

# Mapping L-Theanine to Your Neurobiology

 [keyorahealth.substack.com/p/l-theanine-dosage-timing-safety-protocols](https://keyorahealth.substack.com/p/l-theanine-dosage-timing-safety-protocols)

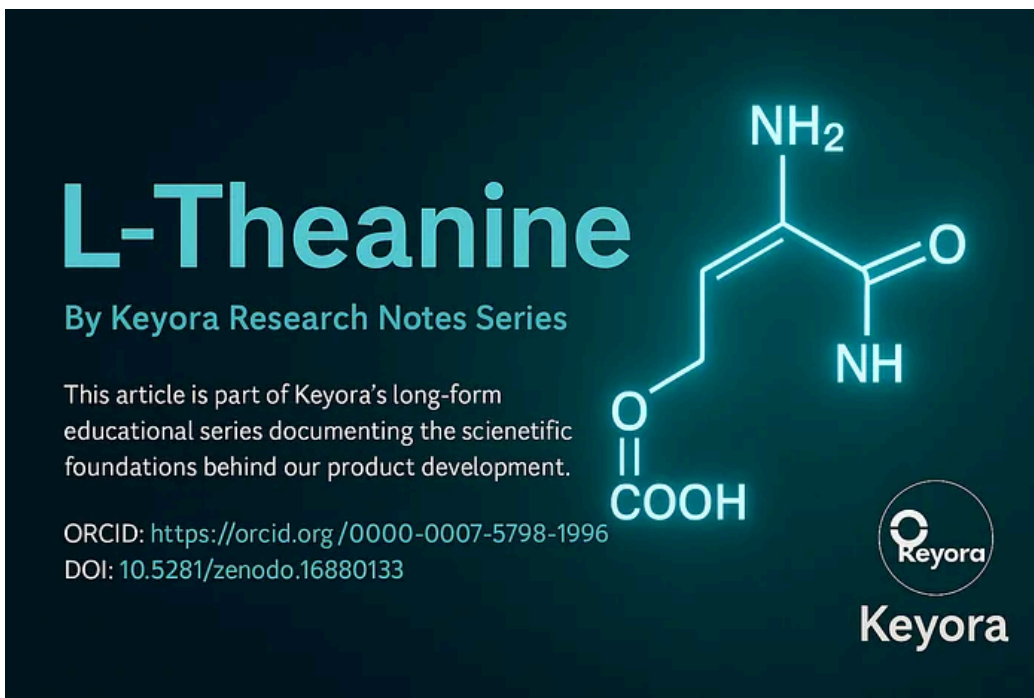
Keyora

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*This article is part of Keyora's long-form educational series documenting the scientific foundations behind our product development.*

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**L-Theanine**  
By Keyora Research Notes Series

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## Why L-Theanine Dosage Matters More Than People Think

L-Theanine is often described as “calming,” “focusing,” or “smoothing,” but the truth is far more interesting:

***L-Theanine has a dose-dependent personality.***

*Low doses, medium doses, and high doses behave differently—and different populations need different dosing windows.*

Across Keyora's research, dozens of RCTs, and neurophysiological studies, we discovered a simple rule:

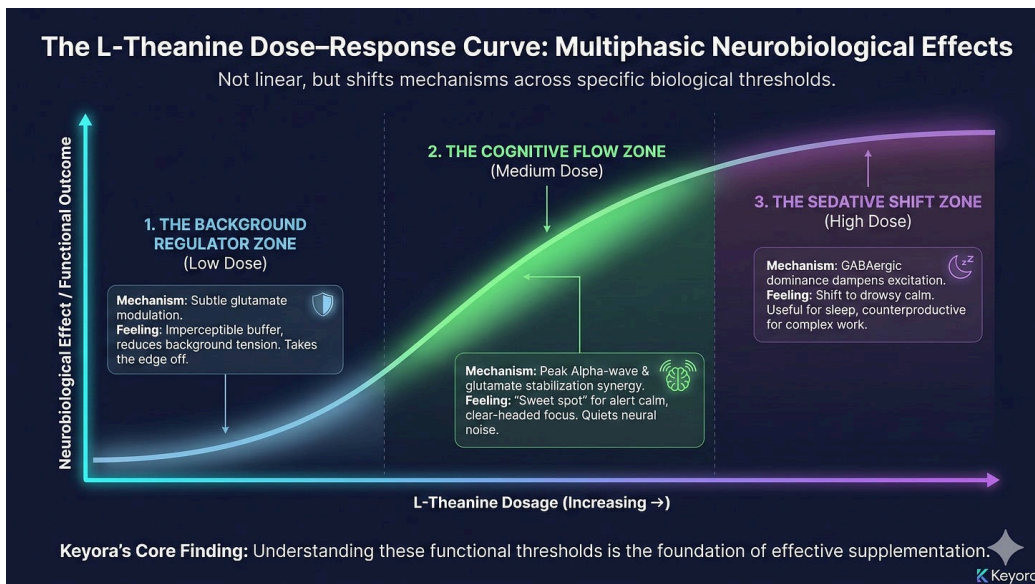
***There is no universal dose.***

***Only population-specific neurobiology.***

Episode 10 explains the *real* science behind L-Theanine dosage:

- How much is needed for calmness
- How much for cognitive enhancement
- How much for sleep
- How much for stress recovery
- How much is too little or too much
- How timing changes the outcome
- How different brains absorb and respond differently

Let's start with the foundation: the dose–response curve.



## 1. The L-Theanine Dose-Response Curve - Three Distinct Zones

L-Theanine's effects fall into three predictable zones, supported by clinical and EEG data.

### 1.1 Zone 1– 50–100 mg: Neural Smoothing & Mild Calmness

Effects in this zone:

- reduced background anxiety
- slight lowering of cortisol
- mild alpha-wave increase
- reduced sensory reactivity
- smoother emotional tone

This is the “daily calm” zone - gentle, stabilizing, non-sedating.

Ideal for:

- students
- professionals
- people sensitive to supplements
- people combining Theanine with caffeine
- mild stress days

## **1.2 Zone 2 - 150–250 mg: Cognitive Stabilization & Stress Regulation**

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At this zone, the effects become more profound:

- significantly increased alpha-wave activity
- stronger GABAergic effects
- noticeable cortisol reduction
- improved sustained attention
- improved working memory under stress
- reduced emotional reactivity

This is the “performance clarity” zone.

Ideal for:

- high-stress professionals

- entrepreneurs
- doctors, scientists
- people struggling with stress-induced cognitive fragmentation
- test preparation / deadline pressure

### **1.3 Zone 3 - 250-400 mg: Sleep Transition & Autonomic Rebalance**

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This zone shifts the effect profile:

- strong reduction in neural excitability
- smoother transition into sleep
- reduced nighttime hyperarousal
- improved HRV
- lowered sympathetic tone

This is the “deep calm / sleep support” zone.

Ideal for:

- stress-induced insomnia
- menopausal sleep disturbances
- ruminative overthinking at night
- late-night autonomic spikes

Not ideal for:

- early daytime use
- cognitive performance tasks
- users combining Theanine with caffeine

# The L-Theanine Dose-Response Curve – Three Distinct Zones



L-Theanine's effects fall into three predictable zones, supported by clinical and EEG data.

## Zone 1 - Neural Smoothing & Mild Calmness

50 - 100 mg | The "daily calm" zone - gentle, stabilizing, non-sedating,

- Reduced background anxiety
- Slight lowering of cortisol
- Mild alpha wave increase
- Reduced sensory reactivity
- Students
- Professionals
- Entrepreneurs
- Doctors, scientists

## Zone 2 - Cognitive Stabilization & Stress Regulation

| The "performance clarity" zone

- Significantly increased alpha-wave activity
- Stronger GABAergic effects
- Noticeable cortisol reduction
- High-stress professionals
- Entrepreneurs
- Doctors, scientists
- People struggling with stress

## Zone 3 - Sleep Transition & Autonomic Rebalance

250-400 mg | The "deep calm/ sleep support" zone.

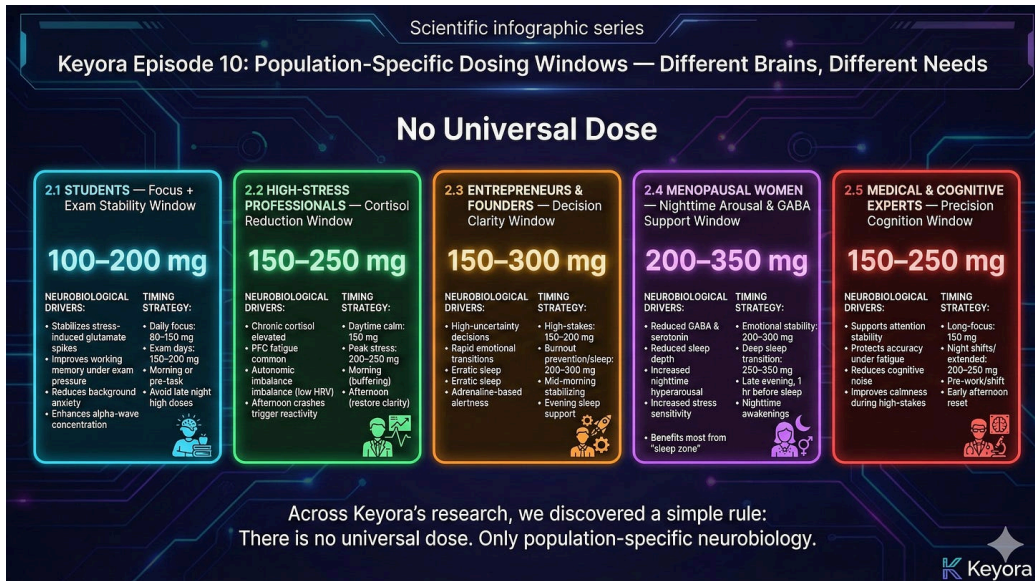
- Strong reduction in neural excitability
- Smoother transition into sleep
- Reduced nighttime hyperarousal
- Improved HRV
- Lowered sympathetic tone
- Stress-induced insomnia
- Cognitive performance tasks
- Users combining Theanine

### Not ideal for:

- Early daytime use
- Cognitive performance tasks

## 2. Population-Specific Dosing Windows - Different Brains, Different Needs

Across our research, we identified precise dose ranges that map onto the five key populations covered in Episode 9.



## 2.1 Students - Focus + Exam Stability Window (100–200 mg)

### Why this dose works for students:

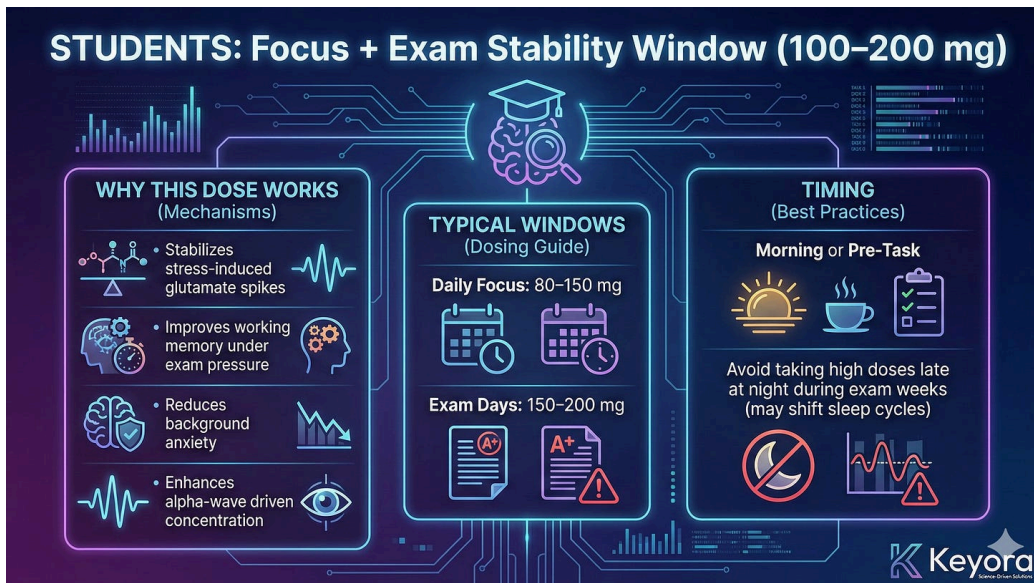
- stabilizes stress-induced glutamate spikes
- improves working memory under exam pressure
- reduces background anxiety
- enhances alpha-wave driven concentration

### Typical windows:

- 80–150 mg for daily focus
- 150–200 mg for exam days

### Timing:

- morning or pre-task
- avoid taking high doses late at night during exam weeks (may shift sleep cycles)



## 2.2 High-Stress Professionals - Cortisol Reduction Window (150-250 mg)

### Why professionals benefit from this range:

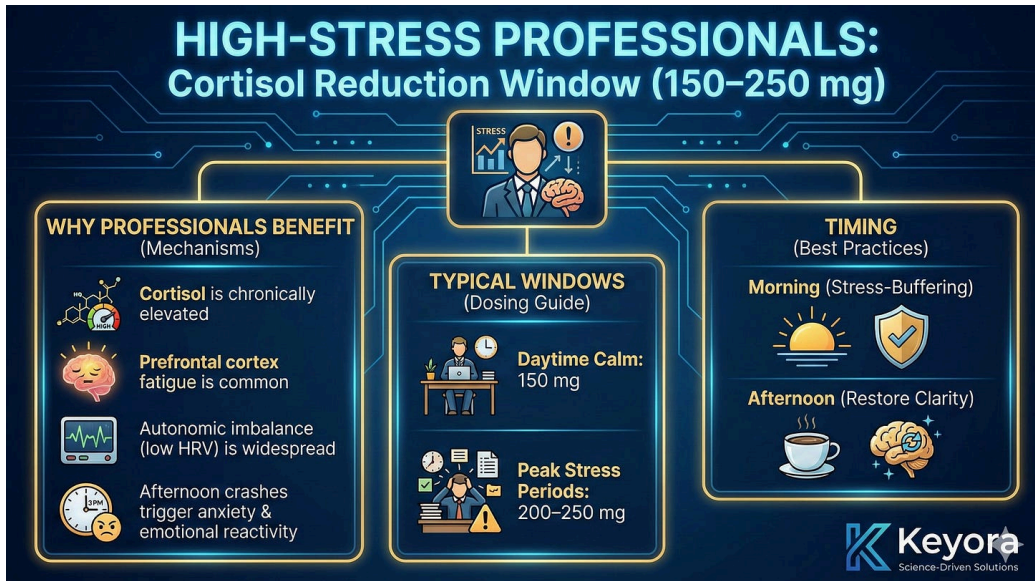
- cortisol is chronically elevated
- prefrontal cortex fatigue is common
- autonomic imbalance (low HRV) is widespread
- afternoon crashes trigger anxiety and emotional reactivity

### Typical windows:

- 150 mg for daytime calm
- 200–250 mg during peak stress periods

### Timing:

- morning (stress-buffering)
- afternoon (restore clarity after a chaotic day)



## 2.3 Entrepreneurs & Founders - Decision Clarity Window (150–300 mg)

**Why this group needs a slightly higher range:**

Entrepreneurs live in:

- high-uncertainty decision cycles
- rapid emotional transitions
- erratic sleep
- adrenaline-based alertness

L-Theanine at 150–300 mg helps:

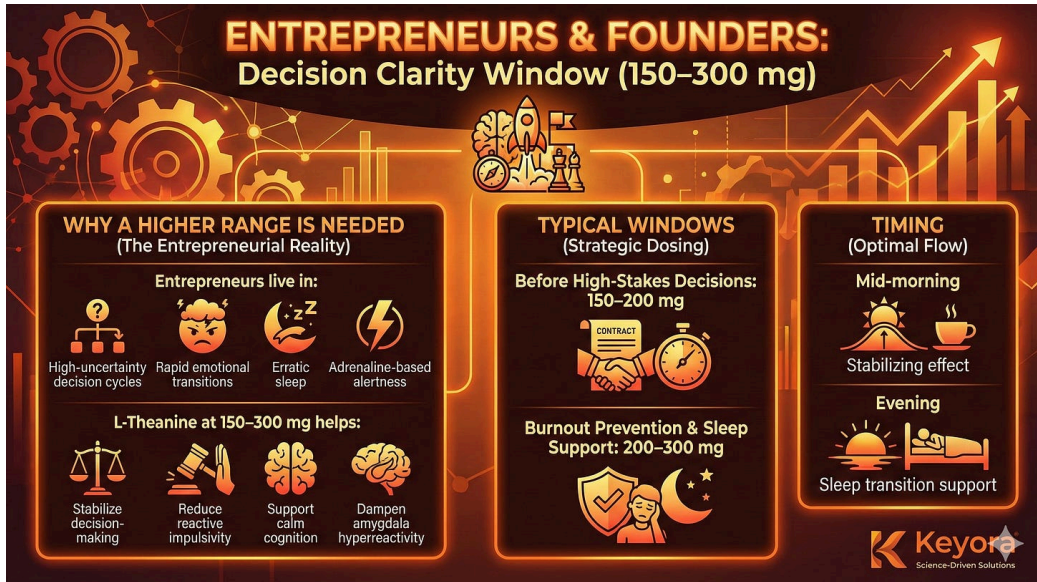
- stabilize decision-making
- reduce reactive impulsivity
- support calm cognition
- dampen amygdala hyperreactivity

**Typical windows:**

- 150–200 mg before high-stakes decisions
- 200–300 mg for burnout prevention & sleep support

## Timing:

- mid-morning: stabilizing effect
- evening: sleep transition support



## 2.4 Menopausal Women - Nighttime Arousal & GABA Support Window (200-350 mg)

### Why L-Theanine is uniquely effective here:

Menopause reduces:

- GABA tone
- serotonin stability
- sleep depth

And increases:

- nighttime hyperarousal
- stress sensitivity
- amygdala activation

### Optimal effects emerge around:

- 200-300 mg for emotional stability

- 250–350 mg for deep sleep transition

### Timing:

- late evening
- 1 hour before sleep
- during nighttime awakenings (if needed)

This population benefits the most from the “sleep zone” of Theanine.

**MENOPAUSAL WOMEN: Nighttime Arousal & GABA Support Window (200–350 mg)**

**WHY L-THEANINE IS UNIQUELY EFFECTIVE**  
(Hormonal & Neurobiological Shifts)

Menopause reduces:

- GABA tone
- Serotonin stability
- Sleep depth

And increases:

- Nighttime hyperarousal
- Stress sensitivity
- Amygdala activation

**OPTIMAL EFFECTS EMERGE AROUND**  
(Targeted Dosing)

- Emotional Stability: 200–300 mg
- Deep Sleep Transition: 250–350 mg

**TIMING**  
(Nighttime Protocol)

- Late evening
- 1 hour before sleep
- During nighttime awakenings (if needed)

This population benefits the most from the “sleep zone” of Theanine.

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## 2.5 Medical Professionals, Scientists, & High-Cognitive Experts - Precision Cognition Window (150-250 mg)

### Why this dose works:

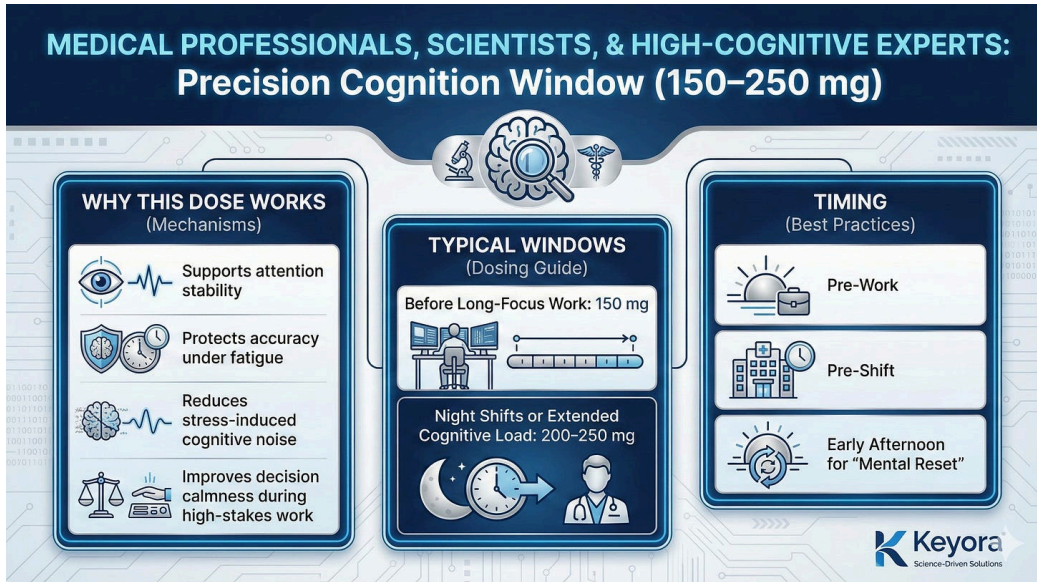
- supports attention stability
- protects accuracy under fatigue
- reduces stress-induced cognitive noise
- improves decision calmness during high-stakes work

### Typical windows:

- 150 mg before long-focus work
- 200–250 mg for night shifts or extended cognitive load

## Timing:

- pre-work
- pre-shift
- early afternoon for “mental reset”



### 3. Timing: When You Take L-Theanine Matters as Much as the Dose

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L-Theanine follows a predictable pharmacokinetic timeline:

Tmax (peak effect): 30-50 minutes

Duration: 4-6 hours

Half-life: ~65 minutes

Based on these dynamics:

#### 3.1 Best Timing for Cognitive Performance

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##### **30 minutes before the task**

This aligns peak alpha-wave activation with the start of performance.

#### 3.2 Best Timing for Stress Support

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##### **Morning + Early Afternoon**

Why:

- buffers cortisol
- prevents stress buildup
- reduces emotional reactivity
- stabilizes energy without sedation

Avoid late-afternoon high doses for sensitive individuals (may make you too calm to focus).

### **3.3 Best Timing for Sleep**

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#### **1 hour before bed**

Effects in this window:

- reduced cortical excitability
- reduced ruminative thinking
- smoother transition into slow-wave sleep

### **3.4 Best Timing for Menopausal Sleep Disturbance**

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#### **1–2 hours before bed + optional 100 mg during nighttime awakening**

This specifically addresses:

- 2–4 AM cortisol spikes
- estrogen-withdrawal-driven hyperarousal

### **3.5 Best Timing with Caffeine**

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#### **L-Theanine first → caffeine 20-30 minutes later**

This sequencing (proven in EEG studies):

- stabilizes excitatory effect
- prevents jitters

- yields “clean focus”
- maintains emotional steadiness

## Timing: When You Take L-Theanine Matters as Much as the Dose

**30 min Before Cognitive Tasks**  
Peak aligns with alpha waves

**1 hr Before Bed**  
Alpha-to-theta transition

**1 hr before Bed**  
+ hour before bed

**Morning + Early Afternoon**  
Cortisol buffering  
Emotional steadiness

**1-2 hr before Bed**  
+ Optional 100 mg Nighttime

**1-2 hr before Bed**  
+ Optional 100 mg Nighttime  
Addresses nighttime awakenings

L-Theanine timing determines functional outcome: clarity, calm, or sleep transition.

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#### 4. Long-Term Safety - What the Data Actually Shows

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A key reason L-Theanine gained global acceptance is its **excellent safety profile**.

#### 4.1 Human Studies Show

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- Safe at **up to 400 mg/day** for healthy adults
- No tolerance development
- No withdrawal
- No dependence
- No cognitive dulling
- No daytime sedation

#### 4.2 Animal Toxicology Studies

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Extremely high safety margins → equivalent of grams per day in human dosing models.

#### 4.3 No Interaction Risks

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- not habit-forming
- not hepatotoxic
- no reported serotonin syndrome
- safe with sleep medications (but start lower)
- safe with antidepressants (but consult clinicians)





#### 4.4 Special Populations

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- safe for students and professionals
- safe for menopausal women
- safe for older adults
- avoid high doses during pregnancy unless supervised

“L-Theanine is one of the few nutrients where higher stress → higher benefit, without increasing risk.”

**LONG-TERM SAFETY — WHAT THE DATA ACTUALLY SHOWS**  
Excellent safety profile drives global acceptance.

<p><b>4.1 HUMAN STUDIES SHOW</b></p>  <p>Safe up to 400 mg/day No tolerance No withdrawal No dependence No cognitive dulling No daytime sedation</p>	<p><b>4.2 ANIMAL TOXICOLOGY STUDIES</b></p>  <p>Extremely high safety margins → Equivalent of grams/day in human dosing</p>	<p><b>4.3 NO INTERACTION RISKS</b></p>  <p>Not habit-forming Not hepatotoxic No reported serotonin syndrome Safe with sleep meds (start lower) Safe with antidepressants (consult clinicians)</p>	<p><b>4.4 SPECIAL POPULATIONS</b></p>  <p>Safe for students/professionals Safe for menopausal women Safe for older adults Avoid high doses during pregnancy (unless supervised)</p>
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Keyora's position: "L-Theanine is one of the few nutrients where higher stress → higher benefit, without increasing risk."

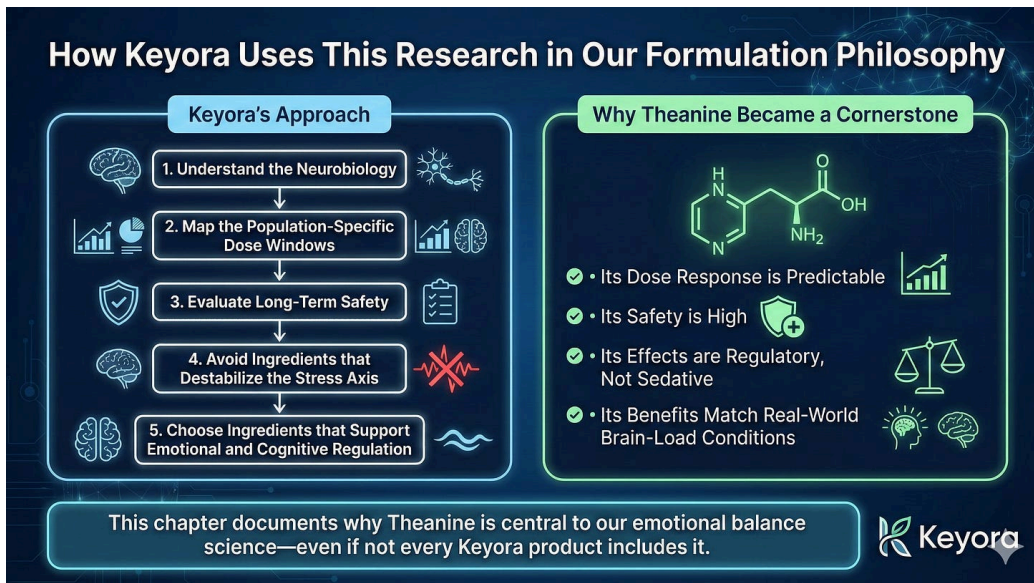


- understand the neurobiology
- map the population-specific dose windows
- evaluate long-term safety
- avoid ingredients that destabilize the stress axis
- choose ingredients that support emotional and cognitive regulation

Theanine became a cornerstone of our research because:

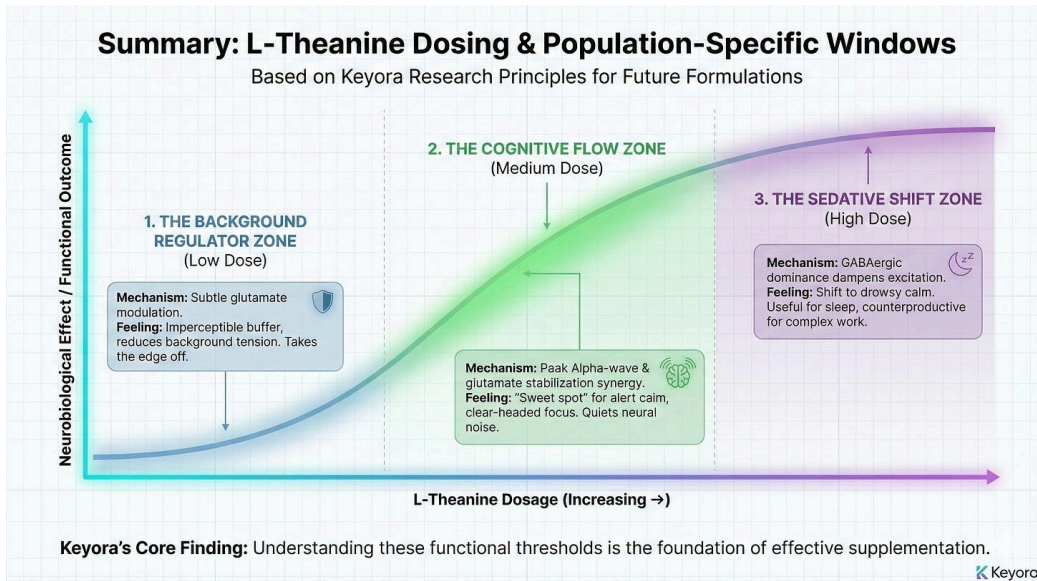
- its dose response is predictable
- its safety is high
- its effects are regulatory, not sedative
- its benefits match real-world brain-load conditions

This chapter documents *why* Theanine is central to our emotional balance science - even if not every Keyora product includes it.



## 6. Summary

- L-Theanine has three dose zones: 50–100 mg (calm), 150–250 mg (stress/cognition), 250–400 mg (sleep).
- Students: 100–200 mg for exam stability.
- High-stress professionals: 150–250 mg for cortisol regulation.
- Entrepreneurs: 150–300 mg for decision clarity and burnout prevention.
- Menopausal women: 200–350 mg for nighttime hyperarousal and emotional stability.
- Medical and scientific professionals: 150–250 mg for precision cognition.
- Best timing: morning for stress, pre-task for focus, evening for sleep.
- Extremely safe long-term, with no tolerance or dependence.
- Keyora uses these principles to guide research and future formulations.



## Episode 11 (Coming Next)

L-Theanine in Real Life: Case Studies, Daily Protocols, and Lifestyle Integration.



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