

Neumentix™ Phenolic Complex K110-42 by Kemin: A Safe and Natural Nootropic Connecting Cognitive & Physical Performance



Neumentix™ is a water-extracted natural dietary ingredient derived from spearmint that was selectively bred to be high in polyphenols and targeted to support cognitive & physical performance. By emphasizing the importance of a more natural and continual process, this distinct ingredient is redefining the approach to cognitive and physical performance to get more out of your work day and workout.

There is immense and growing interest in ingredients with cognitive benefits that can enhance physical performance. However, most ingredients in the sports nootropic market do not typically tout lasting benefits for both cognitive and physical performance.

Yet, more recently, new research with Neumentix™ Phenolic complex K110-42 (Neumentix™) revealed exactly that improvements in cognitive and physical performance were achievable after 30 days of supplementation and sustainable through the length of the 90-day study.¹ These significant findings were noted in a randomized, double blind, placebo controlled

trial including 142 healthy, recreationally active women and men, about 27 years, who were supplemented with either 900 mg of Neumentix™ or placebo for 90 days.

Also unique was the use of the Makoto Arena II² (Fig 1), a novel physical assessment tool that links mental to physical performance. Participants taking Neumentix™ showed statistically significant improvements compared to placebo in various aspects of the Makoto Arena II including choice reaction performance, agility and cross-body movements. These findings are directly indicative of the benefits of Neumentix™ for performance in active,



gaming/athletic environments requiring athleticism, multitasking and coordination.

The novelty of the Makoto

Arena II lies in its ability to bridge mental and physical performance in a multi-dimensional and dynamic manner. The device uses lights and tones coming from targets on three towers and three corresponding footplates. After the light turns on and the tone sounds, the participants react as quickly as possible to contact the correct target with their hands (towers) and feet (footplates). Makoto testing protocols include a one-tower stationary, two-tower lateral and a three-tower multi-directional protocol. For each test, Makoto Arena II records choice reaction time, which is measured from stimulus to successful hit for the 30 second test. The total number of successful hits was also recorded for each test.

As such, the Makoto Arena II requires full body movements to measure choice reaction performance and agility. Traditionally these variables were measured by computer based assessments with minimal body movements required. The Makoto Arena II provides a novel means of assessing choice reaction performance related to physical movements on a millisecond scale and may translate better to real world applications.^{3,4,5}

For example, millisecond intervals of time can have significant impact on common



Fig 1. Makoto Arena II, Makoto USA, Elk Grove Village, IL <http://www.makoto-usa.com/>

athletic activities. A delay in reaction can result in missed shots on the tennis court, failed goal keeping attempts in a soccer game, or a failed effort at blocking a spike on the volleyball court.^{6,7,8,9}

In addition, the three-tower multi-direction test of the Makoto Arena II provides a measure of agility. Agility is the ability to move quickly and easily, and within the context of physical performance, it is more specifically defined as an individual's ability to change direction quickly and accurately.^{10,11} The Makoto Arena II can assess directional change through the combination of reaction time and successful hits using randomly generated stimuli and sport-specific movements required during physical activity.



Neumentix™ as a Natural Nootropic for Performance

The use of Makoto Arena II, provided the opportunity to demonstrate the nootropic benefits of Neumentix™ using a novel device.¹² Previous research on Neumentix™ indicated benefits for working memory in older adults as well as antioxidant, neuroprotective and neurogenic potential mechanistic benefits.

However, this study clearly broadens the application of Neumentix™ allowing for the evolution of a cognitive ingredient into the sports nootropic market. Both athletes and active lifestyle users searching for natural, safe and non-stimulant nootropic solutions that support both physical performance and long-term health and wellness¹³ are likely to benefit from an ingredient like Neumentix™.

What is Neumentix™?

Neumentix™ is a water-extracted natural ingredient sourced from spearmint selectively bred to be high in polyphenols such as rosmarinic acid. This exciting cognitive ingredient is targeted to support cognitive performance specifically, focus and working memory, without disrupting sleep at night. These benefits are clinically supported for healthy young adults as well as older individuals with age-related memory issues.

Kemin developed Neumentix™ from patent-pending, non-GMO, spearmint plant lines. These plants are grown on family farms in the USA in accordance with good agricultural and sustainable farming practices. In fact, Kemin's spearmint lines are the first spearmint to be certified sustainably grown in the USA.

These special plants serve as the source for this innovative dietary ingredient. The native polyphenolic profile of the leaves is harnessed through a patent-pending drying technology followed by a gentle water-extraction method which preserves and maintains the natural phenolic constituents, which are greater than 50 in number. The resulting extract is dried and undergoes rigorous quality testing prior to release.



Neumentix™ polyphenols

When people think of the health benefits of polyphenols, they

might think of anthocyanins found in blueberries, cocoa flavanols, or stilbenes such as resveratrol found in red wine. However, Neumentix™ polyphenols naturally present in Kemin's spearmint plants KI110 and KI42 are powerful and dynamic polyphenols, although lesser known. In fact, Neumentix™ contains more than 50 phenolic constituents including salvianolic, lithospermic and caftaric acids¹⁴ (Fig 2), in addition to the higher levels of rosmarinic acid than what are typically found in the commercial mint sold in the grocery store.¹⁵ The synergy between these bioactive constituents is likely key to understanding the clinical benefits of Neumentix™.

Neumentix™ polyphenols can act in several ways

The key polyphenolic constituents identified in Neumentix™ have all been studied to determine how they may work to promote cognitive performance. Research suggests that these polyphenols are capable of improving cognitive performance in humans through at least four potential mechanisms of action.¹⁶ These include through— i) reduction in oxidative stress; ii) increase in acetylcholine, a neurotransmitter actively involved in learning and memory processes; iii) neurogenesis, promoting the healthy growth of new neurons; and iv) neuroprotection, the ability to help keep neural cells healthy.

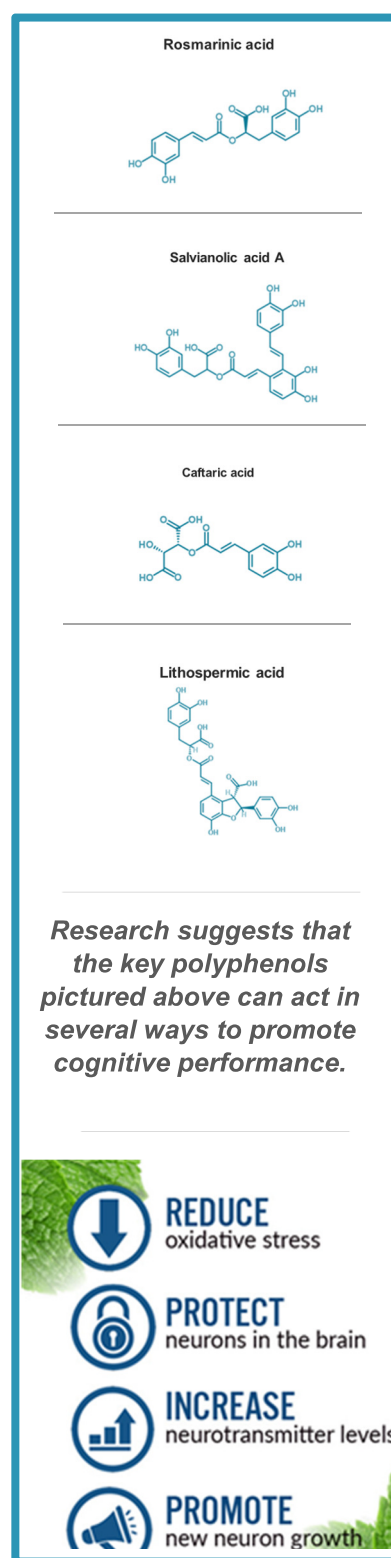


Fig 2. Neumentix Polyphenols and their modes of action

Why Choose Neumentix™?

Consumers are interested in cognition¹⁷ with their number one concern being “staying mentally sharp”.¹⁸ They also realize that in many areas of mental performance including focus, they may not be performing as well as they used to during their work day and in their workout. In fact, research suggests that for several domains of cognition, peak performance likely occurs as early as our 20s.¹⁹ Hence, a more natural and gradual approach to improvement rather than a quick fix may be more important for consumers looking for trusted solutions that are scientifically-backed, safe, and natural with sustainable benefits to meet their cognitive demands.

Neumentix™ Supports Working Memory and Sleep

One of the unique benefits of Neumentix™ is that this extract has been shown to improve working memory. Working memory is part of short-term memory that allows for the storage and manipulation of information while working on another task. It is controlled by the prefrontal cortex and hippocampus. Working memory is a critical cognitive function because it supports cognitive abilities such as sustained attention, focus and concentration. Research also suggests that working memory supports physical performance, such as movement and reaction time.¹² Due to the nature of working memory, improvements in this domain will likely help



Fig 3. Kemin consumer data depicted in a word cloud where the frequency of the word is reflected by its size in the cloud. “What other attributes are important when deciding to buy brain health products?”

improve one’s ability to manage workloads and improve productivity.



This working memory benefit was recognized in a randomized, double-blind,

placebo-controlled clinical trial where participants with age-related memory impairment took either placebo or 900 mg of Neumentix™ for 90 days. A 15% improvement in overall quality of working memory and a 9% improvement in accuracy in spatial working memory over placebo were detected.²⁰ The clinical relevance of these findings is noteworthy since research suggests that as we age cognitive performance can begin to decline by about 10% per decade starting as early as in our 20s.²¹

Also noteworthy and interesting, was that the participants taking 900 mg of Neumentix™ reported that they got to sleep easier and faster at night compared to subjects who took placebo.²⁰

Neumentix™ is safe and well-tolerated

Consumers today expect safe and quality ingredients. Neumentix™ (standardized to 14.5% rosmarinic acid) is recommended for healthy adults at a dose of 900 mg taken once daily, preferably with meals in the morning. Neumentix™ has been affirmed as Generally Recognized As Safe (GRAS).²² There have also been no reported product related adverse events in the three clinical trials lasting between 30 and 90 days.^{20,23,24}

Neumentix™ is stable and easy to formulate with²⁵

Neumentix™ is water soluble, stable during processing at a pH between 2 and 7, and fully recoverable at temperatures up to 300 °F (149 °C), which makes it easy to use in various delivery formats including— vegetable juices, coffee/tea, beverage drink sticks, effervescent, chews/gummies, baked goods, softgels and capsules.

So, differentiate yourself in the marketplace with Neumentix[™]!

Try out the Makoto Arena II at Kemin's Booth # I159 at Supply Side West and learn more about this exciting study!



GROWN IN THE USA Natural sleep support
 Clinically-tested GRAS Water-extracted
 antioxidant GLUTEN-FREE SCIENCE-BACKED
 SUPPORTS CONCENTRATION vegan **NON-GMO**
 Polyphenols *Mentha spicata* SUSTAINABLY-GROWN
 NATURAL NOOTROPIC FOR WORKING MEMORY
 SAFE SUPPORT FOR COGNITIVE PERFORMANCE
 plant-based Inspired molecular solutions
SUPPORTS REACTION PERFORMANCE

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**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. This product is not intended/recommended for children. If pregnant, nursing, under a physician's care or taking medication, consult your health care professional before use. The suggested precautionary statement is similar to statements occurring on the labeling for other plant extracts.*

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