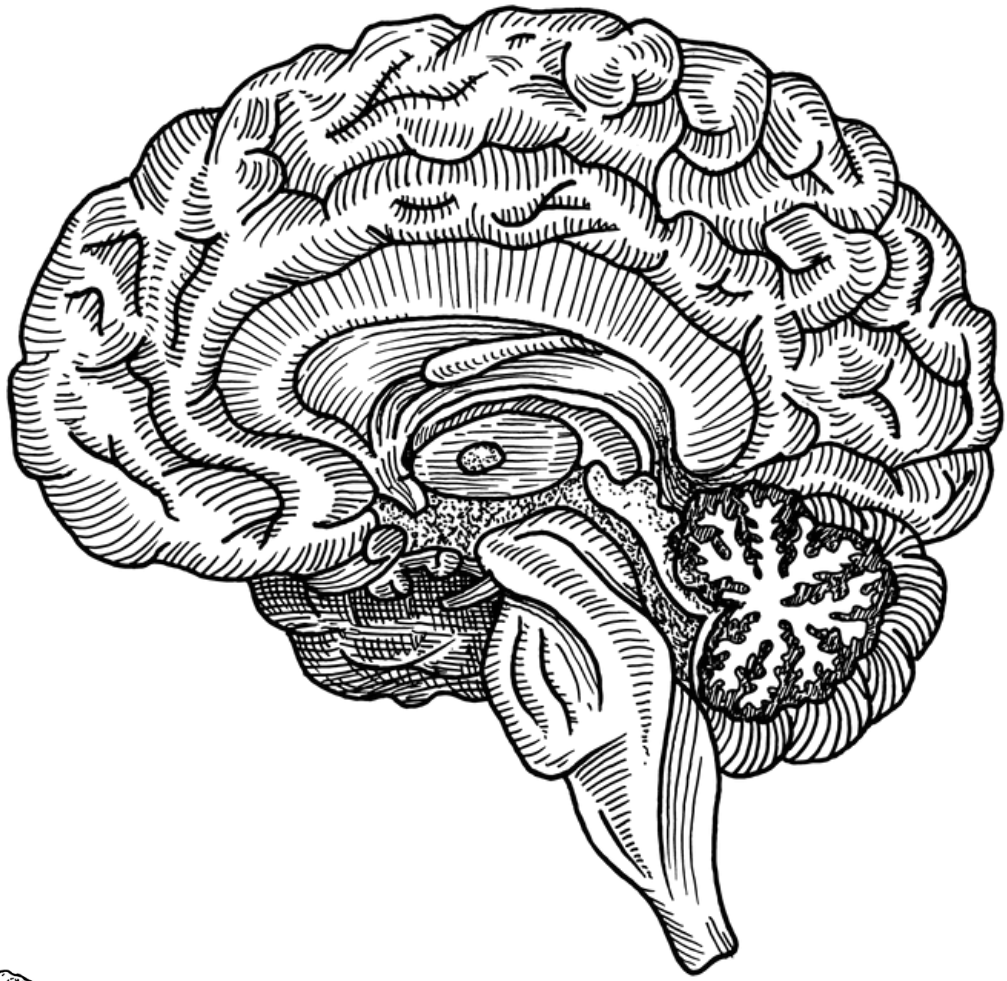
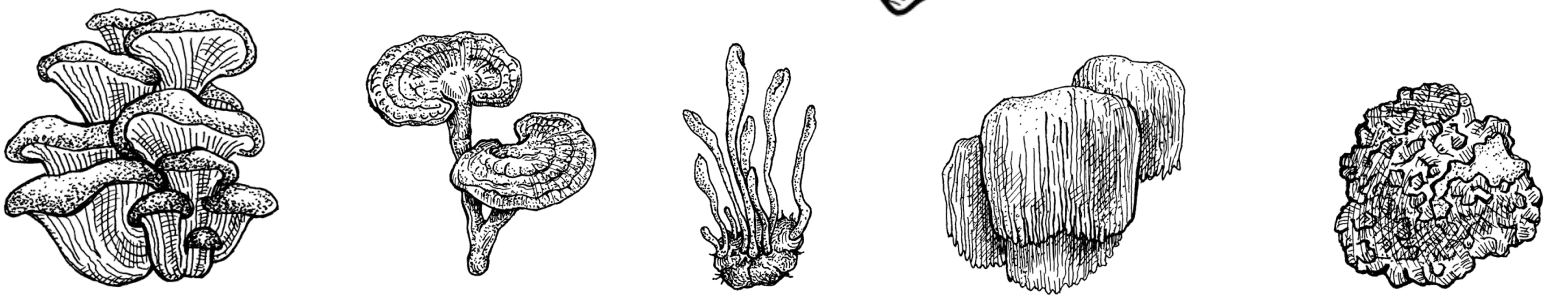
# Medicinal Mushrooms for Nervous System Support

## The Ultimate Guide

Dr. Anna Sitkoff, ND



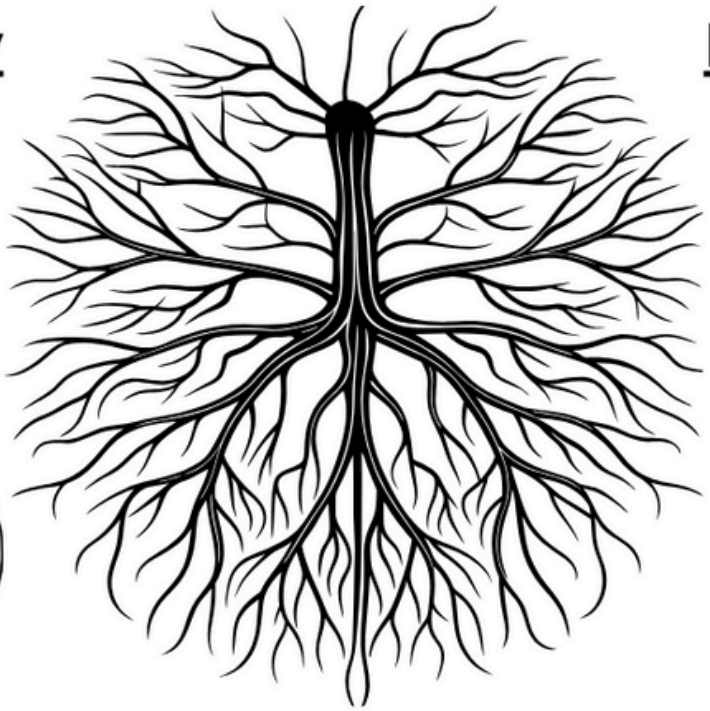


## Anxiety

Lion's mane
Cordyceps
Reishi

## Neuropathy

Lion's mane
Cordyceps
Reishi
Chaga



## Depression

Lion's mane
Cordyceps
Reishi

## Insomnia

Reishi
Lion's mane

## Memory

Lion's mane
Cordyceps
Reishi
Tremella

# Introduction

**Medicinal fungi** offer support for both the central and peripheral nervous systems. The central nervous system comprises the brain and spinal cord, while the peripheral nervous system includes the network of nerves throughout the rest of the body, notably the autonomic nervous system with its sympathetic and parasympathetic responses.

**Conditions like anxiety, depression, insomnia, memory issues, and neuropathy** are all integral aspects of nervous system health. Supporting this complex system requires considering various factors such as hormones, nutrients, genetics, epigenetic trauma, and environmental influences. Mushrooms are a valuable component within this comprehensive approach and can be exceptionally beneficial in promoting overall nervous system health.

**This guide** adopts a comprehensive approach, integrating clinical research, ethnomycological knowledge, and clinical experience. It also includes guidance for lab work to rule out underlying causes of nervous system dysfunction, alongside complementary nutrient and botanical therapies that enhance the benefits of medicinal fungi.

**How to use the "pairs well with" section:**
The intention is not to take all herbs and supplements listed, but rather a menu of therapies that may also be helpful when mushrooms alone are not enough. When trying new supplements, I suggest always trying one therapy at a time.

**A note about this guide:** This guide is not meant to diagnose or treat disease. I am a doctor, but I am not your doctor, so consult your practitioner about use of mushrooms for your specific case.

# Anxiety

**Anxiety** can manifest in several forms including generalized anxiety disorder (GAD), panic disorder, social anxiety, and situational anxiety. It may be caused or exacerbated by chronic stress, hormonal imbalances, gut dysbiosis, nutrient deficiencies, trauma, or neuro-inflammation. Symptoms range from restlessness and racing thoughts to palpitations, muscle tension, and sleep disturbances.

| Mushroom | Benefits | Dose* | Timing |
|---|---|---|---|
| **Reishi** *Ganoderma lucidum* | Calming adaptogen. Supports GABAergic activity and adrenal health | 1-3g/day | Morning and/or evening |
| **Lion's mane** *Hericeum erinaceus* | Supports neurogenesis. May ease anxious rumination | 2g/day | Morning and/or midday |
| **Cordyceps** *Cordyceps militaris/ Ophiocordiceps sinensis* | Adaptogen; stabilizes energy without overstimulation | 1-2g/day | Morning and/or midday |

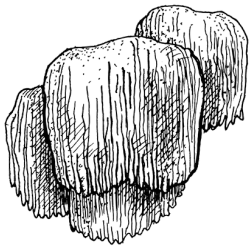
***Mushroom powdered extract unless otherwise noted.**

***When taken alone (monotherapy)**

# Scientific Insights

## Reishi

- Anxiety is associated with hyperactivity of the hypothalamic-pituitary-adrenal (HPA) axis, low GABA levels, and neuroinflammation.
- Reishi has been shown to exert anxiolytic effects through supporting GABAergic activity via down-regulation of inflammatory cytokines.
- Reishi also helps to regulate cortisol levels



## Lion's mane

- Lion's mane promotes hippocampal neurogenesis and increases brain-derived neurotrophic factor (BDNF), which may improve resilience to chronic stress.
- In a small human trial, lion's mane reduced scores on the KMI scale (measuring anxiety and irritability) after 4 weeks of use.

## Cordyceps

- Cordyceps supports mitochondrial ATP production and may buffer the physiological effects of stress, contributing to less anxiety, cognitive and physical.

# Ethnomycological Notes

## Reishi

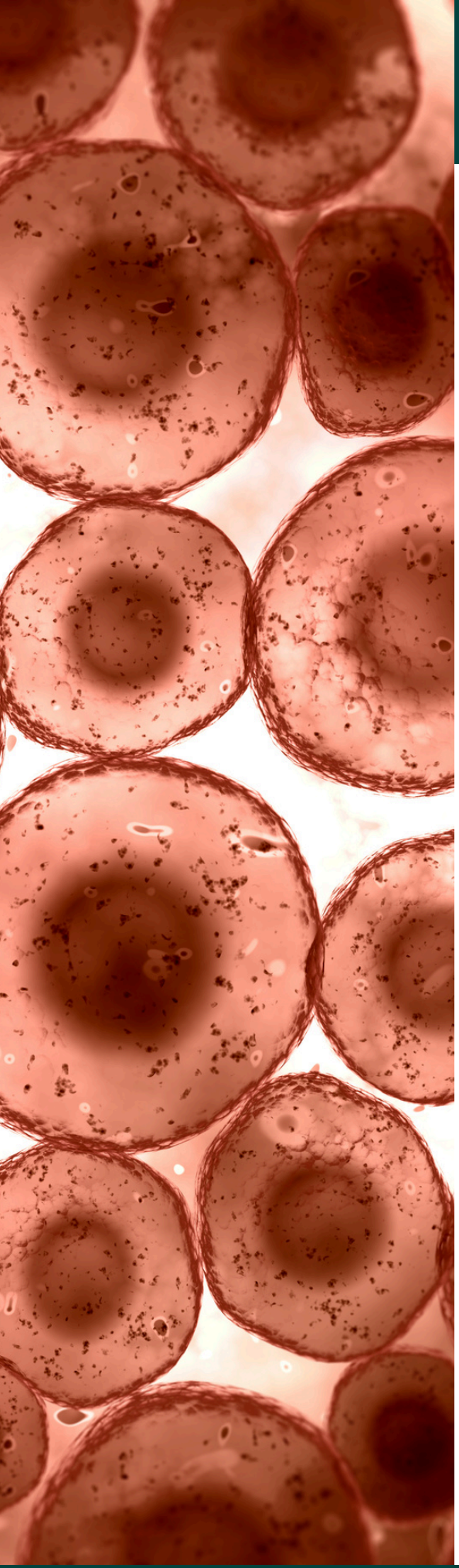
**Reishi** has one of the longest documented histories in medicinal mushroom use, especially within Traditional Chinese Medicine (TCM), where it is known as Lingzhi. It was traditionally used to nourish the Heart Shen, the energetic seat of the mind and spirit. Ancient Daoist texts praised it for promoting calm, emotional equilibrium, and longevity. Reishi was often consumed by monks and sages seeking to still the mind for meditation and spiritual clarity.

## Lion's Mane

**Lion's Mane** was used by yamabushi monks to enhance focus, clarity, and presence during meditation. Though less documented in ancient herbal texts than reishi, it was valued in folk medicine as a tonic for the stomach and nerves. Its ability to "open the mind" and "lift the spirit" was attributed to its nervine and adaptogenic qualities.

## Cordyceps

**Cordyceps** was historically reserved for royalty and elite warriors in Tibetan and Chinese traditions. Traditional healers in Sikkim, a state in NE India, recommend Cordyceps sinensis for "all illnesses" as a tonic and claim that it improves energy, appetite, stamina, libido, endurance, and sleeping patterns



# Tests to Consider

## Hormones

Cortisol (AM & PM) blood or salivary
DHEA-s
Thyroid panel (TSH, Free T3, Free T4, TPO and TG antibodies)
    -May consider reverse T3 with severe stress
Vitamin D (25-OH D3)
Estradiol, sensitive
Progesterone, sensitive
Testosterone (free and total), LC-MS

## Nutrients

Vitamin B12 & Folate
Magnesium (RBC)
Zinc, plasma
Copper, plasma
Iron panel (ferritin, TIBC, serum iron, iron saturation)

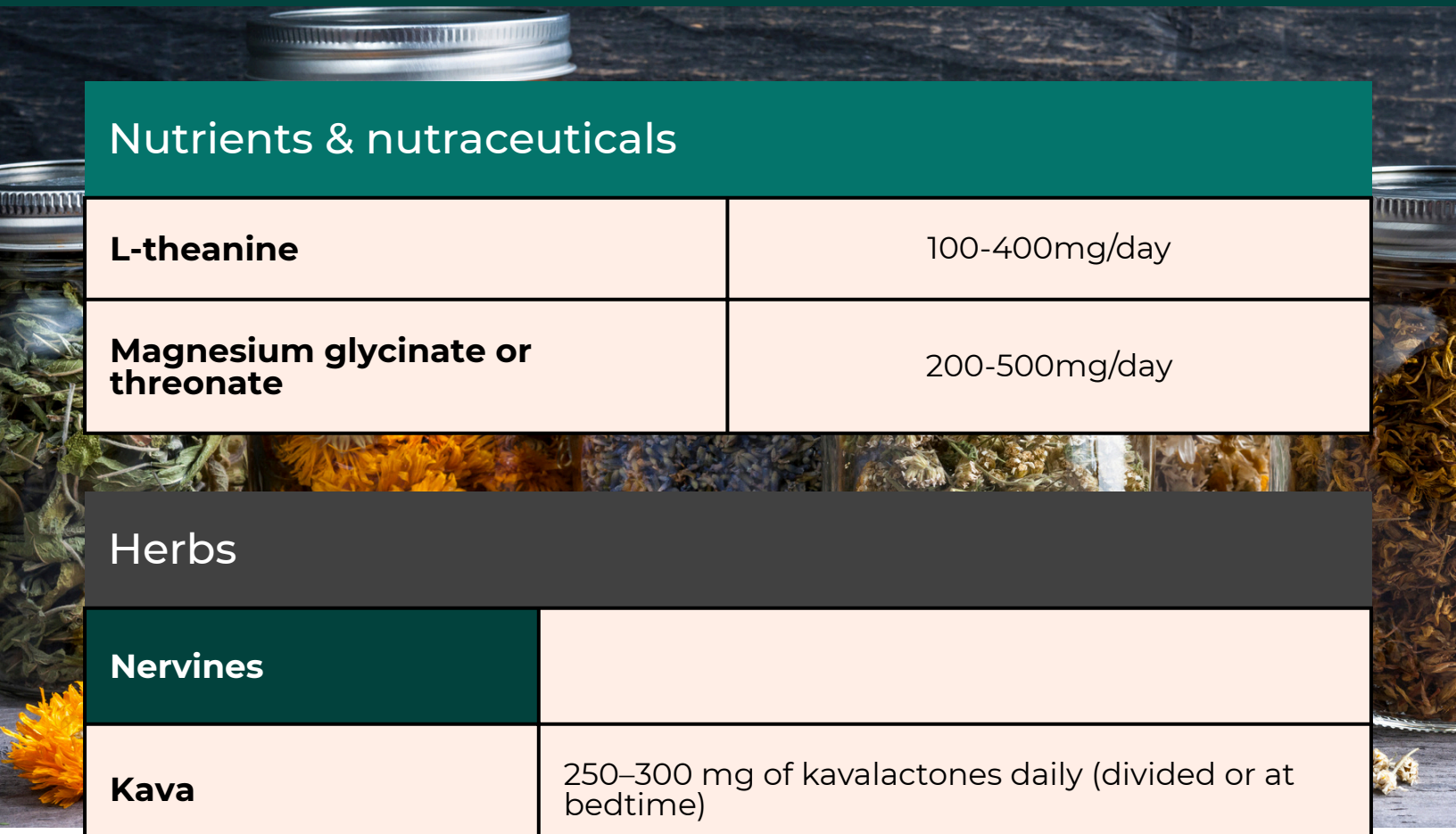
## Inflammatory markers

C-reactive protein (CRP)
Erythrocyte sedimentation rate (ESR)

## Stool testing

Comprehensive stool analysis - GI-Effects, GI-Map, etc.

# Pairs Well With



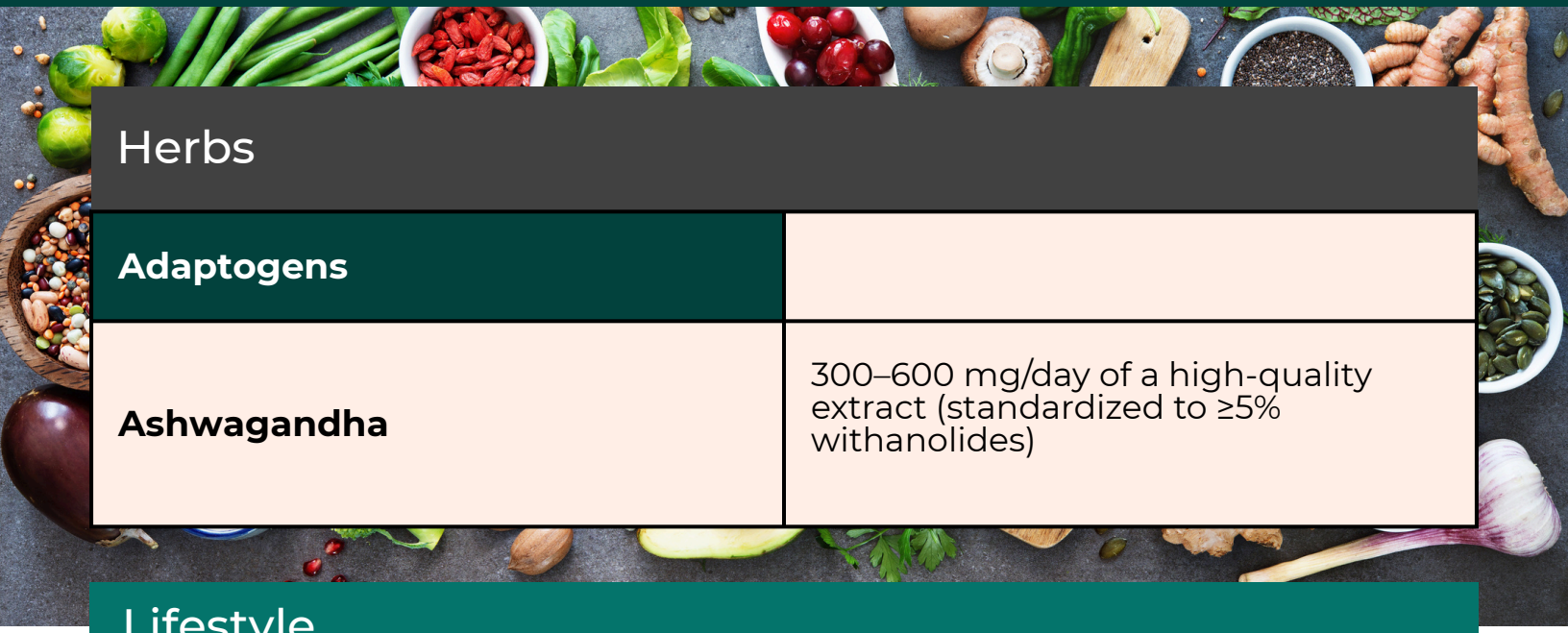
## Nutrients & nutraceuticals

| | |
|---|---|
| **L-theanine** | 100-400mg/day |
| **Magnesium glycinate or threonate** | 200-500mg/day |

## Herbs

| | |
|---|---|
| **Nervines** | |
| **Kava** | 250–300 mg of kavalactones daily (divided or at bedtime) |
| **Lavender** | **Oral extract**: 80–160 mg/day of Silexan® (standardized essential oil used in trials)<br><br>**Aromatherapy:** 2–4 drops essential oil in a diffuser or on wrists/temples |
| **Lemon balm** | 300–600 mg 2–3x/day or 600–1200 mg at bedtime |
| **Passionflower** | 250–1200 mg extract or 1–2 mL tincture 1–3x/day |
| **Hawthorne** | 250–500 mg extract or 1–2 mL tincture, 1–3x/day |
| **Motherwort** | 300–600 mg extract or 1–2 mL tincture, 1–3x/day |

# Pairs Well With



## Herbs

| Adaptogens | |
|---|---|
| **Ashwagandha** | 300–600 mg/day of a high-quality extract (standardized to ≥5% withanolides) |

## Lifestyle

☑ **Blood sugar regulation**
Consume ~.8g protein per pound body weight; avoid skipping meals; eat at about the same time every day

☐ **Circadian rhythm regulation**
Go to sleep and wake up at the same time every day

☐ **Nervous system restorative practices**
Yoga nidra; walking in the forest; meditation; etc.

**Cognitive behavioral therapy (CBT)**

**Exercise**
A mixture of aerobic activty, yoga, and strength training

**Nutrient dense diet, avoidance of processed foods;**
ketogenic diet can be helpful in specific cases

# Depression

**Depression** is a multifactorial mood disorder with symptoms such as low mood, apathy, fatigue, poor concentration, and sleep disturbances. Contributing factors include neurotransmitter imbalances (e.g., serotonin, dopamine), chronic inflammation, HPA axis dysregulation, gut-brain axis dysfunction, oxidative stress, blood sugar dysregulation, and trauma. It often co-occurs with anxiety and insomnia.

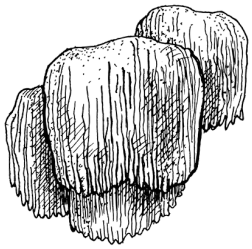
| Mushroom | Benefits | Dose* | Timing |
|---|---|---|---|
| **Reishi** *Ganoderma lucidum* | Modulates stress response; improves sleep, mood, and immune resilience | 1-3g/day | Morning and/or evening |
| **Lion's mane** *Hericeum erinaceus* | Promotes neurogenesis and decreases neuro-inflammation | 2g/day | Morning and/or midday |
| **Cordyceps** *Cordyceps militaris/ Ophiocordiceps sinensis* | Enhances mitochondrial function and physical vitality | 1-2g/day | Morning and/or midday |

***Mushroom powdered extract unless otherwise noted.**
***When taken alone (monotherapy)**

# Scientific Insights

## Reishi

- Reishi may help alleviate depression by modulating the hypothalamic-pituitary-adrenal (HPA) axis and reducing systemic inflammation.
- Preclinical studies show that reishi extracts can enhance hippocampal neurogenesis and increase brain-derived neurotrophic factor (BDNF), supporting mood stabilization and stress resilience.

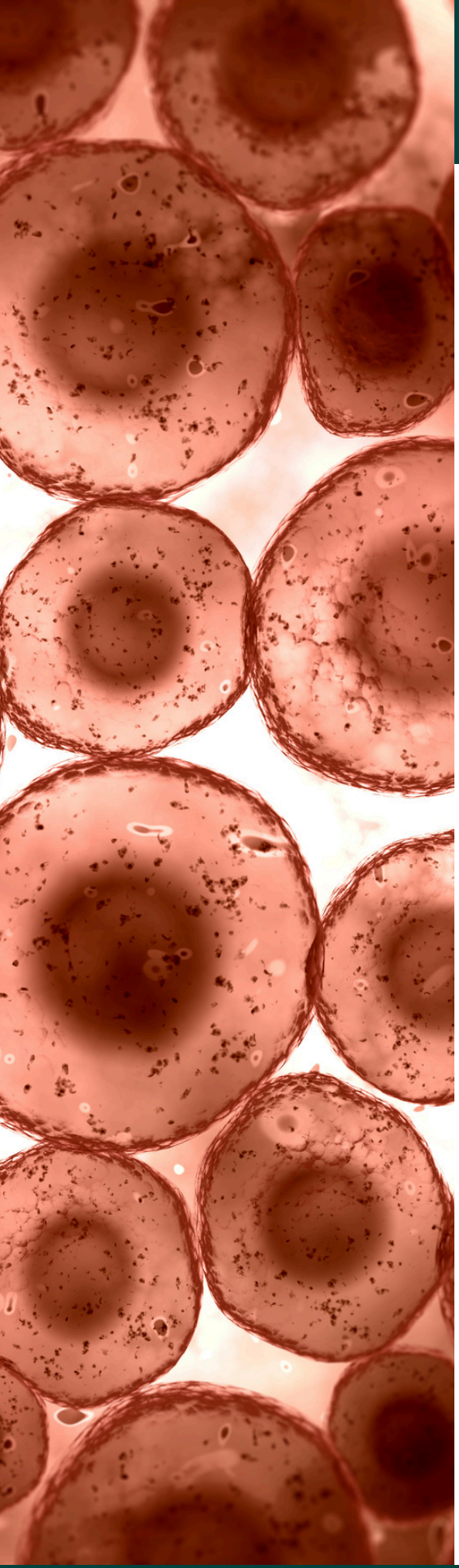


## Lion's mane

- Lion's mane stimulates nerve growth factor in the hippocampus and prefrontal cortex, key areas implicated in depression.
- Rodent and human studies have shown improvements in depressive behavior, likely due to its neurotrophic and anti-inflammatory properties.

## Cordyceps

- Cordyceps may improve depressive symptoms through regulating cortisol levels and enhancing mitochondrial function.
- Animal studies suggest cordyceps can increase serotonin and dopamine availability in key brain regions and exert antidepressant-like effects via modulation of neuroinflammatory and oxidative stress pathways



# Tests to Consider

## Hormones

DHEA-s
Thyroid panel (TSH, free T3, free T4, TPO and TG antibodies)
Vitamin D (25-OH D3)
Estradiol, sensitive
Progesterone, sensitive
Testosterone (free and total) LC-MS

## Nutrients

Vitamin B12 & Folate
Zinc, plasma
Copper, plasma
Iron panel (ferritin, TIBC, serum iron, iron saturation)

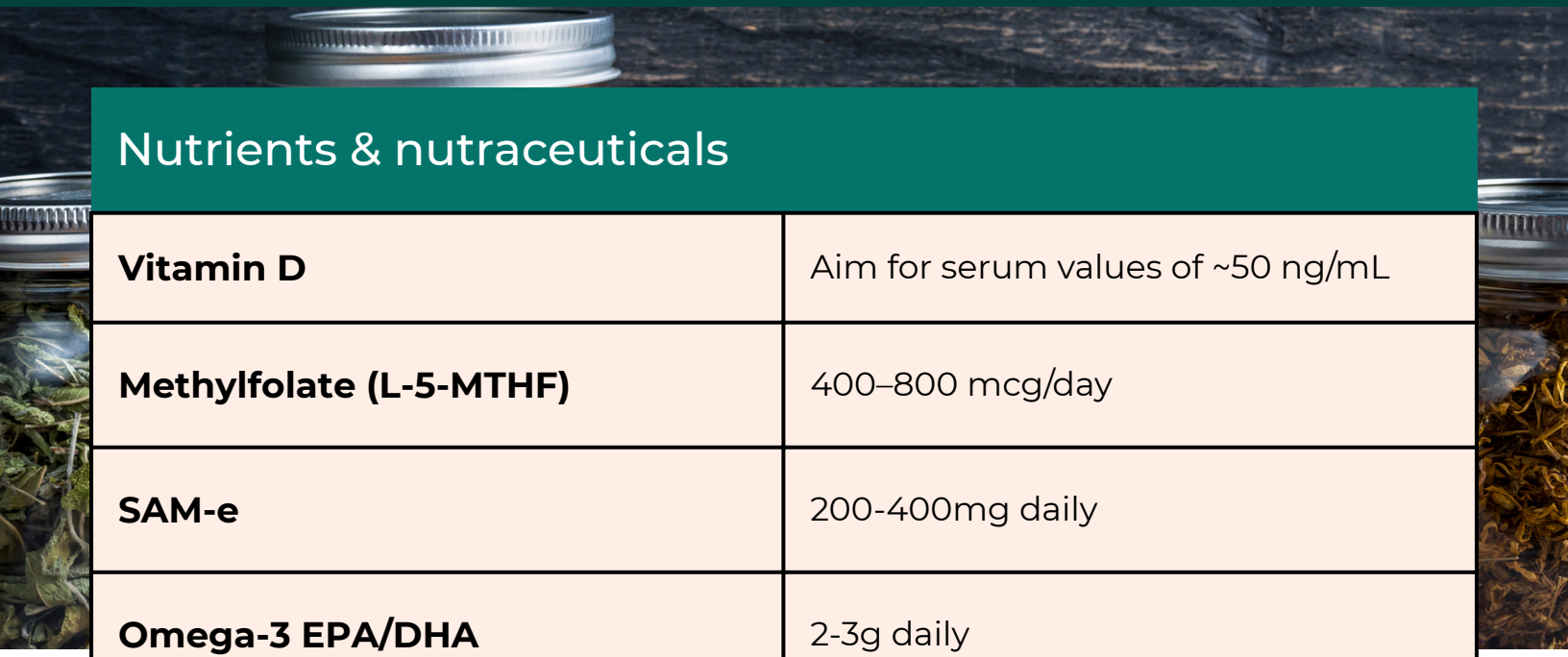
## Inflammatory markers

C-reactive protein (CRP)
Erythrocyte sedimentation rate (ESR)

## Stool testing

Comprehensive stool analysis (GI Effects, GI-Map, etc.)

# Pairs Well With



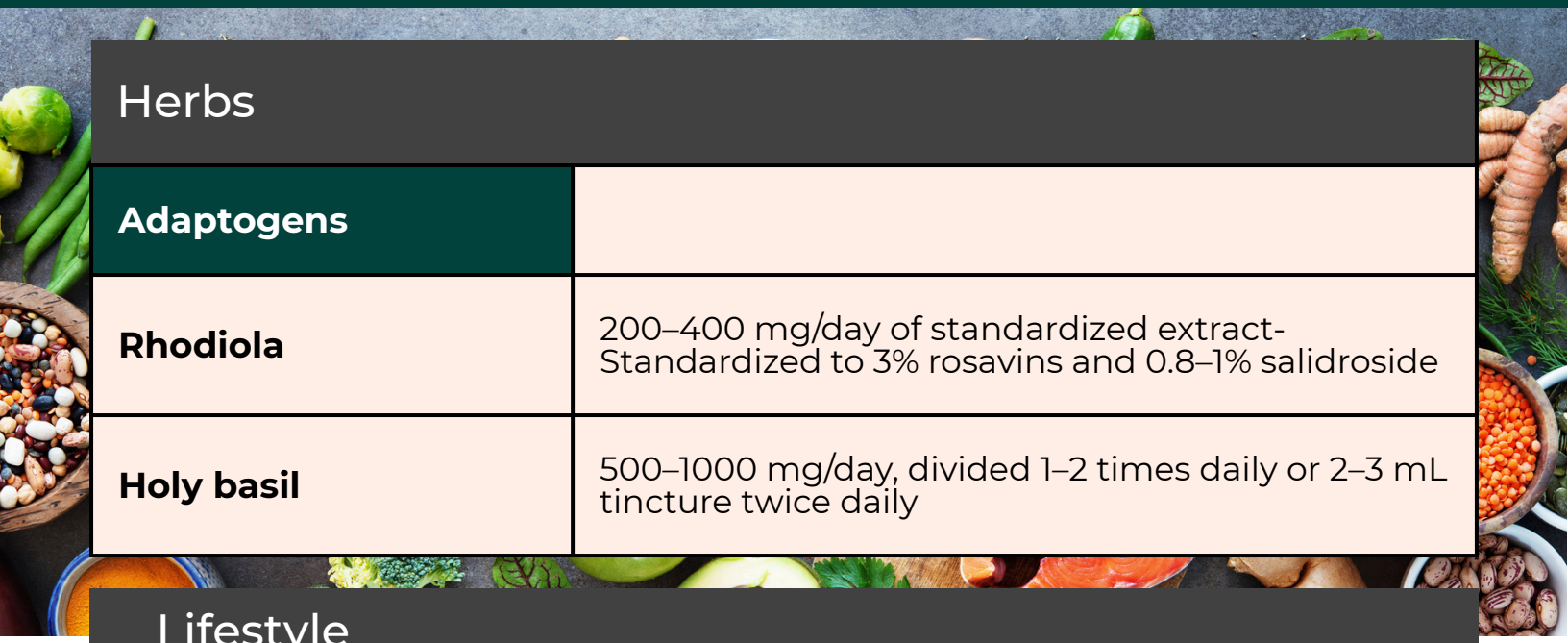
## Nutrients & nutraceuticals

| | |
|---|---|
| **Vitamin D** | Aim for serum values of ~50 ng/mL |
| **Methylfolate (L-5-MTHF)** | 400–800 mcg/day |
| **SAM-e** | 200-400mg daily |
| **Omega-3 EPA/DHA** | 2-3g daily |
| **Probiotics** (multistrain formulations with *Lactobacillus* and *Bifidobacterium* species) | 10-50 billion CFU daily |

## Herbs

| | |
|---|---|
| **Nervines** | |
| **Saffron** | 30 mg/day, usually divided into 15 mg twice daily |
| **St. John's wort** | 300 mg, 3 times daily |
| **Inflammation-modulators** | |
| **Turmeric** | 500–1000 mg/day (as curcumin) |

# Pairs Well With



## Herbs

| Adaptogens | |
|---|---|
| **Rhodiola** | 200–400 mg/day of standardized extract- Standardized to 3% rosavins and 0.8–1% salidroside |
| **Holy basil** | 500–1000 mg/day, divided 1–2 times daily or 2–3 mL tincture twice daily |

## Lifestyle

☑ **Blood sugar regulation**
Consume ~.8g protein per pound body weight; avoid skipping meals; eat at about the same time every day

☐ **Circadian rhythm regulation**
Go to sleep and wake up at the same time every day

☐ **Nervous system restorative practices**
Yoga nidra; walking in the forest; meditation; etc.

**Cognitive behavioral therapy (CBT)**

**Exercise**
A mixture of aerobic activty, yoga, and strength training

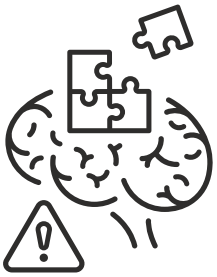
**Nutrient dense diet, avoidance of processed foods;**
Ketogenic diet in specific cases

**Limit screen time**

**Cold water therapy, AM**

**Community and social connection**

# Memory



**Memory issues** can range from occasional forgetfulness to cognitive decline, brain fog, and conditions like mild cognitive impairment (MCI) or early Alzheimer's. Contributing factors include oxidative stress, inflammation, mitochondrial dysfunction, poor circulation, toxin exposure (e.g., mold, heavy metals), and reduced neurogenesis or synaptic plasticity.

| Mushroom | Benefits | Dose* | Timing |
|---|---|---|---|
| **Reishi** *Ganoderma lucidum* | Reduces neuroinflammation; supports sleep and long-term cognitive preservation | 1-2g/day | Morning and/or evening |
| **Lion's mane** *Hericeum erinaceus* | Enhances cognitive function and neuroplasticity, decreases neuro-inflammation | 2g/day | Morning and/or midday |
| **Cordyceps** *Cordyceps militaris/ Ophiocordiceps sinensis* | Boosts mitochondrial energy, cerebral circulation, and resilience under stress | .5-2g/day | Morning and/or midday |

***Mushroom powdered extract unless otherwise noted.**

***When taken alone (monotherapy)**

# Mushrooms

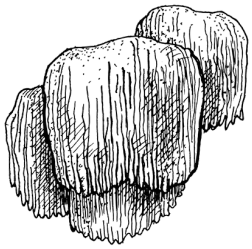
| Mushroom | Benefits | Dose* | Timing |
|---|---|---|---|
| **Tremella** *Tremella fuciformis* | Polysaccharide-rich, supports memory via the gut-brain axis and increases grey matter volume in the brain | 1-2g/day | Anytime |
| **Oyster mushroom** *Pleurotus ostreatus, P. citrinopileatus, P. eryngii* | High in ergothioneine, decreases oxidative stress and supports mitochondria. | 2g/day | Anytime |

***Mushroom powdered extract unless otherwise noted.**
***When taken alone (monotherapy)**

# Scientific Insights

## Reishi

- Reishi reduces neuroinflammation and oxidative stress, which are key contributors to cognitive decline and neuronal damage.
- Its bioactive compounds, including triterpenes and polysaccharides, also promote neurogenesis and protect brain cells, helping to preserve cognitive function over time.



## Lion's mane

- Lion's Mane has demonstrated improvement in mild cognitive impairment in human clinical trials.
- It promotes NGF synthesis, which is essential for the survival and maintenance of neurons, particularly in the hippocampus, essential for memory consolidation.

## Cordyceps

- Cordyceps enhances memory by improving mitochondrial function and increasing cerebral blood flow, which supports energy production and oxygen delivery to brain cells.
- Its antioxidant and anti-inflammatory properties further protect neurons from damage, promoting cognitive resilience and improved memory performance.

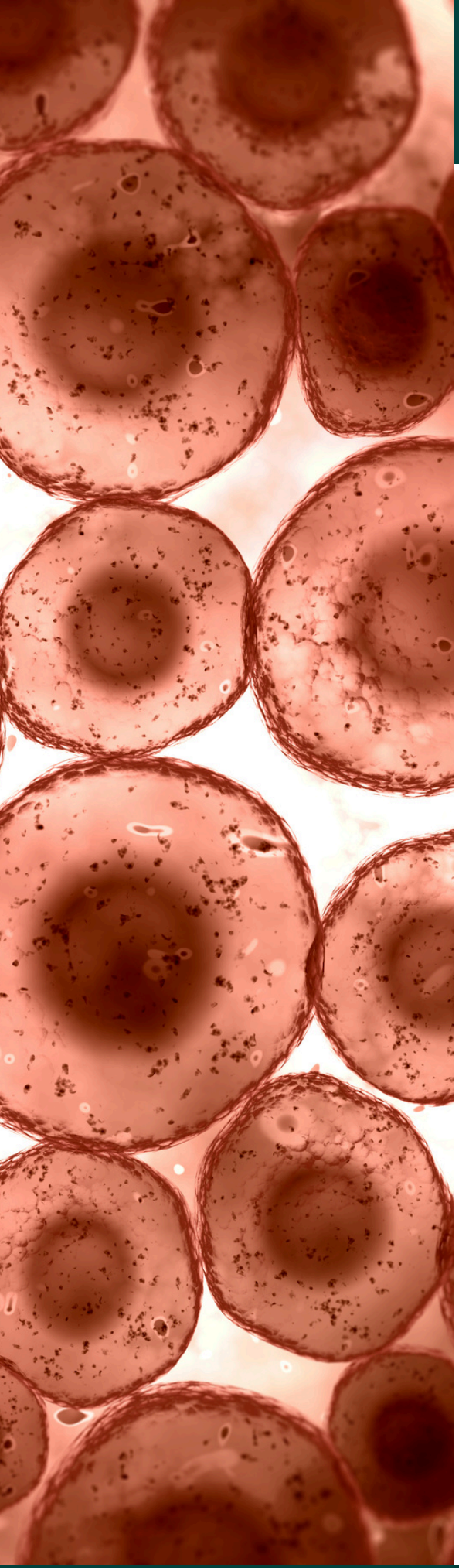
# Scientific Insights

## Tremella

- Tremella fuciformis supplementation significantly improved memory and executive function in individuals with subjective cognitive impairment, accompanied by increased gray matter volume in brain regions linked to cognition.
- These effects are supported by tremella's ability to boost nerve growth factor (NGF) and reduce oxidative stress and inflammation, promoting neuroprotection and synaptic plasticity.

## Oyster

- Oyster mushroom, especially golden oyster and king oyster, is very high in ergothioneine which may help to support memory and cognitive function by protecting neurons from oxidative damage and maintaining mitochondrial health, both critical in age-related cognitive decline and neurodegenerative diseases.
- Scientific studies indicate that ergothioneine levels decline with age and are lower in individuals with mild cognitive impairment, suggesting a neuroprotective role in preserving memory and brain function.



# Tests to Consider

## Hormones

Thyroid panel (TSH, free T3, free T4, TPO and TG antibodies)
Vitamin D (25-OH D3)
Estradiol, sensitive
Progesterone, sensitive
Testosterone (free and total) LC-MS

## Nutrients

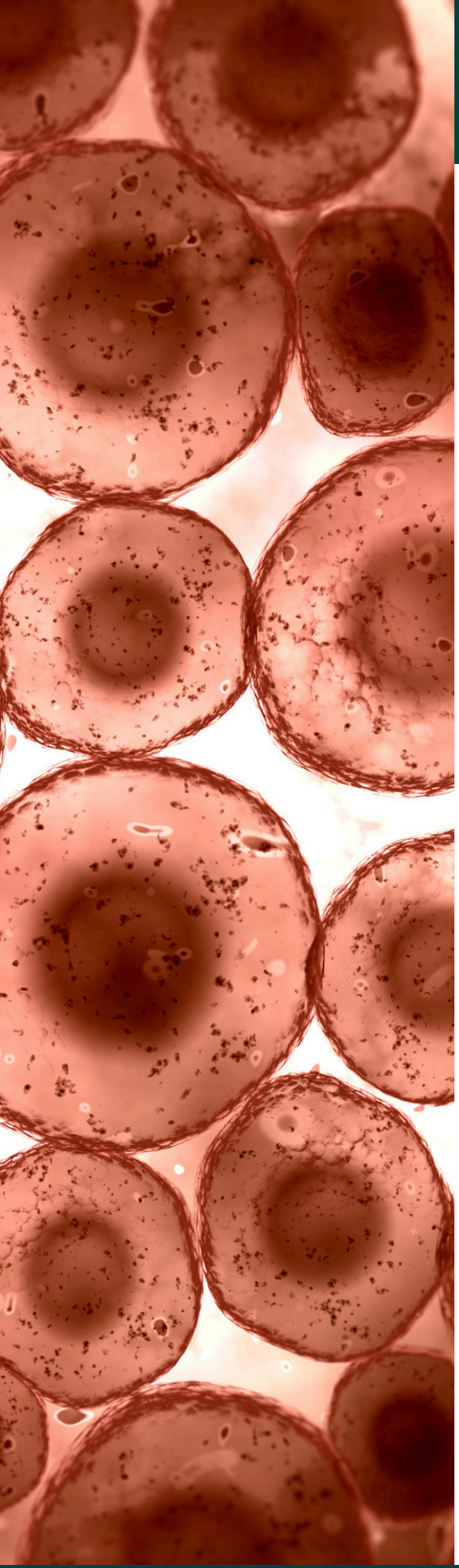
Vitamin B12 & Folate
Zinc, plasma
Copper, plasma
Iron panel (ferritin, TIBC, serum iron, iron saturation)

## Cardiovascular

Lipid panel with NMR fractionation
ApoB
Lp(a)
Homocysteine
hs-CRP
Myeloperoxidase
Oxidized LDL

## Inflammatory markers

C-reactive protein (CRP)
Erythrocyte sedimentation rate (ESR)



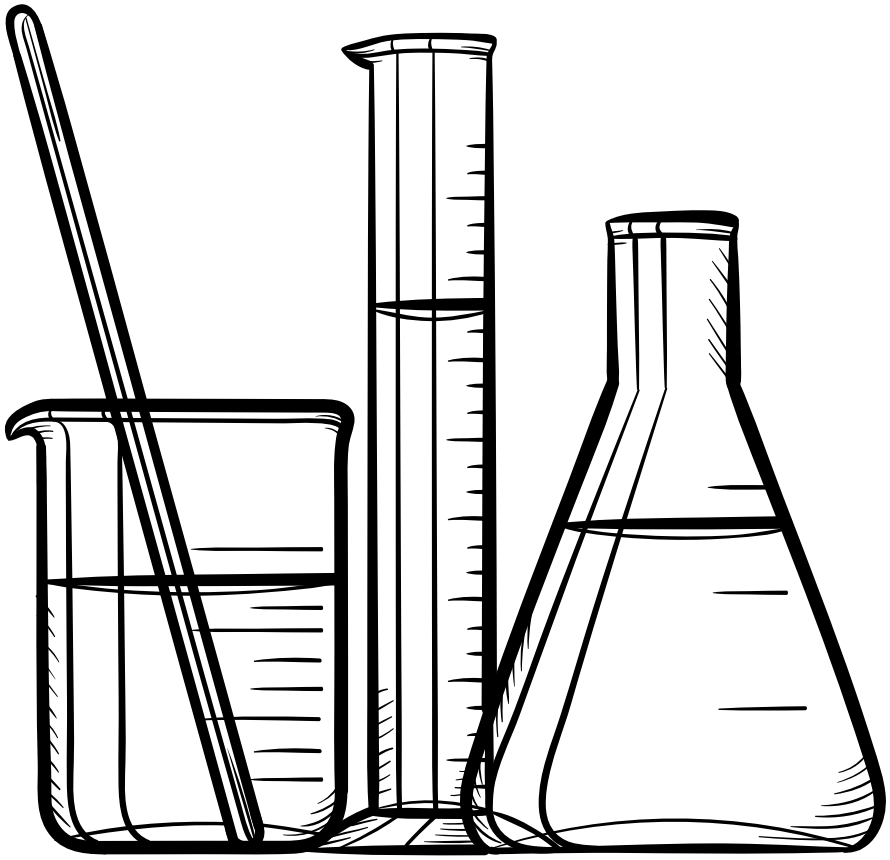
# Tests to Consider

## Toxins

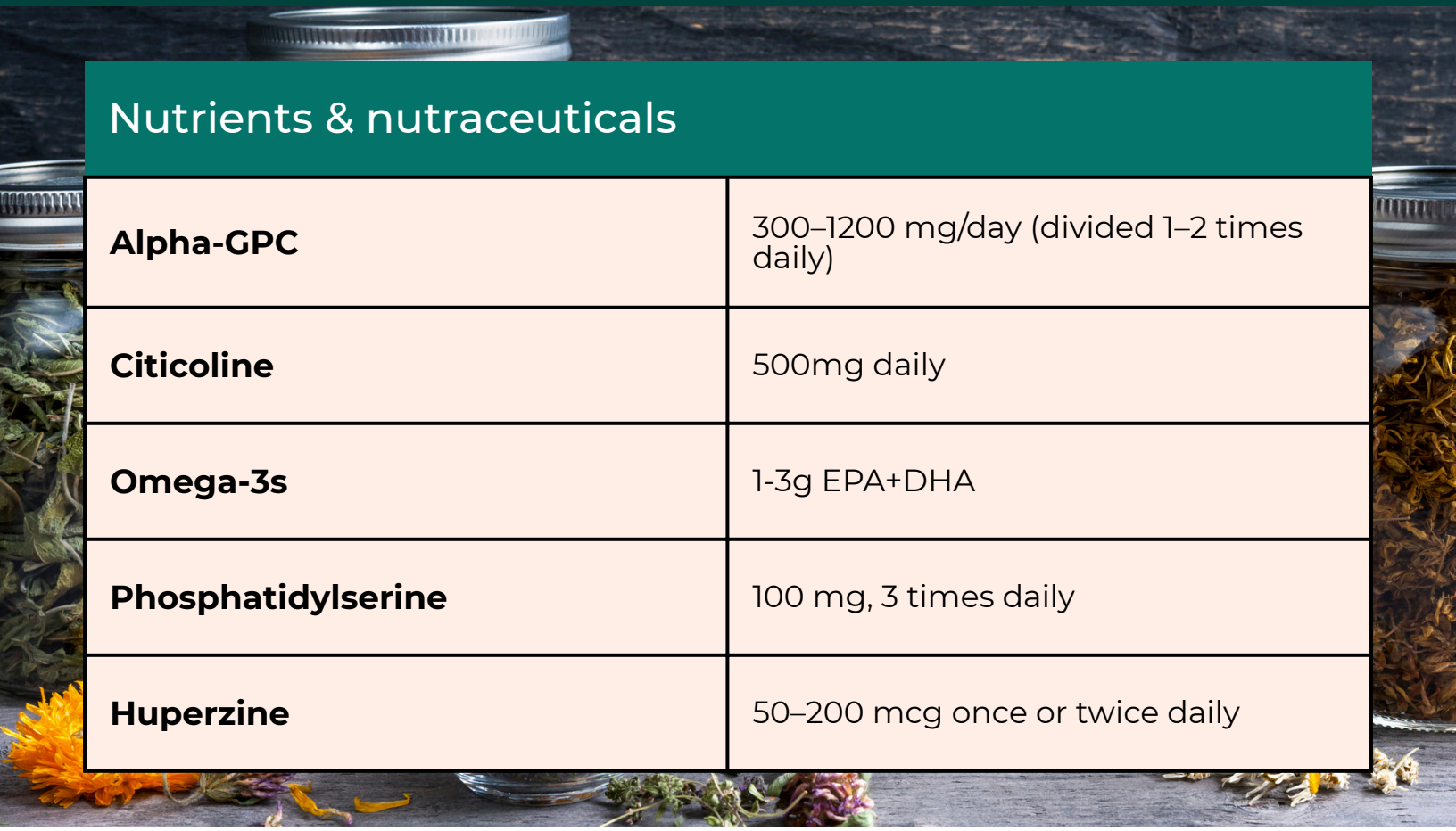
- Heavy metals (urine if concern for past exposure and blood for recent exposure)
- Mycotoxins (urine)

## Genetics

- APOE genotype



# Pairs Well With



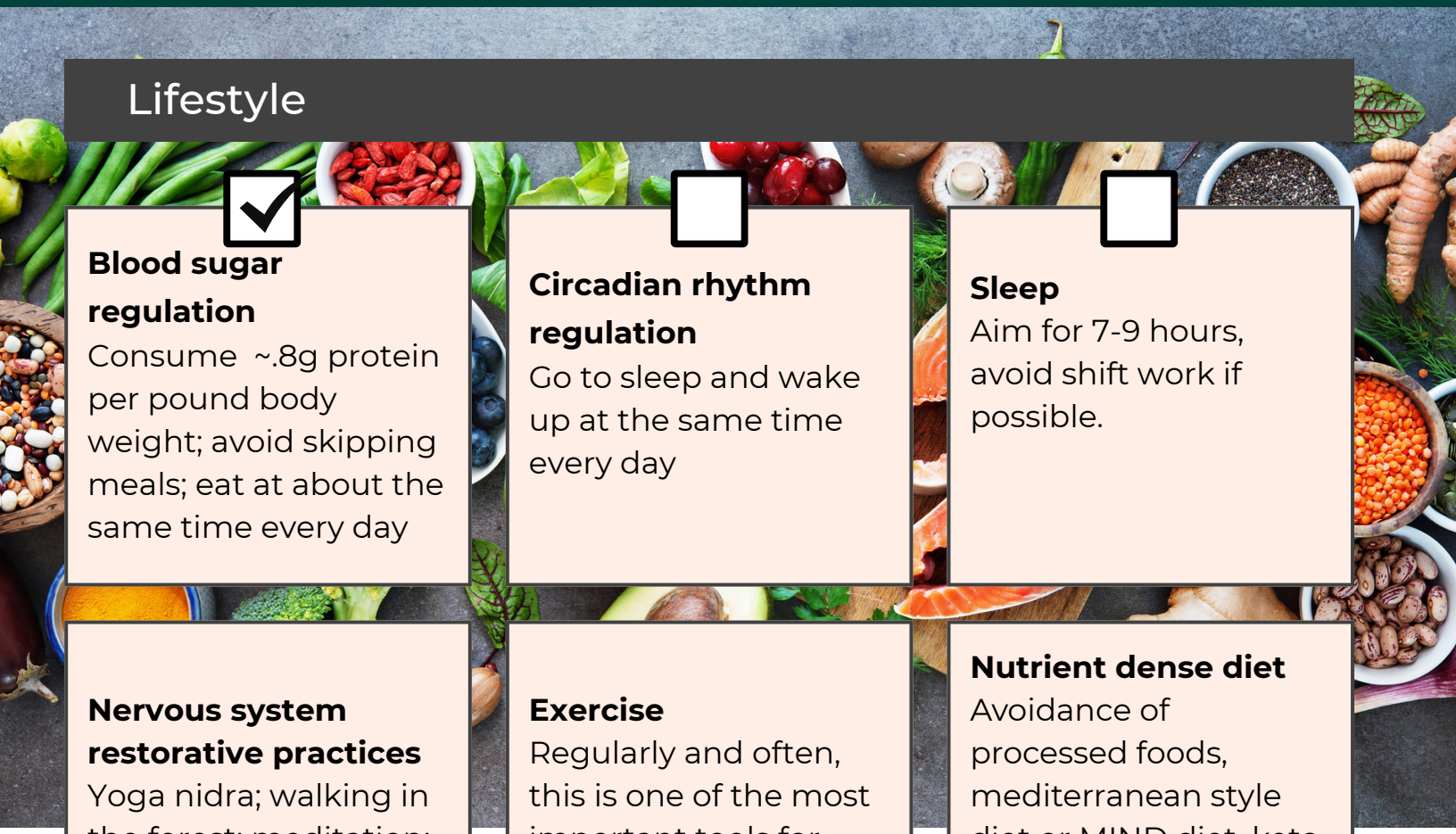
## Nutrients & nutraceuticals

| | |
|---|---|
| **Alpha-GPC** | 300–1200 mg/day (divided 1–2 times daily) |
| **Citicoline** | 500mg daily |
| **Omega-3s** | 1-3g EPA+DHA |
| **Phosphatidylserine** | 100 mg, 3 times daily |
| **Huperzine** | 50–200 mcg once or twice daily |

## Herbs

| | |
|---|---|
| **Nervines** | |
| **Bacopa (brahmi)** | 300–450 mg/day |
| **Ginkgo biloba** | 120–240 mg/day |
| **Rosemary** | 300–500 mg/day of encapsulated extract |
| **Calamus** | Tincture - 2-4mL daily |

# Pairs Well With



## Lifestyle

- [x] **Blood sugar regulation**
Consume ~.8g protein per pound body weight; avoid skipping meals; eat at about the same time every day

- [ ] **Circadian rhythm regulation**
Go to sleep and wake up at the same time every day

- [ ] **Sleep**
Aim for 7-9 hours, avoid shift work if possible.

**Nervous system restorative practices**
Yoga nidra; walking in the forest; meditation; etc.

**Exercise**
Regularly and often, this is one of the most important tools for memory!

**Nutrient dense diet**
Avoidance of processed foods, mediterranean style diet or MIND diet, keto or carnivore for some

**Cognitive engagement and social interactions**

**Avoid neurotoxic compounds like alcohol and tobacco**

**Modulate blood pressure**
Too high or too low can impact memory

# Insomnia

**Insomnia** includes difficulty falling asleep, staying asleep, or waking too early and feeling unrefreshed. It can be acute (short-term) or chronic (lasting >3 months). Causes include stress, cortisol dysregulation, melatonin imbalance, blood sugar swings, and nervous system hyperarousal (sympathetic dominance).

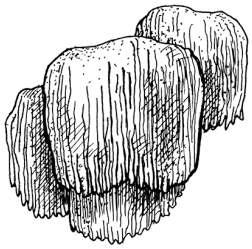
| Mushroom | Benefits | Dose* | Timing |
|---|---|---|---|
| **Reishi** *Ganoderma lucidum* | Calms the mind, supports sleep architecture via GABAergic modulation and reduced cortisol | 1-3g/day | Evening or before bed |
| **Lion's mane** *Hericeum erinaceus* | May support REM sleep via nerve growth factor | 1-2g/day Ideally a combination of pure mycelium and fruiting body | Morning or midday |

***Mushroom powdered extract unless otherwise noted.**
***When taken alone (monotherapy)**

# Scientific Insights

## Reishi

- Reishi has shown sedative-hypnotic effects in animal studies, likely via GABA receptor interaction and reduction of histamine and serotonin turnover in the brain. In one study, it extended total sleep time and improved NREM sleep
- Animal studies have proposed that reishi promotes sleep through a “gut microbiota-dependent and serotonin-associated” pathway.



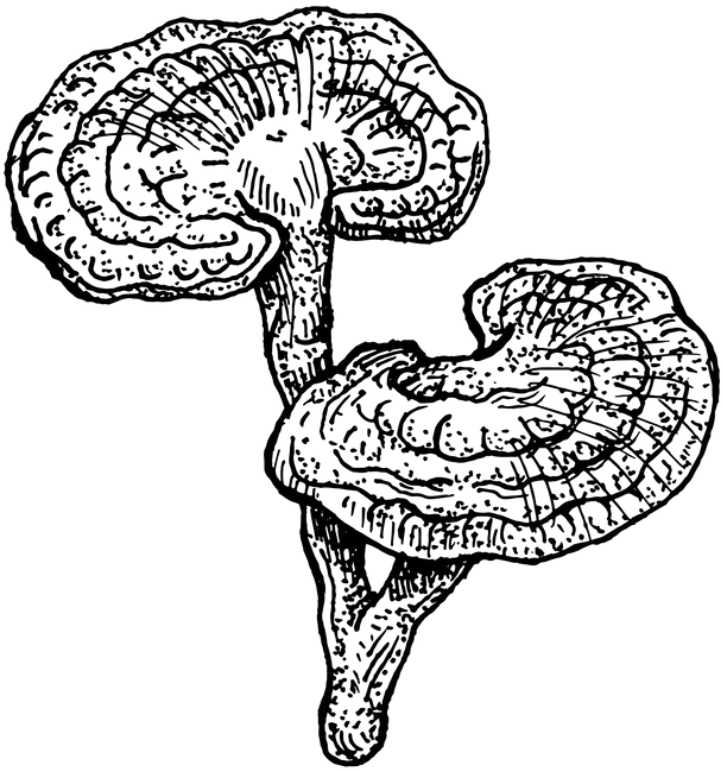
## Lion’s mane

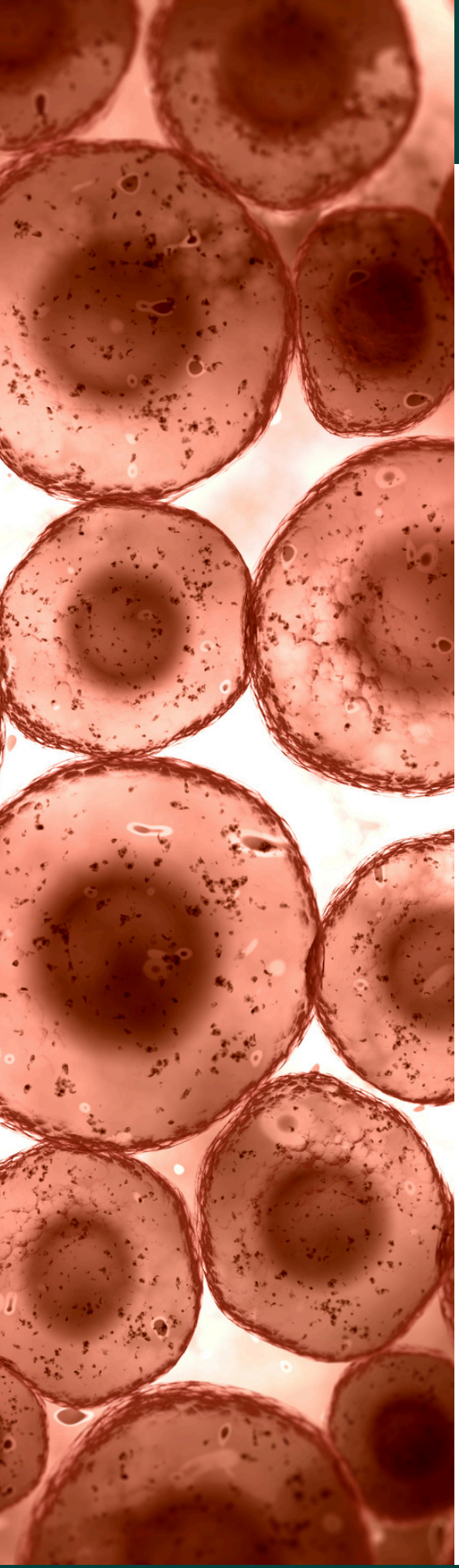
- Lion’s Mane may support sleep by promoting the expression of nerve growth factor (NGF) and brain-derived neurotrophic factor (BDNF), which help regulate circadian rhythm and enhance the function of the hypothalamus and hippocampus, areas involved in sleep-wake cycles.
- Additionally, its ability to reduce anxiety and modulate the HPA axis may lower nighttime cortisol levels, promoting more restful, deeper sleep.

# Ethnomycological Notes

## Reishi

**Reishi** has one of the longest documented histories in medicinal mushroom use, especially within Traditional Chinese Medicine (TCM), where it is known as Lingzhi. It was traditionally used to nourish the Heart Shen, the energetic seat of the mind and spirit. Reishi is traditionally considered a Shen tonic in Daoist medicine, used to cultivate tranquility and dreams during meditation and sleep.





# Tests to Consider

## Hormones

Thyroid panel (TSH, free T3, free T4, TPO and TG antibodies)
Cortisol (AM & PM) blood or saliva
Estradiol, sensitive
Progesterone, sensitive
Testosterone (total and free) LC-MS

## Nutrients

Magnesium, RBC
Iron panel (ferritin, TIBC, serum iron, iron saturation)
*Especially if you have restless leg syndrome

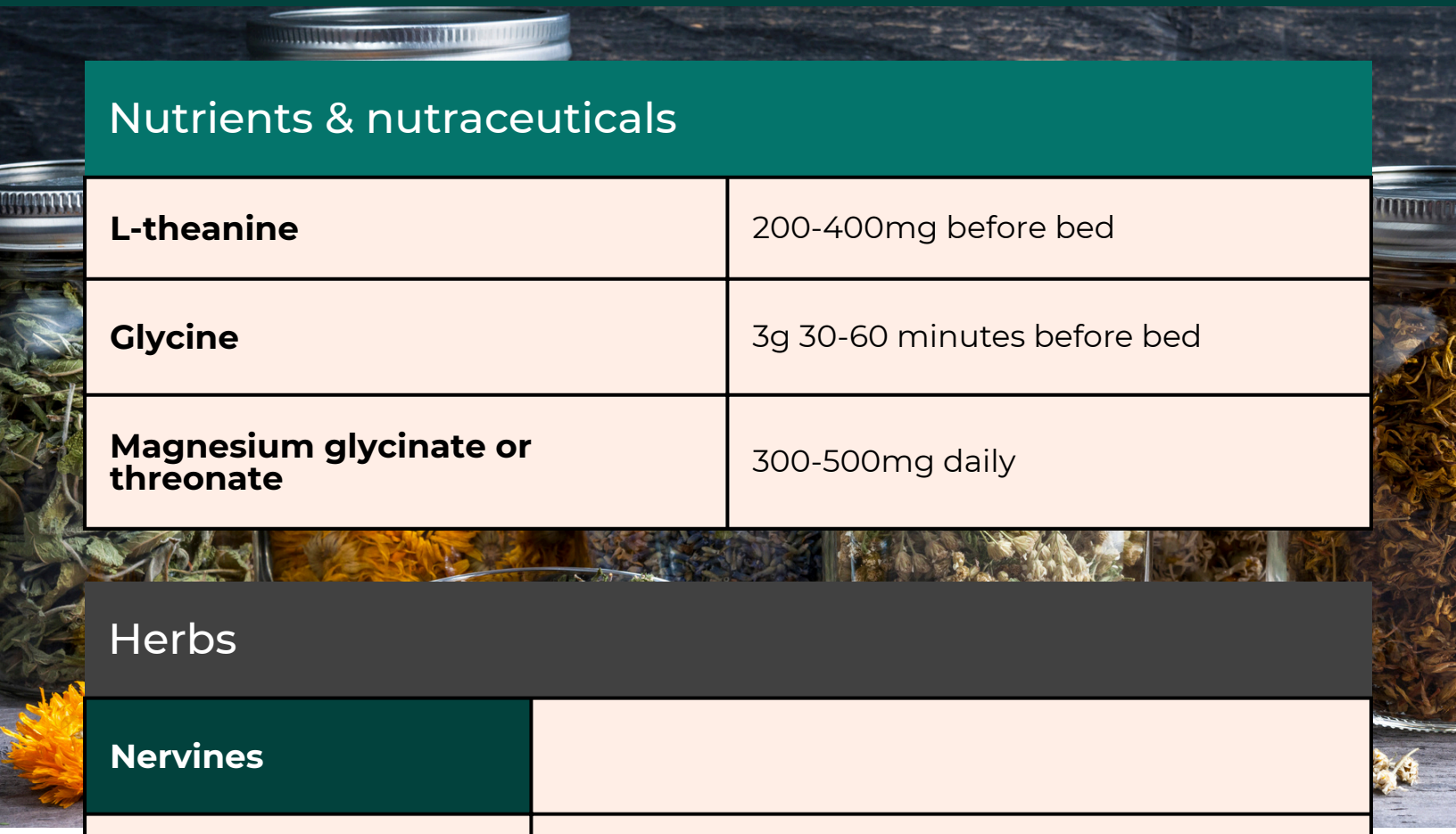
## Metabolic

Insulin, fasting
Glucose, fasting
Continuous glucose monitor

## Sleep Study

Especially if sleep apnea or a limb movement disorder is suspected

# Pairs Well With



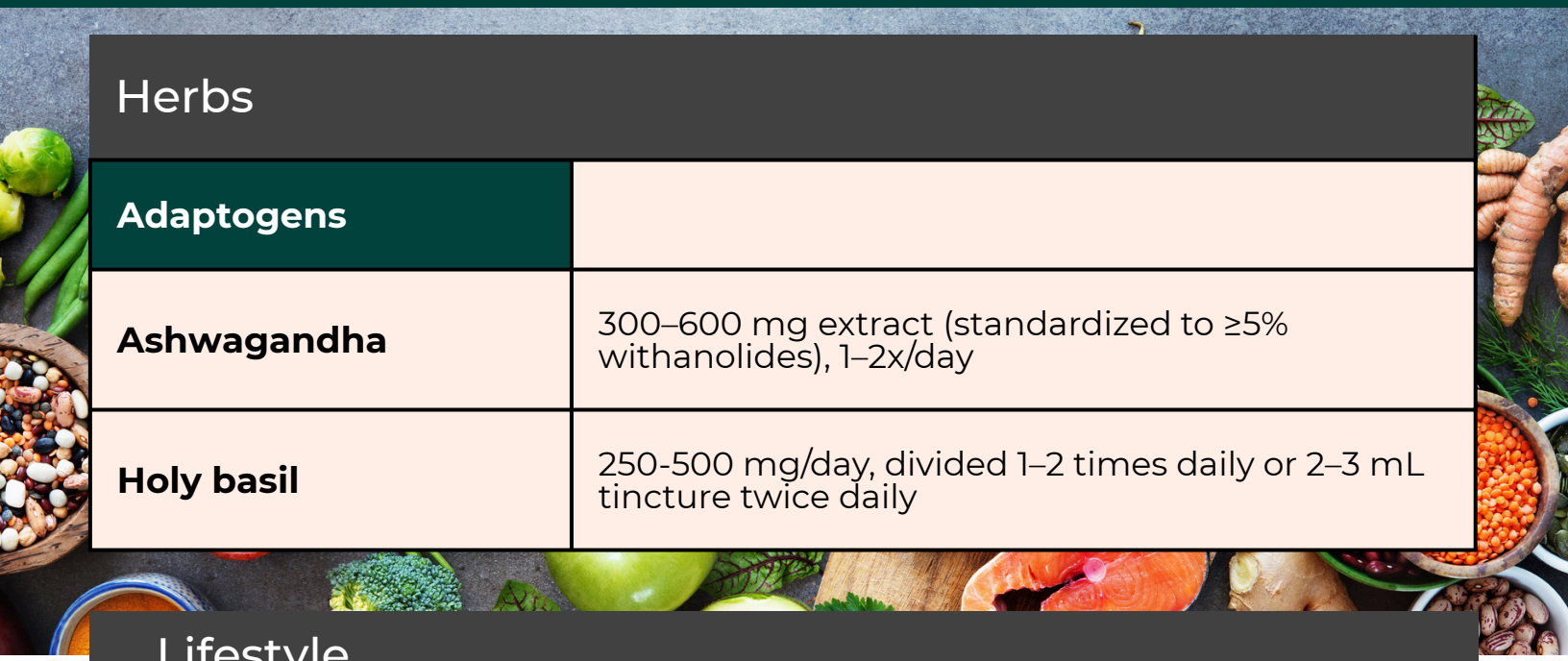
## Nutrients & nutraceuticals

| | |
|---|---|
| **L-theanine** | 200-400mg before bed |
| **Glycine** | 3g 30-60 minutes before bed |
| **Magnesium glycinate or threonate** | 300-500mg daily |

## Herbs

| **Nervines** | |
|---|---|
| **Lemon balm** | 300–600 mg extract, up to 3x/day or 600–1200 mg at bedtime |
| **Passionflower** | 250–500 mg extract or 1–2 mL tincture at bedtime |
| **Skullcap** | 300–600 mg extract or 1–2 mL tincture at bedtime |
| **Kava** | 250–300 mg of kavalactones 30–60 minutes before bed |
| **Chamomile** | 300–500 mg extract or 1–3 g dried flowers as tea 30–60 minutes before bed |
| **Valerian** | 400-600mg, taken 30-60 min before bed |

# Pairs Well With



## Herbs

| Adaptogens | |
|---|---|
| **Ashwagandha** | 300–600 mg extract (standardized to ≥5% withanolides), 1–2x/day |
| **Holy basil** | 250-500 mg/day, divided 1–2 times daily or 2–3 mL tincture twice daily |

## Lifestyle

☑ **Blood sugar regulation**
Consume ~.8g protein per pound body weight; avoid skipping meals; eat at about the same time every day

☐ **Circadian rhythm regulation**
Go to sleep and wake up at the same time every day

☐ **Nervous system restorative practices**
Yoga nidra; walking in the forest; meditation; etc.

**Cognitive behavioral therapy for insomnia (CBT-i)**

**Exercise**
Regularly, but not too close to bedtime

**Limit or avoid alcohol intake before bed**

**Avoid screen time for at least 30 minutes before bed**

**Sleep in a cool environment**

**Avoid eating large meals before bedtime**

# Neuropathy

**Neuropathy** involves dysfunction or damage to peripheral nerves, resulting in symptoms like burning, tingling, numbness, or shooting pain, often in the hands and feet. Common causes include diabetes, B-vitamin deficiencies, autoimmune conditions, infections (like Lyme disease), toxic exposures, and chemotherapy. Neuropathy can be inflammatory, metabolic, or mechanical in origin and is often associated with mitochondrial dysfunction and oxidative stress in nerve tissue.

| Mushroom | Benefits | Dose* | Timing |
|---|---|---|---|
| **Reishi** *Ganoderma lucidum* | Modulates immune function and inflammation in autoimmune or metabolic neuropathy | 2g/day | Anytime |
| **Lion's mane** *Hericeum erinaceus* | Promotes myelin repair and neuro-regeneration via NGF and BDNF | 2g/day Ideally a combination of pure mycelium and fruiting body | Morning or midday |

***Mushroom powdered extract unless otherwise noted.**
***When taken alone (monotherapy)**

# Mushrooms

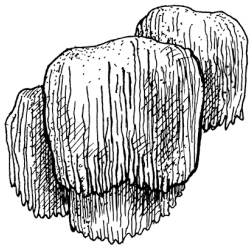
| Mushroom | Benefits | Dose* | Timing |
|---|---|---|---|
| **Cordyceps**<br>*Cordyceps militaris/ Ophiocordyceps sinensis* | Improves mitochondrial energy production and oxygen delivery to nerves | .5-1g | Morning or midday |
| **Chaga**<br>*Inonotus obliquus* | Rich in polyphenols and superoxide dismutase (SOD); protects nerves from oxidative damage | 1-2g<br><br>Powdered sclerotium extract | Anytime |

***Mushroom powdered extract unless otherwise noted.**
***When taken alone (monotherapy)**

# Scientific Insights

## Reishi

- Reishi polysaccharides downregulate pro-inflammatory cytokines and in cases of inflammation-driven neuropathy may help to slow disease processes.
- Triterpenes and polysaccharides support immune balance and may help calm autoimmunity or chronic inflammation affecting peripheral nerves.



## Lion's mane

- Lion's Mane supports remyelination and axon regrowth. Preclinical animal studies have shown accelerated recovery of nerve function after injury.

## Cordyceps

- Cordyceps improves mitochondrial function in diabetic models, which may protect peripheral nerves from hypoxia and metabolic stress.

## Chaga

- Chaga is rich in antioxidants like polyphenols, melanin, and superoxide dismutase (SOD), which help protect peripheral nerves from oxidative damage. Its anti-inflammatory properties may also reduce cytokine-driven nerve irritation.

# Ethnomycological Notes

## Reishi

**Reishi** has been used to tonify jing and qi, foundational energies associated with nervous system resilience in Daoist medicine

## Lion's Mane

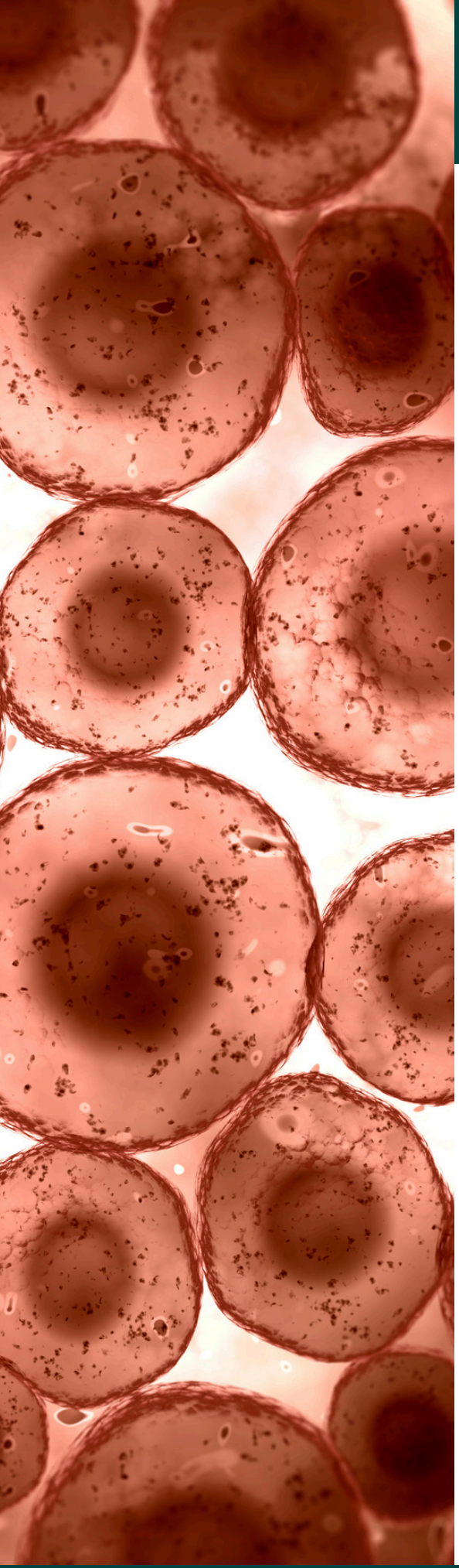
**Lion's Mane** has long been used in traditional Chinese medicine to treat "weakness of the limbs" and "numbness", terms that may describe peripheral nerve issues.

## Cordyceps

**Cordyceps** was historically used to treat fatigue and weakness in the elderly, where nerve degeneration may have played a role.

## Chaga

**Chaga** was traditionally used in Siberia to strengthen the body and restore vitality, its use as a healing tea may have included applications for chronic pain or fatigue.



# Tests to Consider

## Hormones

- Thyroid panel (TSH, free T3, free T4, TPO and TG antibodies)
- Vitamin D (25-OH Vitamin D)

## Nutrients

- Vitamin B12 & Folate
- Vitamin B6
- Iron panel (ferritin, TIBC, serum iron, iron saturation)
- Magnesium, RBC

## Metabolic

- Insulin, fasting
- Glucose, fasting
- HbA1c

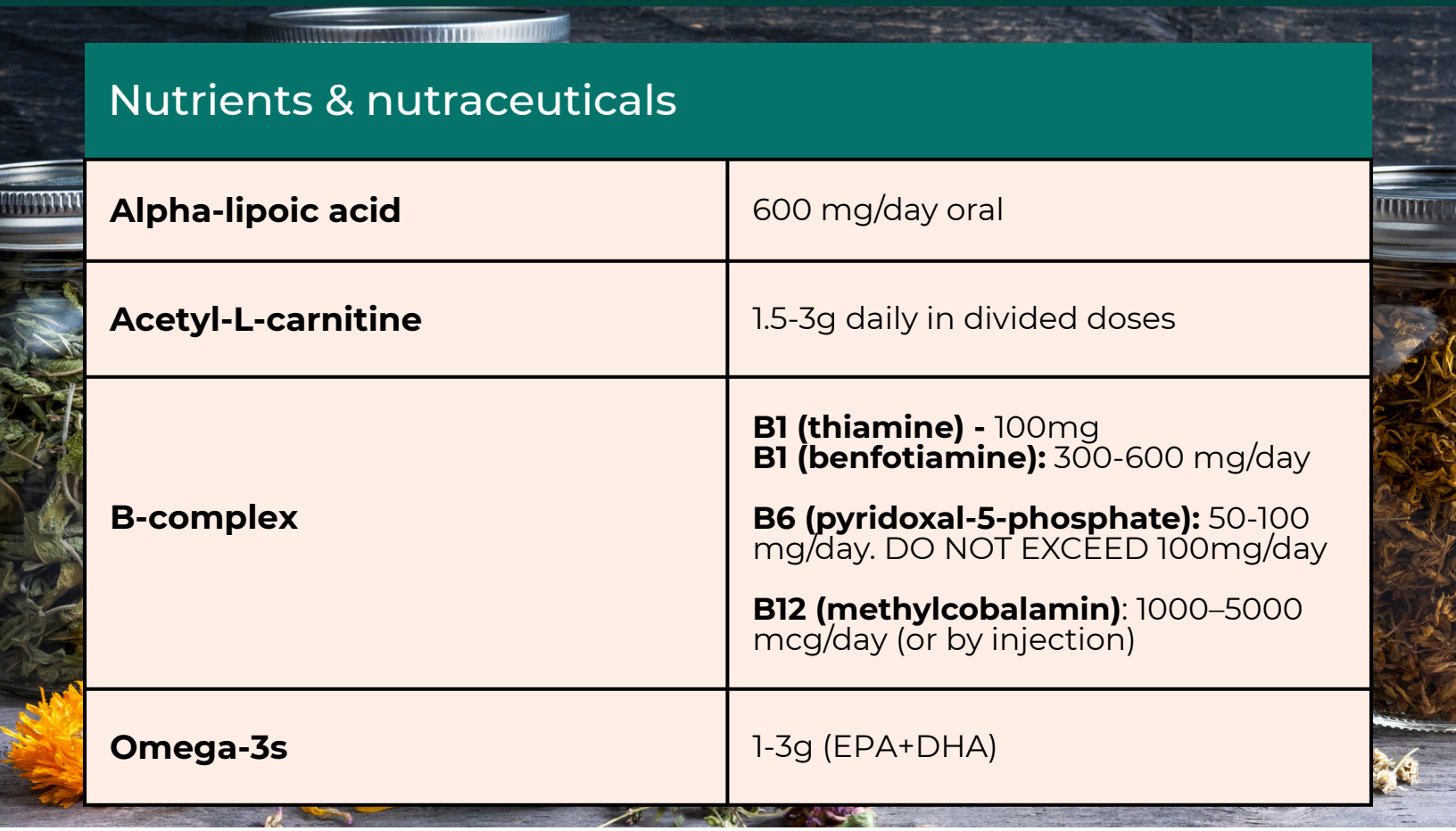
## Toxins

- Heavy metals (especially lead, arsenic, mercury)

## Inflammatory markers/immune

- CRP, ESR
- ANA with reflex to titer and pattern
- Lyme disease (Borrelia) antibodies/PCR + co-infections

# Pairs Well With



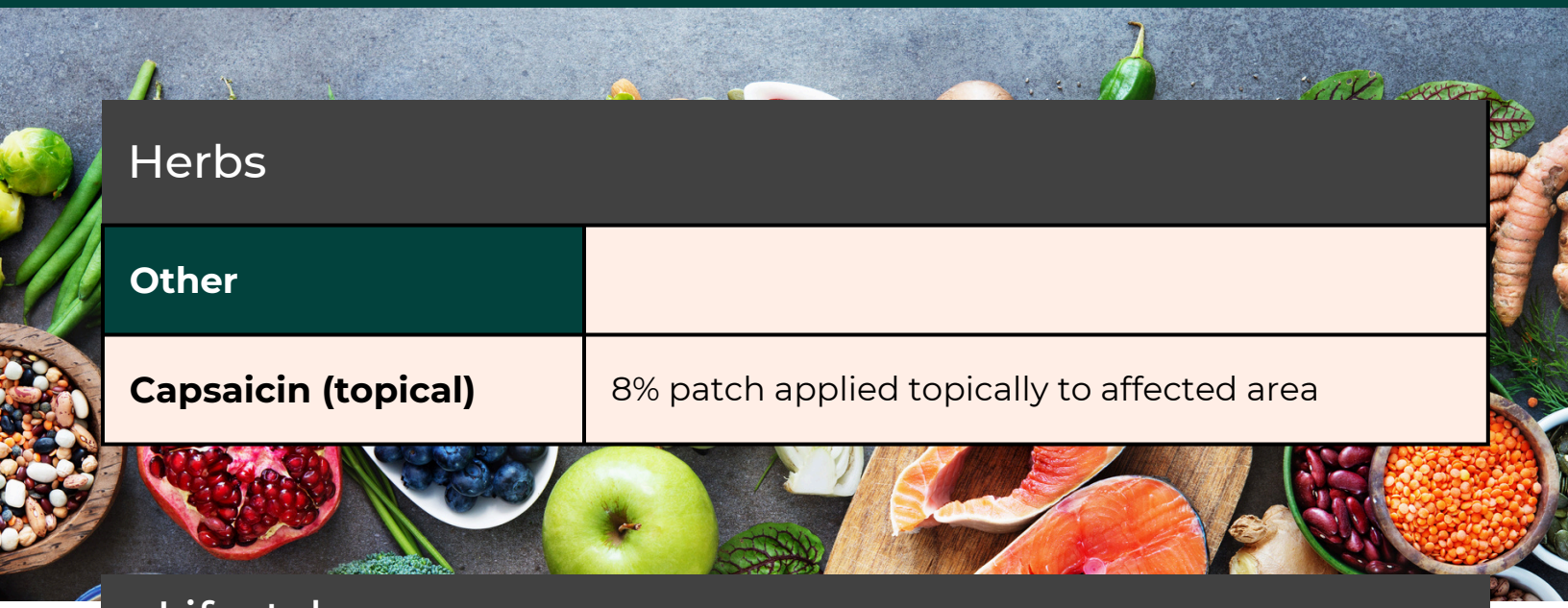
## Nutrients & nutraceuticals

| | |
|---|---|
| **Alpha-lipoic acid** | 600 mg/day oral |
| **Acetyl-L-carnitine** | 1.5-3g daily in divided doses |
| **B-complex** | **B1 (thiamine) -** 100mg<br>**B1 (benfotiamine):** 300-600 mg/day<br><br>**B6 (pyridoxal-5-phosphate):** 50-100 mg/day. DO NOT EXCEED 100mg/day<br><br>**B12 (methylcobalamin)**: 1000–5000 mcg/day (or by injection) |
| **Omega-3s** | 1-3g (EPA+DHA) |

## Herbs

| **Nervines** | |
|---|---|
| **St. John's wort** | **Oral**: 300 mg extract (0.3% hypericin) 3× daily.<br>**Topical**: Hypericum oil applied locally. |
| **Chamomile** | Blue chamomile essential oil diluted in castor oil rubber onto affected areas 2-3x daily |
| **Cannabis** | THC 1–3.5% inhaled, or 2.5–10 mg oral THC |

# Pairs Well With



## Herbs

| Other | |
|---|---|
| **Capsaicin (topical)** | 8% patch applied topically to affected area |

## Lifestyle

☑ **Blood sugar regulation**
Consume ~.8g protein per pound body weight; avoid skipping meals; eat at about the same time every day

☐ **Nutrient dense diet**
Avoidance of processed foods, mediterranean style diet, keto or carnivore for some

☐ **Nervous system restorative practices**
Yoga nidra; walking in the forest; meditation; etc.

**Avoid toxins**
Alcohol, cigarettes, vaping, heavy metals

**Exercise**
Aerobic: 30 min, 5×/week.
Resistance training: 2–3×/week for muscle strength and balance.
Balance work: yoga, tai chi → reduces fall risk.

# Myco-Drug interactions

**Please note:**

- Most interactions are theoretical or based on case reports
- Most interactions are not absolute contraindications, but indicate need for monitoring, especially for people taking multiple medications, anticoagulants and immunosuppressants
- Bleeding risks are most pronounced with reishi and chaga

| Mushroom | Anti-coagulants | Hypoglycemics | Immuno-suppressants | Anti-hypertensives | Notes |
|---|---|---|---|---|---|
| **Reishi** (*Ganoderma lucidum*) | Increased bleeding risk | Mild hypoglycemic effect | Immune stimulating (theoretical interaction) | Mild hypotensive effect (theoretical interaction) | Avoid peri-operatively |
| **Chaga** (*Inonotus obliquus*) | May increase bleeding risk | May potentiate hypoglycemia | Immune stimulating (theoretical interaction) | None known | High oxalate content |
| **Cordyceps** (*Ophiocordyceps sinensis/ Cordyceps militaris*) | None known | May lower blood sugar | Immune stimulating (theoretical interaction) | None known | Safe and beneficial for kidney transplant patients on immuno-suppressive therapy |
| **Maitake** (*Grifola frondosa*) | Rare reports | Enhances insulin sensitivity | Immune stimulating (theoretical interaction) | Mild hypotensive effects | |

# Drug interactions

| Mushroom | Anti-coagulants | Hypoglycemics | Immuno-suppressants | Anti-hypertensives | Notes |
|---|---|---|---|---|---|
| **Lion's Mane** (*Hericium erinaceus*) | None known | May lower blood glucose | None known | None known | Likely supportive with neuroactive drug therapy, but may be an interaction for some. Monitor. |
| **Tremella** (*Tremella fuciformis*) | None known | Mild hypoglycemic effect | None known | None known | |
| **Turkey Tail** (*Trametes versicolor*) | None known | Minimal hypoglycemic effect | Immune stimulating (theoretical interaction) | None known | Often used adjunctively in cancer care without negative chemo-therapy interactions |
| **Oyster Mushroom** (*Pleurotus ostreatus*) | Rare (low bleeding risk) | Documented hypoglycemic effect | Immune stimulating (theoretical interaction) | Can modestly lower blood pressure | |

# Mushroom sourcing & quality

## What to look for in a mushroom supplement

**Mushroom/fruiting body powdered extract** OR liquid mushroom/fruiting body extracts (dual extract, or spagyric from Feral Fungi)

**Exceptions**: Lion's mane can be a mixture of pure mycelium and mushroom powdered extract

## Concentrations

**1:1 mushroom extracts** are good and preferred in most cases with the exception of reishi, where an 8:1 powdered extract will likely have more terpenes present than a 1:1

### Be wary of myceliated grain!

Myceliated grain supplements usually contain grain fillers from the substrate the mycelium was growing on. If you have celiac disease or are sensitive to grains, these formulations are best avoided. Even if you do not have a grain sensitivity, the formulations are generally diluted by grain substrate and less effective than mushroom powdered extract formulations.

| Synonyms for "fruiting body" you might see on a label: | Synonyms for myceliated grain you might see on a label: |
|---|---|
| Mushroom<br>Sporocarp<br>Sporophore<br>Basidiocarp (specific to Basidiomycetes mushrooms)<br>Ascomata or ascocarp (for ascomycete fungi) | Full spectrum<br>Mushroom mycelium<br>Fungal biomass<br>Mushroom biomass |

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