INPLASY

Effectiveness and Safety of Dietary Fiber Supplements in the Adjunctive Treatment of Psoriasis: A Systematic Evaluation and Network Meta-Analysis

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ADMINISTRATIVE INFORMATION

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Review Stage at time of this submission - Completed but not published.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 30 July 2025 and was last updated on 30 July 2025.

INTRODUCTION

Review question / Objective This systematic review and network meta-analysis aims to evaluate the efficacy and safety of various dietary fiber supplements—including vitamin D, XP-828L, fish oil, selenium, probiotics, turmeric decoction, and micronutrients—as adjunct therapies for psoriasis.

The study population includes adult patients with plaque psoriasis. Primary outcomes include clinical efficacy measures such as the Psoriasis Area and Severity Index (PASI), Dermatology Life Quality Index (DLQI), and Physician Global Assessment (PGA), as well as inflammatory markers, cytokines, and adverse events.

The Surface Under the Cumulative Ranking (SUCRA) values will be used to rank the interventions, with the goal of providing evidence-based support for individualized nutritional interventions for psoriasis.

Condition being studied Psoriasis is a chronic, immune-mediated inflammatory skin disease characterized clinically by epidermal hyperproliferation, erythema, scaling, and pruritus. It affects approximately 2% to 5% of the global population, tends to occur more frequently in winter and spring, is difficult to cure, and prone to recurrence—placing a significant burden on both the physical and mental health of patients. Psoriasis is not only a dermatological condition but is increasingly recognized as a systemic disease, often associated with metabolic syndrome, cardiovascular diseases, and gut microbiota dysbiosis. This has led to the development of the "gut–skin axis" theory, which suggests a potential bidirectional regulatory relationship between

intestinal microecology and cutaneous inflammation.
Current therapeutic approaches—such as vitamin D analogs, glucocorticoids, phototherapy, and biologics—can control symptoms in the short term, but long-term remission remains elusive, and adverse effects are common. As a result, nutritional interventions, particularly dietary fiber supplements with anti-inflammatory and immunomodulatory properties, are emerging as a promising adjunctive treatment strategy.

METHODS

Participant or population Patients diagnosed with psoriasis (including plaque-type, mild to moderate severity), aged 18 years or older, regardless of sex or ethnicity.

Intervention Nutritional interventions including vitamin D, oral curcumin, XP-828L (whey protein and oat extract), selenium, fish oil, and probiotic formulas.

Comparator Placebo, standard care.

Study designs to be included Randomized controlled trials (RCTs) will be included.

Eligibility criteria Inclusion Criteria:
Adult patients (≥18 years old) diagnosed with chronic plaque psoriasis.
The intervention group receives at least one type of the following oral dietary supplements: vitamin D, XP-828L, fish oil, selenium, probiotics, curcumin, or other micronutrients. These specific supplements were selected based on the following reasons:
(1) Existing literature shows these supplements have the most concentrated and sufficient randomized controlled trials (RCTs) in the field of psoriasis treatment.
(2) A stable yield of high-quality studies can be obtained using the search strategy:
psoriasis AND ("dietary fiber" OR "vitamin D" OR "XP-828L" OR "fish oil" OR "selenium" OR "probiotic" OR "curcumin" OR "micronutrient")
on databases such as PubMed, Web of Science, and CNKI.
(3) Search results indicate no relevant RCTs for other supplement types (e.g., amino acids, minerals).
The control group receives placebo or standard care. If both intervention and control groups are combined with adjunctive treatments such as phototherapy or topical medication, identical co-interventions must be applied in both groups to avoid confounding due to synergistic effects.
Outcomes:
Primary outcomes: PASI, PGA, DLQI, and clinical effectiveness rate.
Secondary outcomes: inflammatory cytokines, biomarkers, and adverse events.
Study design must be randomized controlled trials (RCTs).
Exclusion Criteria:
Patients with psoriasis subtypes other than chronic plaque psoriasis.
Studies with unclear diagnostic or efficacy criteria.
Theoretical research, laboratory/animal studies, newspaper articles, dissertations, conference papers, retrospective studies, reviews, or systematic reviews.
Studies that do not follow the principles of randomization.
Duplicate publications—only the most complete version will be included.
Interventions that are not oral dietary supplements.

Information sources Electronic databases: PubMed, Embase, Cochrane Library, Web of Science, CNKI, Wanfang, and SinoMed. Manual search will also be conducted through reference lists of relevant reviews.

Main outcome(s) Primary outcomes include changes in PASI and DLQI scores and adverse events. Treatment duration ranged from 4 to 12 weeks. Data were pooled using standardized mean difference (SMD) or mean difference (MD).

Quality assessment / Risk of bias analysis The Cochrane ROB2 tool will be used to assess the risk of bias in included studies, covering five domains: randomization process, deviations from intended interventions, missing outcome data, measurement of the outcome, and selection of the reported result. Two reviewers will assess independently and resolve disagreements through discussion.

Strategy of data synthesis Network meta-analysis will be performed using Stata 17.0 to compare multiple dietary supplement interventions both directly and indirectly. Standardized mean difference (SMD) or mean difference (MD) will be used for continuous variables, and odds ratios (OR) for categorical variables. Heterogeneity (I^2), inconsistency (node-splitting), and SUCRA will be assessed.

Subgroup analysis Conduct subgroup analyses based on intervention types (such as vitamin D, XP-828L, fish oil, etc.) to explore potential influencing factors.

Sensitivity analysis Conduct sensitivity analyses by sequentially excluding individual studies to verify the robustness of the pooled results.

Country(ies) involved China.

Keywords Psoriasis; Dietary Supplements; Systematic Review; Network Meta-Analysis; Vitamin D; XP-828L; Fish Oil; Probiotics; Curcumin; Safety; Efficacy.

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