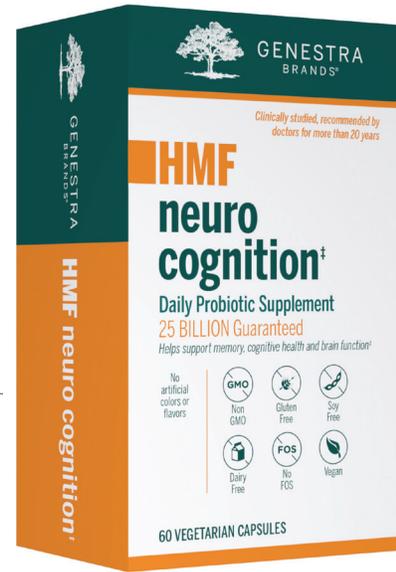




GENESTRA
BRANDS®



HMF Neuro Cognition[‡]

Probiotic formula with bacopa and carotenoids for brain and memory support[‡]

- Provides a combination of clinically researched probiotics, BACOGNIZE® Bacopa extract, lutein and zeaxanthin
- Formulated to support cognitive health, memory and brain function[‡]
- Helps maintain eyesight and support healthy macular pigment optical density[‡]
- Provides 25 billion CFU per daily dosage

HMF Neuro Cognition[‡] was specifically developed to support cognitive health, memory and brain function. It offers BACOGNIZE® Bacopa, a standardized extract of the *Bacopa monnieri* plant, which has a long history of traditional use in Ayurveda. BACOGNIZE® Bacopa has been clinically shown to support cognitive health and brain function, enhancing performance in a test measuring attention, freedom from distractibility and working memory. As the brain and gut reciprocally communicate, this formula includes a blend of four proprietary, research-driven probiotics that have been shown in clinical research to support aspects of cognitive health. To further provide cognitive support, HMF Neuro Cognition[‡] offers the important carotenoid antioxidants lutein and zeaxanthin. Research demonstrates that these carotenoids help maintain eyesight, support healthy macular pigment optical density, and may be associated with improved cognitive function.[‡]

Supplement Facts

Serving Size 2 Capsules
Servings per Container 30

	Amount Per Serving	% DV
BACOGNIZE® Bacopa (<i>Bacopa monnieri</i>) Aerial Parts Std. Extract (10-20:1) (12% Bacosides/3-6 g Dried Equivalent)	300 mg	*
Lutein (from Aztec marigold oleoresin)	10 mg	*
Zeaxanthin (from Aztec marigold oleoresin)	2 mg	*
Probiotic Consortium <i>Lactobacillus acidophilus</i> (CUL-60 & CUL-21) <i>Bifidobacterium animalis</i> subsp. <i>lactis</i> (CUL-34) & <i>Bifidobacterium bifidum</i> (CUL-20)	25 billion CFU	*

* Daily Value (DV) not established

Other ingredients: Cellulose, hypromellose, sunflower lecithin, silica

BACOGNIZE® is a registered trademark of Verdure Sciences, Inc.

Recommended Dose

Take 2 capsules daily with a meal containing oil or as recommended by your health professional.

Size

60 Vegetarian Capsules

Product Code

10389



Non
GMO



Gluten
Free



Soy
Free



Dairy
Free



No
FOS



Vegan

Tried, tested and true.

GenestraBrands.com | 1.888.737.6925

© 2019 Genestra Brands®. All rights reserved.

[‡]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.

HMF Neuro Cognition[†]

Scientific Rationale:

The brain is responsible for important abilities and processes, including memory, attention, motor skills and visualization.¹ Both its function and structure normally change over time, depending on genetics, health status, lifestyle and the environment.¹ While aging is inevitable, there are modifiable factors that can help support cognitive function across the lifespan.¹ For example, maintaining antioxidant status helps reduce oxidative damage, which normally accumulates in the aging brain.² Additionally, the brain and intestinal microflora reciprocally influence each other, suggesting that an optimal gut flora composition may contribute to proper cognitive function.³ Research has found that age-related decreases in cognitive function normally occur in healthy individuals, beginning in their late 20s and extending through their lifetimes.^{2†}

Bacopa has been traditionally used in Ayurveda to support cognitive health for over 3,000 years.⁴ In a recent meta-analysis of nine randomized, placebo-controlled trials, daily intake of 300 mg of bacopa for at least 12 weeks improved cognitive function, including measures of memory and attention.⁴ Emerging evidence suggests that bacopa contains a wide variety of phytochemicals that support cognitive health, including bacosides, and acts by promoting antioxidant defense, increasing cerebral blood flow and regulating neurotransmitter levels.^{5†}

BACOGNIZE[®] is a proprietary, clinically researched bacopa extract standardized to total bacosides. Preclinical research has shown that this extract can bind to and regulate the activity of serotonin receptor 5HT1a, which plays an important role in neurochemical responses.^{6,7} BACOGNIZE[®] also contains flavonoids and polyphenols with antioxidant capacity found to be greater than acai, cocoa and curry powder, which may further contribute to its beneficial health effects.^{6†}

Randomized, double-blind, placebo-controlled trials have reported that BACOGNIZE[®] improves cognitive function in both healthy students and older adults.^{8,9} Daily supplementation with 300 mg of the extract for approximately 7-12 weeks significantly improved measures of cognitive function, including memory and attention.^{8,9} As one trial involved the completion of cognitive tests four weeks after supplementation ended, the study's authors suggested that BACOGNIZE[®] may exert a sustained, positive effect on brain function.^{9†}

Emerging research has also focused on a bidirectional connection between the gut and brain, termed the gut-brain axis.¹⁰ While the brain affects

the gastrointestinal tract by modulating transit, secretions, nutrient absorption and blood flow, the gut can also impact brain function.¹⁰ For example, gut bacteria have been shown to produce neurotransmitters such as GABA, serotonin and acetylcholine, as well as neuroactive metabolites, including short-chain fatty acids (which can activate neurons and cross the blood-brain barrier).¹⁰ In addition to these compounds, the gut and brain communicate through the vagus nerve, which connects the brain stem to the gastrointestinal tract.^{10†}

HMF Neuro Cognition includes the HMF **probiotic** consortium, which has been shown across *in vitro*, animal and human clinical trials to support aspects of cognitive health.¹¹⁻¹⁴ Daily supplementation with this probiotic combination in rats significantly improved measures of memory and increased the concentration of metabolites (such as GABA) in the frontal cortex, while these strains increased attention scores in a human clinical trial.^{12,13†}

As the eye is an extension of the central nervous system, researchers are investigating the relationship between cognitive function and the carotenoids **lutein** and **zeaxanthin**.^{15,16} In addition to their presence in the lens and macula of the retina, lutein and zeaxanthin are found in the brain.¹⁵ Research has reported that higher levels of these carotenoids are positively associated with improved cognitive function across a range of ages.^{15,17-18} Although their mechanism of action has not been confirmed, preliminary evidence suggests they may support the brain by mediating antioxidant activity, cytokine balance or neuronal processing (such as promoting cell-to-cell communication and structural stability).^{16†}

Age-related structural and functional changes affect not only the brain, but also the eyes.¹⁹ Evidence suggests that lutein and zeaxanthin support eye health by reducing oxidative damage resulting from metabolic activity and light exposure (which can accumulate over time).²⁰ In addition, they have also been shown to directly scavenge free radicals and decrease light-induced peroxidation in membrane phospholipids, while absorbing and attenuating the effects of high-energy blue light before it can reach retinal cells.²¹ Lutein supplementation, alone and in combination with zeaxanthin, further helps to support eyesight by promoting healthy macular pigment optical density (MPOD).²²⁻²³ A higher MPOD has also been associated with cognitive health in adults, further suggesting a supportive role of these carotenoids in the brain.^{16,24-25†}

REFERENCES

1. IOM (Institute of Medicine). 2015. Cognitive aging: Progress in understanding and opportunities for action. Washington, DC: The National Academies Press.
2. Vauzour, D, Camprubi-Robles, M, Miquel-Kergoat, S, Andres-Lacueva, C, Bánáti, D, et al. *Ageing Res Rev*. 2017; 35: 222-240.
3. Dinan, TG, Cryan, JF. *Gastroenterol Clin North Am*. 2017; 46(1): 77-89.
4. Kongkeaw, C, Dilokthornsakul, P, Thanarangsarit, P, Limpeanchob, N, Norman Schofield C. *J Ethnopharmacol*. 2014; 151(1): 528-35.
5. Aguiar, S, Borowski, T. *Rejuvenation Res*. 2013; 16(4): 313-26.
6. *Verdure Sciences*. [White paper]. Data on file.
7. Barnes, NM, Sharp, T. *Neuropharmacology*. 1999; 38(8): 1083-152.
8. Kumar, N, Abichandani, LG, Thawani, V, Gharpure, KJ, Naidu, MU, Venkat, Ramana, G. *Evid Based Complement Alternat Med*. 2016; 2016: 4103423.
9. Hingorani, L, Patel, S, Ebersole, B. 2012. Poster session presented at the International Congress for Natural Products Research, NYC, NY.
10. Kim, N, Yun, M, Oh, YJ, Choi, HJ. *J Microbiol*. 2018; 56(3): 172-182.
11. Michael, DR, Davies, TS, Loxley, KE, Allen, MD, Good, MA, et al. *Benef Microbes*. 2019; 10(4): 437-447.
12. O'Hagan, C, Li, J, Marchesi, JR, Plummer, S, Garaiova, I, Good, MA. *Neurobiol Learn Mem*. 2017; 144: 36-47.
13. Owen, L, Reinders, M, Narramore, R, Marsh, AMR, Gar Lui, F, et al. *Proceedings of the Nutrition Society*. 2014; 73 (OCE1): E29.
14. Noorwali, EA, Beaumont, JD, Corfe, BM, Owen, L. *Proc Nutr Soc*. 2017; 76(OCE1): E6.
15. Power, R, Coen, RF, Beatty, S, Mulcahy, R, Moran, R, et al. *J Alzheimers Dis*. 2018; 61(3): 947-961.
16. Jia, YP, Sun, L, Yu, HS, Liang, LP, Li, W, et al. *Molecules*. 2017; 22(4): E610.
17. Feeney, J, O'Leary, N, Moran, R, O'Halloran, AM, Nolan, JM, et al. *J Gerontol A Biol Sci Med Sci*. 2017; 72(10): 1431-1436.
18. Renzi-Hammond, LM, Boyler, ER, Fletcher, LM, Miller, LS, Mewborn, CM, et al. *Nutrients*. 2017; 9(11): E1246.
19. Andersen, GJ. *Wiley Interdiscip Rev Cogn Sci*. 2012; 3(3): 403-410.
20. Ma, L, Lin, XM. *J Sci Food Agric*. 2010; 90: 2-12.
21. Mares, J. *Annu Rev Nutr*. 2016; 36: 571-602.
22. Berendschot TT, Goldbohm RA, Klöpping WA, van de Kraats J, van Norel J, van Norren D. *Invest Ophthalmol Vis Sci*. 2000; 41(11): 3322-6.
23. Huang YM, Dou HL, Huang FF, Xu XR, Zou ZY, Lu XR2, Lin XM. *Br J Ophthalmol*. 2015; 99(3): 371-5.
24. Saint, SE, Renzi-Hammond, LM, Khan, NA, Hillman, CH, Frick, JE, Hammond, BR. *Nutrients*. 2018; 10(2): E193.
25. Vishwanathan, R, Iannaccone, A, Scott, TM, Kritchevsky, SB, Jennings, BJ, et al. *Age Ageing*. 2014; 43(2): 271-5.

Tried, tested and true.

GenestraBrands.com | 1.888.737.6925

© 2019 Genestra Brands[®]. All rights reserved.



GENESTRA
BRANDS[®]

[†]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.