A, et al. *Curr Issues Mol Biol*. 2023;45(2):1762-1778. doi:10.3390/cimb45020113
15. Su XB, Ko AA, Saiardi A. *Adv Biol Regul*. 2023;87:100921. doi:10.1016/j.jbior.2022.100921
16. Clements RS Jr, Darnell B. *Am J Clin Nutr*. 1980;33(9):1954-1967. doi:10.1093/ajcn/33.9.1954
17. Levine J, Barak Y, Gonzalves M, et al. *Am J Psychiatry*. 1995;152(5):792-794. doi:10.1176/ajp.152.5.792
18. Mukai T, Kishi T, Matsuda Y, et al. *Hum Psychopharmacol*. 2014;29(1):55-63. doi:10.1002/hup.2369
19. Magnesium fact sheet. National Institutes of Health. Updated June 2, 2022. Accessed April 25, 2024. <https://ods.od.nih.gov/factsheets/Magnesium-HealthProfessional/>
20. Kirkland AE, Sarlo GL, Holton KF. *Nutrients*. 2018;10(6):730. doi:10.3390/nu10060730

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REV. 07/12/22