

## COMPARATIVE AND INTEGRATIVE MANAGEMENT OF POLYCYSTIC OVARIAN DISEASE (PCOD): A REVIEW OF HERBAL AND ALLOPATHIC APPROACHES

H. Aarathi<sup>\*1</sup>, Dr. S. Parthasarathi<sup>2</sup>, Dr. K. Rithika<sup>2</sup>, S. Lakshmi<sup>1</sup>, G. Gnana Moorthy<sup>1</sup>, S. Priyadharshini<sup>1</sup>

<sup>1</sup>Students of the SS Institute of Pharmacy, Sankari.

<sup>2</sup>Assistant Professor, Doctor of Pharmacy.

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### \*Corresponding Author

H. Aarathi

Students of the SS Institute of  
Pharmacy, Sankari.



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### ABSTRACT

Polycystic ovarian disease or polycystic ovarian syndrome, commonly referred to as COD or PCOS, is a prevalent endocrine and metabolic disorder in women of reproductive age that commonly results in irregular menstrual cycles, failure of conception, and chronic metabolic disorders.<sup>[1]</sup> Originally reported in 1935, it was defined by three criteria: insulin resistance. Allopathic therapies such as hormonal therapies, anti-contraceptive preparations, and insulin-sensitising agents provide an instant alleviation of symptoms of menstrual disturbances and lowering of androgen levels. However, their chronic use has been associated with several side effects such as hepatotoxicity, increased body weight, and cardiovascular disorders. The relatively safe and rapidly effective management of such symptoms through the use of bioactive compounds from medicinal herbs, which possess inherent antioxidant, anti-

inflammatory, and hormone-regulatory properties, has become an increasingly popular mode of alternative treatment for PCOD.<sup>[2]</sup> Several such herbs such as vitex agnus catus, cinnamon, and Tribulus terrestris have been found to possess significant potential in improving ovarian and insulin function and regulation hormonal imbalances. The objective of this review article, therefore, is to interpose offered concurrent with conventional allopathic therapies that provide a synergistic effect through effective modulation of menstrual irregularities, correction of

androgen excess, and improvement of overall maternal and reproductive health through a combination of rapid allopathic and safe and holistic herb therapies. Such an integrated therapeutic modality provides a potentially unexplored treatment for the comprehensive management of PCOD. Further scientific studies are warranted to standardise management protocols and validate such therapeutic measures in various patient settings.<sup>[3]</sup>

**KEYWORDS:** Polycystic ovarian disease, herbal drug therapy, allopathic pharmacological management, Integrative medical approach, Photoactive compounds, hormonal regulation.

## INTRODUCTION

Polycystic ovarian disease (PCOD) is a common endocrine and metabolic a common endocrine and metabolic disorder that affects women during their reproductive years. It is a major cause of menstrual irregularity and infertility. The disorder is marked by disrupted follicular development, high androgen production, and changes in ovarian structure. Alongside reproductive issues, PCOD is linked to metabolic problems like insulin resistance, obesity, and lipid imbalances. These factors significantly raise the risk of long-term health issues. The complex nature of PCOD, involving genetic factors, hormonal imbalance, and lifestyle choices, complicates its management. Conventional treatment mainly aims to control symptoms and prevent related metabolic and reproductive issues. Common approaches include hormonal medications to regulate menstrual cycles and lower androgen levels, insulin-sensitising drugs to help with glucose metabolism, and ovulation inducing agent for women trying to conceive.<sup>[4]</sup> While this treatment can provide quick symptom relief, it often fails to tackle the root cause of the disorder. Long-term use of this medication may lead to side effects that can result in poor adherence and a return of symptoms after stopping the treatment. Herbal medicine, which comes from traditional practices like Ayurveda, Siddha, and Unani, offers a natural way to manage PCOD by focusing on restoring hormonal balance and metabolic health. Several medicinal plants have properties that mimic estrogen, counteract androgens, provide antioxidants, and enhance insulin sensitivity. These help normalise ovarian function and regulate menstrual cycles. Herbal therapies prioritize long-term control of the disorder, have fewer side effects, and aim to improve overall health, often alongside diet and are popular as a complementary strategy for managing PCOD. This combined method seeks to improve treatment effectiveness, lessen drug-related side effects, and provide lasting results. A thorough evaluation of both herbal and conventional treatment options is crucial to

create evidence-based, patient – focused management strategies for PCOD.<sup>[5]</sup>

### **PATHOPHYSIOLOGY OF PCOD**

Polycystic ovary syndrome (PCOS) was first described in the early 1930s by two Hungarian clinicians, Kulin *et al.*, who identified it as a constellation of symptoms associated with polycystic ovaries. The pathophysiology of PCOS is not clearly understood. Still, it has been related to androgen excess and insulin resistance, which could be considered as the foundation of the current theories and studies on the pathophysiology and mechanism by which the disease develops. The theory of androgen excess of ovarian androgen production, specifically the production of androstenedione, which leads to increased conversion of androgen to estrogen in adipose tissue. The potential seriousness of this androgen excess can be gauged by the fact that there is increased risk of endometrial cancer in women with PCOD. Another theory revolves around the pathophysiology of insulin resistance. It has been suggested that hyperinsulinemia is prevalent in women with PCOS. Hyperinsulinemia is accompanied by an increase in insulin receptors in the peripheral tissue of women with PCOS, hence increasing the susceptibility of this tissue to the effects of insulin. When insulin binds to its receptor, it triggers a series of mechanisms, some of which include increased glucose uptake by the cell, glycogen synthesis, and protein synthesis. This enhances glucose and the synthesis of glycogen and proteins in the liver and peripheral tissues. Hyperinsulinemia can lead to an increase in insulin levels, leading to insulin resistance. The exact mechanism is still not clear, but it has been suggested that this insulin resistance may influence the level of androgen production, potentially increasing it.<sup>[6]</sup>

Polycystic ovarian disease (PCOD), also known as polycystic ovary syndrome (PCOS), is a complex endocrinopathy and metabolic disorder. This is because it involves a spectrum of abnormalities that include ovarian dysfunction, insulin and hormone resistance, and chronic inflammation. If one takes into consideration the mechanisms present in polycystic ovarian disease, it is evident that the pathology is complex.

One of the most fundamental manifestations that occurs with PCOD is the endocrine imbalance, with hyperandrogenism being the most prevalent. There is an excess secretion of the luteinizing hormone (LH), but a deficiency or normal secretion of the follicle-stimulating hormone (FSH). As a result, there is an inhibition of ovulation because the ovarian follicles are abnormal and arrested in their development, with many cysts forming in the

ovary. Insulin resistance plays a crucial role in the etiopathogenesis of PCOD. Reduced peripheral sensitivity to insulin leads to hyperinsulinemia, which is an adjustment to reduced insulin sensitivity. Hyperinsulinemia stimulates the excess secretion of androgen from ovarian theca cells and reduces the secretion of sex hormone-binding globulin from the liver; therefore, there is an elevated level of free androgen in circulation.<sup>[7]</sup>

### **OTHER FEATURES**

Recently, there have been emerging results highlighting the importance of chronic low – grade inflammation and oxidative stress in the pathophysiology of PCOD. The increased levels of pro- inflammatory cytokines and ROS have been found to have adverse effects on the microenvironment, insulin signalling pathways, and endothelial function. When viewed through an allopathic lens, pathophysiology in PCOD is predominantly neuroendocrine and metabolic, involving the hypothalamic–pituitary–ovarian axis and resistance. On the other hand, while applying an herbal medicine perspective to it, apparently, PCOD is a condition of metabolic disorder, impairment of tissue feeding, and disturbance of hormone harmony. Hence, the syndrome of PCOD is a convergence of endocrinopathy, metabolic disorder, impairment of tissue feeding, and disturbance of hormone harmony. Hence, the syndrome of PCOD is a convergence of endocrinopathy, metabolism, and anti-inflammation. So, a combined herbal and allopathic approach can be taken in this case.<sup>[8]</sup>

### **CLINICAL FEATURES**

PCOD present itself in the form of a multi–system disorder, where the systems affected include the reproductive system, among others. Therefore, the disorder takes time to develop and, thus, is mostly unnoticed due to its diverse characteristics. Altered menstrual rhythm, indicated by unpredictable menstrual cycle duration, decreased rate of menstruation, and irregular intervals between menses, is one of the first clinical manifestations. It is due to failed ovarian follicular growth and ovulation. Anovulation leads to difficulties in conceiving and maintaining pregnancy over time. The hormonal disturbances caused by PCOD result in physical changes that are primarily related to androgens, including the onset of resistant acne, excessive body hair in undesirable areas, dark patches on the skin, and thinning of the scalp hair. Such symptom confirms imbalances in hormonal levels in PCOD, primarily because these symptoms are not a skin condition.<sup>[9]</sup>

PCOD is also linked to the presence of metabolic symptoms in the body, which include poor insulin metabolism, intolerance of carbohydrates, increased waist–hip ratio, weight gain, and

lack of energy. It is important to note that it is not uncommon to find women with normal body weights affected by these symptoms. Neuro-psychological symptoms are also recognised, particularly regarding mental fatigue, irritability, low mood, sensitivity to stress, and decreased motivation inpatient. Such symptoms may deteriorate because of the perception of chronic illness and hormonal change. Therapeutically, allopath primarily aims for the suppression of symptoms and the correction of metabolism, in contrast to the main aims of herbal medicine, namely the normalisation of the functions of the body, the rejuvenation of the ovaries, the modulation of stress, as well as the achievement of bodily balance. Understanding the varied clinical manifestations validates a complementary approach to PCOD therapy.<sup>[10]</sup>

## DIAGNOSIS

It has been found in the diagnosis of polycystic ovarian disease that there should be an integration in the process of clinical diagnosis, lab work and imaging. A proper diagnosis is very helpful in preventing complications.

### Clinical testimonial

Menstrual cycle assessment is to be done. These include irregular menses, oligomenorrhea, or amenorrhea. There is a physical finding of hyperandrogenism. These include hirsutism, acne, female pattern of androgenic alopecia or obesity. Other factors include family history, lifestyle factors, or associated medical conditions.<sup>[11]</sup>

### Laboratory investigations

The important tests for the assessment of endocrine dysfunction include luteinizing hormone, follicle-stimulating hormone, total and free testosterone, dehydroepiandrosterone sulfate, and sex hormone-binding globulin. High LH/FSH ratio and hyperandrogenesis are characteristically found. Supporting tests for insulin resistance, fasting glucose levels, and lipid profiles are done towards the assessment of metabolic disturbance associated with PCOD.

### Imaging Studie

Ultrasonography is done either transvaginally or by pelvic ultrasonography. The findings are an enlarged ovary containing 12 or more small follicles around the margin. These also help to find the morphology of the ovaries concerning the other symptoms.<sup>[12]</sup>

### Criteria for diagnosis

The Rotterdam criteria, widely accepted, base diagnosis on the presence of two or more of the following three criteria:

1. Oligo – or an
2. Clinical or biochemical hyperandrogenism.
3. Ultrasound with morphology of polycystic ovaries

A holistic diagnosis process leads to timely intervention, treatment, and management of abnormalities of reproduction, metabolism, and psychology in women affected with PCOD.<sup>[13]</sup>

### **ALLOPATHIC TREATMENT FOR PCOD**

Polycystic ovarian disease, or PCOD, is a complex endocrine and metabolic disorder. PCOD is known by the characteristics of chronic anovulation, hyperandrogenism, polycystic ovaries, and often related metabolic complications like insulin resistance, obesity and dyslipidemia. The treatment of PCOD using the allopathic system is complex. There are various aspects to its treatment, like the management of endocrine, metabolic, ovulation, and symptomatic conditions. A planned, evidence-based management is thus ensured for short - term control of symptoms as well as prevention of complications.

#### **1. Pharmacological approach**

##### **a) Hormonal therapy**

Combined oral contraceptive (COCs): COCs are administered for Allopathic Treatment of Polycystic Ovarian Disease

#### **1. Pharmacological Approach**

##### **a) Hormonal Therapy**

Combined Oral Contraceptives (COCs): COCs are administered for regulating menses, decreasing androgenic effects, and controlling complaints of acne, hirsutism, and seborrhea. Additionally, these medications prevent hyperplasia of the endometrium due to anovulation. Progesterone Therapy: The cyclic use of progesterone causes menstruation in non-pregnant women, thereby inhibiting endometrial hyperplasia.

##### **b) Insulin-sensitivity**

It increases peripheral insulin sensitivity, suppresses compensatory hyperinsulinemia, and facilitates restoration of ovulatory cycles.

Metformin is also helpful for weight management and improving lipid profiles, and for the prevention of type2 diabetes and cardiovascular disease.

### **C) Ovulation induction agents**

Clomiphene citrate and letrozole cause stimulation of follicular development and ovulation in women desiring reproduction.

Gonadotropin therapy: Recommended only when used in patients who do not respond to initial pharmacological therapy, which calls for strict monitoring to avert ovarian hyperstimulation syndrome or multiple follicles.

### **D) Anti-androgen**

Medications prescribed for androgenic symptoms of hirsutism, acne, and hair loss include spironolactone and finasteride. These are usually employed in addition to hormonal treatment.

## **2. Lifestyle modification**

Dietary care: low glycemic, controlled diets help in the reduction of weight, along with improving the sensitivity of insulin.

Exercise: Regular aerobic and resistance exercise is effective for weight loss, hormone regulation, and heart function.

Behavioural intervention: Stress management and psychologicalcounsellingare beneficialin improving the quality oflife inwomen. In reducing the emotional disturbances of anxiety and depression, often observed in women presenting with PCOD, only a small amount of weight loss (5- 10 %) has been found to improve ovulation and menses.

The doctor stated that requiring surgical Laparoscopic ovarian drilling (LOD): This is recommended in women who have failed medical ovulation induction. It aims at reducing ovarian secretions of androgens, which can induce spontaneous ovulation. This procedure has proved to be successful.

1. Monitoring and long-termcare: the routine measurement of hormonal concentration, values, andductive, metabolic, and psychosocial outcomes. Metabolism (glucose, insulin, lipid profile), and sexual function are necessary for monitoring treatment response and for

the prevention of long-term consequences. Regular follow-up care prevents complications such as metabolic syndrome, type2 diabetes, heart disease, and endometrial cancer.<sup>[14]</sup>

## **HERBAL MEDICAL APPROACH TO PCOD**

Polycystic Ovarian Disease (PCOD) is a common hormonal and metabolic disorder affecting women of reproductive age. It often causes irregular periods, high androgen levels, polycystic ovaries, insulin resistance, and metabolic issues. While traditional medical treatment offers symptom relief and fertility help, herbal medicine provides a natural, whole-body approach. Herbal remedies aim to restore hormonal balance, improve metabolic function, encourage ovulation, and enhance mental well-being, all with few side effects.

## **MECHANISMS OF HERBAL INTERVENTION**

Herbal medicine targets several underlying issues related to PCOD:

### **Hormonal Modulation**

Herbs influence the hypothalamic-pituitary-ovarian axis, helping to balance estrogen, progesterone, and androgen levels. Normalising androgen levels reduces symptoms like excessive hair growth, acne, and hair loss.

### **Enhancement of Insulin Sensitivity**

Plant compounds such as polyphenols and flavonoids boost insulin signalling and glucose uptake.

Lowering high insulin levels can restore ovulation and prevent metabolic problems.

### **Anti-Androgenic Activity**

Some herbs block androgen receptors or limit androgen production, which helps lessen symptoms related to high androgen levels.

### **Anti-Inflammatory and Antioxidant Properties**

Chronic inflammation and antioxidative stress can disrupt ovarian function in PCOD. Herbs like turmeric, green tea, and cinnamon offer antioxidant support and help reduce overall inflammation.

### **Adaptogenic and stress–modulation effects**

Adaptogenic herbs like ashwagandha lower cortisol levels and help manage stress – related hormonal problems. These effects support both reproductive and metabolic health while

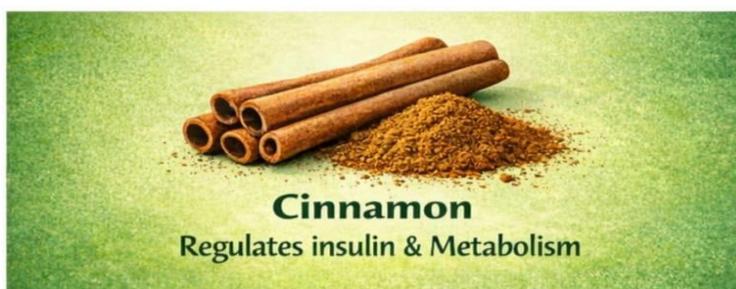
enhancing mental well-being.

### Reproductive support

Herbal treatment encourages follicle growth, luteal function, and regular ovulation. It can improve fertility in women with PCOD without needing invasive methods.<sup>[15]</sup>

### COMMONLY USED HERBAL AGENTS

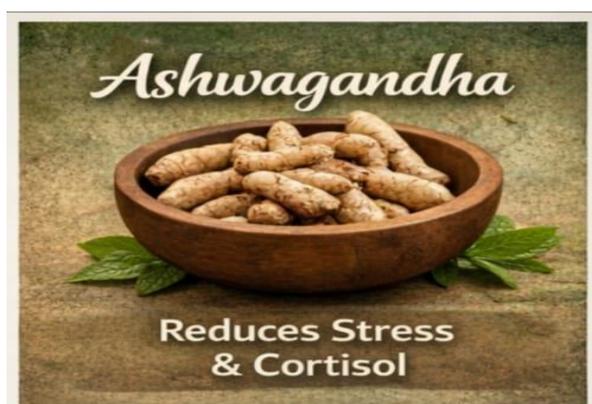
Cinnamon (*cinnamomum verum* \cassia): improves insulin sensitivity and regulates menstrual cycles.



Fenugreek (*TRIGONELLA FOENUM –GRAECUM*): enhances glucose metabolism and balances lipids while supporting hormonal regulation.



Ashwagandha (*withania somnifera*) lowers stress, regulates cortisol, and improves reproductive and metabolic health.

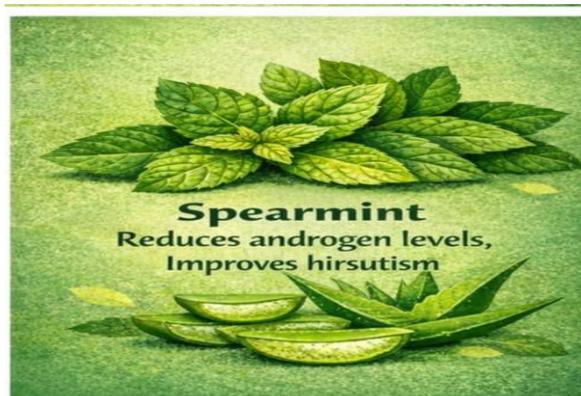


Shatavari (*asparagus racemosus*) supports ovulation luteal phase, and regular periods.



Liquorice (*Glycyrrhiza glabra*) has mild anti-androgen effects helps reduce excessive hair growth and acne.

Spearmint (*mentha spicata*): lowers androgenic symptoms and excessive hair growth.



Green tea (*camellia sanceis*): provide (curcuma longa): offers anti-inflammatory and antioxidant benefits and supports ovarian and metabolic health.



### ADVANTAGES OF HERBAL THERAPY

Offers a natural and whole-body approach, addressing multiple aspects of PCOD at once. Has fewer side effects compared to prolonged use of traditional medications. Improves fertility, ovulation, metabolic health, and mental well-being. Can work well with lifestyle changes like diet, exercise, and stress management for Better rasul's. promotes long-term management of

PCOD.

## LIMITATIONS

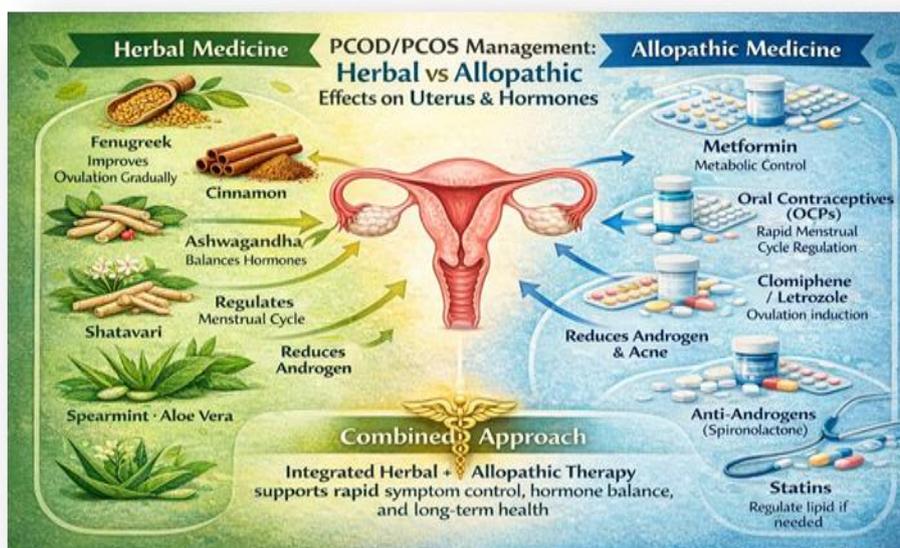
Variability exists in herbal preparation, strength and standardisation. Clinical benefits may take longer to show compared to conventional interventions. There is limited large scale-clinical evidences much relies heavily on traditional knowledge and smaller studies.

Integration with lifestyle: as measures Dietary intervention, a low glycine nutrient-rich diet, enhances the effectiveness of herbal treatments.

Exercise: ragerarebit and strength training help balance hormones, control weight and improve metabolic health.

Stress management yoga, meditation, and mindfulness practices combined with adaptogenic herbs can boost overall results.<sup>[16]</sup>

## COMPARATIVE APPROACH OF HERBAL AND ALLOPATHIC MANAGEMENT OF POLYCYSTIC OVARIAN DISEASE (PCOD)



Polycystic ovarian disease (PCOD) is a complex endocrine and metabolic disorder affecting women of reproductive age. It shows up as irregular periods, high androgen levels, polycystic ovaries, insulin resistance, obesity, and related metabolic and mental health issues. Effective management must address reproductive age. It shows up as irregular periods, high androgen

levels, polycystic ovaries, insulinresistance, obesity, and health issues. Effective management must address reproductive and hormonal imbalances, as well as metabolic issues and psychosocial well-being. Both allopathic andherbal approaches have their own benefits anddrawbacks. one'sown benefitsand drawbacks. A comparative evaluation helps create individualised, comprehensive, andevidence-basedmanagement plans.<sup>[17]</sup>

## **MECHANISMS OF ACTION**

### **ALLOPATHIC APPROACH**

Allopathic therapy mainly includes drug treatments that aim to correct specific hormonal and metabolic imbalances

#### **1. HORMONAL REGULATION**

Combined oral contraceptives (COCs) regulate menstrual cycles, lower androgen levels, and protect the endometrium from hyperplasia caused bychronic anovulation.

Cyclical progesterone therapy triggers menstruation in women not trying to conceive, preventing endometrial complications.

#### **2. INSULIN SENSITIZATION**

Metformin and similar medicationsimprove peripheral insulin sensitivity, lower compensatory hyperinsulinemia, and enhance ovulation function.

These medications also aid in weight management, improvelipid profiles, and lower the risk of metabolic syndrome and heart problems.

#### **3. OVULATION INDUCTION**

Clomiphene citrate and letrozole stimulate follicular development and help with ovulation. Gonadotropins are usedfor cases that do not respond to other treatments, with careful monitoring to prevent ovarian hyperstimulation and multiple pregnancies.

#### **4. ANTI-ANDROGEN THERAPY**

Spiroatoms and finasteride help reduce androgen – related issues like hirsutism, acne, and hair loss, often used with hormonal therapy for better results.

#### **5. SURGICAL INTERVENTION**

Laparoscopic ovarian drilling (LOD) is reserved for patients who do not respond to medical treatment, lowering ovarian androgen production and restoring spontaneous ovulation.<sup>[18]</sup>

## HERBAL APPROACH

Herbal therapy offers a holistic multi – targeted intervention that focuses on naturally improving reproductive and metabolic health:

### 1. HORMONAL MODULATION

Herbs like Shata Vari, ashwagandha, and fenugreek help regulate the hypothalamic – pituitary – ovarian axis, balancing estrogen, progesterone, and androgen levels.

### 2. METABOLIC REGULATION

Bioactive compounds in cinnamon, fenugreek, green tea, and turmeric improve insulin sensitivity, enhance glucose metabolism, and reduce lipid imbalance.

### 3. ANTI-ANDROGENICACTIVITY

Herbs such as liquorice and spearmint lower androgen activity or decrease production, helping to manage hirsutism, acne, and hair loss.

### 4. ANTI-INFLAMMATORY AND ANTIOXIDANT EFFECTS

Chronic low – grade inflammation and oxidative stress can harm ovarian function; herbs provide antioxidant and anti- inflammatory benefits, enhancing both ovarian and overall health.

### 5. ADAPTOGENIC AND STRESS – REDUCING EFFECTS

Adaptogenic herbs like ashwagandha lower cortisol levels and reduce stress – related hormonal imbalances, improving both reproductive and mental health.

### 6. FERTILITY AND OVULATION SUPPORT

Herbal therapy encourages follicular development, supports luteal phase function, promotes ovulation, and improves natural fertility, aiding long – term reproductive health without invasive treatments.<sup>[19]</sup>

## COMPARATIVE SYMPTOM MANAGEMENT

Feature allopathic approach, herbal approach, comparative insights.

Menstrual regulation COCs, progesterone therapy Shata Vari, cinnamon, fenugreek allopathic provides quick cycle regularity; herbal supports gradual, long – term hormonal balance ovulation & fertility clomiphene, letrozole, gonadotropins, LOD Shata Vari ashwagandha allopathic ensures immediate conception; herbal promotes natural ovulation and fertility support over time hyperandrogenism spironolactone, finasteride licorice, spearmint, green tea

allopathic offers predictable symptoms reduction; herbal improve systemic balance and reduce oxidative stress weight & metabolic health diet, exercise, metformin cinnamon, fenugreek, green tea, turmeric both improve metabolism; herbal adds anti-inflammatory, antioxidant, and adaptogenic benefits psychological well – being limited pharmacological effect ashwagandha, adaptogenic herbs herbal therapies significantly boost mood, lower anxiety, and support stress management.<sup>[20]</sup>

#### **ADVANTAGES OF EACH APPROACH: ALLOPATHIC THERAPY: QUICK SYMPTOM CONTROL WITH PREDICTABLE RESULTS**

Effective for immediate ovulation induction and menstrual regulation. Helpful in acute cases needing prompt intervention.

#### **HERBAL THERAPY**

Holistic and natural, addressing several issues at once. Minimal side effects with a long – term safety profile. Support fertility, metabolic health, hormonal balance, and mental well-being.

Work best when combined with lifestyle changes, promoting sustainable PCOD management.<sup>[20]</sup>

#### **LIMITATION OF EACH APPROACH: ALLOPATHIC THERAPY**

Possible long- term side effects include weight gain, gastrointestinal issues, and hormonal imbalances.

#### **HERBAL THERAPY**

Variability in herbal quality, preparation, and strength can affect results.

Slower onset of effects compared to drugs.

Fewer large-scale clinical trials; evidence often comes from traditional use, small studies, or observational research.

#### **INTEGRATIVE MANAGEMENT PERSPECTIVE**

Combining allopathic and herbal approaches creates a synergistic framework for PCOD management:

Allopathic therapy provides rapid hormonal correction, symptom relief, and fertility support.

Herbal therapy offers long – term benefits for hormonal balance, metabolic regulation, reproductive health, and psychological well-being.

Lifestyle changes like diet, exercise, and stress management complement both methods and enhance effectiveness.

Customising treatment based on symptom severity, reproductive goals, metabolic status, and personal preferences can optimise outcomes while reducing risk.<sup>[21]</sup>

### **ROLE OF LIFESTYLE MODIFICATION IN PCOD**

Polycystic ovarian disease causes a hormonal problem in women who are of childbearing age. Polycystic ovarian disease (PCOD) shows up as hormonal imbalance, metabolism trouble and problems with periods or getting pregnant. medicine –both modern and herbal –helps with the symptoms of polycystic ovarian disease (PCOD). I have seen that changing daily habits works best for treating polycystic ovarian disease (PCOD). Changing the way you eat, moving more, sleeping well and lowering stress all help polycystic ovarian disease (PCOD), without surgery or pills. Lifestyle changes aim at the root cause of PCOD. They focus on the insulin resistance, the obesity, the chronic inflammation and the hormonal imbalance. By doing that, lifestyle Changes help the side of PCOD and the reproductive side of PCOD.

#### **Nutritional and dietary management**

I have seen that diet helps control the progression and problems of PCOD. The diet strategies that many health experts recommend are low GL foods such as grains, legumes, vegetables, and fruit, which help keep the blood sugar steady. Low GL foods lower insulin spikes. Low GL foods are very important for managing insulin resistance. In my experience, when I eat low GL foods, my blood sugar feels more stable. My insulin dose does not spike as much.

#### **Regulation of physical activity**

I have seen that exercise is a part of the lifestyle changes for PCOD. Exercise improves metabolic outcomes. Improves outcomes. Aerobic Exercise: I notice that aerobic exercise, like walking, swimming and cycling, improves my heart health. Aerobic exercise cuts my belly fat. Aerobic exercise helps my insulin work better. Strength Training and Resistance Exercises: Strength Training and Resistance Exercises increase body mass. Strength Training and Resistance Exercises help the body use energy efficiently. Strength Training and Resistance Exercises improve how the body uses glucose in people with insulin resistance. Exercise. Duration: Follow the exercise schedule. The exercise includes 150 minutes of moderate aerobic exercise each week. The exercise also includes strength training two times each week for benefits. Benefits: Exercise helps the menstrual cycle become more regular.

Exercise lowers the hormones. Exercise improves health.<sup>[22]</sup>

### **Stress reduction and psychological health**

I have seen chronic stress make hormonal imbalances in PCOD worse. I have seen chronic stress raise levels. The higher cortisol levels can worsen insulin resistance. The higher cortisol levels can also contribute to obesity. Stress management techniques include: I try Mind-Body Practices, like Yoga, tai chi and meditation. Mind-Body Practices lower my stress. Mind-Body Practices improve the balance. Mind-Body Practices support the endocrine regulation. Behavioural Strategies: I have seen the counselling and the mindfulness-based interventions help women with PCOD manage anxiety and depression. Anxiety and depression are common in women with PCOD. Sleep Hygiene: Ensuring 7–9 hours of quality sleep per night maintains hormonal balance, regulates appetite-controlling hormones, and enhances metabolic health.<sup>[23]</sup>

### **Behavioural modification and lifestyle habits**

I notice that the sustainable lifestyle changes need behavioural strategies. Sustainable lifestyle changes work. Self-Monitoring: I track my weight, my diet, my exercise and my menstrual cycles. Self-Monitoring helps me see patterns and see progress. Goal-Oriented Approaches: Set targets for weight loss, exercise, and diet. Goal-Oriented Approaches keep me on track. Goal-Oriented Approaches increase sticking to the plan and motivation. Social and Family Support: The encouragement that the family members give or the help that the peer support groups provide reinforces the changes. Social and Family Support also improves health.

### **Long –term outcome and evidence**

I have read that science shows that lifestyle modification is important for improving the outcomes in PCOD:

#### **Metabolic Improvements**

- Metabolic Improvements reduce insulin resistance.
- Metabolic Improvements improve the lipid profiles.
- Metabolic Improvements lower the risk of type 2 diabetes and cardiovascular complications.

Reproductive Health: Regularisation of menstrual cycles, improved ovulation, and enhanced fertility outcomes. Hormonal Regulation: Reduction in androgen levels, alleviation of

hirsutism, acne, and other hyperandrogenic manifestations. Psychological Well-Being: Improvement in mood, self-esteem, and quality of life due to physical activity and stress management.<sup>[24]</sup>

## **ADVANTAGES AND LIMITATIONS OF PCOD MANAGEMENT**

Polycystic ovarian disease (PCOD) is a hormone and metabolism problem. Polycystic ovarian disease (PCOD) needs a way to manage polycystic ovarian disease (PCOD). Treatments include medicines, herbal treatments and lifestyle changes. Each treatment has its strengths and its own challenges. I have spoken with patients who have polycystic ovarian disease (PCOD). I have learned that knowing the good and the bad of each treatment helps design a care plan that works for the patient. The care plan focuses on the patient and, on what polycystic ovarian disease (PCOD) needs.

### **ADVANTAGES**

#### **1. COMPREHENSIVE SYMPTOM CONTROL**

I have found that the combination of drug, herb and lifestyle changes helps manage the PCOD symptom. The PCOD symptoms include periods, infertility, weight gain, acne and excess hair growth. When the drug, the herb and the lifestyle changes work together, the PCOD symptoms get better.

The personalised treatment plans improve symptom control. The personalized treatment plans work by looking at the hormone and metabolism patterns of each patient. The personalised treatment plans match the hormone metabolism patterns of each patient with the treatment. I have seen personalised treatment plans make a difference in the life of a patient.

#### **2. METABOLIC HORMONAL IMPROVEMENTS**

I have lost weight by eating and exercising more. Weight loss improves my insulin sensitivity. Weight loss also reduces the fat around my organs. The reduced visceral fat helps my androgen levels stay normal. I think medication such as insulin sensitizers and oral contraceptives helps with the lifestyle modifications. I think medications work by fixing the imbalance. I have medication work.

#### **3. ENHANCED FERTILITY AND REPRODUCTIVE HEALTH**

I have found that ovulation induction, with medicine or herbs, helps the body release eggs. Adding lifestyle changes can raise the chance of pregnancy. Regularising cycles, with the

diet, the exercise and the stress management, supports the function. I have found that when I keep my cycles regular, following the diet, doing the exercise and practising stress management, my reproductive function improves.<sup>[25]</sup>

#### **4. PSYCHOLOGICAL AND EMOTIONAL BENEFITS**

From my experience, lifestyle modifications such as exercise and stress management lower the anxiety that depression and body-image worries that often come with PCOD. Lifestyle modifications also help me manage PCOD. I have noticed that improved well-being makes the treatment adherence higher and helps me stay on track. Improved well-being makes the long-term outcomes better.

#### **5. LONG -TERM HEALTH PROTECTION**

In my experience, effective management strategies lower the risk of long-term problems. I have found that effective management strategies lower the risk of type 2 diabetes, heart disease, and metabolic syndrome. I have noticed that lifestyle interventions give the last health benefits. I have also noticed that lifestyle interventions go beyond just controlling the symptoms.

#### **6. FLEXIBILITY AND INDIVIDUALIZATION**

In my practices patients can pick therapy, remedies or both. Patients decide based on their preference. Patients also look at how patients tolerate the treatment and at the background.<sup>[25]</sup>

### **LIMITATIONS**

#### **1. VARIABILITY IN RESPONSE**

Treatment outcome differs from person to person. I notice that the genetics, the hormone levels and the metabolic conditions shape treatment outcomes. I have seen patients who do not get symptom relief after the comprehensive therapy. Symptom relief often remains incomplete despite the therapy.

#### **2. SIDE EFFECTS OF MEDICATIONS**

I have noticed that the allopathic drugs, such as contraceptives or insulin sensitizers can cause discomfort. The allopathic drugs also cause weight changes. The allopathic drugs can even cause liver function alterations. I have found that long-term use needs monitoring. I have also seen that long-term use needs dose adjustments. I watch the monitoring and the dose

adjustments to keep the effects away. long-term use needs careful watch to avoid effects.<sup>[26]</sup>

### **3. CHALLENGES WITH HERBAL THERAPIES**

I have noticed that the Allopathic drugs, such as contraceptives or insulin sensitizers can cause discomfort. The Allopathic drugs also cause weight changes. The Allopathic drugs can even cause liver function alterations. I have found that long-term use needs monitoring. I have also seen that long-term use needs dose adjustments. I watch the monitoring and the dose adjustments to keep the effects away. Long-term use needs careful watch to avoid effects.<sup>[27]</sup>

### **4. DIFFICULTIES I LIFESTYLE ADHERENCE**

Maintaining consistent dietary patterns, exercise routines, and stress management practices can be challenging due to modern lifestyle demands, work schedules, and a lack of social support. I have seen that lifestyle changes bring results slowly. The slow results can cut motivation for sticking with it. I know it can be hard to keep going.<sup>[28]</sup>

### **5. ECONOMIC AND ACCESSIBILITY BARRIERS**

Some therapies, especially specialised lifestyle programs or high-quality herbal formulations, may not be affordable or easily available to all patients. The regular monitoring and the follow up are needed for PCOD management. PCOD management steps can add costs. can create logistical problems.<sup>[29]</sup>

### **6. TIME-CONSUMING NATURE OF NON-PHARMACOLOGICAL APPROACHES**

I notice that lifestyle modification works well. Notice that lifestyle medication requires the patient to stay committed for a time and to learn about it. In my experience, quick relief from the symptom is often not possible. Because quick relief from the symptoms is often not possible, patient motivation and counselling are crucial. Patient motivation and counselling are essential.<sup>[30]</sup>

### **CONCLUSION**

Polycystic ovarian syndrome (PCOS), also commonly known as PCOD, has remained one of the most prominent endocrine and metabolic diseases in women of reproductive age.<sup>[31]</sup> New estimates of global women's reproductive health have shown that 6 to 13% of women of reproductive age are prone to PCOS, and the number of undiagnosed cases remains

enormous.<sup>[32]</sup> In other countries and some regions of India, the estimates of women in the reproductive age groups have ranged from close to 20%, considering the criteria and characteristics. [The number of women continues to rise with every passing year.<sup>[33]</sup>

Also, the increasing prevalence underlines the need for an urgent and reliable treatment with regard to both the hormonal aspect of the disease (hormones) and the metabolic aspect (insulin and weight).<sup>[34]</sup>

Allopathic medicine and herbal remedies in PCOS

“Allopathic medicine has well-studied medications that intervene quickly and effectively for: reducing pain, regulating menstrual cycles, increasing insulin sensitivity, \*inducing ovulation for fertility, managing excess androgens, and lowering long –term metabolic risk.<sup>[35]</sup>

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