

# CARTA – Therapeutic Stacks: Rationale Sheets

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Reference for R&D, QA/Compliance, and investor diligence. Doses are starting points for pilots and may be titrated after stability and user tolerance testing.

## Mobility & Function

### Cannabinoid Stack

CBD + CBG

### Mushroom/Botanical Stack

Curcumin ( $\geq 95\%$  curcuminoids), Boswellia extract (20–30% AKBA), Ginger root, Reishi (fruiting body,  $\geq 20\%$   $\beta$ -glucans), Black seed oil

### Nutrients

Vitamin D3, Vitamin K2-MK7, Boron

### Mechanistic Rationale

- CBD: analgesia via CB1/CB2, TRP channel modulation; anti-inflammatory cytokine shift
- CBG: nociceptive modulation and inflammation control
- Curcumin/Boswellia: COX/LOX inhibition; NF- $\kappa$ B downregulation; osteoarthritis signals
- Reishi:  $\beta$ -glucans for immune modulation, inflammation balance
- Black seed oil: thymoquinone; broad anti-inflammatory activity

### Key Evidence

- Curcumin & Boswellia: RCTs/meta-analyses show modest benefit in joint stiffness/discomfort
- CBD: analgesic benefit in neuropathic and chronic pain contexts
- CBG: supportive preclinical anti-inflammatory signals

### Formulation Notes

- Softgels preferred (odor/taste control, oil solubility)
- Patch feasible for cannabinoids only

## **Calm & Focus (Daytime)**

### **Cannabinoid Stack**

THCA + CBDA + CBG

### **Mushroom/Botanical Stack**

Lion's Mane 200 mg, Green tea extract (low caffeine, ≥50% EGCG), Bacopa monnieri (45–55% bacosides), L-theanine

### **Nutrients**

Vitamin B12, Magnesium (glycinate or threonate)

### **Mechanistic Rationale**

- THCA/CBDA: non-intoxicating, anti-inflammatory, anti-nausea; CBDA is strong 5-HT1A modulator
- CBG: early signals for anxiolytic and focus benefits
- L-theanine: increases alpha-wave activity; calm alertness
- Lion's Mane: NGF stimulation; cognitive/mood support
- Bacopa: memory, focus, anxiolytic support
- EGCG: antioxidant, metabolic support, mild mental clarity

### **Key Evidence**

- L-theanine improves calm/focus in human trials
- Lion's Mane and Bacopa show cognitive/memory signals in small RCTs
- CBDA: strong preclinical anti-nausea activity

### **Formulation Notes**

- Hard capsule with desiccant for mushrooms/botanicals
- Daytime profile; avoid excess caffeine

## **Mood & Energy**

### **Cannabinoid Stack**

CBC + CBD + THCV

### **Mushroom/Botanical Stack**

Cordyceps, Rhodiola rosea (3% rosavins/1% salidroside)

### **Nutrients**

Vitamin B6 (P5P)

### **Mechanistic Rationale**

- CBC: TRP channel activation; emerging mood effects

- CBD: anxiolytic, stabilizing partner to THC
- THCV: CB1 antagonism at low doses; energy/appetite effects
- Cordyceps: mitochondrial/energy support
- Rhodiola: HPA axis modulation; anti-fatigue, anti-stress

### Key Evidence

- Rhodiola and Cordyceps: human trials show reduced fatigue/stress, improved stamina
- Low-dose THC: mood enhancement with CBD moderation

### Formulation Notes

- Hard capsule or nano-tincture for quicker onset
- AM/Daytime use

## Rest & Restore (Nighttime)

### Cannabinoid Stack

CBN + CBNA + CBD

### Mushroom/Botanical Stack

Reishi, Chamomile (apigenin-rich)

### Nutrients

Melatonin, Glycine, pharmaGABA®, Taurine, L-theanine

### Mechanistic Rationale

- CBN/CBNA: sedative cannabinoid pathways
- CBD: reduces nighttime anxiety
- Reishi/Chamomile: calming, GABAergic effects
- Glycine: thermoregulation; sleep latency/quality
- pharmaGABA®: natural GABA agonism; stress/sleep quality
- Melatonin: circadian onset cue

### Key Evidence

- Melatonin widely studied for sleep onset
- Chamomile & Glycine: modest sleep quality benefits
- Reishi & pharmaGABA®: early supportive human data

### Formulation Notes

- Night capsule preferred; cannabinoid-only patch optional

## Digestive Support

### Cannabinoid Stack

CBDA

### Mushroom/Botanical Stack

Ginger extract ( $\geq 5\%$  gingerols), Peppermint oil, Turkey Tail

### Nutrients

Bacillus coagulans, Vitamin B6

### Mechanistic Rationale

- CBDA: potent 5-HT<sub>1A</sub> anti-nausea effect
- Ginger: 5-HT<sub>3</sub> antagonist; pro-kinetic activity
- Peppermint: smooth muscle antispasmodic
- Turkey Tail: gut microbiome support ( $\beta$ -glucans)
- Probiotic: digestive balance

### Key Evidence

- Ginger: multiple RCTs for nausea/vomiting
- CBDA: highly potent preclinical anti-emetic

### Formulation Notes

- Softgel preferred (odor control, reflux mitigation with enteric coating)
- Clear PRN labeling

## Metabolic Wellness

### Cannabinoid Stack

THCV + CBG

### Mushroom/Botanical Stack

Cordyceps, Green tea extract ( $\geq 50\%$  EGCG, low caffeine), Cinnamon extract

### Nutrients

Chromium picolinate, Myo-inositol

### Mechanistic Rationale

- THCV: appetite regulation, energy via CB<sub>1</sub> antagonism
- CBG: clarity, anti-inflammatory
- EGCG: thermogenesis, fat oxidation
- Cinnamon: insulin sensitivity support

- Chromium/Myo-inositol: glucose and metabolic regulation

### Key Evidence

- EGCG & Cinnamon: human evidence for glycemic/metabolic markers
- THCV: emerging human pilot data

### Formulation Notes

- Day capsule; energy-forward positioning

## Mind & Memory

### Cannabinoid Stack

CBD + CBG

### Mushroom/Botanical Stack

Lion's Mane, Ginkgo biloba, Cordyceps

### Nutrients

Omega-3 algal oil DHA/EPA, PQQ, NAC, CoQ10, Vitamin D3

### Mechanistic Rationale

- CBD/CBG: neuroprotection, neuroinflammation modulation
- Lion's Mane: NGF promotion; cognition/mood in small trials
- Ginkgo: antioxidant, cerebral blood flow
- DHA/EPA: membrane fluidity, synaptic plasticity
- PQQ/CoQ10: mitochondrial support, antioxidant synergy
- NAC: glutathione precursor; neuroprotective

### Key Evidence

- Lion's Mane & Ginkgo: human cognition studies
- Omega-3: strong human evidence for brain health
- NAC: studied in psychiatric and neurodegenerative conditions

### Formulation Notes

- Oil-based softgel for omega-3/CoQ10
- Separate capsule for Lion's Mane powder if stability requires