

# Zynamite<sup>®</sup>



A nektium whitepaper

**THE NATURAL CHOICE FOR**  
**SPORTS AND ACTIVE NUTRITION**

# What is

## Zynamite®?

**Zynamite® is a multi-award winning patented botanical extract that provides sports and active nutrition benefits beyond those of caffeine.**

As a natural and sustainable alternative to caffeine, this premium botanical ingredient has been clinically documented to provide significant sustained boosts to mental and physical performance – including power output, muscle recovery, and decision making.

Studies have shown Zynamite® activates brain waves in an almost identical pattern to caffeine – but uses a different mechanism that doesn't cause any of the side-effects associated with caffeine. In fact, recent studies have demonstrated Zynamite® has activities that go well beyond those of caffeine.

Zynamite® is rooted in a history of traditional use. With a focus on ethnobotany, Nektium spent years understanding how different traditional cultures have used a variety of herbs to boost concentration and mental focus – from the Amazon to India, China, and Africa. The search led us to develop the specific profile of extract that now makes the patented composition of Zynamite®.

Zynamite® is sourced by selectively pruning cultivated mango trees in the tropics. It is not only a natural ergogenic aid and alternative to caffeine, but as a by-product of mango production, it is also ecologically sustainable.

**Natural. Authentic. Sustainable. Benefits beyond caffeine.**

### Introducing Zynamite® PX

Zynamite® PX is a patent-pending sports formulation of our award-winning Zynamite® in combination with quercetin. This premium ingredient is specifically designed for sports and active nutrition applications and has been clinically validated to provide benefits to physical performance and recovery in multiple clinical studies.

### Global recognition for Zynamite®



- Cognitive booster
- Reaction times
- Focus
- Decision making
- Activities beyond caffeine
- Reduce mental fatigue
- Improved brain oxygenation

- Increased  $\dot{V}O_2$  max
- No blood pressure increase
- No heart rate increase
- Anti-inflammatory

- Enhanced sprint performance
- Higher mean power output
- Improved peak power output
- Faster muscle recovery
- Reduced lactate build-up
- Less pain
- Less muscle damage
- Improved oxygen extraction

- Sustained effects
- No crash
- No jitters

// Performance

// Recovery

// Cognition

# Breaking out of the niche

## From high-end sports to active lifestyles

There has been a paradigm shift in the attitudes of consumers towards health and wellness, demonstrating a desire to be more proactive towards exercise and nutrition.

Sports nutrition is no longer a niche market, with shoppers turning to products previously considered only for serious sports as a convenient way to help them get valuable nutrition as part of their daily exercise routine.



According to data from FMCG Gurus **three quarters** of European consumers have purchased a sports nutrition product in the last six months.

(FMCG Gurus, Vitafoods 2019)

**Performance Nutrition:** Products specifically aimed at giving you a mental or physical edge while exercising or competing in sports. This can often come in the form of building muscles, increasing endurance, helping focus in high pressure situations, or enhancing recovery.



**59%** of consumers who purchase sports nutrition products do so to consume before or after sports & workouts.

(FMCG Gurus, Vitafoods 2019)

**Active Nutrition:** Products mostly aimed at healthy and active consumers who are looking for a healthy and convenient alternative food, drink or supplements to help get the most out of exercise and hectic lifestyles. Active nutrition products help consumers to take steps towards general health goals and power the enjoyment of general fitness.



**41%** of consumers purchase sports nutrition products to help power everyday health goals and tasks.

(FMCG Gurus, Vitafoods 2019)



### Convenience

Convenient, on-the-go product formats are popular with consumers looking to match busy lifestyles with sports and active nutrition products that will help power-up their day by providing valuable nutritional value. Both casual users and fitness enthusiasts are buying in to the 'on-the-go' formats, especially in bars and ready-to-drink (RTD) formats.



### Clean label

Shoppers are increasingly paying more attention to labels – and want to see ingredients they recognise. Sports nutrition brands are responding by including on-pack information about where ingredients come from, sustainable and ethical practices, as well as seeking to include more natural and plant-based ingredients.

Natural is the most important claim for consumers when it comes to sports nutrition products.

(FMCG Gurus, Vitafoods 2019)



### Differentiation, naturally

Botanical ingredients offer a relatively underexploited opportunity for differentiation in the sports and active nutrition market. Despite a wealth of evidence for their benefit in sports applications, the inclusion of natural botanicals into mainstream sports and active nutrition products like sports drinks and protein powders is not yet common practice and creates a chance for differentiation in the market.



### Beyond caffeine

While industrially-synthesised caffeine dominates the market, naturally-sourced caffeine and natural botanical substances that offer benefits beyond caffeine are emerging as popular clean label ingredient solutions that provide a differentiation factor

Caffeine is present in **73%** of pre-workout blends, with an average of 266mg caffeine per serving.

(Lumina Intelligence)



**40%** of consumers have concerns about the after-effects of sports nutrition products.

(FMCG Gurus, Vitafoods 2019)



### From brawn to brains

Sports nutrition is rapidly becoming more than simply building muscles and power, with brands and consumers putting a growing focus on cognitive benefits and reaction times. According to data from NutraIngredients, more than half (62%) of sports nutrition brands and suppliers are already active, or soon to be active, in developing products that target cognitive functions and concentration as part of their sports and active range.

(Data from NutraIngredients Sports Nutrition Congress, 2018)



### Beyond pre-workout

There is huge potential for companies active in the pre-workout space to expand into the energy sector with ready-to-drink RTD extensions. Outside core powder offerings aimed at male weekend warriors, there are clear opportunities for products developed for women, in addition to extending use beyond the pre-and post-workout windows at the gym and into pre-competition areas in team sports and athletics, and the rapidly expanding area of esports and gaming.



Botanical ingredients are present in **61%** of pre-workout blends.

(Lumina Intelligence)

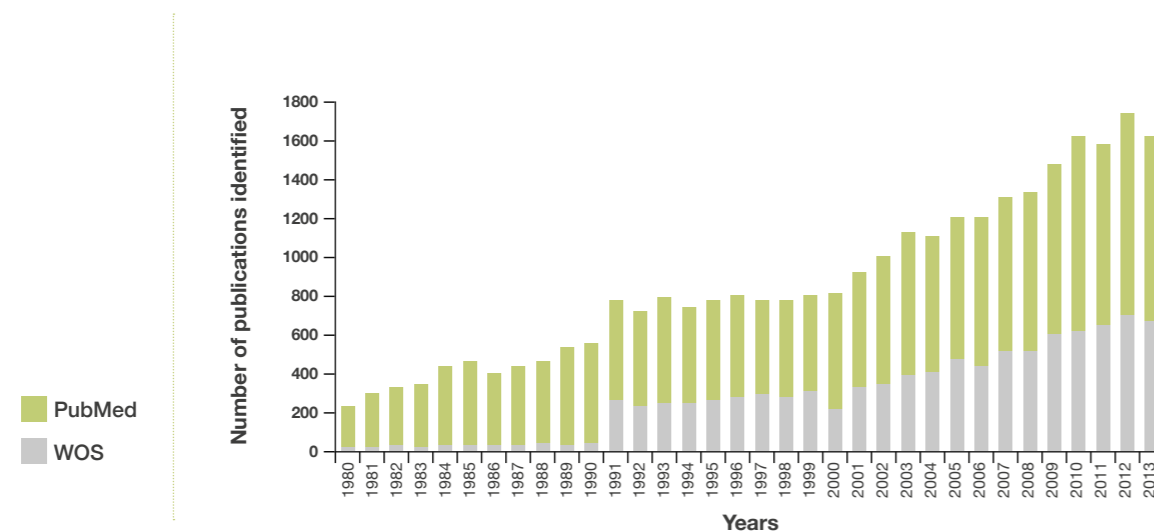
# Caffeine alternatives

## In focus

### Many mental energy products that promote athletic or cognitive performance in stressful or exhausted conditions rely on caffeine.

It is well documented that our genetic make-up means that many of us are highly sensitive to caffeine, while many more simply do not want to use caffeine because of tolerance or the widely known 'jitters' and 'crash' associated with its use.

Since the introduction of energy drinks and highly caffeinated sports nutrition products in the 1980's there has been a steady increase in reporting of side-effects of caffeine in the medical literature.



### Shifting demand

Consumers are becoming increasingly aware of – and turned off by - the excessively high caffeine content of many nutraceuticals, energy drinks and sports performance products.

Further, the use of synthetic caffeine in many products has created growing backlash and demand for natural alternatives.

As a result, consumers and brands are turning towards naturally low-caffeine or caffeine free options.

It is clearer than ever that more shoppers are looking for naturally sourced alternatives to caffeine as they become increasingly aware of their daily caffeine intake and the side-effects of caffeine.

*There is a growing backlash against highly caffeinated products in energy drinks and sports nutrition arenas - both from consumers and regulatory bodies.*

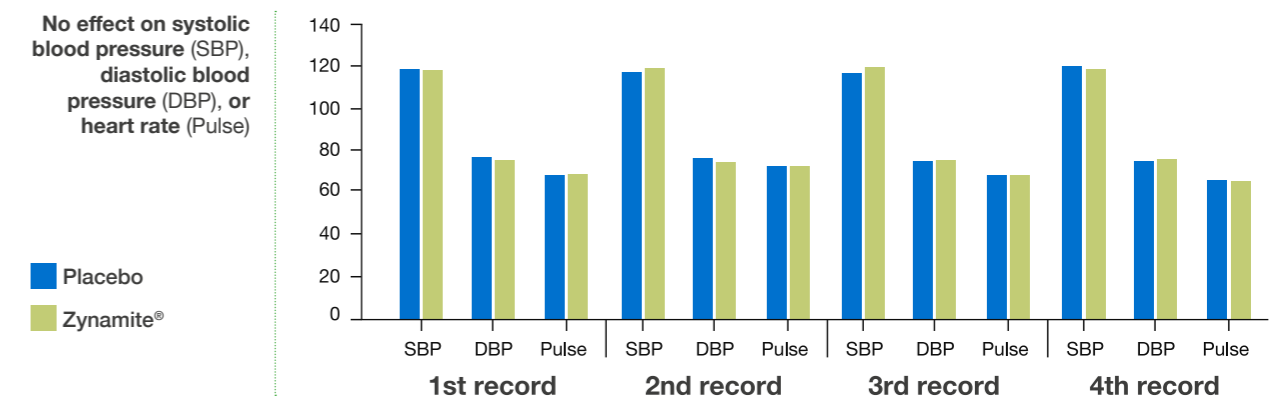
### The non-stim stim

In 2015 Nektium saw the need for a natural side-effect free alternative to caffeine. Providing a safe, natural alternative to caffeine, with nootropic benefits beyond those of caffeine, has been core to our innovation strategy ever since.

This quest culminated in our award-winning patented botanical extract Zynamite®.

Zynamite® provides mental energy and improved performance under fatigued conditions, without the negative side-effects of caffeine.

From a physiological standpoint, this means that when ingested, Zynamite® does not increase heart rate or blood pressure<sup>1</sup>, has a sustained duration of action<sup>2</sup>, and does not lead to the characteristic 'jitters' or 'crash' associated with caffeine consumption.

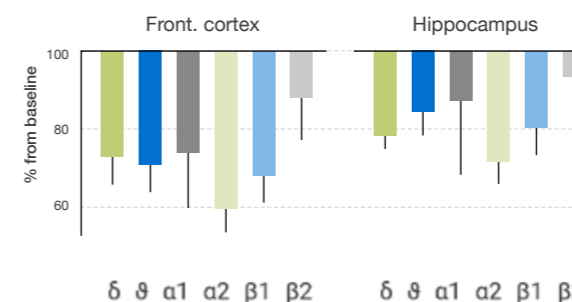


### Benefits beyond caffeine

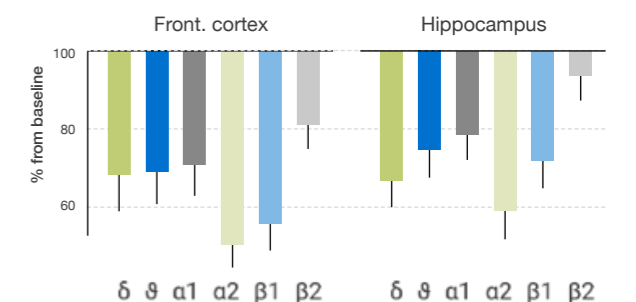
Due to its mechanism of action, Zynamite® can be used to completely replace caffeine in a product. It can also be used to dramatically reduce the amount of caffeine in products, as it has been demonstrated that Zynamite® acts synergistically with caffeine<sup>3</sup>.

In fact, the pattern of brain activities and mental benefits from Zynamite® are broader and longer lasting than those seen in caffeine<sup>2</sup>.

### Zynamite®



### Caffeine



Electroencephalogram (EEG) data demonstrates almost identical patterns of brain activity between caffeine and Zynamite<sup>4</sup>

# Zynamite®

## The science

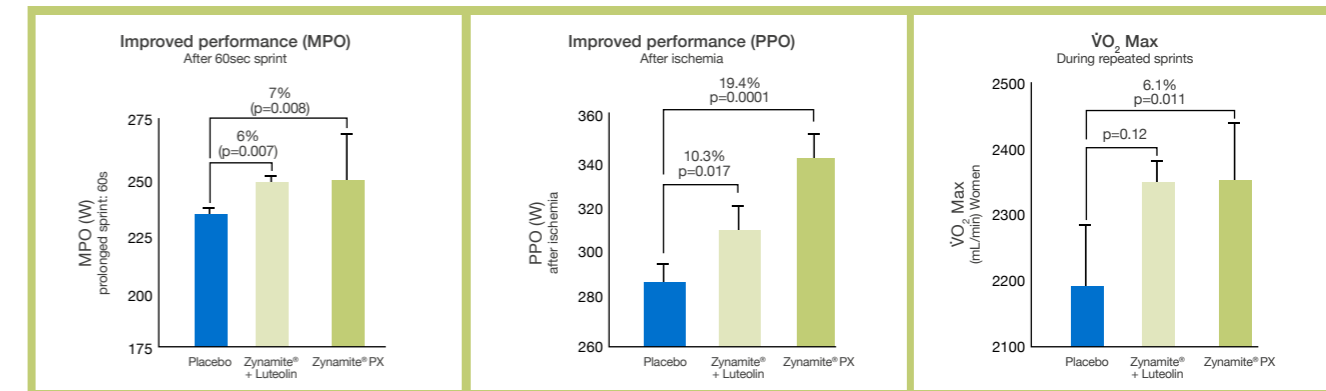
Whether you are an athlete competing at the top of your game, or in need of on-the-go nutrition for an active lifestyle, performing at your mental and physical best, and being able to recover fast is essential.

### Physical Performance

For elite athletes, the difference between a record-breaking win and not even making the podium can be the smallest of margins. For weekend warriors, the gym community and on-the-go consumers, enhancing motivation, focus and squeezing everything out of your physical performance during training sessions is vital.

A single dose of Zynamite® in combination with luteolin or quercetin (Zynamite® PX) drives increased sprint performance and has been shown to drive gains in power output including up to 7% increase in mean power output (MPO) and 19.4% increase in peak power output (PPO) during extreme fatigue. Increases of 6.1% in  $\dot{V}O_2$  max were also seen for Zynamite® PX against placebo<sup>4-6</sup>.

*“What makes Zynamite® special is the capacity to enhance performance by acting simultaneously in the central nervous system and at the muscle level, with greater efficiency at the highest levels of fatigue”*  
 Professor Dr. Jose López Calbet, University of Las Palmas, Spain



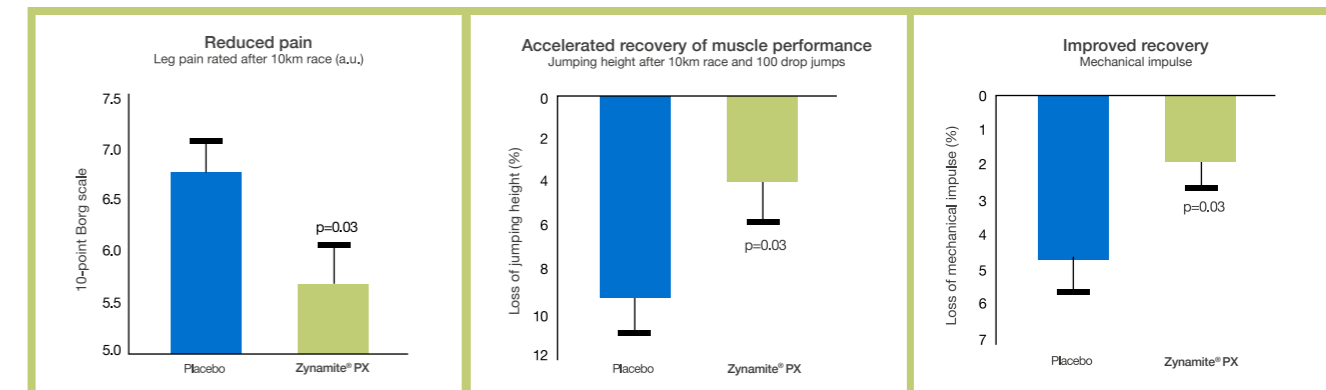
### Recovery

Whether an elite athlete or a busy on-the-go mum, getting fitter depends on training harder more frequently and reducing the impact of recovery so you can feel better to train again.

Zynamite® PX has been shown to lessen pain during training or competition, reduce muscle damage, and accelerate the recovery of muscle

performance. Clinical data has shown an 11% reduction in pain after a 10km competition.

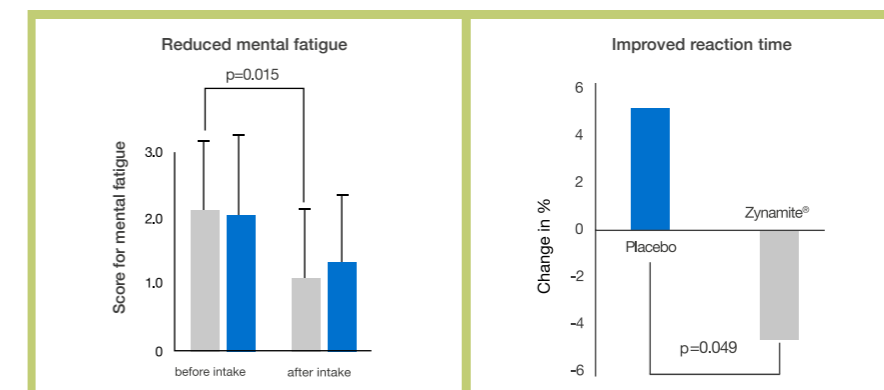
Intake of the award-winning extract also limited the loss of jumping performance 24 hours after competition by 59% compared to placebo. Further clinical data has shown reductions in blood lactate and improved mechanical impulse<sup>7</sup>.



### Cognition

Many say the main difference between elite sports players and amateurs is in their understanding of the game and ability to think quickly on the pitch – better anticipating the movements of opponents, and working out weaknesses in the competition whilst still giving 100% physically.

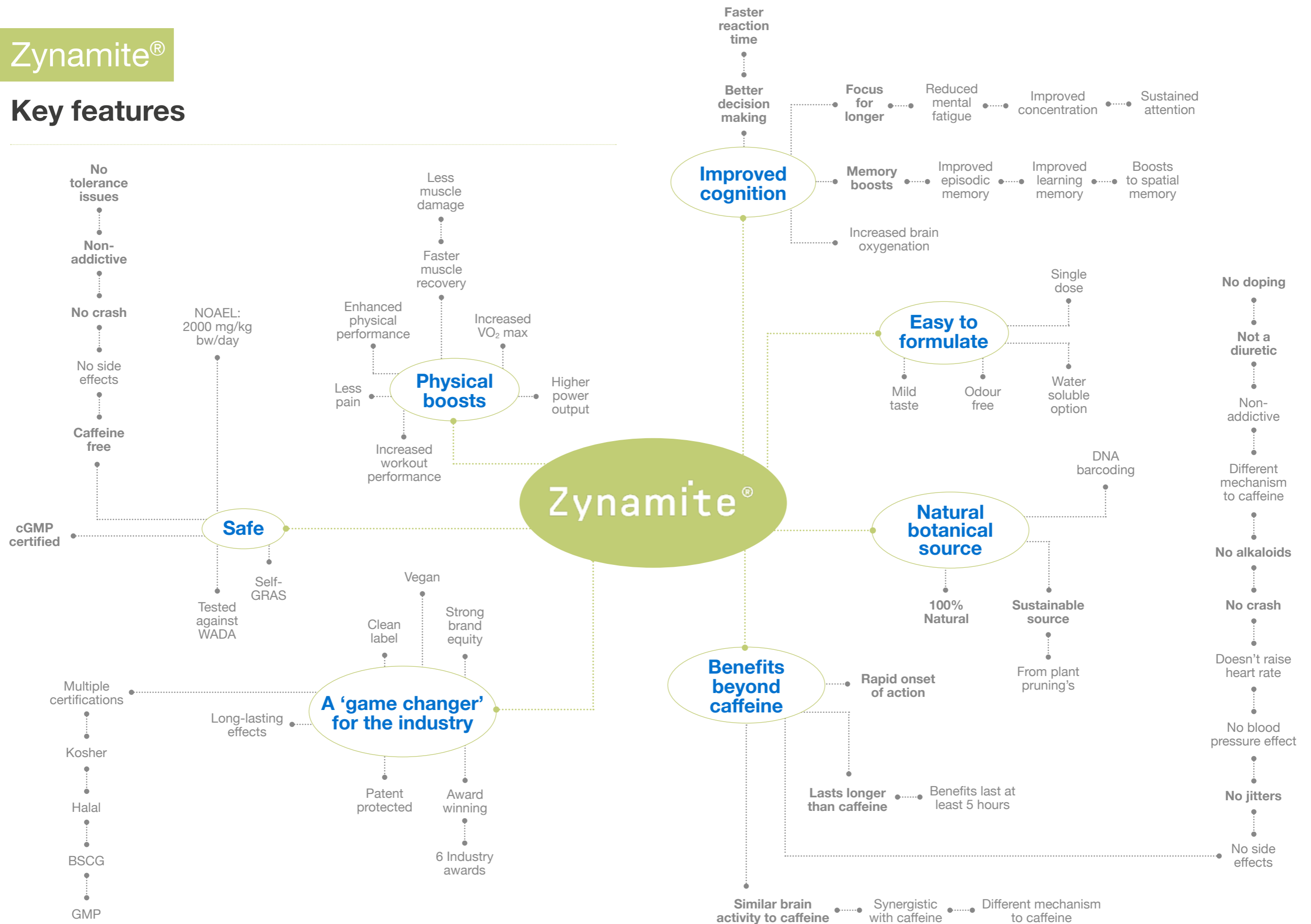
Clinical trials have shown a single dose of Zynamite® can help cognitive functions and decision making by reducing mental fatigue, increasing focus and concentration, and boosting reaction times by 50ms<sup>1</sup>.



**Key:**  
 ■ Zynamite®  
 ■ Zynamite® PX  
 ■ Placebo  
 ■ Zynamite® + luteolin

# Zynamite®

## Key features



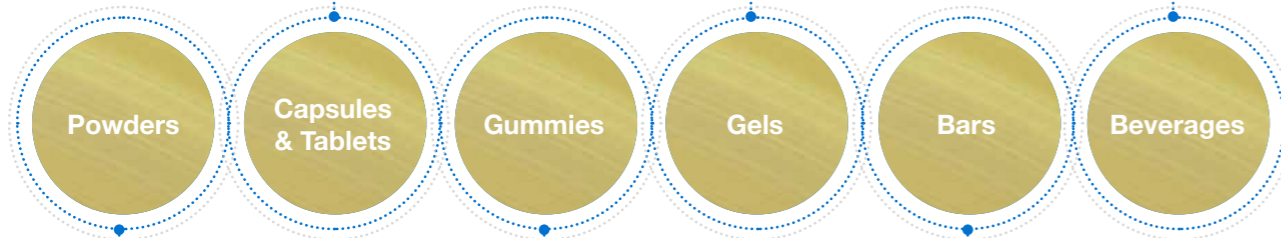
# Applications and examples



Multivitamin  
Herbal blends  
Nootropic stacks  
Recovery & post-workout  
Cognitive boosters  
BCAA & EAA blends  
General wellbeing

Endurance products  
Recovery & post-workout

Sports hydration drinks  
Energy shots  
Natural energy drinks  
Energy drinks  
Infused waters  
Sodas  
Protein shakes  
Meal replacement  
eSports



Protein powders  
Pre-workout  
Nootropics  
Post-workout  
Amino blends  
Meal replacement

Multivitamin  
Recovery & post-workout  
Pre-competition  
General wellbeing

Healthy snacking  
Post-workout & recovery  
Breakfast bars  
Keto bars



# Nektium

## Our journey

**Nektium is the ethnobotanical and evidence-based innovation specialist in the nutraceutical supply chain. The company was born out of two friends' shared passion for the ethnobotany, phytochemistry and pharmacology of little-known botanicals and their applications in health and wellness.**

Today, based at our high-specification facilities on the island of Gran Canaria, Spain, the company remains defined by its solid foundation of dedicated relationships, love for nature, and passion for research excellence.

Nektium brings ethnobotany to life – identifying the best plants and extracts to research in clinical studies for human health, using world-class technologies and proprietary methods to produce the best quality botanical extracts.

### Our ethnobotanical quest

In 2015, Nektium embarked on a global ethnobotanical quest to identify botanicals with potential to be the next-generation nootropic and activities beyond those of caffeine.

#### Zynamite® is the result of this global quest.

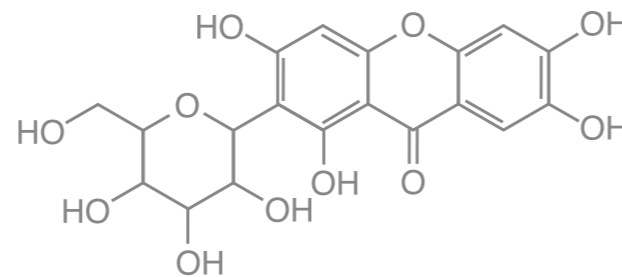
The search for the next generation of caffeine-free botanical nootropic ingredient led our botanical experts to identify 150 botanical candidates from global bioresources using an ethnobotanically-directed approach, including research in the field.

After screening and dereplication steps, a final selection of ten botanicals was made, and these were subjected to brain electrical activity (EEG) studies.

The proprietary extract used in Zynamite® was the clear winner, giving by far the best brain activating EEG signature of the ten best botanical leads.

### Principle bioactives

The active principles of Zynamite® are mangiferin and closely related xanthonoids.



Ultra-high-performance liquid chromatography (UPLC) with photodiode array detection (PDA) is used to provide high-resolution separation, identification and quantification of these key xanthonoids.

### DNA Barcoding: Identification of species

The botanical raw material used for Zynamite® first undergoes macroscopic inspection to ensure it conforms with reference plant material. DNA barcoding by the Royal Botanical Garden, Madrid, is then used to positively confirm its botanical identity. Additionally, UHPLC chromatographic profiles are used to confirm the presence of characteristic markers and to quantify the content of principle bioactives.

## Important information

### Zynamite® is protected

Zynamite® is protected by three families of patents and patent applications:

- Compositions for enhancing brain activity.*  
United States Patent 10537604B2.  
European patent EP3487491B1.
- Compositions for improving sports performance.*  
Patent application WO2020114613A1.
- Compositions for reducing craving, enhancing mood and decreasing stress.*  
Spanish patent ES2681996B2.  
United States Patent: US 10874708B2.

### Regulatory

Mango leaves have a well-established use in food and beverages throughout the tropics of the world where mango trees are cultivated. They are also listed as food supplement in Italy, France and Belgium. Zynamite® has self-affirmed GRAS in the USA.

Specific countries that were notified for the marketing of mango leaf extract under the brand name Zynamite® include: Italy, France, Belgium, Germany and Finland.

### Safety data

To confirm the safety of ingestion of Zynamite®, Nektium commissioned a 90-day *in vivo* repeat dose oral gavage toxicity study of Zynamite®.

Based on data from this study the No Observed Adverse Effect Level (NOAEL) was determined as 2000 milligrams per kilogram of body weight per day\*.

**NOAEL: 2000mg/kg bw/day**

\*Note: 2000 mg/kg bw/day was the highest dose tested. No toxic effects were seen in any dose.

### Key features:

**Botanical origin:** *Mangifera indica* (mango leaves)

**Bioactives:** Mangiferin

**Cultivated or wild:** Cultivated

**Appearance:**

Free flowing, light brown to beige powder

**Pack size:** 25kg

**Taste:** Mild taste, no odour

**Recommended serving:** 300mg

**Quality:** GMO free, BSE/TSE free, DNA-barcode, Doping free

**Product certification:** Kosher, Halal, GMP, BSCG



### Quality assurance & certifications

Our award-winning Zynamite® ingredient is the result of high quality botanical raw material combined with meticulous manufacturing procedures.

Nektium's facilities and production processes strictly comply with cGMP (independently audited and certified annually) and rigorous quality control programs that ensure a high-quality product.

All batches are dispatched with a certificate of analysis to confirm origin and product quality.



# Zynamite®

## Awards

### Frost & Sullivan

Frost & Sullivan recognizes industry leaders with excellence in best practices.



#### European New Product Innovation Award 2019

In 2019 Zynamite® was awarded the prestigious Frost & Sullivan Award in the category: “European New Product Innovation”.

The award honours Nektium Pharma for outstanding achievement in innovation anticipated to encourage significant growth in the industry, and for identifying emerging trends that will catalyse and transform industries.

### NutraIngredients awards

The NutraIngredients panel of judges honoured Nektium’s innovative mental and physical energy ingredient Zynamite® two years in a row:



#### Nutrition Research Project: NutraIngredients Awards 2019

Ongoing investment in clinical research is at the heart of a perennial branded nutraceutical. This award recognizes Zynamite® as the best game-changing nutrition research project that advances the boundaries of nutritional science.



#### Sports Ingredient of the Year: NutraIngredients Awards 2018

This award celebrates Zynamite® as the best science-based sports nutrition ingredient at the prestigious NutraIngredients Awards in Geneva.



#### Sports Ingredient of the Year: NutraIngredients Awards Asia 2018

With a strong commercial presence in Asia, Zynamite® was awarded runner up at the prestigious NutraIngredients Asia Awards in Singapore. The award celebrates ingredients designed to meet the demands of the sports and active nutrition category in Asia.

### ESSNA awards

The panel of judges at the European Specialist Sports Nutrition Alliance (ESSNA) Awards identified Nektium as one of the most forward-looking sports nutrition suppliers in Europe, with Zynamite® handed two awards:



#### Best Free-From Product: ESSNA Awards 2019

Zynamite® was rewarded with a category win for its caffeine-free, side-effect free, doping-free formulation that provides real-world performance and recovery benefits.



#### Game Changer: ESSNA Awards 2019

Zynamite® was awarded runner up in the ‘Game Changer’ category for providing both mental & physical energy, and for improving performance & recovery.



#### Best Sports Nutrition Ingredient: ESSNA Awards 2020

Zynamite® was nominated as finalist in the ‘Sports Nutrition Ingredient’ category for providing both mental & physical energy and improving performance & recovery.



#### Best Sports Nutrition Product: ESSNA Awards 2020

G2T Go2Train PRO and Zynamite® was nominated as finalist as ‘Best Sports Nutrition Product’ for its advanced formula containing Zynamite® designed to prevent fatigue, improve focus, and provide high recovery capacity.

## References

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Get in touch to find out how Zynamite® and Zynamite® PX can help your products stay ahead of the competition and provide performance and recovery benefits for the next generation of sports and active nutrition products.

**Natural. Authentic. Sustainable. Benefits beyond caffeine.**

For more information contact: [service@nektium.com](mailto:service@nektium.com)

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