

Product Development Guide

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Nootropics for total cognitive wellness

Lifelong strategies for sustaining brain function



Natural Products Insider®

PAID CONTENT



Nootropics for total cognitive wellness

Lifelong strategies for sustaining brain function

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Nootropics for total cognitive wellness

Lifelong strategies for sustaining brain function

Modern life takes a toll on the brain

Focus, alertness, sharp memory, mental stamina, calm. All desirable attributes for successful functioning and managing modern-life demands, but continuously challenging to achieve and maintain. This was the case long before the persistent stressors of the pandemic upended daily routines, prolonging isolation, causing stress, and suspending “normalcy,” yet optimal cognitive function can be particularly fleeting. In trying to juggle the demands of work, school and family amidst such uncertainty, many consumers today report feeling especially scattered, stressed, depressed, foggy-brained and all-around exhausted.

Nobody likes this feeling—particularly when they know their brain is capable of so much more. But when this incredibly complex organ is tired, stressed or short on essential nutrients, its broad range of functions—processing, learning, language, memory, intuition, judgement—are easily impaired. The stress cycle upends itself, causing anxiousness and trouble sleeping, in turn making it more challenging to stay well and in balance.

Of course, the natural aging process can hinder cognitive performance too. And with the U.S. population growing progressively older—the number of individuals age 65 and up will more than doubled between 2000 and 2040, according to the U.S. Census Bureau —there are a whole lot of consumers interested in keeping their brains as healthy as possible for as long as possible.

Fortunately, there are several safe and effective ways to support cognitive health. Eating a nutritious whole-food diet is perhaps the biggest one, followed by getting regular physical exercise and high-quality sleep, limiting toxic substances such as alcohol and added sugars, and managing stress with yoga, meditation or time spent outdoors. Keeping the brain engaged and challenged by reading, learning and tackling projects is also helpful, especially for older demographics.

But in reality, few consumers have the time, energy or resources to do all of these things consistently. And even if they do, many still often feel like their brains could use a little help. It's no wonder millions of Americans turn to coffee, tea, energy drinks or other caffeinated beverages for a mental edge. Caffeine is a highly effective fast-acting stimulant that is generally safe when used in moderation, although many people consume too much, which can cause restlessness, dizziness, headaches, irritability or even insomnia.

But caffeine is old news, at least in its traditional, commonly used synthetic form. Caffeine also doesn't fully satisfy the needs of many wellness-oriented consumers today or align with how they prefer to manage their health. They seek natural solutions, whether stimulant or nonstimulant, that support their brain and enhance its many functions safely and effectively—and with scientific evidence to prove it.

The rise of nootropics

There is an entire class of dietary supplements that delivers the natural brain-boosting benefits that more and more consumers crave. Nootropics, also called brain health supplements, are specifically formulated to bolster cognitive function. Using a range of botanical extracts, nutrients and other compounds, these products work in targeted ways to enhance specific aspects of cognition, from working memory to verbal recall to quick decision-making.

Given the hectic world we're living in, coupled with consumers' increasing interest in proactive health management, nootropics have been steadily becoming more popular purchases. Additionally, participants in the fast-rising esports scene are buying in, as gamers want to stay mentally sharp throughout their fast-paced, stressful activities.

According to *Nutrition Business Journal* (NBJ), the brain health market has grown between 6% and 7% each year for the last several years. And while NBJ analysts expected slower growth for the category during pandemic-plagued 2020, brain health supplements indeed held strong last year, increasing 6.3% to break \$1 billion in sales for the first time ever.

Looking ahead for nootropics, NBJ does predict a slight slowdown in sales growth in 2021—to 4.8%—as the world continues to sort itself out amidst the ongoing COVID-19 pandemic. However, that plateau should be short lived. NBJ expects sales growth to rebound to 7.9% in 2022, followed by 9.8% in 2023 and 10.3% in 2024.

Certainly, the category's success stems in part from more consumers taking control of their health journey and seeking out natural products to assist with that. But it's also driven by innovation within the nootropics market.



The brain health market has grown between **6% and 7%** each year for the last several years.





Ingredient companies have invested heavily in researching and developing brain-supportive actives that can anchor and differentiate dietary supplements, as well as functional foods and beverages. Along with sourcing the highest quality raw materials sustainably, they've applied advanced clean-label technologies to produce the finished ingredients. Leading suppliers have also put their offerings through the scientific paces to demonstrate their safety, bioavailability and efficacy.

As a result, there is a broad spectrum of unique, efficacious nootropic ingredients for product developers and brand owners to explore. Many are botanical in origin, drawing upon Mother Nature's gifts and standardizing them for key active constituents that influence specific biological processes within the brain and body to enhance memory, focus, processing or other cognitive functions. These include natural caffeine-containing sources such as organic green tea, which provide the desired stimulant effect as clean energy. In some cases, botanical-derived caffeine ingredients also supply antioxidants and other beneficial constituents.

Aside from stimulants, other nootropic ingredients deliver vitamins, minerals or other essential nutrients for better brain function. There are also natural-source neurotransmitters such as gamma-aminobutyric acid (GABA) that can calm the nervous system.

Nootropics is an exciting category full of excellent market opportunities for product formulators and brand owners. Be sure to partner with a trustworthy, transparent, values-aligned supplier to secure the highest quality active ingredients that can make a brain health supplement, functional food or functional beverage stand out and succeed. ♦

A Bright Nootropic Caffeine

Guayusa (*gwhy-you-sah*)

An ancient plant that only grows in the Amazon regions of Ecuador and Peru. The leaves contain a unique blend of caffeine and antioxidants that have been used for centuries by local people.



AMATEA[®]

organic guayusa extract by *AFS*

Mental energy for work, sports, and gaming

AmaTea elevates brands to a whole new level of performance and functionality. Our patented process enhances the naturally occurring caffeine and antioxidants from guayusa for a remarkable ingredient that is unlike any other caffeine. Whether your brand is a beverage, powder, supplement, or energy drink, you'll get the most out of it with a focused energy experience that is mentally uplifting and motivating. Plus, you will love that AmaTea is USDA Certified Organic, sustainably grown under the rainforest canopy, and responsibly sourced with thousands of independent farming families.



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APPLIED FOOD SCIENCES

Product Development Guide

Q&A



Company Name: Applied Food Sciences (AFS)
 Contact: Brian Happel
 Title: Global Sales Director — Nutrition

1 What specific ingredients related to nootropics (cognitive support ie: healthy mood, enhancing mental speed and alertness, memory function and verbal recall, reducing foginess) do you offer brands in supplement applications?

AmaTea® organic guayusa extract elevates brands to a whole new level of performance and functionality. Our patented process enhances the naturally occurring caffeine and antioxidants from guayusa for a remarkable ingredient that is unlike any other caffeine. Whether your brand is a beverage, powder, supplement, or energy drink, you'll get the most out of it with a focused energy experience that is mentally uplifting and motivating.

PurCaf® organic caffeine is an incredible powdered caffeine sustainably sourced from organic green tea leaves, but it can outperform even synthetic caffeine in your beverage, stick pack, or supplement. In addition, because of the complete solubility and less bitter flavor profile, PurCaf gives every brand a reason to reconsider its source of caffeine.

2 Are there new advancements and studies available to enhance new product innovations?

The average U.S. consumer will have around 220 mg of caffeine per day.¹ But conventional forms of caffeine can have unwanted side effects that make it hard to sit still and focus. For example, caffeine stimulates the release of epinephrine (better known as adrenaline) in the body which can produce a similar experience as our “fight or flight” response.² While the sudden feelings of excitement, muscle tremors, or accelerated heartbeat may be helpful in life-threatening situations, those similar jittery sensations are not beneficial when crushing a work project, studying for a midterm, or during a gaming session.

Solution: AmaTea® organic guayusa extract — mental energy for focus at work, sports, and gaming. Guayusa is an Amazonian tea with a unique blend of caffeine and antioxidants. Current studies on AmaTea® organic guayusa extract show that this ingredient stimulates a significantly lower increase in epinephrine than other caffeine forms, including synthetic caffeine anhydrous [ii]. Stay tuned! We are

about to publish the results of our gamer study on AmaTea® and cognitive performance in esports.

3 How do you define your company's point of differentiation in the market?

Applied Food Sciences (AFS) has a 20-year history of bringing inspiration and innovation to the natural products industry. Over the past five years, ***we have sold more than 6 billion servings of organic and natural caffeine*** through our innovative suite of coffee and tea extracts. We continue to raise the standard of what quality, consistency, and safety mean for energy and nootropic ingredients. In addition, AFS is part of the International Life Sciences Institute (ILSI), a nonprofit organization commissioned to improve the understanding of caffeine's impacts on human health and safety.

4 Do your ingredient solutions have a particular supply chain story or special certifications?

Meaningful Growing: Over the last five years, AFS has worked to build a sustainable supply chain of responsibly and ethically sourced guayusa through co-ops and foundations across Ecuador and Peru. We work with thousands of independent farming families, not industrial plantations, preserving the ecosystems and supporting the communities around this botanical ingredient. Our farms are not mono-crop systems. Instead, guayusa is grown in ancient forest gardens known as ‘chakras’ among trees and other vegetation utilizing patterns observed in nature. Farming in this method reduces the need to degrade or cut down the forest and creates a more diverse, productive, and ecologically sound land-use system.

Certifications: In June 2020, AFS achieved a historical first with AmaTea® by receiving a GRAS ‘no questions letter’ from the FDA for a natural caffeine-containing botanical ingredient. This response from the FDA is an acknowledgment of the reliable safety data in support of the ingredient. AmaTea® is also USDA Organic, non-GMO, and Kosher Certified.

References:

1. Fredholm, B., Battig, K., Holmen, J., Nehlig, A. & Zvartau, E. Actions of Caffeine in the Brain with Special Reference to Factors That Contribute to Its Widespread Use. *Pharmacol. Rev.* 51, 83–133 (1999).
2. Krieger DR, Kalman DS, Feldman S, et al. The Safety, Pharmacokinetics, and Nervous System Effects of Two Natural Sources of Caffeine in Healthy Adult Males. *Clin Transl Sci.* 2016;9(5):246-251. doi:10.1111/cts.12403



COGNIGRAPE™



NATURAL HELP TO ENHANCE COGNITIVE BRAIN FUNCTIONS

SUGGEST DOSAGE
250 MG/DAY



COGNIGRAPE™ is a standardized powder extract from red grape juice containing high concentrations of active grape substances such as anthocyanins and proanthocyanidins. **COGNIGRAPE™** is one of the premier ingredients from BIONAP, an optimum natural ingredient to improve cognitive performance.

COGNIGRAPE™ has been clinically proven* to improve cognitive functions such as attention, language, immediate and delayed memory and ameliorate the mood status in healthy seniors. This remarkable ingredient can be used in dietary supplements and functional foods.

*Results may vary

BENEFIT



**IMPROVES COGNITIVE
SKILLS SUCH AS
ATTENTION, LANGUAGE
AND IMMEDIATE-DELAYED
MEMORY**

**LEADING TO A SIGNIFICANT
IMPROVEMENT IN THE GENERAL
MOOD STATUS**



**IDEAL INGREDIENT FOR
Nootropic Products**



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Product Development Guide

Q&A



Company Name: Bionap
 Contact: Tyler Ris
 Title: Sales Vice President
 — Bionap USA Inc

1 What specific ingredients related to nootropics (cognitive support ie: healthy mood, enhancing mental speed and alertness, memory function and verbal recall, reducing fogginess) do you offer brands in supplement applications?

Bionap offers COGNIGRAPE™, a standardized powder extract from red grape juice containing high concentrations of active grape substances such as anthocyanins and proantocyanidins, has been clinically shown to improve cognitive function and brain health. COGNIGRAPE™ can be utilized in dietary supplements and functional foods.

2 Are there new advancements and studies available to enhance new product innovations?

Recent advancements with COGNIGRAPE™ have been evaluated for cognitive and brain function. A clinical study completed with COGNIGRAPE™ demonstrated improved cognitive function related to attention, language, immediate and delayed memory. It was also able to help the mood status in healthy older individuals. A second study with COGNIGRAPE™ further confirming these benefits with a younger population is underway. Furthermore, COGNIGRAPE™ has achieved self-GRAS status for use in specific food and beverage application.

3 Are there specific DSHEA compliant product label claims for your ingredient(s)?

Claims* that can be supported with the use of COGNIGRAPE include:

- Provides antioxidant protection
- Supports brain health and function
- Enhances cognitive brain functions
- Promotes cognitive skills specific to memory
- Improves general mood status

For additional claim support, please contact Bionap.

**These are examples of potential claims, and relate solely to the scientific support. The claims have not been evaluated by Food and Drug Administration.*

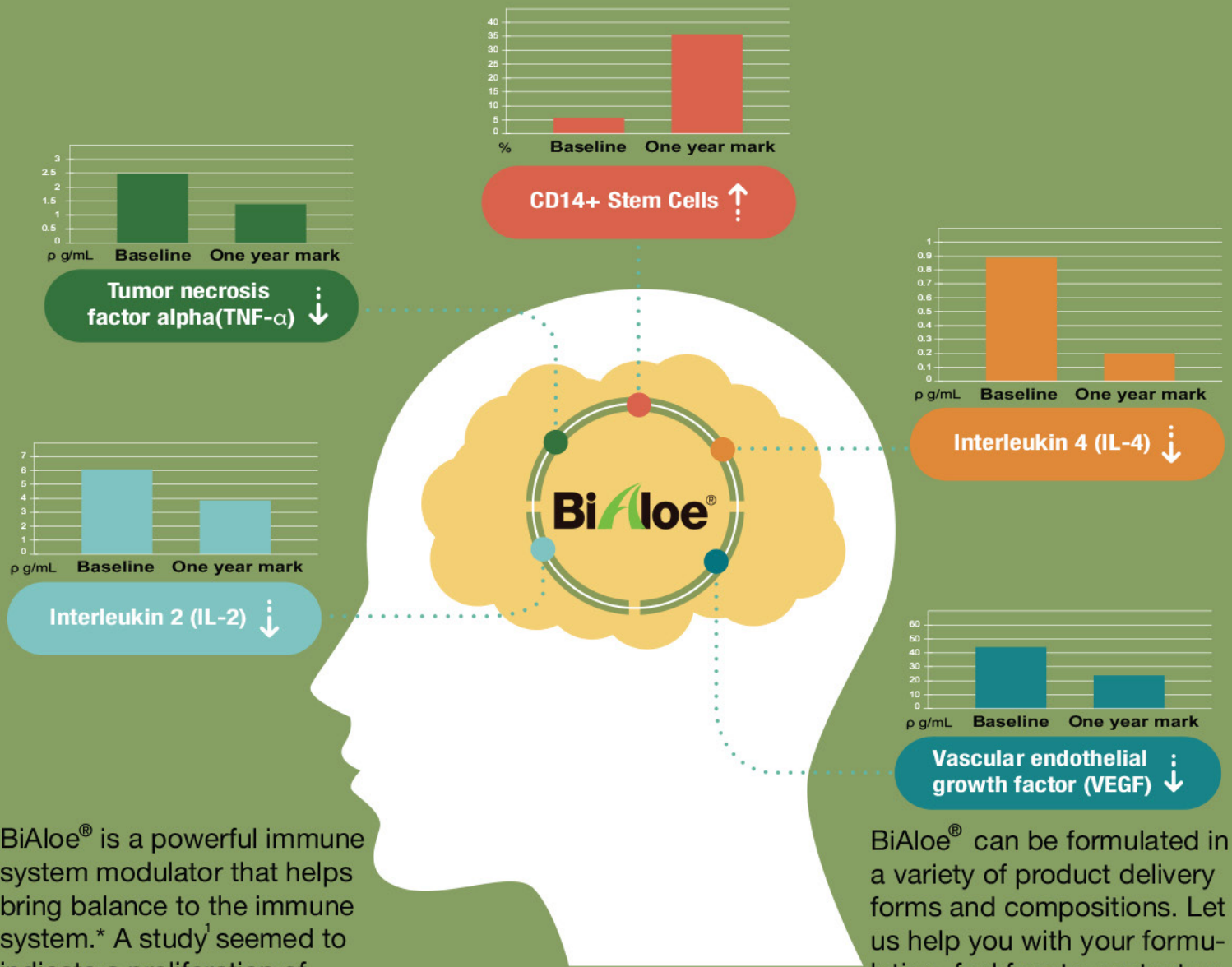
As with all product claims, use of these claims, and other labeling claims, should be reviewed by end users to make sure they comply with current regulatory requirements

4 Do your ingredient solutions have a particular supply chain story or special certifications?

Phoenicians started grapevine cultivation in the third millennium B.C. Later, it was the Greeks that developed this kind of crop introducing it in Sicily in the 12th century B.C. Even today, we follow the Greek pruning system. We use co-products coming from grape-pressing during the grape-sugar production.

Volcanic soils surrounding Etna, main area of grapevine cultivation of BIONAP's suppliers, have a unique mineral and chemical profile that determine nonpareil characteristics in the plants grown there. Our supply chain, is short, traceable and ethically managed. A farmer's network has been created to assure a wide production base and to reduce crop risks. The actual network, ever growing, consists of certified farmlands no more distant than two hours of transport route from the BIONAP's processing facility.

Lifecycle analysis of COGNIGRAPE™ raw material support the best practice to reduce the environmental impact. COGNIGRAPE™ is Halal and Vegan certified and it is a gluten, GMO and BSE/TSE free product. It is also TRU-ID (DNA barcoding) certified and we have a self-affirmed GRAS to guarantee the safety of the product.



BiAloe® is a powerful immune system modulator that helps bring balance to the immune system.* A study¹ seemed to indicate a proliferation of CD14+ Stem Cells as well as a marked reduction of various pro-inflammatory markers.*

One of the hallmarks of aging is a sub-optimal function of the immune system that may lead to chronic inflammation which in turn may lead to a host of age related problems.

The University of Miami, in a one year nutritional intervention study using BiAloe® as one of the main ingredients on Alzheimer's Disease patients, found that immunological inflammation markers went down, production of pluri-potent adult stem cell production increased and cognitive scores on the majority of the patients stabilized or improved.*

BiAloe® can be formulated in a variety of product delivery forms and compositions. Let us help you with your formulation, feel free to contact us anytime so we can start working with you on your cognitive support product project.

* 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.

¹ Lewis J, et. al. J Alzheimers Dis. 2013;33(2):393-406. The effect of an aloe polymannose multinutrient complex on cognitive and immune functioning in Alzheimer's disease.

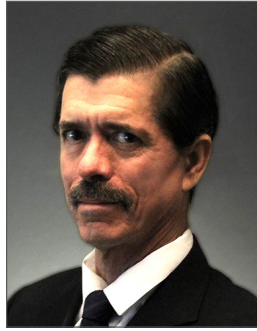
Let us help achieve success in your formulation goals, contact us today at 281-480-8811, or via email at success@lorandlabs.com.





Product Development Guide

Q&A



Company Name: Lorand Laboratories LLC
 Contact: Santiago Rodriguez, Ph.D
 Title: CEO and Technical Director

1 What specific ingredients related to nootropics (cognitive support i.e.: healthy mood, enhancing mental speed and alertness, memory function and verbal recall, reducing fogginess) do you offer brands in supplement applications?

BiAloe® Organic Inner Leaf Aloe vera powder for use in cognitive support drinks and stick packs. Perfect for cognitive support nutraceuticals as a standalone ingredient or added to various complementary ingredients. BiAloe® is a free flowing, water-soluble powder that is a formulators' dream.

2 Are there new advancements and studies available to enhance new product innovations?

Acemannan, the biologically active component of BiAloe® has been shown to be a powerful immunomodulatory agent in multiple studies, including studies in human subjects.

Aloe vera has been shown to improve the bioavailability of both water and oil soluble vitamins that are crucial to immune function.

3 Are there specific DSHEA compliant product label claims for your ingredient(s)?

BiAloe® Supports an already healthy:

- Cognitive function
- Immune system function
- Stomach acid level that is in the normal range
- Gastrointestinal tract
- Blood sugar level that is in the normal range
- Cholesterol level that is in the normal range
- Intestinal flora level as a prebiotic

4 Do your ingredient solutions have a particular supply chain story or special certifications?

Due to a technological breakthrough in Aloe vera processing, Lorand Labs has created BiAloe®. This amazing Aloe vera powder has no bitter taste and is virtually Aloin-free with no laxative effects. BiAloe® is fully compliant with the stringent new European regulation on Aloin.

BiAloe® is the highest quality and most bio-available Aloe available. BiAloe® has 3-10 times more immunomodulatory Acemannan than any other commercially available Aloe vera. This results in formulations that only require one-third to one tenth of the Aloe necessary to achieve the desired result.

Aloe vera used to process BiAloe® is Certified Organic so it is grown free from dangerous pesticides, herbicides or artificial fertilizers. BiAloe® is also Certified Kosher, USDA Organic and Certified Halal. BiAloe® is non-GMO, Cruelty Free, Gluten and Allergen free. Our facility is NSF GMP registered.

NO MATTER WHAT APPLICATION YOU CHOOSE, IT'S SURE TO BE MEMORABLE.



BacoMindTM

World's Best Bacopa with 9 Bioactives for Brain Health

Customers want more functional products, and the cognitive enhancement market is projected to reach \$11.6B. BacoMind[®], the world's best bacopa is a patented, clinically tested, memory and cognition-enhancing, full spectrum extract with 9 bioactives. **The first GRAS, food-grade Bacopa nootropic, BacoMind[®] is suitable for food, beverage, and nutraceutical applications. Together with BacoMind[®], you can build a more memorable product.**



Want to know more?

 naturalremedy.com  hhp@naturalremedy.com





Product Development Guide

Q&A



Company Name: Natural Remedies
 Contact: Abey Thomas
 Title: Head – Global Marketing

1 What specific ingredients related to nootropics (cognitive support ie: healthy mood, enhancing mental speed and alertness, memory function and verbal recall, reducing fogginess) do you offer brands in supplement applications?

BacoMind® is a patented, clinically tested nootropic ingredient proven to support cognitive functions like memory, attention, learning and focus on the elderly, middle-aged adults and children. This unique, full-spectrum *Bacopa monnieri* extract is standardized to nine different bioactive constituents, with batch-to-batch consistency. BacoMind® is supported by five clinical trials, including an exclusive safety clinical study. BacoMind® is the first Bacopa extract to receive USA GRAS status and can be used in beverages, candies/confections and bakery products at 50 mg per serving.

2 Are there new advancements and studies available to enhance new product innovations?

BacoMind® is genuinely unique. It's the only bacopa extract standardized to nine different bioactives with batch-to-batch consistency, which provides the full spectrum benefits of the herb as present in nature. Moreover, as BacoMind® has GRAS status, it can be utilized in beverage and food applications. To cater to the needs of the fast-growing brain health market and other novel applications, we've developed BacoMind®-F&B with superior organoleptic properties, which makes it suitable for applications like gummies and shots. BacoMind® is supported by five published clinical studies on safety and efficacy in adults and children. In addition to this, several new studies across the globe are in the pipeline, which further strengthens the science on this brand.

3 Are there specific DSHEA compliant product label claims for your ingredient(s)?

Based on the published clinical studies, the following label claims are recommended for BacoMind®:

1. BacoMind® helps to improve cognitive function and memory during aging
2. BacoMind® helps to improve acquisition and retention in healthy older people
3. BacoMind® helps to improve cognitive functions such as focus and verbal memory in the elderly
4. BacoMind® support's learning and memory, including information retention and recall, in children and adolescents

Health Canada recently evaluated BacoMind®, and the following health claims are recommended for Adults and Children (NPN: 80111109 & NPN: 80111110)

1. BacoMind® supports brain health
2. BacoMind® helps to support cognitive health and brain performance
3. BacoMind® helps to support memory
4. BacoMind® helps to support cognitive function in children
5. BacoMind® helps to support brain health in children

4 Do your ingredient solutions have a particular supply chain story or special certifications?

The herb used for manufacturing BacoMind® is certified Good Agricultural Practices (GAP) and sourced through a fully traceable, sustainable and socially responsible supply chain. Moreover, it is manufactured in an ISO 14001 certified facility.

noolVL[®]

Visit us at Booth #4947
at SupplySide West!

INGREDIENT OF
THE YEAR –
SPORTS
NUTRITION



GAME ON!

AN INNOVATIVE NOOTROPIC INGREDIENT SPECIFICALLY FORMULATED FOR
ESPORTS AND CLINICALLY STUDIED IN GAMERS — THE FIRST OF ITS KIND.

noolVL[®] is a breakthrough ingredient from Nutrition21 — developed specifically for the
bodies and minds behind the controller.

noolVL is a non-stimulant, nootropic ingredient that has powerful benefits for gamers:

- WORKS FAST – IN JUST 15 MINUTES
- REDUCES ERRORS AND IMPROVES ACCURACY
- ACCELERATES REACTION TIME AND MOTOR SPEED
- OPTIMIZES FOCUS¹
- BOOSTS ENERGY*
- ENHANCES VISUAL ATTENTION¹

Nutrition21
INNOVATIVE INGREDIENTS. REAL RESULTS.



Nitrosigine[®]



VELOSITOL[®]

ChromaX

noolVL

Lustriva[®]

Zinmax[®]

¹Versus baseline.

*Perceived energy measured by using the validated Profile of Mood States (POMS) questionnaire.

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.

Nutrition21 LLC – 2021 Data on File.

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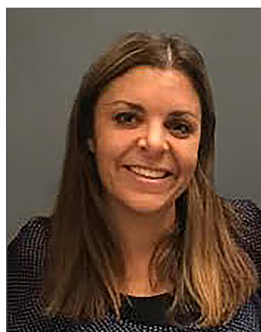
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Nutrition21

INNOVATIVE INGREDIENTS. REAL RESULTS.

Product Development Guide

Q&A



Company Name: Nutrition21
 Contact: Elyse Lovett, MS, MBA
 Title: Vice President
 of Marketing

1 What specific ingredients related to nootropics (cognitive support ie: healthy mood, enhancing mental speed and alertness, memory function and verbal recall, reducing fogginess) do you offer brands in supplement applications?

In 2019, Nutrition21 launched a nootropic ingredient called nooLVL, which features a patented complex of Bonded Arginine and Silicon with an additional optimized dose of Inositol. nooLVL is a non-stimulant ingredient that boosts cognitive performance that was designed for and studied in a population of gamers to target benefits that are most important to the booming esports industry. nooLVL works FAST (in 15 minutes!) and delivers benefits for reaction time, focus, accuracy and increased energy.¹

2 Are there new advancements and studies available to enhance new product innovations?

Nutrition21 unveiled new research on the cognitive benefits of nooLVL at the International Society of Sports Nutrition's (ISSN) Annual conference in mid-June 2021.

This new data strengthens the evidence behind nooLVL for improving cognitive benefits for esports gamers, who rely on quick reactions, focus, memory and fine motor skills to excel during competition. These skills are especially important when gamers are facing off against each other in high stakes tournaments and events. One of the most important skills for gamers is reaction time (RT). RT is the time it takes for your central nervous system to respond to stimuli. Once this message is received by the brain, it is turned into physical or mental response.

The new study, *Effect of Arginine Silicate and Inositol Ingestion on Cognitive and Executive Function in Gamers*, performed at Texas A&M University, examined whether nooLVL ingestion had effect prior to and following a one-hour gaming challenge on cognitive function. This new data found evidence of enhanced short-term memory, RT, reasoning and concentration among gamers following nooLVL supplementation. This further supports the existing findings.

3 Are there specific DSHEA compliant product label claims for your ingredient(s)?

Below are examples of claims that can be used at a 1.6g dose of nooLVL:

- nooLVL, the esports gaming ingredient works within 15 minutes – increasing perceived energy, focus, and accuracy.
- nooLVL significantly improves accuracy (reduces errors) in gamers.
- nooLVL significantly improves attention and reaction time in gamers after 60 minutes of gaming .
- In a double-blind, placebo-controlled trial, nooLVL resulted in 66% less errors, significantly improving accuracy, compared to placebo after a single dose.

4 Do your ingredient solutions have a particular supply chain story or special certifications?

nooLVL is a safe, non-stimulant ingredient that can be formulated into dietary supplement or functional food/ beverage products for gamers, as well as anyone looking to support their cognitive performance. nooLVL is an excellent addition to ready to drink (RTD) beverage applications, powders, functional candy/snacks, bars and more. nooLVL is GRAS, vegan, non-GMO and gluten-free.

References:
 1. Perceived energy



PharmaGABA[®]

Naturally Fermented GABA

**NEW COGNITIVE
STUDY PUBLISHED!**

<<< CLINICALLY STUDIED DATA >>>

RELAX. MANAGE STRESS.

THINK BETTER.



Product Development Guide

Q&A



Company Name: Pharma Foods International Co. Ltd.
 Contact: Dr. Aditya Kulkarni
 Title: Overseas Business Development Manager

1 What specific ingredients related to nootropics (cognitive support ie: healthy mood, enhancing mental speed and alertness, memory function and verbal recall, reducing foginess) do you offer brands in supplement applications?

Our flagship ingredient PharmaGABA® is clinically shown to improve overall cognitive health. Prolonged stress, anxiety and sleep deprivation are known to cause damage to brain neurons resulting in poor cognitive health. Here, PharmaGABA® plays a key role as a neurotransmitter and enhances the overall cognitive health by lowering stress and anxiety and by improving relaxation and sleep quality. All these functionalities of PharmaGABA® are supported by scientific research and published in peer-reviewed journals.

2 Are there new advancements and studies available to enhance new product innovations?

We would like to specifically describe our recent findings (in 2020) on PharmaGABA® for improvement of wide range cognitive functions. We are proud to say that GABA is the world's first reported functional food ingredient that improves logical thinking. The below-mentioned clinical trials were conducted on 120 healthy persons aged 40 and above, who were feeling cognitive decline.

The subjects took 100 mg or 200 mg of PharmaGABA® as daily GABA dose for three months, or a placebo sample without GABA. The results revealed that the subjects who received PharmaGABA® had significantly improved cognitive function compared to those who did not consume PharmaGABA®. In particular, “memory” and “visuospatial cognition” were improved at 100 mg concentration. When the dose was doubled to 200 mg concentration, additional cognitive benefits were recorded such as improvement of “non-verbal reasoning (logical thinking)”, “working memory”, “sustained attention”, apart from “memory” and “spatial cognition.” Furthermore, the results also confirmed

improvement in “vitality” and “mental health” along with the cognitive health. Beyond brain health, our recent studies also showed that PharmaGABA® promotes muscle synthesis by stimulating the secretion of growth hormones.

3 Are there specific DSHEA compliant product label claims for your ingredient(s)?

We would like to recommend the following nootropics claims based on our clinical studies:

- Supports cognitive health and function

4 Do your ingredient solutions have a particular supply chain story or special certifications?

PharmaGABA® is a safe and reliable ingredient produced from food grade materials using a proprietary, natural fermentation process. PharmaGABA® has acquired self-affirmed GRAS status in USA and is also registered under the Master Files in Canada. It is the only brand of GABA ingredient that has been recognized globally and received regulatory approvals in various countries such as USA, Canada, China, Japan, South Korea, India, Thailand, Taiwan, Philippines, Vietnam etc. making it accessible for global consumers.

References:

- Intake of 200 mg/day of gamma-Aminobutyric acid (GABA) improves a wide range of cognitive functions- A randomized, double-blind, placebo-controlled parallel-group clinical trial, Jpn Pharmacol Ther, 2020, 48(3), 461-74.
- Improvement of Memory and Spatial Cognitive Function by Continuous Ingestion of 100mg/day of gamma-Aminobutyric Acid (GABA) -A Randomized, Double-blind, Placebo-controlled Parallel-group Clinical Trial, Jpn Pharmacol Ther, 2020, 48(3), 475-86.

PANMOL[®] NADH



Biologically active Vitamin B3
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Product Development Guide

Q&A

Company Name:	US distributor: STAUBER Performance Ingredients
Contact:	Shirley Rozeboom
Title:	VP Health & Nutrition
Company Name:	Austrian manufacturer: vis vitalis gmbh
Contact:	Barbara Lehner (vis vitalis gmbh)
Title:	Nutritionist, Product Management PANMOL®

1 What specific ingredients related to nootropics (cognitive support ie: healthy mood, enhancing mental speed and alertness, memory function and verbal recall, reducing fogginess) do you offer brands in supplement applications?

NADH, the biologically active form of vitamin B3, is the strongest energy-provider in the human organism. It is especially important for organs and tissues with a high metabolic rate and thus, for the brain. It plays a central role in the cellular energy production and the nervous system by supporting cognitive and mental balance, a healthy mood, alertness, concentration and memory.

NADH is the best biological “spark plug” and highest antioxidant available for the human organism with many positive and beneficial effects.

Two main causes contribute to low NADH levels: on the one hand, the body’s ability of taking up, storing and using NADH decreases with increasing age. On the other hand, NADH itself is highly reactive and therefore sensitive to light, air, gastric acid or oxidants and loses its effectiveness quickly when exposed to those factors.

Therefore, it has always been a challenge to combine biologically active vitamin B3 with other ingredients to create effective and useful supplements for consumers. The vis vitalis gmbh, located in a biospheric region in Salzburg, Austria, found a patented way to stabilize NADH in a natural process. PANMOL® NADH is—due to this natural coating consisting of plant fat, bees wax and chlorophyll—electrochemically and physically stabilized. It can be combined with other nonactive ingredients and still shows high efficacy. That way, it is possible to benefit from the NADH’s full mental energy, anti-aging and regenerative potential.

From the technological point of view, PANMOL® NADH can be easily combined with other ingredients, used orally due to its gastric acid resistance and has an extended shelf life of 36 months enabling it for the use in a wide range of capsule products and formulations.

2 Are there new advancements and studies available to enhance new product innovations?

In times where NR and NMN are popular, trending ingredients—NADH has always been known to provide mental energy. In comparison to the other forms mentioned above, NADH is not a precursor of vitamin B3 and does not need to be converted in several reactions, dependent on enzyme activity or cofactors. It can directly contribute to a normal energy-yielding metabolism, functioning of the nervous system as well as to the reduction of tiredness and fatigue.

A study* containing the stabilized, gastric resistant oral form PANMOL® NADH showed the positive influence on memory, concentration and prevailing mood. After supplementation and evaluation, it could be concluded that memory and attention, as well as mood, improved by about 40%. Memory challenges for many adults and seniors can be well supported, and benefits for healthy metabolism can be realized, at any age.

3 Are there specific DSHEA compliant product label claims for your ingredient(s)?

The label recommendation within the EU is “active vitamin B3 (or NADH) with plant fats, bees wax and chlorophyll”. Additionally, several health claims on vitamin B3 are available.

4 Do your ingredient solutions have a particular supply chain story or special certifications?

PANMOL® NADH meets the highest quality standards and is vegetarian, halal/kosher as well as free from gluten, lactose and fructose. It makes a versatile application possible and addresses a vast audience.

References:

*Rösler et al.: Influence of a NADH containing nutritional supplement on memory, concentration, and mood. OM & Ernährung, 2008/125



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