

BIOME GUIDE PROTOCOL

Psoriasis & Skin Health Protocol

Evidence-based probiotic, supplement, and dietary strategies to calm inflammation from the inside out

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16 peer-reviewed citations

What This Protocol Addresses

Psoriasis is a chronic, immune-mediated inflammatory skin disease affecting 2-4% of the western population. It is driven by overactive Th17 cells that produce IL-17 and IL-22, causing rapid keratinocyte proliferation and the characteristic red, scaly plaques. Emerging research reveals that gut dysbiosis plays a central role through the gut-skin axis, where disrupted intestinal barrier integrity and altered microbial metabolites fuel systemic inflammation that manifests on the skin.

The Gut-Skin Axis: Four Pathways to Psoriasis

Pathway	Mechanism	Evidence
Gut dysbiosis	Inverted Firmicutes/Bacteroidetes ratio; reduced diversity; enrichment of E. coli	Huang 2018; Wen 2023; Hidalgo-Cantabrana 2019
Intestinal permeability	Disrupted tight junctions (Claudin-3); bacterial translocation; LPS entering circulation	Mahran 2024: serum CLDN3 significantly elevated (p = 0.002)
Treg/Th17 imbalance	Impaired Foxp3+ Treg function; Th17 dominance; IL-17/IL-22 overproduction	Wen 2026: SCFAs restore Treg/Th17 balance via HDAC inhibition
Systemic inflammation	Elevated CRP, TNF-alpha, IL-6; shared pathways with metabolic comorbidities	Woo 2026: Th17/IL-23 axis, adipokine imbalance, LPS signaling

Gut-Skin Axis Research Snapshot

Singla 2025 describes the gut-skin axis as a 'complex, bidirectional interaction between the GI system and skin, driven by immune modulation, systemic inflammation, and gut microbiota dynamics.' Disruptions in gut homeostasis are now recognized as contributing factors to psoriasis, acne, and atopic dermatitis.

Gut Dysbiosis in Psoriasis

Multiple 16S rRNA and metagenomic studies consistently show that psoriasis patients harbor a distinct and disrupted gut microbial profile compared to healthy individuals. The findings converge on lower alpha-diversity, an inverted Firmicutes-to-Bacteroidetes ratio, and enrichment of pro-inflammatory species.

Study	Patients	Key Findings
Hidalgo-Cantabrana 2019 (Br J Dermatol)	19 psoriasis vs 20 controls	Lower diversity; altered taxa abundance; clear dysbiosis profile
Huang 2018 (Sci China Life Sci)	35 psoriasis vs 27 controls	Firmicutes/Bacteroidetes inverted; 16 genera altered; Veillonella correlated with hs-CRP; severe disease = worse dysbiosis
Wen 2023 (Microb Pathog)	32 untreated vs 15 controls vs 17 spouses	E. coli enriched; Flagellar assembly and Bacterial chemotaxis downregulated; severity-dependent differences

Why This Matters for Your Protocol

The consistent finding of gut dysbiosis in psoriasis provides the scientific rationale for microbiome-targeted interventions. Multi-strain probiotics, prebiotic fiber, and dietary changes aim to restore microbial balance, repair the intestinal barrier, and reduce the inflammatory signals that drive skin flares.

Short-Chain Fatty Acids and Immune Balance

Short-chain fatty acids (SCFAs) including butyrate, propionate, and acetate are produced by gut bacteria fermenting dietary fiber. These metabolites are central to the gut-skin connection in psoriasis through their ability to regulate the Treg/Th17 balance.

SCFA Action	Mechanism	Psoriasis Relevance
Treg expansion	HDAC inhibition increases Foxp3 expression	Counteracts Th17 dominance that drives keratinocyte proliferation
Th17 suppression	Inhibits RORgammat transcription	Reduces IL-17 and IL-22 production
PPARgamma activation	Enhances fatty acid oxidation via CD36/CPT1/AMPK	Metabolic reprogramming favors Treg differentiation
Gut barrier support	Fuels colonocytes; strengthens tight junctions	Reduces LPS translocation and systemic inflammation
Dendritic cell modulation	Reduces pro-inflammatory cytokine secretion	Dampens initial immune activation cascade

SCFA Research Highlight (Wen 2026)

SCFAs 'ameliorate psoriatic inflammation by promoting Treg expansion, inhibiting Th17 polarization, and modulating innate immune cells (neutrophils, dendritic cells, and macrophages).' Effects are mediated through both receptor-dependent signaling (GPR43, GPR109A) and epigenetic mechanisms (HDAC inhibition). This provides the scientific basis for dietary fiber and prebiotic interventions.

Practical Takeaway: Feed Your SCFA-Producers

Include 25-35 g of diverse dietary fiber daily from sources like oats, flaxseed, Jerusalem artichokes, garlic, onions, leeks, asparagus, and resistant starch (cooled potatoes, green bananas). A prebiotic supplement (inulin, FOS, or GOS at 5-10 g/day) can bridge gaps.

Probiotics for Psoriasis: The Evidence

Probiotic supplementation is the most directly tested microbiome intervention for psoriasis. The evidence supports multi-strain formulations as adjunctive therapy, with the strongest results coming from a landmark 2019 RCT and subsequent meta-analyses.

Meta-Analysis Evidence (Zhu 2024, 7 RCTs)

Outcome	Probiotics vs Placebo	p-value
PASI reduction (mean difference)	MD -3.09 (95% CI -5.04 to -0.74)	p = 0.01
PASI-75 achievement	33.57% vs 23.61% (RR 1.40)	p = 0.06
CRP reduction	MD -2.36 (95% CI -2.77 to -1.95)	p < 0.0001
DLQI (quality of life)	MD -1.45 (non-significant)	p = 0.59
Adverse events	RR 0.68 (no increase vs placebo)	p = 0.22

Landmark RCT: Navarro-Lopez 2019

12-week double-blind, placebo-controlled trial (n=90 adults with plaque psoriasis). Multi-strain probiotic: *B. longum* CECT 7347, *B. lactis* CECT 8145, *L. rhamnosus* CECT 8361. Results: 66.7% probiotic group achieved PASI-75 vs 41.9% placebo (p < 0.05). PGA 0/1: 48.9% vs 30.2%. Lower relapse risk at 6-month follow-up. Gut microbiota modulation confirmed.

Multi-Strain vs Single-Strain

A critical finding across the literature is that multi-strain formulations consistently outperform single-strain probiotics for psoriasis. Suriano 2023 tested *L. rhamnosus* alone (n=103, 6 months) and found no significant between-group difference (p = 0.620). In contrast, Liscano 2025's meta-analysis (19 studies, 1104 participants) confirmed that multi-strain formulations and synbiotic combinations showed greater efficacy than single-strain preparations. Zeng 2024's massive 80-RCT meta-analysis across 14 autoimmune diseases also found probiotics improved psoriasis symptoms without increasing adverse events.

Optimal Probiotic Protocol for Psoriasis

Choose a multi-strain formula containing *Bifidobacterium* and *Lactobacillus* species (ideally *B. longum*, *B. lactis*, *L. rhamnosus*). Dose: 10-50 billion CFU daily for at least 12 weeks. Continue for 6+ months to reduce relapse risk. Single-strain *L. rhamnosus* alone is insufficient based on current evidence.

Vitamin D: The Psoriasis Connection

Vitamin D deficiency is one of the most consistent findings in psoriasis research, and supplementation plays a dual role in both immune regulation and potential disease prevention.

Finding	Data	Source
25(OH)D levels in psoriasis vs controls	21.0 vs 27.3 ng/mL (p < 0.00001)	Formisano 2023: 23 studies, 1876 patients vs 7532 controls
Pooled 25(OH)D difference	-6.13 ng/mL (95% CI -10.93 to -1.32, p = 0.01)	Pitukweerakul 2019: 10 cohort studies, 6910 total
Oral vit D on PASI score	No significant improvement at 3, 6, 12 months	Formisano 2023: 4 RCTs pooled
Autoimmune disease prevention	22% reduction (HR 0.78, 95% CI 0.61-0.99)	Hahn 2022 VITAL trial: 25,871 participants, 5.3 years
Combined vit D + omega-3	31% reduction (HR 0.69, 95% CI 0.49-0.96)	Hahn 2022: strongest effect with both supplements

The Vitamin D Paradox

Psoriasis patients consistently have lower vitamin D levels, and supplementation reduces autoimmune disease incidence by 22% (VITAL trial). Yet direct PASI improvement from oral vitamin D alone remains unproven. The takeaway: correct deficiency for immune and preventive benefit even if it is not a standalone skin treatment. Aim for serum 25(OH)D of 40-60 ng/mL. Dose: 2000-4000 IU/day with fat-containing meal for absorption.

Omega-3 Fatty Acids

Omega-3 PUFAs (EPA and DHA) are anti-inflammatory fatty acids that counteract the arachidonic acid cascade driving psoriatic inflammation. Multiple dietary reviews recommend replacing saturated fats with omega-3s as a core dietary strategy.

Evidence Source	Key Finding
Hahn 2022 (VITAL trial)	Omega-3 1000 mg/day reduced autoimmune disease by 15% (HR 0.85); combined with vitamin D: 31% reduction (HR 0.69)
Garbicz 2021 (Nutrients)	Recommends replacing saturated fatty acids with omega-3 PUFAs; fish oil associated with improved psoriasis outcomes
Musumeci 2022 (Dermatol Ther)	Fish rich in omega-3 PUFAs recommended; Mediterranean diet beneficial partly due to omega-3 content
Katsimbri 2021 (Antioxidants)	Omega-3 PUFAs are 'key players for immunomodulation' with the 'most beneficial effect' among macronutrients

Omega-3 Dosing for Psoriasis

EPA + DHA: 2000-3000 mg combined daily (prioritize EPA for anti-inflammatory effect). Consume with a fat-containing meal for absorption. Choose triglyceride-form fish oil or algae-based omega-3 for vegetarians. Fatty fish (salmon, sardines, mackerel) 2-3 times weekly provides dietary omega-3 alongside the supplement.

Curcumin: Multi-Target Anti-Inflammatory

Curcumin (diferuloylmethane) from turmeric modulates multiple inflammatory pathways relevant to psoriasis. Its pleiotropic mechanism makes it a compelling adjunctive supplement, though bioavailability enhancement is essential.

Target	Action	Psoriasis Relevance
NF-kappaB	Inhibits nuclear translocation	Master switch for pro-inflammatory cytokine production
STAT3	Blocks IL-6/STAT3 signaling	Key pathway in Th17 differentiation and keratinocyte hyperproliferation
COX-2 / 5-LOX	Dual inhibition of prostaglandin and leukotriene synthesis	Reduces inflammatory mediators driving plaque formation
TNF-alpha	Downregulates expression	Central cytokine in psoriatic inflammation
CRP	Reduces systemic levels	Marker of systemic inflammation consistently elevated in psoriasis

Clinical Safety Profile

Gupta 2012 reviewed curcumin across 67+ clinical trials: safe at doses up to 12 g/day for 3 months. Vollono 2019 notes low oral bioavailability is the main limitation; novel delivery systems (nanoparticles, liposomal, piperine-enhanced) improve absorption 20-fold. Recommended: 500-1000 mg/day of a bioavailable curcumin formulation (with piperine or as phytosome).

Dietary Strategies for Psoriasis

Diet is not a replacement for medical treatment, but multiple evidence reviews position it as a meaningful adjuvant. The following strategies have the strongest research support.

Strategy	Evidence Level	Key Recommendation
Weight loss (if overweight)	Strong	Low-calorie diet; even 5-10% weight loss improves PASI; obesity worsens psoriasis via adipokine imbalance
Mediterranean diet	Moderate-Strong	Rich in omega-3, polyphenols, fiber; anti-inflammatory nutrient profile; recommended by Garbicz 2021 and Musumeci 2022
Omega-3 rich foods	Moderate	Fatty fish 2-3x weekly; replace saturated fats; Katsimbri 2021 identifies PUFAs as top immunomodulatory macronutrient
Antioxidant-rich foods	Moderate	Vitamins A, C, E, selenium, carotenoids, flavonoids; fruits and vegetables emphasized
Gluten-free diet	Selected cases	Beneficial for psoriasis patients with celiac markers; not universally recommended
Prebiotics and probiotics	Moderate	Feed SCFA-producing bacteria; multi-strain probiotics as daily supplement
Alcohol avoidance	Moderate	Alcohol triggers flares; recommended avoidance by Musumeci 2022
Reduce processed foods	General	Minimize sugar, refined carbs, trans fats; reduce systemic inflammation

Diet as Adjuvant

Musumeci 2022 emphasizes: 'Changing dietary and lifestyle habits alone does not replace conventional treatment, but must be considered as an adjuvant. Physicians may play a crucial role by adequately acknowledging psoriatic patients on the advantages of proper lifestyle and diet habits.'

Supporting Supplements

Beyond the core stack of probiotics, vitamin D, omega-3, and curcumin, several additional supplements support gut barrier integrity and antioxidant defense in psoriasis.

Supplement	Mechanism	Dose Range	Notes
Zinc	Antioxidant; immune regulation; skin repair	15-30 mg/day	Synbiotic improved Zn absorption (Akbarzadeh 2021)
Selenium	Glutathione peroxidase cofactor; antioxidant defense	100-200 mcg/day	Recommended by Garbicz 2021 for psoriasis
L-Glutamine	Gut barrier integrity; colonocyte fuel	5-10 g/day	Supports tight junction repair
Vitamin A	Keratinocyte differentiation; immune function	5000-10000 IU/day	Do not exceed 10000 IU; or use beta-carotene
Vitamin C	Collagen synthesis; antioxidant	500-1000 mg/day	Supports skin barrier; reduces oxidative stress
Prebiotic fiber (inulin/FOS)	Feeds SCFA-producing bacteria	5-10 g/day	Inulin, FOS, or GOS; start low, increase gradually
N-Acetyl Cysteine (NAC)	Glutathione precursor; reduces oxidative stress	600-1200 mg/day	Supports detoxification and antioxidant capacity

Tiered Supplement Stack

Tier 1 (Core): Multi-strain probiotic + Vitamin D + Omega-3 EPA/DHA + Curcumin (bioavailable) Tier 2 (Support): Prebiotic fiber + Zinc + Selenium Tier 3 (Optimize): L-Glutamine + NAC + Vitamin A + Vitamin C Start with Tier 1 for 4 weeks before adding Tier 2. Tier 3 is individualized.

Phase 1: Calm and Restore (Weeks 1–12)

The first phase focuses on reducing active inflammation, repairing the gut barrier, and establishing a microbiome-supportive foundation.

Intervention	Specification	Timing
Multi-strain probiotic	B. longum + B. lactis + L. rhamnosus; 20-50 billion CFU	Morning, with or before breakfast
Vitamin D3	2000-4000 IU/day (test 25(OH)D; target 40-60 ng/mL)	With largest fat-containing meal
Omega-3 (EPA/DHA)	2000-3000 mg combined (EPA-dominant)	With meals, split AM/PM
Curcumin	500-1000 mg bioavailable form (with piperine or phytosome)	With food
Prebiotic fiber	Start 3 g/day, increase to 5-10 g over 2 weeks	Mixed into food or drink
L-Glutamine	5 g/day	Morning on empty stomach
Zinc + Selenium	25 mg zinc + 200 mcg selenium	With food (not same time as probiotics)
Diet shift	Mediterranean pattern; increase vegetables, fish; reduce sugar, alcohol, processed foods	All meals

Important: Psoriasis Medication Interactions

If you are taking methotrexate, add folic acid supplementation (1-5 mg/day) as recommended by Garbicz 2021. If on immunosuppressants or biologics, consult your dermatologist before starting probiotics. This protocol is designed as adjuvant support alongside, not a replacement for, prescribed treatments.

Phase 2: Sustain and Prevent (Weeks 13–24+)

After the initial 12-week intensive phase, the focus shifts to maintaining improvements and preventing relapse. Navarro-Lopez 2019 found lower relapse rates at 6-month follow-up in the probiotic group, underscoring the importance of sustained supplementation.

Component	Phase 2 Adjustment	Rationale
Probiotic	Continue daily; consider cycling strains every 3 months	Sustained microbiota modulation; lower relapse risk
Vitamin D	Maintain 2000 IU/day (or per blood levels)	Ongoing immune support; seasonal adjustment may be needed
Omega-3	Maintain 2000 mg/day or increase dietary fish	Continued anti-inflammatory coverage
Curcumin	Can reduce to 500 mg/day maintenance	Ongoing NF-kappaB modulation
Prebiotic fiber	Maintain 5-10 g/day from mixed sources	Sustained SCFA production
Diet	Continue Mediterranean pattern; reintroduce foods cautiously to identify triggers	Long-term lifestyle foundation

The Sustained Benefit

Korneev 2024's systematic review found that 'favorable treatment outcomes are associated with microbiota alterations that approach those observed in healthy individuals.' This means the goal is not just symptom relief but genuine microbiome restoration that maintains itself over time.

Tracking Your Progress

Monitoring key markers helps you understand whether the protocol is working and when to adjust. Track these at baseline and every 4-6 weeks.

Marker	What It Tells You	Target
PASI score (via dermatologist)	Skin severity assessment	PASI-75 (75% reduction) is clinically meaningful
Serum 25(OH)D	Vitamin D status	40-60 ng/mL
hs-CRP	Systemic inflammation	Below 1.0 mg/L
Skin photographs	Visual progress tracking	Take same-angle photos every 4 weeks
Digestive symptoms	Gut health self-assessment	Reduced bloating, regular bowel movements
DLQI questionnaire	Quality of life	Score below 5 (minimal impact on life)
Body weight	Metabolic health	Steady reduction if overweight; stable if healthy weight

Timeline Expectations

Weeks 1-4: Digestive improvements; potential initial skin fluctuation as microbiome shifts. Weeks 4-8: Gradual reduction in redness and scaling; CRP should begin to decline. Weeks 8-12: More significant PASI improvement; energy and mood benefits. Weeks 12-24: Consolidation of gains; reduced flare frequency. Be patient. Microbiome restoration is gradual. The Navarro-Lopez RCT showed strongest results at 12 weeks with sustained benefit at 6-month follow-up.

Sources

1. Singla et al. (2025). Gut-skin axis: Emerging insights for gastroenterologists. *World J Gastrointest Pathophysiol*. DOI: 10.4291/wjgp.v16.i3.108952
2. Komine (2020). Recent Advances in Psoriasis Research; the Clue to Mysterious Relation to Gut Microbiome. *Int J Mol Sci*. DOI: 10.3390/ijms21072582
3. Hidalgo-Cantabrana et al. (2019). Gut microbiota dysbiosis in a cohort of patients with psoriasis. *Br J Dermatol*. DOI: 10.1111/bjd.17931
4. Huang et al. (2018). Dysbiosis of gut microbiota was closely associated with psoriasis. *Sci China Life Sci*. DOI: 10.1007/s11427-018-9376-6
5. Wen et al. (2023). Altered gut microbiome composition in nontreated plaque psoriasis patients. *Microb Pathog*. DOI: 10.1016/j.micpath.2023.105970
6. Mahran et al. (2024). Role of Claudin-3 as a biomarker of gut-skin axis integrity in psoriasis. *Arch Dermatol Res*. DOI: 10.1007/s00403-024-03071-4
7. Wen et al. (2026). Fatty acid-related immune network in psoriasis. *Front Pharmacol*. DOI: 10.3389/fphar.2026.1731683
8. Woo & Kim (2026). Obesity, skin disorders, and the microbiota. *J Microbiol*. DOI: 10.71150/jm.2508007
9. Navarro-Lopez et al. (2019). Efficacy and Safety of Oral Administration of a Mixture of Probiotic Strains in Patients with Psoriasis. *Acta Derm Venereol*. DOI: 10.2340/00015555-3305
10. Zhu et al. (2024). Efficacy and safety of probiotics in the adjuvant treatment of psoriasis: systematic review and meta-analysis. *Front Med*. DOI: 10.3389/fmed.2024.1448626
11. Zeng et al. (2024). Efficacy and safety of gut microbiota-based therapies in autoimmune diseases: systematic review of 80 RCTs. *BMC Med*. DOI: 10.1186/s12916-024-03303-4
12. Liscano et al. (2025). Microbial Interventions for Inflammatory Skin Diseases: Systematic Review and Meta-Analysis. *Microorganisms*. DOI: 10.3390/microorganisms13112416
13. Formisano et al. (2023). Psoriasis and Vitamin D: A Systematic Review and Meta-Analysis. *Nutrients*. DOI: 10.3390/nu15153387
14. Hahn et al. (2022). Vitamin D and marine omega-3 supplementation and incident autoimmune disease: VITAL trial. *BMJ*. DOI: 10.1136/bmj-2021-066452
15. Gupta et al. (2012). Therapeutic roles of curcumin: lessons learned from clinical trials. *AAPS J*. DOI: 10.1208/s12248-012-9432-8
16. Garbicz et al. (2021). Nutritional Therapy in Persons Suffering from Psoriasis. *Nutrients*. DOI: 10.3390/nu14010119

Disclaimer

This protocol is provided for educational and informational purposes only. It is not intended as medical advice and should not replace consultation with a qualified healthcare provider. Psoriasis is a complex medical condition that may require prescription medications including biologics, immunosuppressants, and topical treatments. Always consult your dermatologist before starting any supplement regimen, especially if you are currently on prescribed psoriasis therapy. Individual results may vary. The information presented is based on peer-reviewed research available at the time of writing and may be updated as new evidence emerges.

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