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Mohammed Mahdi Salman Ghabban

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Shohani Hormonal Guard (SHG): A Multifunctional Nutraceutical Approach to Treating Polycystic Ovary Syndrome Through Metabolic, Hormonal, and Anti-Inflammatory Pathways

Mohammed Mahdi Salman Ghadban^{ID}

AL-Nisour University College, Baghdad, Iraq

Abstract

Polycystic Ovary Syndrome (PCOS) is a complex endocrine-metabolic disorder affecting women of reproductive age. It is characterized by ovarian dysfunction, insulin resistance, and hyperandrogenism, often accompanied by an overactive hypothalamic-pituitary-adrenal (HPA) axis. “Shohani Hormonal Guard” (SHG) is a nutraceutical formulation designed to target PCOS pathophysiology via multiple ingredients. We present a comprehensive review of SHG’s components – including inositols, N-acetylcysteine (NAC), berberine, ashwagandha, omega-3 fatty acids, and micronutrients (zinc, magnesium, vitamin B6, vitamin D3/K2, resveratrol, chromium, probiotics, etc.) – and their mechanistic roles and clinical benefits in PCOS. The literature demonstrates that SHG’s ingredients improve insulin sensitivity, modulate cortisol and adrenal function, restore hormonal balance, and reduce inflammation and oxidative stress. We discuss how these agents synergistically address PCOS’s root disturbances, potentially enhancing ovulatory function, metabolic health, and quality of life. This evidence-based analysis highlights SHG as a multi-targeted adjunct for PCOS management, aligning with current clinical and nutritional recommendations.

Keywords: Shohani hormonal guard, Biological treatment, Polycystic ovary syndrome, Dietary supplement, Natural components, Hormonal balance support, Ovulatory function, Metabolic regulation, Anti-inflammatory action

1. Introduction

Polycystic Ovary Syndrome (PCOS) is one of the most prevalent endocrine disorders in women, affecting an estimated 6–15% of reproductive-aged women. It is diagnosed by a combination of hyperandrogenism (clinical and/or biochemical), chronic oligo-anovulation, and polycystic ovarian morphology, after exclusion of other etiologies. The syndrome’s pathogenesis is multifactorial, involving genetic predispositions and environmental/lifestyle factors. Key features of PCOS pathophysiology include: (1) insulin resistance with compensatory hyperinsulinemia, (2) dysregulation of the HPA axis and cortisol metabolism, and (3) gonadotropic and ovarian hormonal imbalances. These interconnected disturbances lead to the hallmark clinical manifes-

tations – menstrual irregularities, anovulatory infertility, hirsutism, acne, and central obesity – as well as long-term cardiometabolic risks (type 2 diabetes, dyslipidemia, hypertension).

Standard therapy for PCOS often involves lifestyle modification (diet and exercise), insulin-sensitizing drugs (e.g. metformin), and hormonal treatments (oral contraceptives) to manage symptoms. However, there is growing interest in evidence-based nutraceuticals that can address PCOS’s root causes with fewer side effects. Shohani Hormonal Guard (SHG) is a comprehensive dietary supplement formulated to target PCOS through multiple bioactive ingredients. Each component of SHG is chosen for its specific mechanism of action on PCOS pathophysiology, from improving insulin sensitivity to reducing adrenal stress and restoring normal ovarian function.

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E-mail address: shohani3@icloud.com (M. M. S. Ghadban).

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This article provides an academically rigorous review of how SHG's ingredients act on PCOS pathways and summarizes clinical data supporting their use. We also discuss the synergistic integration of these components and offer clinical recommendations for incorporating SHG into PCOS management.

2. Literature review

Factors contributing to the development of polycystic ovary syndrome (PCOS) include genetic susceptibility, environmental and dietary influences, chronic stress, insulin resistance, obesity, and gut dysbiosis. Among these, **insulin resistance** is one of the most central mechanisms, present even in lean patients, and is associated with hyperinsulinemia that drives ovarian androgen excess. Chronic **psychological stress** plays a significant role in aggravating PCOS by elevating cortisol levels, disrupting the hypothalamic-pituitary-ovarian (HPO) axis, and increasing adrenal androgen secretion. Additionally, **obesity** not only exacerbates insulin resistance but also increases inflammatory cytokine activity and aromatase dysfunction in adipose tissue, further worsening hormonal imbalance.

Emerging research also implicates **gut microbiome alterations** as a contributing factor to systemic inflammation, metabolic endotoxemia, and androgen excess via the gut–ovary axis. Low-grade **inflammation and oxidative stress** have been consistently observed in PCOS patients, further impairing insulin signaling and ovarian folliculogenesis.

Effective treatment strategies must address this multifactorial pathogenesis by simultaneously targeting **metabolic, endocrine, inflammatory, and neuroendocrine** axes. SHG ingredients and their mechanisms are presented in detail (Fig. 1; Table 1).

1. Myo-Inositol & D-Chiro-Inositol (40:1 ratio)

- **Insulin Sensitization:** Enhances cellular insulin signaling, reduces hyperinsulinemia, and subsequently decreases ovarian androgen production (Unfer *et al.*, 2017; Larner, 2016).
- **Ovarian Follicular Restoration:** Re-establishes physiological inositol ratios within the ovary, improving FSH responsiveness and oocyte maturation.
- **Reduction of Hyperandrogenism:** Increases SHBG levels and reduces free testosterone, improving ovulatory function and menstrual regularity.

2. N-Acetylcysteine (NAC)

- **Antioxidant Activity:** Replenishes intracellular glutathione, mitigating oxidative stress in ovarian tissue (Thakker *et al.*, 2015).
- **Insulin Modulation:** Improves insulin sensitivity and lowers fasting glucose and insulin levels (Xu *et al.*, 2023).
- **Reproductive Support:** Enhances ovulatory frequency and fertility outcomes, particularly in women with insulin resistance or clomiphene resistance.

3. Berberine

- **AMPK Activation:** Stimulates AMP-activated protein kinase to enhance glucose uptake and reduce hepatic glucose production (Mishra *et al.*, 2022).
- **Anti-Androgenic Effect:** Suppresses theca cell androgen synthesis, improving hormonal balance (Wei *et al.*, 2020).
- **Lipid and Weight Control:** Reduces LDL, triglycerides, and body weight while improving liver function and SHBG levels.

4. Ashwagandha (Withania somnifera, KSM-66)

- **Cortisol Regulation:** Reduces serum cortisol levels, restoring hypothalamic-pituitary-adrenal axis balance (Lopresti *et al.*, 2019).
- **Adrenal Androgen Reduction:** Decreases DHEA-S levels in hyperactive adrenal states, which are common in PCOS (Chandrasekhar *et al.*, 2012).
- **Stress Resilience:** Improves psychological wellbeing and sleep quality, indirectly benefiting metabolic and reproductive health.

5. Omega-3 Fatty Acids (EPA/DHA)

- **Anti-Inflammatory Action:** Decreases systemic inflammation by reducing CRP and inflammatory cytokines (Tang *et al.*, 2021).
- **Hormonal Modulation:** Increases SHBG and reduces LH and total testosterone levels (Yang *et al.*, 2018).
- **Improved Insulin Sensitivity:** Enhances adiponectin expression and HOMA-IR, supporting metabolic function in PCOS.

6. Zinc

- **Insulin Signaling Support:** Functions as a cofactor for insulin receptor activity and

glucose transporter (GLUT4) translocation ([Asemi et al., 2015](#)).

- **Anti-Androgenic Properties:** Inhibits 5 α -reductase, reducing conversion of testosterone to DHT and mitigating hirsutism ([Jamilian et al., 2016](#)).
- **Antioxidant Effect:** Decreases oxidative stress markers such as malondialdehyde (MDA).

7. Magnesium

- **Metabolic Support:** Enhances post-receptor insulin signaling and modulates glucose metabolism ([Li et al., 2022](#)).
- **Stress Buffer:** Reduces cortisol levels and supports neuromuscular relaxation (Luo et al., 2021).
- **Inflammation Reduction:** When combined with other micronutrients, lowers CRP and improves lipid and glycemic profiles.

8. Vitamin B6 (Pyridoxine)

- **Homocysteine Regulation:** Participates in methylation pathways, reducing homocysteine levels associated with cardiovascular and fertility risks ([Rafey et al., 2019](#)).
- **Hormonal Balance:** Supports estrogen and progesterone metabolism and alleviates premenstrual symptoms.
- **Neurotransmitter Synthesis:** Enhances serotonin and GABA production, contributing to improved mood and stress tolerance.

9. Vitamin D3 and Vitamin K2 (MK-7)

- **Insulin and Ovarian Support:** Vitamin D3 improves insulin receptor expression and ovarian follicular function ([Lu et al., 2023](#)).
- **Androgen Regulation:** Vitamin K2 has been shown to reduce DHT and free androgen index while increasing SHBG ([Tarkesh et al., 2020](#)).
- **Skeletal and Cardiovascular Benefits:** Vitamin K2 complements D3 in regulating calcium homeostasis, supporting bone health and vascular integrity.

10. Resveratrol

- **Anti-Androgenic Action:** Inhibits CYP17A1 and 3 β -HSD enzymes in theca cells, significantly reducing total testosterone and DHEA-S ([Banaszewska et al., 2016](#)).

- **Insulin Sensitivity Enhancement:** Activates AMPK and improves glucose uptake independently of weight loss.
- **Ovarian Protection:** Reduces oxidative stress and inflammation, supporting follicular health and ovulatory function.

11. Chromium (Chromium Picolinate)

- **Insulin Potentiation:** Enhances insulin receptor kinase activity and GLUT4 translocation ([Ashoush et al., 2016](#)).
- **Ovulation Induction:** Improves ovulation and menstrual regularity by reducing hyperinsulinemia ([Amiri et al., 2018](#)).
- **Anti-Inflammatory Support:** Lowers hs-CRP and modulates gene expression of inflammatory markers.

12. Probiotics (Lactobacillus & Bifidobacterium strains)

- **Gut Microbiome Restoration:** Corrects dysbiosis and reduces intestinal permeability and endotoxemia ([Zhao et al., 2021](#)).
- **Insulin Resistance Improvement:** Lowers fasting insulin and HOMA-IR, improving metabolic status.
- **Endocrine and Inflammatory Benefits:** Reduces total testosterone, CRP, and MDA levels; may also support mood via the gut-brain axis ([Taghizadeh et al., 2018](#)).
- **Enhanced Absorption:** Bioperine enhances the bioavailability of various nutrients, ensuring the body efficiently absorbs and utilizes the active components of SSG ([Badmaev et al., 2000](#)).

2.1. Essential points to remember

- **Speak with Healthcare Professionals:** It's essential to consult a qualified healthcare provider before beginning any supplement, particularly for women with PCOS, to ensure safety, suitability, and avoidance of interactions with prescribed medications.
- **Supplement Quality:** To guarantee efficacy and purity, always select SHG supplements from reputable and clinically validated sources.
- **All-encompassing Care:** SHG is intended to complement—not replace—conventional treatments, such as hormonal therapies, lifestyle interventions, and fertility protocols.

2.2. Integration of ingredients in SHG

SHG employs a scientifically formulated blend of nutraceuticals that target the multifactorial pathophysiology of polycystic ovary syndrome. Each

ingredient addresses specific components of PCOS, including insulin resistance, hyperandrogenism, inflammation, oxidative stress, and ovulatory dysfunction. By integrating compounds that work across metabolic, hormonal, and reproductive

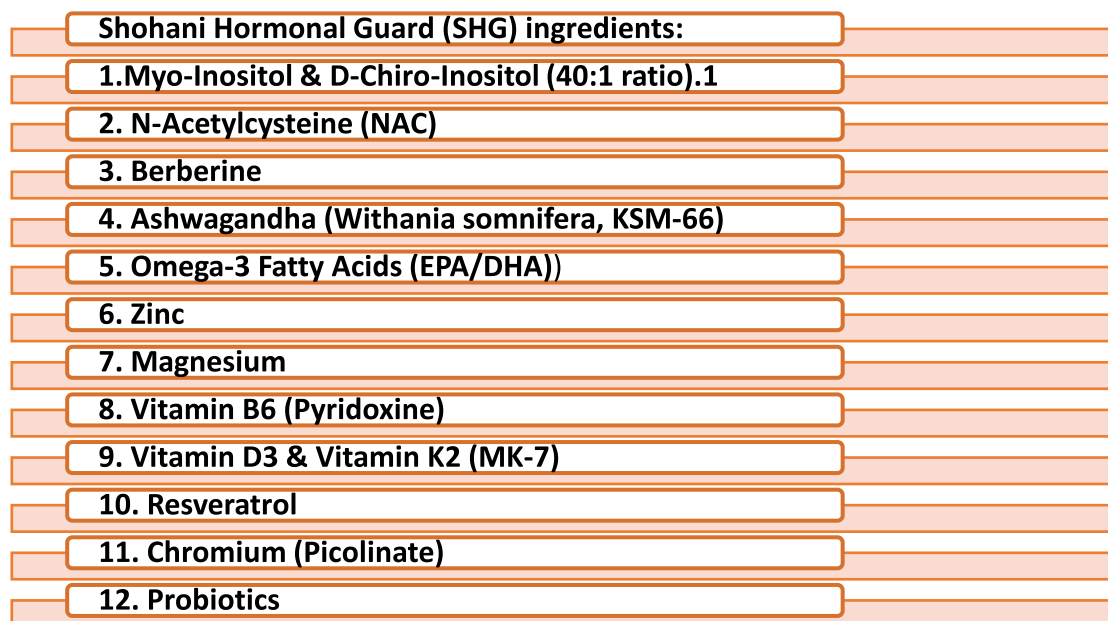


Fig. 1. Shohani Hormonal Guard (SHG) ingredients.

Table 1. Summary of supplements and their roles in addiction recovery.

Compound/Nutrient	Mechanisms	Effects	References
Myo-Inositol & D-Chiro-Inositol	Improves insulin sensitivity, restores ovarian follicular signaling	Enhances ovulation, lowers testosterone, improves fertility	Unfer <i>et al.</i> , 2017; Larner, 2016
Curcumin	Inhibits NF-κB, reduces oxidative stress, anti-inflammatory	Reduces inflammation, supports ovarian function, metabolic regulation	Chainani-Wu, 2003; Kotha & Luthria, 2019
Berberine	Activates AMPK, enhances glucose uptake, reduces androgen synthesis	Improves insulin resistance, lowers androgens, reduces weight	Mishra <i>et al.</i> , 2022; Wei <i>et al.</i> , 2020
Ashwagandha (KSM-66)	Inhibits oxidative stress, interacts with CNS, supports metabolism	Improves stress response, supports hormonal balance	Lopresti <i>et al.</i> , 2019; Chandrasekhar <i>et al.</i> , 2012
Resveratrol	Inhibits theca cell androgen production, activates AMPK	Lowers testosterone and DHEA-S, improves ovulation	Banaszewska <i>et al.</i> , 2016; Lagana <i>et al.</i> , 2020
Omega-3 (EPA/DHA)	Anti-inflammatory, improves adiponectin, modulates lipid metabolism	Lowers CRP, improves insulin sensitivity, reduces androgens	Tang <i>et al.</i> , 2021; Yang <i>et al.</i> , 2018
Zinc	Supports insulin signaling, inhibits 5α-reductase, antioxidant	Reduces hirsutism, improves metabolic profile, antioxidant protection	Jamilian <i>et al.</i> , 2016; Asemi <i>et al.</i> , 2015
Magnesium	Enhances insulin signaling, reduces inflammation, supports ovulation	Improves glucose metabolism, reduces stress-related hormonal imbalance	Rafey <i>et al.</i> , 2019; Root <i>et al.</i> , 2021
Vitamin B6	Regulates insulin and androgen levels, supports bone and ovary health	Improves ovulation, reduces DHT, enhances SHBG	Lu <i>et al.</i> , 2023; Tarkesh <i>et al.</i> , 2020
Vitamin D3 & K2	Enhances nutrient bioavailability	Improved absorption of active compounds	Badmaev <i>et al.</i> , 2000
Chromium (Picolinate)	Enhances insulin receptor activity, reduces inflammation	Improves insulin sensitivity, promotes ovulation, reduces CRP	Ashoush <i>et al.</i> , 2016; Amiri <i>et al.</i> , 2018
Probiotics	Modulates gut microbiota, reduces endotoxemia, improves metabolism	Lowers testosterone, reduces inflammation, supports insulin regulation	Zhao <i>et al.</i> , 2021; Taghizadeh <i>et al.</i> , 2018

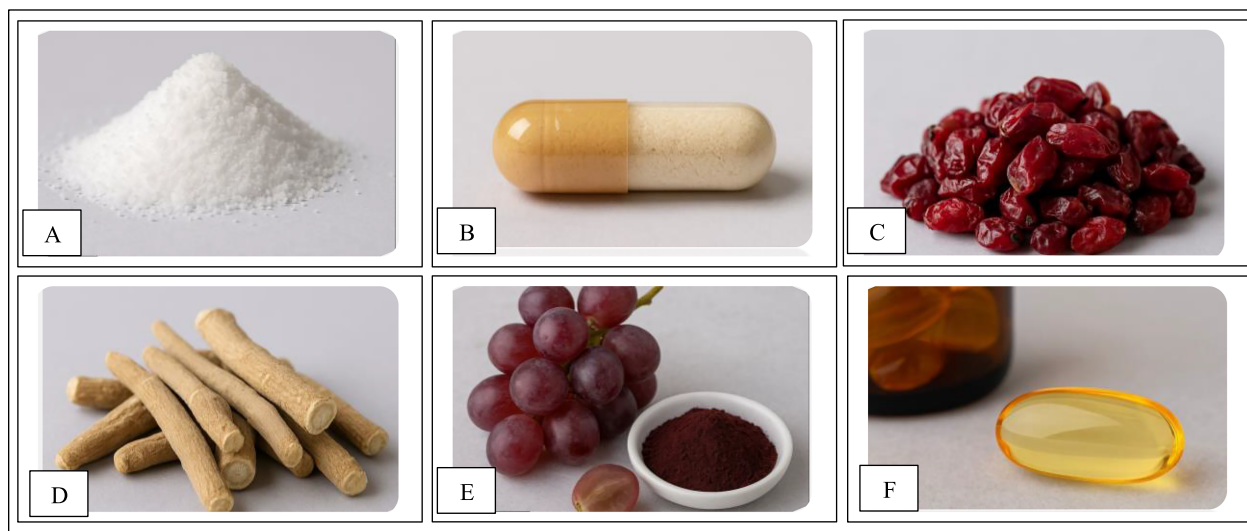


Fig. 2. A – Myo-inositol; B – N-acetylcysteine (NAC); C – Berberine (*Berberis vulgaris*); D – Ashwagandha (*Withania somnifera*); E – Resveratrol (from red grapes); F – Omega-3 (EPA/DHA from fish oil) (Unfer *et al.*, 2017; Thakker *et al.*, 2015; Mishra *et al.*, 2022; Lopresti *et al.*, 2019; Banaszewska *et al.*, 2016; Tang *et al.*, 2021).

pathways, SHG provides a synergistic and holistic treatment approach that supports long-term hormonal balance and reproductive health.

3. Conclusion

Shohani Hormonal Guard (SHG) represents a promising integrative supplement for managing polycystic ovary syndrome. Its combination of evidence-based ingredients delivers a comprehensive therapeutic strategy that addresses both the biochemical and hormonal complexities of PCOS. By improving insulin sensitivity, reducing inflammation, modulating androgens, and enhancing ovulatory function, SHG offers a safe, natural, and effective alternative or adjunct to traditional PCOS treatments—with the added benefit of fewer side effects and improved quality of life.

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