

## Review Article



## Herbal Modulators of Reproductive and Metabolic Dysfunction in PCOS: A Critical Review

<sup>1</sup>Prof. Vanshika K. Sahu\*, <sup>2</sup>Kanishka Shamatkar, <sup>2</sup>Ganesh Waghmare, <sup>3</sup>Dr. H.S. Sawarkar<sup>1</sup>Assistant Professor, Dr. Rajendra Gode College of Pharmacy, Amravati, Maharashtra, India.<sup>2</sup>UG Scholar, Dr. Rajendra Gode College of Pharmacy, Amravati, Maharashtra, India.<sup>3</sup>Principal, Dr. Rajendra Gode College of Pharmacy, Amravati, Maharashtra, India.\*Corresponding author's E-mail: [vanshikasahu347@gmail.com](mailto:vanshikasahu347@gmail.com)

Received: 06-10-2025; Revised: 18-12-2025; Accepted: 25-12-2025; Published online: 20-01-2026.

## ABSTRACT

Polycystic Ovary Syndrome (PCOS) is a complex endocrine–metabolic disorder characterized by ovulatory dysfunction, hyperandrogenism, polycystic ovarian morphology, and associated metabolic disturbances such as insulin resistance, dyslipidaemia, chronic inflammation, and obesity. Affecting 5–10% of women of reproductive age globally, PCOS significantly impairs fertility, metabolic health, and psychological well-being. Conventional therapies — including insulin sensitizers, anti-androgens, combined oral contraceptives, and ovulation-inducing agents—provide symptomatic relief but are often associated with adverse effects, high cost, and limited long-term safety, prompting increasing interest in safer, plant-based alternatives. Herbal medicine, rooted in Ayurveda and traditional systems worldwide, offers multi-target therapeutic potential due to its rich repertoire of phytochemicals with endocrine, metabolic, and anti-inflammatory actions. This review critically evaluates evidence-based herbal interventions used in PCOS management, focusing on their phytochemistry, mechanisms of action, and experimental or clinical outcomes. Key botanicals such as *Cinnamomum zeylanicum*, *Aloe barbadensis*, *Glycyrrhiza glabra*, *Ocimum tenuiflorum*, *Asparagus racemosus*, *Curcuma longa*, *Hypericum perforatum*, *Saraca asoca*, *Vitex agnus-castus*, *Foeniculum vulgare*, *Tinospora cordifolia*, and flaxseed demonstrate diverse pharmacological benefits. Several commercial herbal formulations containing these botanicals exhibit synergistic effects and are widely used in clinical practice. Overall, findings suggest that herbal therapeutics may serve as safe and effective adjuncts or alternatives to conventional treatment, particularly for long-term PCOS management. However, variations in dosage, preparation, study design, and limited large-scale clinical trials necessitate further rigorous research to standardize formulations, establish safety profiles, and confirm therapeutic efficacy. Integrating botanical interventions with lifestyle modification may offer a holistic and sustainable strategy for managing PCOS.

**Keywords:** Amenorrhea, dysmenorrhea, menstruation, and medicinal herbs.

## INTRODUCTION

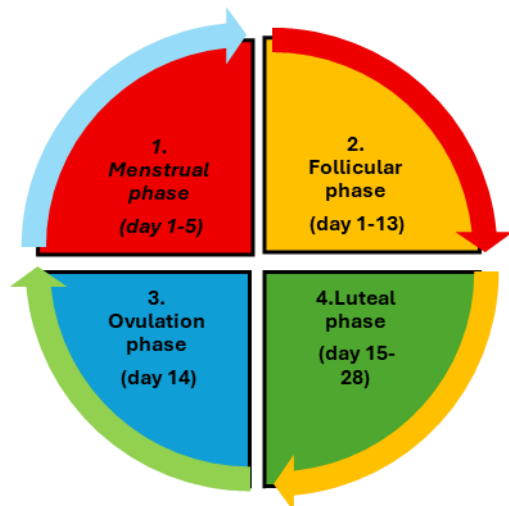
When a woman is not pregnant, her uterus sheds its lining during her menstrual cycle, often known as her period. The menstrual cycle includes it, and it usually occurs once a month. The Menstrual Cycle An adult's menstrual cycle can vary from 21 to 35 days, but it usually lasts 28 days. Millions of people worldwide struggle with menstrual issues Which can involve everything from dullness and mood swings to agonizing cramps and erratic cycles. Although traditional therapies like hormone and painkiller medicines are frequently recommended, more and more people are seeking relief through natural solutions. A natural and comprehensive method of treating menstruation problems, herbal medicine has its roots in traditional medicinal techniques that have been used for centuries. In order to address menstrual issues, this introduction examines the effectiveness and advantages of herbal medicines, emphasizing their historical significance and rising acceptance in modern medicine. Many societies have used herbal medicines to control menstrual cycles and ease menstruation discomfort throughout history. Ancient writings from societies like Egypt, China, and India describe how medicinal plants were used to treat gynaecological conditions. These writings offer important insights on customary herbal remedies. As more and more contemporary research confirms their therapeutic benefits,

these age-old cures are still effective today. Utilizing the therapeutic potential of plants, which are home to numerous bioactive chemicals with therapeutic qualities, is the foundation of herbal medicine. Herbal therapies frequently function in concert with the body, treating underlying imbalances and enhancing general health and well-being, in contrast to synthetic pharmaceuticals. Herbal remedies are also frequently less likely to cause negative effects and to cause reliance than pharmaceuticals, which makes them a desirable choice for people looking for natural substitutes. Scientific research has demonstrated the mechanisms of action of numerous herbal treatments used to treat menstruation issues in recent years. Herbs including ginger, chasteberry, and doing have compounds that have been shown to have hormone-regulating, analgesic, and anti-inflammatory properties, which supports their effectiveness in treating menstruation problems. The use of herbal treatments to treat menstruation issues is becoming more widely acknowledged as awareness of holistic approaches to health continues to rise. A complete and individualized approach to menstrual well-being is demonstrated by natural drugs, which respect traditional wisdom while using contemporary scientific understanding. The female reproductive system goes through a complicated, well-planned series of activities that usually span 28 days, however there are frequently variances. There are multiple



discrete stages involved, each with unique hormonal shifts and physiological functions.

#### Phases of Menstrual cycle:



#### 1. Menstrual phase (day 1-5)

The period lasts from the first day of menstruation to the fifth day.

The following events occur during this phase:

- Menstrual fluid is the substance that exits the vagina as the uterus discards its inner lining composed of blood vessels and soft tissue.
- A blood loss between 10 and 80 millilitres is regarded as typical.
- As the uterus and abdominal muscles contract to release the menstrual fluid, cramps may happen during these phases.

#### 2. Follicular phase (day 1-13)

This phase begins on the first day of menstruation and continues until the thirteenth day of monthly cycle.

The following things happen during this stage:

- The pituitary gland secretes a hormone that promotes the development of the egg cells in the ovaries. One of these egg cells starts to develop into a follicle, which is a sac-like structure.
- The follicle of the egg cell releases a hormone as it develops, which encourages the uterus to produce the endometrium, a lining of soft tissue and blood vessels.

#### 3. Ovulation phase (day 14)

A hormone that the pituitary gland produces on the fourteenth day of the cycle triggers the ovary to release the mature egg cell. In the fallopian tube, the released egg cell is transported. Near the ovary, near the termination of the fallopian tube, are finger-like projections called fimbriae. Each fimbria has tiny projections that resemble hairs, called cilia.

#### 4. Luteal phase (day 15-28)

This phase begins on the fifteenth day and continues until the end of the cycle.

The following events occur during this phase:

- For a full day, the liberated egg cell during the ovulation phase stays in the fallopian tube.
- The egg cell breaks down if a sperm cell does not fertilize it in that amount of time.
- cravings for meals
- By the time the menstrual cycle ends, the hormone that keeps the uterus' endometrium growing is depleted. This initiates the menstrual period for the next cycle.

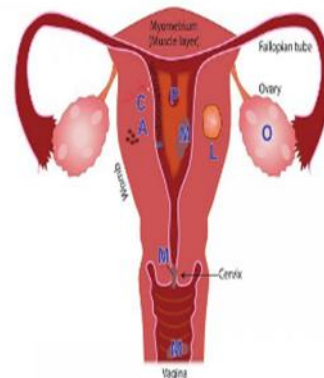
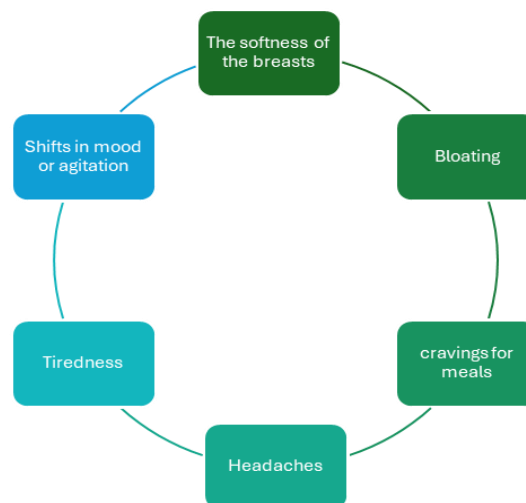
#### Menstrual Blood

A mixture of mucous, blood, and uterine tissue.

Average blood loss: 2–6 teaspoons, or 30–80 ml.


The colour might be anything from dark brown to vivid red.

#### Common Symptoms of Menstruation:



Periods in All Stages of Life Commences: Usually between the ages of 9 and 15 (menarche).

Stops: Known as menopause, between the ages of 45 and 55.

 When to Consult a Physician Consult a medical professional if you encounter:

- Excessive bleeding (soaking through a tampon or pad per hour).
- Periods that are longer than seven days.
- Period irregularities or absences.
- Excruciating pain that interferes with day-to-day activities.
- Symptoms of infection (such as fever, discharge, or an odd smell).

## DISCUSSION

### Menstrual Disorders

Heavy, painful periods or no periods at all are examples of menstrual diseases. Some of the common menstruation diseases include the following:

#### Amenorrhea

- Primary amenorrhea
- Secondary amenorrhea
  - abnormal bleeding in the uterus
- Oligomenorrhea
  - Hypermenorrhoea
  - Polymenorrhea
  - Hypomenorrhea
  - Metrorrhagia
- Menometrorrhagia
- Perimenopausal bleeding
  - Dysmenorrhea
- Primary dysmenorrhea
- Secondary dysmenorrhea

### PCOS

A complex yet prevalent illness, polycystic ovarian syndrome mostly affects women who are fertile. The disease causes subfertility in more than 70% of women who experience ovulation deficiencies. Leventhal syndrome, prolonged oligo anovulation, and polycystic ovarian morphology are all linked to polycystic ovarian syndrome, which was initially described by Stein and Leventhal in 1935. Poly Cystic Ovarian Syndrome is a condition where the ovaries have cysts that affect normal ovarian function. A lack of clear diagnostic criteria makes it challenging for many doctors to recognize this common illness.<sup>1</sup> There is a higher chance of reproductive problems in women with PCOS.<sup>2</sup> Stein Leventhal syndrome, another name for this condition, is a major cause of infertility in women. Among the many underlying symptoms of this disorder are obesity or excess weight, high blood pressure, diabetes,

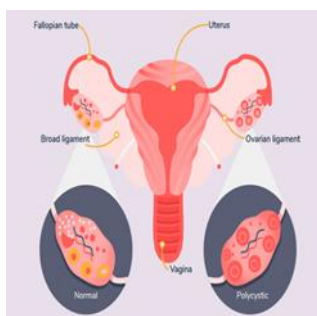
dysfunction of the lipid profile, dandruff on the scalp or oily skin, dark-colored patches on the neck and underarm skin, pelvic pain that is typically chronic, acne, increased hormone levels in men that show thinning of hair, baldness according to the male pattern, excessive growth of hair on the body and face, irregular bleeding, irregular menstruation, irregular ovulation, and immature follicles.<sup>3</sup> According to the National Institutes of Health's Office of Disease Prevention, PCOS affects women of childbearing age. They number over 5 million, or approximately 7% of all adult females. According to the report, PCOS is the most common endocrine condition, affecting 5- 10% of girls aged 18 to 44.<sup>4</sup> The primary underlying causes of PCOS in women are inappropriate estrogen, androgen, and androgen production in a regulated manner.<sup>5</sup> Women have been shown to have low-grade inflammation and insulin resistance. PCOS is negatively impacted by a number of factors, including food, exposure to environmental contaminants, and changes in lifestyle. It may result in severe health problems if untreated. Fertility is also directly impacted.<sup>6</sup> One neuroendocrine hallmark of PCOS is the increased frequency of luteinizing hormone production, the rise in luteinizing hormone serum concentration, the increase in amplitude, and the ratio of LH/FSH.<sup>7</sup> Another factor contributing to PCOS is the interaction of multiple genetic and environmental factors. It is typically observed in obese women with a family history of PCOS who exercise little or not at all. The existence of ovarian cysts, the absence of ovulation, and elevated testosterone levels are among the findings utilized to treat the illness. The presence of any cysts can be found using ultrasound techniques. The diagnosis can also be made using a number of other factors that produce comparable symptoms, such as hypothyroidism, hyperplasia, and increased blood prolactin levels.<sup>8</sup> There is currently little to no cure for PCOS, according to recent studies. The only way to get the treatment is to make little lifestyle adjustments, including exercising and losing weight. There are a number of medications that can help with skin issues like acne, excessive hair growth, and maintaining the regularity of the menstrual cycle. Additionally, a variety of methods for treating acne and removing hair can be employed.<sup>9</sup> The current treatment for PCOS, which corresponds to medication therapies, is lifestyle modification. Changes in lifestyle, including appropriate exercise, food, and weight loss, are necessary to address this illness. Pharmacological intervention includes drugs that reduce insulin, certain anti-androgens, and progestin-oestrogens together. Due to their high cost, this type of treatment has a number of issues and negative effects. Gaining weight, irregular menstruation, gastric issues, and insulin resistance are possible side effects.<sup>10</sup>

#### Symptoms:

symptoms like your first period or health issues that show up later in your twenties or thirties. For a patient to be diagnosed with polycystic ovarian syndrome, even though each woman has a unique set of symptoms, they need to have at least two of the following conditions:



- Acne not associated with puberty
- Absent periods
- Excessive hair growth
- Fatigue



#### CAUSES OF PCOS



#### Histological features of PCOS:

- Whole ovarian hypertrophy
- Thickened capsule ( $>100\ \mu$ )
- Increased number of sub capsular follicle cysts
- Scarcity of corporea lutea or albicantia
- Hyperplasia and fibrosis of the ovarian stroma
- Premature luteinization of theca cells.

#### Organs involved in PCOS:

- **OVARY**- On either side of the uterus, the female gonad organ is visible.
- **ADRENAL GLAND**-The glands that are situated directly above both kidneys.
- **PANCREAS**- our body's insulin-producing gland.
- **PITUTARY GLAND**- the gland that controls all hormones, located just beneath the brain.

#### Herbal remedies for PCOS:

Plants, plant parts, or plant extracts utilized for flavour, aroma, or medicinal purposes are often referred to as herbs in trade. Traditional herbal remedies have been utilized to cure a variety of ailments because they are naturally occurring ingredients that have undergone little to no industrial processing. In discussions about world health, traditional herbal remedies are receiving a lot of attention. Traditional medicine has a proven role in healing, prevention, and rehabilitation.<sup>11</sup> Since herbal remedies are typically gentler on the body and have less adverse effects

than prescription drugs, they can be a very successful therapy option for PCOS.<sup>12</sup> Herbal therapy has become extremely popular. As a specific field with its own peculiarity, it is battling for recognition as a science. It is now required to demonstrate that the scientific and practical thoroughness of herbal rehabilitation can match that of other medical specialties. Herbal therapy has the advantage of being safer than conventional therapy, with less side effects, and having a potentiating effect due to the presence of several active chemicals in medicinal plants. Herbs have less adverse effects and can be used for longer periods of time, which is crucial because PCOS needs to be managed over the long term. They may be effective in addressing the underlying causes of PCOS, alleviating symptoms, and promoting the body's natural healing process by strengthening the immune system. A PCOS-friendly diet and exercise routine can be used with herbal medications to improve the efficacy of the chosen botanical treatment.<sup>13</sup>

#### Cinnamon Cassia

Botanical Name: *Cinnamomum zeylanicum*,

Family: *Lauraceae*



In to being used as a culinary spice, Dalchini bark has been utilized as a multipurpose medication in both traditional and modern medicine around the world. Currently, there are at least 250 species of Dalchini that belong to the cinnamon genus, and trees may be found all over the world.<sup>14,15</sup> Because cinnamon extract increases phosphatidylinositol 3-kinase activity in the insulin signalling pathway, it potentiates the action of insulin and has been demonstrated to improve insulin resistance in both in vitro and in vivo experiments. For eight weeks, fifteen PCOS-afflicted women were randomized to either daily oral cinnamon or a placebo. Insulin resistance was significantly reduced in the cinnamon group but not in the placebo group when post-treatment insulin sensitivity indices were compared to baseline insulin sensitivity indices using fasting and 2-hour oral glucose tolerance tests. The herb's polyphenols have been shown to increase insulin-dependent glucose metabolism, which in turn alters glucose transport. According to the study, Dalchini can help women with PCOS since it reduces menstrual cycle irregularities and offers a safe, efficient medication. When compared to a



placebo group, the study also indicates that the herb's extract may be utilized to treat irregular menstrual cycles and ovulation.<sup>15</sup>

#### **Aloe-vera:**

Botanical Name: *Aloe barbadensis*, Family: *Liliaceae*



The efficiency of an Aloe vera gel formulation was investigated using a rat model of PCOS. Female Charles Foster rats five months old were given oral doses of letrozole, a non-steroidal aromatase inhibitor, to develop PCOS. The rats were given a daily oral dose of 2 millilitres of the Aloe vera gel formulation for 55 days. They subsequently regained steroidogenic activity and glycemic sensitivity. Co-treatment with PCOS decreased the phenotype's development Aloe vera gel contains letrozole as an inductive agent. An aloe vera gel formulation that recovers ovarian steroid status and changes the primary steroidogenic impact protects against PCOS. This is explained by the extract's phytochemicals.<sup>16</sup>

#### **Liquorice:**

Botanical Name: *Glycyrrhiza glabra*, Family: *Leguminosae*



During the luteal phase of the cycle, nine healthy women aged 22 to 26 had their androgen metabolisms examined in relation to liquorice. For two cycles, they were administered 3.5 g of a commercial licorice mixture that contained 7.6% w/w glycyrrhizic acid every day.<sup>17</sup> They weren't receiving any additional care. We used radioimmunoassay to evaluate serum adrenal and gonadal androgens, cortisol, aldosterone, and plasma renin activity. Within two months, the total testosterone in the serum steadily dropped. discontinue it. Prior to treatment, licorice can lower serum testosterone levels by blocking 17-hydroxysteroid dehydrogenase and 17-20 lyase. One adjuvant treatment

for hirsutism and polycystic ovarian syndrome may be licorice.

#### **Flax Seed:**

Botanical Name: *Linum usitatissimum*, Family: *Linaceae*



In one study, a 31-year-old woman with PCOS had her hormone levels affected by taking 30 grams of flaxseed each day. Over the course of four months, the patient drank 83% of his flaxseed dose. The Body Mass Index (BMI), insulin, total serum testosterone, and free serum testosterone levels significantly decreased, according to height-weight measurements and fasting blood samples obtained at baseline and at the 4-month follow-up. By the end of the study, the patient reported decreased hirsutism. This case study reports a clinically significant decrease in androgen levels accompanied by a corresponding decrease in hirsutism.<sup>18</sup>

#### **Tulsi:**

Botanical Name: *Ocimum tenuiflorum*, Family: *Lamiaceae*



Among its many therapeutic applications, tulsi is a sacred herbal plant that is mostly used to treat obesity and hypoglycemia.<sup>19</sup> Its anti-androgenic qualities can be utilized to treat polycystic ovarian syndrome. It reduces testosterone production and controls fat.<sup>20</sup> The absence of ovulation results in the ineffective usage of androgens. The liver also produces a relatively small amount of SHBG protein. This is the cause of women's problems becoming pregnant, acne, and excessive facial hair development. Androgens and insulin levels can be moderated with tulsi. Moreover, it is a superb antioxidant. On an empty stomach, chew ten or more leaves in the early morning. Drink boiling tulsi water frequently.

**Shatavari:**

Botanical name: *Asparagus racemosus*, Family: *Asparagaceae*



Shatavari belongs to the Asparagaceae family and was utilized as a therapeutic herb in ancient Ayurvedic medicine. The medicinal herb is used by women for infertility, menstrual cycle management, ovarian follicle creation, and optimal functioning. According to some theories, the plant contains phytoestrogen, a naturally occurring estrogen derived from plants that aids in the recovery of women's reproductive systems. It also assists in controlling the body's insulin levels in hyperinsulinemia.<sup>21</sup> A phenomenon known as the Shatavari effect was seen in young women. By increasing the stimulating hormone of Follicle, the herb may promote folliculogenesis, according to a study. The weight of the ovaries may also increase, according to some studies.<sup>22</sup> It is also thought to be the best herb for issues related to menstruation. Several ingredients in ShataVari assist treat menstrual issues, such as menorrhagia, or painful bleeding during the period, irregular bleeding, etc. The main component of shatavari, saponin, aids in preserving uterine mobility and is hence beneficial for uncomfortable premenopausal bleeding.<sup>23</sup> Shatavari's phytoestrogen content also allows it to address the underlying hormonal balances. Women of reproductive age benefit from the phytoestrogens' ability to regulate the ovarian cycle. The herb also helps with premenstrual symptoms and heavy bleeding. This therapeutic herb also helps ladies feel less stressed.<sup>24</sup>

**Turmeric:**

Botanical name: *Curcuma longa*, Family: *Zingiberaceae*



In female Wistar rats, curcumin produced favourable results when letrozole was used to induce PCOS. The most

used drug for ovulation induction in PCOS, clomiphene citrate, had a comparable impact. It has well-established antioxidant and anti-inflammatory qualities. Turmeric helps with hormone balance, PMS symptom control, and menstrual pain alleviation. A common remedy for menstruation pain and a general health booster in Ayurvedic medicine is turmeric.

**Hypericum Perforatum**

Botanical name: *Hypericum perforatum*, Family: *Hypericaceae*



*Hypericum perforatum*, sometimes known as St. John's wort, belongs to the Hypericaceae family. St. John's wort is used as a therapeutic herb in many countries. Goat weed, Enola weed, and Tipton weed are other names for St. John's wort. Greek doctors recommended the herb for the treatment of menstrual disorders.<sup>25</sup> There are a number of situations in which a patient's psychological state or anxiety may influence the course of treatment or lower its success rate.<sup>26</sup> Treatment for ovarian function is not positively impacted by any trigger that results in negative stress or despair. Patients are therefore more confident and interested in using natural botanicals for therapy, as well as in using safe, effective, and natural remedies. These days, patients with PCOS and ovarian dysfunction are using alternative medicine to supplement their treatment for better results or to have a synergistic impact.<sup>27</sup> There is no good effect of any trigger that causes negative stress or despair on ovarian function treatment. This increases patients' confidence and interest in safe, natural, and effective therapies as well as in using natural botanicals for therapy. In order to improve outcomes or have a synergistic effect, patients with PCOS and ovarian dysfunction are now adopting complementary and alternative medicine to enhance their treatment.<sup>28,29</sup>

**Ashoka**

Botanical name: *Saraca asoca*, Family: *Fabaceae*





The main conditions for which Ashoka bark is used are PCOS, irregular menstruation problems, uterine spasms, uncontrolled profuse bleeding, mild to moderate discomfort, and dysmenorrhea. Asoka is regarded as one of the best uterine tonics since it assists those who have miscarriages and irregular menstrual periods. The plant is used to stop severe bleeding or to stop menstruation. Women who have PCOS or any other uterine condition use both the flower and the bark parts. Asoka's stem is also used to treat uterine hemorrhage. Through the action of oxytocin, the herb is also said to have thickened the endometrium, the uterus' innermost lining, which helps avoid uterine problems. The Ashoka is thought to behave similarly to estrogen, which means it encourages healthy uterine function and stops excessive bleeding. When menstruation causes heavy bleeding, it acts as an astringent. It also makes the uterine muscles contract. According to the research, it also affects menorrhagia and uterine fibroids in PCOS patients.

#### Chaste berry:

Botanical name: *Vitex agnus-castus*, Family: *Lamiaceae*



The Lamiaceae family includes the shrub *Vitex agnus-castus*, sometimes referred to as the "chase tree," which has been used for 2,000 years as a common treatment for irregular menstruation and infertility.<sup>30</sup> In women with polycystic ovarian syndrome, low dosages of estrogen and *Vitex agnus-castus* showed similar effects on the regularity of the menstrual cycle and the average levels of free testosterone and prolactin in their serum. For millennia, this herb has been used to treat hormone imbalances and is regarded as an adaptogen. One of the most popular herbs for PCOS treatment is chaste berry, which helps to stabilize and promote pituitary gland function. Progesterone levels can rise while estrogen and androgen levels can fall due to the luteinizing hormone released by the pituitary gland. adverse effects: This herb may cause rash, gastrointestinal problems, and dizziness, but there aren't any serious adverse effects linked to it. This plant should be avoided by women who are pregnant or taking birth control tablets since it alters hormones. Additionally, anyone on dopamine-related medications, such as antipsychotics or Parkinson's meds, shouldn't consume chaste berry.

#### Fennel Seeds:

Botanical name: *Foeniculum vulgare*, Family: *Apiaceae*



Fennel seeds are believed to help cure PCOS because of their anti-hirsutism and androgen (male hormone) properties.<sup>31</sup> The herb fennel is sharp like celery and has a flavour similar to licorice. Among its components is anethole, which some people think relieves spasms. A 2013 study indicated that the prescription medication mefenamic acid was not as effective at reducing menstrual cramps as fennel extract and an extract from the *Vitex agnus cactus*. The trial involved 105 women, half of whom received the combined extracts and the other half a placebo. It was hard for the researchers to identify the more effective of the two extracts.<sup>32</sup> As per a 2020 review, fennel was shown to reduce pain intensity just as well as conventional pharmaceutical therapy and more well than a placebo. Nonetheless, the authors pointed out that more investigation is necessary to confirm their conclusions. Any component of the fennel plant can be eaten the bulb can be boiled and used to soups or salads. Fennel fronds and seeds can be dried and used as a spice. Both capsules and oil are available forms of fennel extract. Studies typically do not reveal which type of fennel was given to study participants, making it difficult to identify which type is best for reducing menstrual cramps.<sup>33</sup>

#### *Tinospora Cordifolia*

Biological name: Guduchi, Family: *Menispermaceae*

In the family, Guduchi is known by its botanical name, *Tinospora cordifolia*.



An herb with hypoglycemic, ovarian balancing, anti-inflammatory, and anti-stress qualities, it is a member of

the Menispermaceae family. The stem part is used in the pants. Guduchi is generally used to treat PCOS. Insulin disturbance and ovarian cysts are the main causes of inflammation in the various tissues. It is also believed that guduchi has anti-inflammatory qualities. It is used to naturally boost immunity. Women who develop insulin

resistance due to PCOS can overcome this resistance. Moreover, this plant controls the flow of menstruation.<sup>34</sup>

List of some well-known Polyherbal marketed formulations containing the above-described crude drugs are listed below in the Table 1.

**Table 1:** List of Polyherbal Marketed Formulations

Brand	Company	Key ingredient	Uses
Evercare	Himalaya Wellness	Ashoka Lodhara Shatavari Guduchi	<ul style="list-style-type: none"> <li>Restores hormonal balance.</li> <li>Regulates menstrual cycles.</li> <li>Relieves dysmenorrhea</li> </ul>
Amycordial	Aimil pharmaceuticals	Ashoka Lodhra Shatavari Jatamansi	<ul style="list-style-type: none"> <li>Uterine tonic</li> <li>regulates cycles.</li> <li>improves fertility in PCOS</li> </ul>
Gynocare	Charak Pharma	Shatavari Ashoka Lodhra Guduchi Trikatu	<ul style="list-style-type: none"> <li>Regulates hormones.</li> <li>reduces ovarian cysts.</li> <li>improves ovulation</li> </ul>
PCOS care Capsules	Baidyanath /other brands	Shatavari Ashoka Guduchi Lodhra Triphala	<ul style="list-style-type: none"> <li>Shrinks cysts.</li> <li>restore cycle.</li> <li>balance hormones</li> </ul>
Shatavari balance juice	Kapiva	Shatavari Ashoka Mulethi Lodhra	<ul style="list-style-type: none"> <li>Reduce PCOS symptoms.</li> <li>improve fertility regulate menstrual cycle</li> </ul>
SHE CARE Juice	Krishna's	Ashoka Lodhra Shatavari Dashmool Gokhru	<ul style="list-style-type: none"> <li>Regulate menstrual cycle.</li> <li>boost energy immunity and metabolism</li> </ul>
PCOD -CARE Capsules	Nveda	Haldi Alo vera Shatavari Neem	<ul style="list-style-type: none"> <li>Support fertility and ovulation.</li> <li>improve insulin sensitivity and metabolism</li> </ul>
PCOS & PCOD Support	Healthreef	Shatavari chasteberry raspberry fenugreek	<ul style="list-style-type: none"> <li>Help regulate.</li> <li>irregular period</li> </ul>

## CONCLUSION

The review summarizes that synthetic drugs might have side effects when used over a prolonged period. However, the herbal drugs are safe and provide therapeutic action without any side effects on prolonged or long-term use. Several herbs can be used individually or in combination to relieve risk factors associated with PCOS. It was also observed that a few herbs given in a combination produce a synergistic effect. The pharmacological action is seen more

in combination than as single entity. Several market preparations use a combination of several herbs and, each herb potentiates the pharmacological action of the other. Hence, the selection of herbs and herbal interactions is also an important aspect. Several herbal marketed preparations that are available for PCOS include popular brands like Himalaya, Patanjali, Dabur, Baidyanath, etc. All these marketed preparations have herbal drugs or a combination of herbal drugs.





**Source of Support:** The author(s) received no financial support for the research, authorship, and/or publication of this article.

**Conflict of Interest:** The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

## REFERENCES

- Waggoner W, Boots LR, Azziz R, Kahsar-Miller M, Knochenhauer ES, Key TJ. This study aims to determine the prevalence of polycystic ovarian syndrome in unselected white and black women in the Southeast United States. 83:3078-3082 in J Clin Endocrinol Metab 1998.
- Amin MK, Atia YA, and Taher MA. Using Silymarin to Increase Ovulation in Women with Polycystic Ovary Syndrome. 2012;12(6):16–21. Global J Inc.
- Dayani Siriwardene, S.A.; Karunathilaka, L.P.; Kodituwakku, N.D.; Karunaratne, Y.A. Subfertility with polycystic ovarian syndrome (PCOS): Clinical effectiveness of an ayurvedic therapy regimen. Ayu, 2010;31(1):24-27. 22131680 PMID: <http://dx.doi.org/10.4103/0974-8520.68203>
- Eaton, A.; Robinson, M.G.; Ndefo, U.A.; Green, M.R.; Polycysticovary syndrome: A review of available treatments with an emphasis on pharmacological methods. P&T, 2013; 38(6):336-355. 23946629 PMID
- Patelanuradha, J.; Thakor, A.P. Potential application of tephrosia purpurea as a restorative medication for PCOS: Investigation in Wistar Rat. Int. Res. J. Biol. Sci., 2012;1(3):1-6. accessible via: <http://www.isca.in/>
- Babu, A.M.S.; Latha, S.T.; Prasanna, J.L.; Rani, M.J.; Divya, K. An overview of predominant polycystic ovarian disease and its natural treatments. 2015;5(10):3307-3315; Indo Am. J. Pharm.
- Mobeen, H.; Kashif, M.; Afzal, N. An autoimmune condition might be the cause of polycystic ovary syndrome. Egyptian Scientifica, 407173 (2016)
- Balaji, S.; Amadi, C.; Prasad, S.; Bala Kasav, J.; Upadhyay, V.; Singh, A.K.; Surapaneni, K.M.; Joshi, A. Comparing the burden of polycystic ovary syndrome in teenage females in urban and rural areas. 158951 in BioMed Res. Int., 2015, (158951).
- Singh, R.; Garg, A.; Purohit, A.; Deora, D.; Verma, N.; Choudhary, K. A current synopsis of polycystic ovary syndrome. Int. J. Biol. Sci., 2020;7(3):18-23. (<http://dx.doi.org/10.22159/ijms.2019.v7i3.34248>)
- Waggoner W, Boots LR, Azziz R, Kahsar-Miller M, Knochenhauer ES, Key TJ. This study aims to determine the prevalence of polycystic ovarian syndrome in unselected white and black women in the Southeast United States. 1998; 83:3078-3082; J Clin Endocrinol Metab.
- Tilburt JC, Kaptchuk TJ. Bulletin of the World Health Organization. 86th ed., 2008:594-599.
- Sasikala SL, Shamila S. In order to treat rats with PCOS caused by letrozole, a new Ayurvedic medication called asokarishtam was used. 1992; 9: 91-104; J Cell Tiss Res.
- Sangal, A. Role of cinnamon as beneficial antidiabetic food adjunct: A review. Adv. Appl. Sci. Res., 2011;2(4):440-450.
- Vangalapati, M.; Prakash, S. A review on pharmacological activities and clinical effects of cinnamon species. Res. J. Pharm. Biol Chem. Sci., 2012;3(1):653-663.
- Evidence that cinnamon improves menstrual cyclicity in women with polycystic ovarian syndrome: A randomized controlled trial (Kort, D.H.; Lobo, R.A.). Am J Obstet Gynecol, 2014;211(5):487-93.E1-487.
- Miller LG, Murray WJ. Herbal medicinals: a clinician's guide. (No Title). 2005.
- Dunne N, Slater W. The Natural Diet Solution for PCOS and Infertility: Natural Ways to Treat Polycystic Ovary Syndrome. 2006;548–581; Nat Sol for PCOS.
- Kaptchuk TJ, Tilburt JC. Bulletin of the World Health Organization, 86th ed., 2008:594-599.
- PMID: 29635127; <http://dx.doi.org/10.1016/j.biopha.2018.04.003>. DIY solutions. Benefits and images of the shatavari plant (Asparagus racemosus). accessible at <https://www.homeremediess.com/medicinal-plants-shatavari-benefits/> [retrieved January 10, 2021] Ecstasy. Cordifolia Tinospora. Accessible at: [https://i.etsystatic.com/11266331/r/il/660c45/2374644217/il\\_570xN.2374644217\\_muzq.jpg](https://i.etsystatic.com/11266331/r/il/660c45/2374644217/il_570xN.2374644217_muzq.jpg) [retrieved January 10, 2021].
- Mahapatra, S.C.; Sahu, D.S.; Meda, M.; Satapathy, S.; Das, N.; Bandyopadhyay, D. Tulsi (Ocimum sanctum Linn.) supplementation's effects on liver enzymes and metabolic parameters in young, overweight, and obese individuals. Indian Journal of Clinical Biochemistry, 2017;32(3):357-363. 10.107/s12291-016-0615-4 PMID: 28811698; <http://dx.doi.org>.
- Chachiappan, S.; Matheswaran, S.; Saravanan, P.P.; Gayathiri, M. Medicinal plants for polycystic ovarian syndrome: A review of research on phytomedicine. Int. J. Herb, 2017;5(2):78-80. 10.22192/ijcrps <http://dx.doi.org>
- V. Kali; A.N. Jadav; K.K. Bhuttani. Asparagus racemosus's in vivo impact on infant female wistar rats' serum gonadotrophin levels. Chapter 40 of the 2nd World Congress on Biotechnology: Division of Herbal Medicine, NBRI: Lucknow, 2003.
- Gaitond, B.B.; Jetmalani, M.H. Respiratory muscle antioxytocin activity of saponin extracted from Asparagus racemosus Willd (Shatavari). 1967;179(1):121-129; PMID: 53483883; Arch. Int. Pharmacodyn.
- Pandey, A.K.; Gupta, A.; Tiwari, M.; Prasad, S.; Pandey, A.N.; Yadav, P.K.; Sharma, A.; Sahu, K.; Asrafuzzaman, S.; Vengayil, D.T.; Shrivastav, T.G.; Chaube, S.K., Stress's impact on female reproductive health disorders: Potential advantages of shatavari (Asparagus racemosus). Biomed. Pharmacother., 2018;103:46–49.
- Belwal, T., Devkota, H.P., Singh, M.K., and Sharma, R. Chapter 3.40 discusses St. John's Wort (Hypericum perforatum), which is not a mineral or vitamin. Pages. 415–432 in Nutritional Supplements, Academic Press, 2019.
- Mitsi, C.; Efthimiou, K. [Infertility: Psychological-psychopathological consequences and cognitive-behavioural interventions]. Psychiatriki, 2014;25(4):293-302.
- Views of practitioners of complementary and alternative medicine (CAM) in the support and treatment of infertility



- (O'Reilly, E.; Seigny, M.; Sabarre, K.A.; Phillips, K.P. Altern. Med. BMC complement, 2014;14:394.
28. Rayburn, W.F.; Gonzalez, C.L.; Christensen, H.D.; Stewart, J.D. Effect of hypericum (St. John's wort) given during pregnancy on the development and growth of mouse puppies. 2001;184(2):191-195, Am. J. Obstet. Gynecol. 10.1067/mob.2001.108339 via <http://dx.doi.org> PMID: 1117450
  29. Canning, S.; Simpson, N.; Orsi, N.; Ayres, J.; Waterman, M.; Dye, L. A double-blind, randomized, placebo-controlled study examined the effectiveness of hypericum perforatum, also known as St. John's wort, in treating premenstrual syndrome. 207-225 in CNS Drugs, 2010;24(3):50-56. 20155996 PMID: <http://dx.doi.org/10.2165/11530120-000000000-00000>.
  30. Saraca asoca as a uterine tonic in traditional Siddha medicine: a review by Arul Jothi, R.; Thiruthani, M. Int. J. Curr. Res. Chem. Pharm. Sci. 2019;6(6):1-3.
  31. Bone K. A Clinical Guide to Blending Liquid Herbs: Herbal Formulations for the Individual Patient, 1ed., Churchill Livingstone, St. Louis, 4th ed., 2003:2345-2356.
  32. Lee HW, Ang L, Lee MS, Alimoradi Z, and Kim E carried out a comprehensive review and meta-analysis of randomized controlled trials on the efficacy of fennel to alleviate pain in primary dysmenorrhea. Nutrients, Nov. 2020;12(11):3438; doi: 10.3390/nu12113438.
  33. Bensoussan A, Wu E, Smith CA, Proctor M, and Zhu X. herbal remedy for primary dysmenorrhea in Chinese. The Cochrane Database System Review, 2008, doi: 10.1002/14651858.CD005288.pub3.
  34. Pavithra L, Ilango K. Using in silico methods to identify phytoconstituents to treat polycystic ovarian syndrome. Indian J. Biochem Biophys. 2023; 60(2):99-107.

For any questions related to this article, please reach us at: [globalresearchonline@rediffmail.com](mailto:globalresearchonline@rediffmail.com)

New manuscripts for publication can be submitted at: [submit@globalresearchonline.net](mailto:submit@globalresearchonline.net) and [submit\\_ijpsrr@rediffmail.com](mailto:submit_ijpsrr@rediffmail.com)

