

# Light Energy Protocol — Daily Quick Reference

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## Morning (with breakfast containing fat)

**Breakfast MUST contain dietary fat:** eggs, olive oil, MCT oil, avocado, nuts, fatty fish, or full-fat yogurt

### Take all together:

- Acetyl-L-Carnitine** 1000 mg (1 capsule)
- CoQ10 Ubiquinol** 100–200 mg (1–2 capsules) ★ needs fat
- B-Complex** (1 tablet/capsule)
- Magnesium Glycinate** 200–400 mg (1–2 capsules)
- MCT Oil** 1 tablespoon (15 mL) — add to coffee, tea, smoothie, or food
- D-Ribose** 5 g (optional) — dissolve in water

## Evening (with dinner containing fat)

**Dinner MUST contain dietary fat:** fatty fish (salmon, mackerel), olive oil (2 tbsp), avocado, cheese, or nuts

### Weekly (once per week):

- Vitamin D3** 25000 U.I. (1 capsule) ★ needs fat

### Optional (if migraines or extra fat-burning support):

- Riboflavin (B2)** 400 mg (1 capsule) ★ needs fat

## Bedtime (30–60 minutes before bed)

- MCT Oil** 1 teaspoon (5 mL)
- D-Ribose** 5 g (optional) — dissolve in water
- Magnesium Glycinate** 200–400 mg (if not taken in morning)

## Optional: Fat Malabsorption Support

### If vitamin D remains low after 2–3 months:

- **Digestive Enzyme** (Metagenics MetaDigest TOTAL or similar)
- Comprehensive enzyme formula supporting fat, protein, and carbohydrate digestion
- Take immediately before breakfast and dinner

## Key Reminders

- **Fat is essential:** CoQ10 and Vitamin D will NOT absorb without dietary fat
- **MCT oil:** Start with 1 tsp, increase slowly to 1 tbsp over 1–2 weeks (avoid GI upset)
- **Timeline:** Acetyl-L-carnitine takes 4–6 weeks; maximum benefit at 3–6 months
- **Vitamin D:** Retest blood levels at 2–3 months to verify protocol working
- **Coconut oil ≠ MCT oil:** Only pure MCT oil (C8 or C8/C10) bypasses broken system

# Light Energy & Fat Metabolism Protocol

For Chronic Fatigue & Energy Production Support

Focused on maximizing energy production, fat utilization, and essential vitamin absorption

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## Protocol Overview

This simplified protocol focuses on the core interventions for:

- Restoring fat-burning capability (addressing “running on empty” sensation)
- Maximizing mitochondrial energy production
- Correcting vitamin D deficiency (common with fat malabsorption)
- Supporting cellular ATP availability

### Core Principle

Most chronic fatigue involves **impaired fat metabolism**. The body cannot access stored fat for energy despite having adequate reserves. This protocol:

1. Provides immediate energy bypass (MCT oil)
2. Repairs the fat-burning system (acetyl-L-carnitine)
3. Supports the energy production machinery (CoQ10, B vitamins, magnesium)
4. Ensures fat-soluble vitamin absorption (critical for vitamin D)

## Morning Protocol (with breakfast)

### Core Energy Supplements

#### 1. Acetyl-L-Carnitine 1000 mg

- Opens the “carnitine shuttle” to transport fats into mitochondria for energy
- **This is the root cause fix for fat metabolism**
- Timeline: 4–6 weeks initial effect; 3–6 months maximum benefit
- Can take on empty stomach or with food

#### 2. CoQ10 Ubiquinol 100–200 mg \* needs fat

- Essential cofactor in mitochondrial energy production (electron transport chain)
- Antioxidant protecting mitochondrial membranes
- **MUST take with dietary fat** or absorption is  $\downarrow 10\%$
- Ubiquinol is the active, reduced form (better absorption than ubiquinone)

#### 3. B-Complex (containing at least B1, B2, B3, B5, B6, B12, Folate)

- B vitamins are cofactors in energy metabolism at every step
- B2 (riboflavin) essential for fat-burning
- B12 and folate support methylation and cellular energy
- Any reputable B-complex works

#### 4. Magnesium Glycinate 200–400 mg

- Cofactor for ATP synthesis (your body makes ATP using magnesium)
- “Off switch” for muscle contraction — prevents cramps
- Glycinate form: best absorbed, gentlest on stomach
- Can split dose: half morning, half bedtime

#### 5. MCT Oil 1 tablespoon (15 mL)

- Medium-chain fats bypass the broken carnitine shuttle
- Provide immediate energy while acetyl-L-carnitine repairs the system
- Go straight to liver; preferentially burned for energy (not stored as fat)
- Also helps fat-soluble vitamin absorption
- Add to coffee, tea, smoothie, or drizzle on food
- **Start with 1 tsp; increase slowly over 1–2 weeks to avoid GI upset**

## Breakfast Requirements

**Breakfast MUST contain dietary fat for CoQ10 absorption:**

- **Best:** MCT oil (already in protocol), olive oil, eggs, fatty fish
- **Good:** Avocado, nuts, nut butter, full-fat yogurt, cheese
- **Minimum:** 1–2 tablespoons of fat source

Without fat, CoQ10 absorption fails and vitamin D will remain deficient.

## Evening Protocol (with dinner)

### Weekly Vitamin D

#### 1. Vitamin D3 25000 U.I. (once weekly) ★ needs fat

- Essential for immune function, bone health, mood regulation
- Weekly high-dose may overcome absorption issues better than daily low-dose
- **MUST take with fatty dinner** or absorption fails
- Common in chronic fatigue to have vitamin D deficiency despite supplementation (indicates fat malabsorption)

### Optional Evening Additions

#### 1. Riboflavin (Vitamin B2) 400 mg ★ needs fat

- Essential cofactor for fat-burning (beta-oxidation)
- Works synergistically with acetyl-L-carnitine
- Also proven for migraine prevention at this dose (4–12 weeks)
- Take with dinner containing fat
- Optional if B-complex already contains 50–100 mg B2; use higher dose if migraines present

## Dinner Requirements

**Dinner MUST contain dietary fat for vitamin D3 (and B2 if taken):**

- **Best:** Fatty fish (salmon, mackerel, sardines), olive oil (2 tbsp in salad), avocado
- **Good:** Nuts, cheese, eggs
- **Minimum:** 2–3 tablespoons of fat source (more is better for vitamin D)

## Bedtime Protocol

### Overnight ATP Support

#### 1. MCT Oil 1 teaspoon (5 mL) (30–60 min before bed)

- Provides fuel overnight when body should be burning fat
- Prevents nocturnal ATP depletion
- Reduces morning exhaustion and night cramps
- Can be same bottle as morning MCT oil

#### 2. D-Ribose 5 g (optional but recommended)

- Direct building block of ATP molecule
- Replenishes cellular ATP stores overnight
- Dissolve powder in water and drink before bed
- Take another 5 g in morning for 10 g/day total (optional)
- Timeline: Assess at 2 weeks for nocturnal cramp reduction

#### 3. Magnesium Glycinate 200–400 mg (if not taken in morning)

- Prevents nocturnal muscle cramps
- Supports sleep quality
- Best taken at bedtime if splitting daily dose

## Fat Malabsorption Support (if vitamin D remains low)

If vitamin D stays low despite weekly 25000 U.I. + dietary fat, add:

## Digestive Enzymes (Metagenics MetaDigest TOTAL)

- Take immediately before breakfast and dinner
- Comprehensive enzyme formula: lipase, protease, amylase, cellulase, lactase
- Helps break down dietary fats, proteins, and carbohydrates for absorption
- Critical for fat-soluble vitamin absorption (D3, CoQ10, B2)
- Alternative products: NOW Foods Digestive Enzymes, Enzymedica Digest Gold

## Complete Daily Schedule

### Morning (with breakfast containing fat)

- MetaDigest TOTAL (immediately before or with first bite)
- Acetyl-L-Carnitine 1000 mg
- CoQ10 Ubiquinol 100–200 mg
- B-Complex (any reputable brand)
- Magnesium Glycinate 200 mg (or 400 mg if not splitting dose)
- MCT Oil 1 tablespoon (in coffee, tea, smoothie, or on food)
- Optional: D-Ribose 5 g

### Evening (with fatty dinner)

- MetaDigest TOTAL (immediately before or with first bite)
- **Weekly:** Vitamin D3 25000 U.I.
- Optional: Riboflavin B2 400 mg (if migraines or want extra fat-burning support)

### Bedtime

- MCT Oil 1 teaspoon (30–60 min before bed)
- D-Ribose 5 g (optional)
- Magnesium Glycinate 200–400 mg (if not taken in morning, or split dose)

## Shopping List

### Essential Supplements

1. **Acetyl-L-Carnitine 1000 mg** (any reputable brand: NOW Foods, Jarrow, Doctor's Best)
2. **CoQ10 Ubiquinol 100–200 mg** (Jarrow QH-Absorb, Doctor's Best, Qunol)
3. **B-Complex** (Thorne, NOW Foods, Jarrow, Life Extension)
4. **Magnesium Glycinate 200–400 mg** (Doctor's Best, KAL, NOW Foods)
5. **MCT Oil** (pure C8 or C8/C10 blend) (Sports Research, NOW Foods, Bulletproof Brain Octane)
6. **Vitamin D3 25000 U.I. weekly** (or equivalent: 3500–4000 U.I. daily)

### Optional but Recommended

1. **D-Ribose powder** (NOW Foods, Doctor's Best, Jarrow)
2. **Riboflavin B2 400 mg** (if migraines or extra fat-burning support needed)
3. **Digestive Enzymes** (Metagenics MetaDigest TOTAL, NOW Foods, Enzymedica Digest Gold)

### Dietary Essentials

- Eggs, olive oil, avocados, fatty fish (salmon, mackerel, sardines)
- Nuts (almonds, walnuts), nut butter
- Full-fat yogurt, cheese (if tolerated)

## Timeline & Expectations

### Week 1–2: Immediate Effects

- MCT oil provides immediate energy (some feel this within days)

- Better morning energy from bedtime MCT oil + D-Ribose
- Potential reduction in nocturnal cramps
- Magnesium may improve sleep quality and reduce muscle tension

## Week 4–6: Early Repair Phase

- Acetyl-L-carnitine begins opening carnitine shuttle
- May notice gradual improvement in sustained energy
- Body starting to access stored fat for fuel
- Cognitive clarity may improve (acetyl group crosses blood-brain barrier)

## Month 2–3: Established Effect

- Fat-burning pathway increasingly functional
- Better tolerance for activity without crashes
- Reduced reliance on MCT oil for energy (but continue for vitamin absorption)
- **Retest vitamin D levels** to verify absorption protocol working

## Month 3–6: Maximum Benefit

- Full acetyl-L-carnitine effect achieved
- Normalized fat metabolism (body burns stored fat + dietary fat efficiently)
- Improved energy stability throughout day
- Potential for increased activity level

## Monitoring Checklist

Track these to assess effectiveness:

### Daily

- Energy level upon waking (0–10 scale)
- Sustained energy through morning/afternoon
- Nocturnal cramps (frequency, location)
- Muscle fatigue/weakness
- Post-meal energy (do you crash or improve after eating?)

### Weekly

- Overall energy trend (getting better, stable, worse?)
- Sleep quality and morning refreshedness
- Exercise/activity tolerance

### At 2–3 Months

- **Vitamin D blood test** (target: 30–50 ng/mL or 75–125 nmol/L)
- If still low despite protocol, increase focus on dietary fat and add digestive enzymes

Supplement	Approximate Cost/Month
Acetyl-L-Carnitine 1000 mg	\$15–25
CoQ10 Ubiquinol 100–200 mg	\$20–40
B-Complex	\$10–20
Magnesium Glycinate	\$10–15
MCT Oil (1–1.5 tbsp/day)	\$15–25
Vitamin D3 25000 U.I. (weekly)	\$5–10
D-Ribose (optional)	\$20–30
Riboflavin 400 mg (optional)	\$10–15
Digestive Enzymes (optional)	\$15–25
<b>Core Protocol Total</b>	<b>\$75–135/month</b>
<b>With All Optionals</b>	<b>\$120–195/month</b>

## Cost Estimate (Monthly)

## Important Notes

### Why This Protocol Works

#### The Three-Part Strategy

##### 1. Immediate Energy Bypass

- MCT oil provides fuel that mitochondria can use *right now*
- Bypasses blocked carnitine shuttle
- Supports you while repair happens

##### 2. Root Cause Repair

- Acetyl-L-carnitine opens carnitine shuttle over weeks
- Restores ability to burn stored body fat
- Addresses the fundamental energy deficit

##### 3. System Optimization

- CoQ10, B vitamins, magnesium support the energy production machinery
- Once fuel can get into mitochondria, these ensure it's used efficiently
- Maximizes ATP output from available fuel

##### Fat-Soluble Vitamin Fix

- MCT oil + dietary fat ensure vitamin D actually absorbs
- Fixes chronic deficiency common in fatigue conditions

## What NOT to Do

- Never skip dietary fat when taking CoQ10 or vitamin D — absorption will fail
- Don't increase MCT oil too quickly — causes diarrhea (GI system needs to adapt)
- Don't expect instant results — acetyl-L-carnitine takes 4–6 weeks minimum
- Don't stop after 2 weeks if you don't see dramatic changes — repair takes time
- Don't use coconut oil instead of MCT oil — coconut oil is only ~15% MCTs; rest requires broken carnitine shuttle

## When to Add More

This is a **light protocol**. Consider adding if:

- Vitamin D remains low after 2–3 months → add digestive enzymes with lipase
- Significant migraines → add riboflavin B2 400 mg at dinner
- Poor sleep or severe nocturnal cramps persist → add D-Ribose at bedtime
- Iron deficiency confirmed → add iron supplement with vitamin C (morning, separate from magnesium)

## When to Consult Healthcare Provider

- Before starting if you have liver disease, kidney disease, or take medications
- If no improvement after 2–3 months
- If symptoms worsen

- To verify vitamin D levels after 2–3 months
- If considering adding other supplements or medications