Can myo-inositol help with acne related to PCOS

Preliminary evidence suggests that myo-inositol supplementation may help improve acne in women with PCOS, likely through improvements in insulin sensitivity and reduced androgen levels, though the current evidence base lacks rigorous methodology and quantitative outcome data needed for definitive conclusions.

Abstract

Two studies examining myo-inositol supplementation for acne in women with PCOS were identified, both reporting improvements in acne-related outcomes following 6 months of treatment . The Ciotta et al. study demonstrated significant improvement in acne scores compared to placebo , while the Pezza et al. study found significant improvements in acne-related quality of life measures (CADI and DLQI) at 3 and 6 months . Both studies also reported improvements in insulin sensitivity , with the Pezza study additionally demonstrating reductions in testosterone and DHEAS levels , providing a plausible mechanistic pathway for acne improvement through reduced hyperandrogenism.

However, the evidence remains preliminary. Neither study provided quantitative baseline or post-treatment acne severity data , standardized acne grading scales were not clearly specified , and only abstracts were available for review. The Pezza study used a combination product containing magnesium and folic acid alongside myo-inositol , complicating attribution of effects. While the consistent direction of benefit across studies and favorable safety profile (no adverse events reported) suggest myo-inositol may be a reasonable adjunctive option for PCOS-related acne, definitive conclusions await randomized controlled trials with validated acne outcome measures.

Paper search

We performed a semantic search using the query "Can myo-inositol help with acne related to PCOS" across over 138 million academic papers from the Elicit search engine, which includes all of Semantic Scholar and OpenAlex.

We retrieved the 50 papers most relevant to the query.

Screening

We screened in sources based on their abstracts that met these criteria:

- **Population - PCOS Diagnosis**: Does the study include women diagnosed with PCOS (polycystic ovary syndrome)?
- **Population - Acne Presence**: Does the study include participants who have acne?
- **Intervention - Myo-inositol**: Does the study examine myo-inositol supplementation (alone or in combination with D-chiro-inositol) as an intervention?
- **Outcomes - Acne Measures**: Does the study measure acne-related outcomes (e.g., acne severity scores, lesion counts, dermatological assessments, quality of life related to acne)?
- **Study Design**: Is the study design a randomized controlled trial, controlled clinical trial, cohort study, case-control study, systematic review, or meta-analysis?
- **Intervention Isolation**: Can the effects of myo-inositol be determined independently (i.e., is myo-inositol studied alone or are its individual effects distinguishable from other interventions)?
- **Study Type Appropriateness**: Is the study NOT a case report, case series, editorial, letter, conference abstract, in vitro study, or animal study?
- **Study Duration**: For intervention studies, is the study duration at least 4 weeks?

We considered all screening questions together and made a holistic judgement about whether to screen in each paper.

Data extraction

We asked a large language model to extract each data column below from each paper. We gave the model the extraction instructions shown below for each column.

- **Study Design**:

  Extract study design details including:

- Type of study (RCT, retrospective cohort, case series, etc.)
- Comparison groups (placebo, active comparator, pre-post only)
- Randomization and blinding status
- Study duration and follow-up periods
- Sample size and power calculations if reported

- **Population Characteristics**:

  Extract participant details including:

- PCOS diagnostic criteria used
- Baseline acne severity and assessment method
- Age range and mean age
- BMI or weight status
- Baseline hormonal profile (testosterone, DHEAS, etc.)
- Inclusion and exclusion criteria
- Concomitant PCOS symptoms (hirsutism, irregular cycles, etc.)

- **Intervention Details**:

  Extract complete intervention information including:

- Specific myo-inositol formulation (pure vs. combination products)
- Dosage and frequency
- Co-supplements included (magnesium, folic acid, etc.)
- Duration of treatment
- Administration method and timing
- Compliance monitoring methods

- **Acne Assessment Methods**:

  Extract how acne was evaluated including:

- Specific acne grading scales used (if any)
- Clinical assessment methods
- Objective measures (lesion counts, photographs, etc.)
- Patient-reported outcome measures
- Frequency of assessments
- Who performed the assessments (dermatologist, researcher, patient)

- **Acne Outcomes**:

Extract all acne-related results including:

- Baseline acne severity scores/measures
- Post-treatment acne severity scores/measures
- Percentage improvement or change from baseline
- Statistical significance of changes
- Time points when improvements were first observed
- Differences between treatment groups if applicable

- **Hormonal Effects**:

  Extract hormonal and metabolic changes including:

- Testosterone levels (free and total) before/after
- DHEAS levels before/after
- Insulin sensitivity measures (HOMA-IR, glucose tolerance, etc.)
- Other androgen markers
- Changes in BMI or weight
- Statistical significance of hormonal changes

- **Quality of Life**:

  Extract patient-reported outcomes including:

- Specific QoL scales used (CADI, DLQI, etc.)
- Baseline and follow-up QoL scores
- Patient satisfaction measures
- Self-assessed acne improvement
- Impact on psychological well-being
- Social/functional impact assessments

- **Safety Profile**:

  Extract safety and tolerability data including:

- All reported adverse events
- Dropout rates and reasons
- Compliance rates
- Serious adverse events
- Comparison of side effects between groups
- Long-term safety concerns noted
- Contraindications identified

Characteristics of Included Studies

Two studies met the inclusion criteria for this review, both examining the effects of myo-inositol supplementation on acne in women with polycystic ovary syndrome (PCOS) over a 6-month treatment period.

Study	Full Text Retrieved?	Study Type	Sample Size	Population	Intervention	Duration
L. Ciotta et al., 2012	No	Comparative study with placebo control	137 PCOS women	Young, overweight women with oligomenorrhea, acne, mild hirsutism, and insulin resistance	Myo-inositol, D-chiro-inositol, or placebo	6 months
Michele Pezza et al., 2025	No	Retrospective study	200 PCOS patients	Women with PCOS presenting with acne and hirsutism	LEVIGON (myo-inositol + microlipodispersed magnesium + folic acid)	6 months

Both studies were limited to abstract-only availability, which constrains the depth of methodological assessment. Neither study reported randomization or blinding procedures , and power calculations were not mentioned in either source . The Ciotta study included a placebo comparison group , while the Pezza study was a single-arm retrospective analysis without a control group .

Effects

Intervention Details

Study	Myo-Inositol Formulation	Dosage	Co-Supplements	Compliance Monitoring
L. Ciotta et al., 2012	Not specified	Not mentioned	Not mentioned	Not mentioned
Michele Pezza et al., 2025	LEVIGON (combination product)	Not mentioned	Microlipodispersed magnesium, folic acid	Not specified; excellent compliance reported

The intervention formulations differed substantially between studies. The Ciotta study examined pure myo-inositol and D-chiro-inositol separately , while the Pezza study used a combination product containing myo-inositol with microlipodispersed magnesium and folic acid . Neither study reported specific dosing regimens .

Acne Outcomes

Study	Assessment Method	Baseline Severity	Outcome Measures	Results	Statistical Significance
L. Ciotta et al., 2012	”Acne Score” (not further specified)	Not reported	Acne Score improvement	Significant improvement in Acne Score with both myo-inositol and D-chiro-inositol	Not reported
Michele Pezza et al., 2025	Cardiff Acne Disability Index (CADI), Dermatology Life Quality Index (DLQI)	Not reported	Quality of life impact, clinical picture of acne	Significant improvement in CADI and DLQI at 3 and 6 months	Not specified for acne outcomes

Both studies reported improvements in acne-related outcomes following myo-inositol supplementation . However, neither study provided quantitative baseline or post-treatment acne severity data . The Ciotta study reported improvement in an unspecified ”Acne Score” , while the Pezza study focused on patient-reported quality of life measures rather than objective acne severity assessments . The Pezza study noted improvements at both the 3-month and 6-month timepoints .

Hormonal and Metabolic Effects

Study	Testosterone	DHEAS	Insulin Sensitivity	BMI	Statistical Significance
L. Ciotta et al., 2012	Not reported	Not reported	Improved insulin resistance	Not reported	Not reported
Michele Pezza et al., 2025	Significant reduction (free and total implied)	Significant reduction	Improved	Significant reduction	Significant (p-values not provided)

Both studies reported improvements in insulin sensitivity , which is mechanistically relevant given the established relationship between hyperinsulinemia and hyperandrogenism in PCOS. The Pezza study provided more detailed hormonal findings, demonstrating significant reductions in testosterone and DHEAS levels , along with BMI reduction . These hormonal changes offer a plausible mechanism for acne improvement, as elevated androgens drive sebum production and follicular hyperkeratinization.

Quality of Life

Study	QoL Instruments Used	Timepoints Assessed	Results
L. Ciotta et al., 2012	Not reported	Not applicable	Not applicable
Michele Pezza et al., 2025	CADI, DLQI	3 and 6 months	Significant improvement

The Pezza study was the only source to assess quality of life outcomes related to acne, utilizing validated dermatology-specific instruments (CADI and DLQI) . Improvements were observed at both assessment timepoints , suggesting sustained benefit over the treatment period.

Safety Profile

Study	Adverse Events	Compliance	Dropouts
L. Ciotta et al., 2012	Not reported	Not reported	Not reported
Michele Pezza et al., 2025	None reported	Excellent	Not reported

Safety data were limited across both studies. The Pezza study explicitly reported no side effects and excellent compliance , which is consistent with the generally favorable tolerability profile of inositol supplements. The Ciotta study did not report safety outcomes .

Synthesis

Both included studies support a beneficial effect of myo-inositol supplementation on acne in women with PCOS, though the evidence base has notable limitations. The consistent direction of effect across both studies is notable, particularly given that the Ciotta study included a placebo comparison group .

Several factors complicate interpretation of these findings:

Methodological Considerations: Neither study was described as randomized or blinded , and only abstract-level data were available for both sources. The Pezza study's retrospective design without a control group is particularly susceptible to confounding and regression to the mean. The Ciotta study's comparative design with placebo control provides stronger internal validity, though methodological details remain unclear.

Outcome Assessment: The studies used different approaches to assess acne outcomes. The Ciotta study employed an unspecified "Acne Score" , while the Pezza study relied on quality of life instruments (CADI, DLQI) rather than objective acne severity measures . Neither study reported specific lesion counts, standardized grading scales, or quantitative pre-post comparisons , making it impossible to determine the magnitude of clinical improvement.

Intervention Heterogeneity: The interventions differed between studies. The Ciotta study used myo-inositol alone (and separately, D-chiro-inositol) , while the Pezza study used a combination product containing myo-inositol with microlipodispersed magnesium and folic acid . This makes it difficult to attribute effects specifically to myo-inositol in the Pezza study, as magnesium supplementation may independently influence metabolic and hormonal parameters.

Mechanistic Plausibility: The observed improvements in insulin sensitivity and reductions in androgens (testosterone, DHEAS) provide a biologically plausible mechanism for acne improvement. In PCOS, insulin resistance drives ovarian androgen production, and reducing hyperinsulinemia would be expected to decrease sebum production and improve acne indirectly.

Population Specificity: Both studies focused on women with PCOS who exhibited insulin resistance or metabolic dysfunction . The findings may be most applicable to this specific phenotype rather than to all women with PCOS-related acne or to acne in non-PCOS populations.

In summary, preliminary evidence from these two studies suggests that myo-inositol supplementation may improve acne outcomes in women with PCOS, likely through improvements in insulin sensitivity and reduction of hyperandrogenism. However, the absence of rigorous methodological details, standardized acne outcome measures, and quantitative effect size data limits the strength of conclusions. The favorable safety profile reported suggests that myo-inositol supplementation carries minimal risk, which may support its consideration as an adjunctive approach in clinical practice pending more definitive evidence from randomized controlled trials with validated acne assessment instruments.

References

L. Ciotta, C. Formuso, I. Pagano, and M. Stracquadanio. "M043 MYO-INOSITOL VS D-CHIRO INOSITOL IN PCOS TREATMENT." *Minerva Ginecologica*, 2012.

Michele Pezza, Valentina Carlomagno, Elena Sammarco, Antonino Trischitta, Carla Ceddia, Amalia Vitiello, Germano Baj, V. Citi, and Alessandro Colletti. "Association of Myo-Inositol and Microlipodispersed Magnesium in Androgen-Dependent Dermatological Diseases: A Retrospective Study." *Pharmaceuticals*, 2025.