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REVIEW ARTICLE

Unravelling the Potential of Herbal Therapy for Polycystic Ovarian Disorder

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Abstract

Polycystic Ovarian Disorder is among the most well-known hormonal diseases influencing many women overall prompting the development of cysts on the ovaries. Albeit, the specific ground for its improvement isn't very much revealed till now, however a mix of hereditary, ecological and way of life factors were considered as noticeable contributing variables for its development and advancement. The ongoing treatments for polycystic ovarian disorder incorporate a way of life alteration, utilization of oral contraceptives, anti-androgen therapy and insulin-sensitizing agents, ovulation induction and assisted reproductive technologies. Even though these ongoing treatments are well dependent to some degree in females enduring polycystic ovarian issues, various secondary effects are being accounted for to be related to these treatments. Herbal treatment could be an option for polycystic ovarian problems as it offers compelling recuperation with immaterial aftereffects. Herbal treatment frequently focuses on the main driver of the sickness instead of alleviating symptoms, expecting to re-establish general well-being and prosperity. In this ongoing review, we have compiled the purposes of specific spices for the treatment of polycystic ovarian disorders including cinnamon, fenugreek, gymnema, saw palmetto, spearmint, liquorice, turmeric and berberine - containing plants. These plants were accounted for too effective against polycystic ovarian disorder with their system of activity as portrayed. Escalated research on these plants will clear many new courses towards the advancement of medication disclosure and medication plans for the powerful treatment of polycystic ovarian issues.

Keywords: Current Therapy, Environmental Factors, Genetic Factors, Herbal Therapy, Polycystic Ovarian Disorders

1. Introduction

Polycystic Ovary Disorder (PCOD), also known as Polycystic Ovary Disorder (PCOS), could be a hormone lack that influences millions of females around the world. It is characterized by different hormonal lopsided characteristics that can cause an assortment of physical and passionate indications. PCOD usually influences the ovaries (the organs within the body dependable for creating eggs and hormones), causing little cysts on or interior the ovaries. The precise cause of PCOD isn't fully caught, but it is accepted to be a combination of hereditary qualities, environment, and way of life. One of the side effects of PCOD is an overproduction of hormones from androgens, the male hormones that are as a rule found in smaller sums in women. This hormonal insufficiency can disturb the typical menstrual cycle, causing sporadic periods or indeed no periods at all. Whereas PCOS is frequently related to well-being issues, it can have a more noteworthy effect on a woman's general well-being. Ladies with PCOD may involvement an assortment of indications, including hair development, skin break out,

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weight pick up, and ripeness issues that can influence physical and enthusiastic well-being[1].

Polycystic Ovary Syndrome (PCOS) is a complex disease thought to result from a combination of genetics and environment. PCOD treatment includes a multidisciplinary approach that includes medication, lifestyle changes, and motivation. Early diagnosis and appropriate treatment are important to reduce the long-term health risks associated with PCOD, such as insulin resistance, diabetes, heart problems, and pregnancy[1].

In this review article, we look at the causes, symptoms, and treatment of PCOD, as well as lifestyle changes that can help manage the condition. Raising awareness about PCOD is critical to empowering women with the knowledge and tools they need to manage their health and improve their quality of life. As the world becomes increasingly healthier, the traditional medicine versus herbal medicine debate continues. Herbs have been used in traditional medicine around the world for centuries, and their beneficial effects in treating a variety of health conditions are well documented. Conversely, prescription drugs, although necessary in modern medicine, often have side effects and potentially long-term effects. In this review, we will explore several herbs that are effective in the treatment and control of PCOD.

1.1 Factors Responsible for the Generation of PCOS

Polycystic ovary disorder may be a complex endocrine clutter that influences millions of females around the world. It is characterized by hormonal insufficiency, unpredictable monthly cycles, numerous sorts of ovarian blisters, and numerous other side impacts that can influence a woman's development and improvement. Understanding the components that contribute to the improvement of PCOS is critical for creating compelling treatment procedures and moving forward the quality of life of influenced people[1].

1.1.1 Genetic Predisposition and Mutation

Ponders have appeared that hereditary variables play an imperative part in the event of PCOS. Considers appears that this infection clusters in families, it is hereditary. A few qualities included in hormone direction, affront expression, and ovarian working have appeared to play a part in the pathogenesis of PCOD. These hereditary changes can influence hormone generation, affront resistance, and the complete ovarian environment, driving the improvement and movement of PCOD[1].

Quality change is additionally thought to be a critical figure influencing the arrangement of PCOS. Changes in qualities related to ovarian steroidogenesis are a common cause of PCOD. These qualities control the generation of androgens, which are male hormones that ladies create. Changes in this quality cause expanded androgen generation, which is the trademark of PCOS. Additionally, transformations in qualities related to the affront digestion system have also been detailed to cause polycystic ovary syndrome.

Insulin may be a sedate that makes a difference the body utilizes glucose for vitality. Changes in qualities related to the affront digestion system can lead to affront resistance, a condition in which the body does not react successfully to affront. Affront resistance leads to expanded androgen production, which leads to PCOD. In expansion, changes in qualities included within the control of the monthly cycle can lead to the improvement of PCOS. These qualities control the discharge of eggs from the ovaries and the generation of hormones that control the menstrual cycle. Mutations in these qualities can lead to safe brokenness, another highlight of PCOD[2-4].

1.1.2 Hormonal Imbalances

PCOS is characterized by tall levels of androgens (male hormones) in influenced ladies. These high androgen levels disturb the adjustment of female hormones such as estrogen and progesterone, leading to menstrual abnormalities and the arrangement of ovarian tumours. Affront resistance, a highlight of PCOD, compounds androgen generation, making a horrendous circle that leads to hormonal disappointment and illness movement[5].

1.1.3 Insulin Resistance

Insulin resistance, a condition in which body cells don't react to the impacts of Insulin, is related to PCOD. Insulin plays a critical part in controlling diabetes, but if there's Insulin resistance, the pancreas produces more insulin to compensate for the diminished cellular reaction. Tall Insulin levels cause the ovaries to deliver an overabundance of androgens, which can

compound PCOS indications. Insulin also contributes to weight pick-up and corpulence by contributing to the hormonal awkwardness related to PCOD[6].

1.1.4 Lifestyle Factors

Environment and lifestyle can also affect the development and severity of PCOD. Poor eating habits, high-calorie diets, and obesity increase the risk of PCOD and can worsen its symptoms. Weight management and regular physical activity are beneficial for hormonal imbalances and improve reproductive outcomes in women with PCOD[7].

1.1.5 Inflammation and Oxidative Stress

Low levels of inflammation and oxidative stress are associated with PCOD pathophysiology. Inflammatory cytokines and reactive oxygen species can impair ovarian function, leading to poor follicular development and ovarian formation. Controlling inflammation and oxidative stress through dietary changes and targeted therapies may provide significant benefits in PCOD management[8].

1.1.6 Physical Factors Responsible for the Formation of PCOS Include

Obesity: Obese women are more likely to develop PCOD than non-obese women. This is because obesity causes insulin resistance leading to PCOD[2-4].

Early Puberty: Older girls may develop PCOD later in life. This is because premature ageing causes changes in body metabolism that increase the risk of PCOD[2-4].

Family History: Women with a family history of PCOD are more likely to have the disease. This suggests that PCOD genetics can be passed on from parent to child[2-4].

1.2 Current Therapies Available for PCOS and Their Drawbacks

1.2.1 Lifestyle Modifications

Lifestyle changes such as a healthy, balanced diet and regular exercise are often the first line of defence in PCOS management. Weight management is particularly important because obesity and insulin resistance are often associated with PCOD. Research shows that even losing weight can improve hormonal balance and menstrual patterns, which can have a positive impact on fertility and overall health. However, it can be difficult to make lifelong lifestyle changes, and not all women with PCOD recover in the same way with this approach[9].

1.2.2 Oral Contraceptives

Estrogen and progestin-containing combined oral contraceptives are commonly used to regulate menstrual cycles and reduce androgen levels in women with PCOD.

Oral contraceptives can reduce acne, hair growth, and other symptoms associated with PCOD by inhibiting ovulation and maintaining a stable hormonal environment. However, some women may experience side effects such as mood swings, nausea, and breast tenderness. In addition, oral contraceptives may not be suitable for people with certain conditions and regular use may cause recurrence of PCOD symptoms[10].

1.2.3 Anti-androgen Medications

Antiandrogens (such as spironolactone) may be prescribed to counteract the effects of high androgen levels in PCOD. This drug helps reduce hair and acne growth and raises health awareness.

However, they can take months to achieve meaningful results and, like all medicines, they can have side effects such as dizziness, fatigue and pain. Also, this drug is not suitable for pregnant women or women planning to become pregnant[11].

1.2.4 Insulin-sensitizing Agents

Insulin sensitizers such as metformin may be prescribed to women with PCOD and insulin resistance. Metformin helps improve insulin sensitivity and can make menstrual periods more regular and increase ovulation rates. It is especially beneficial for women with PCOS, diabetes or pre-diabetes. However, metformin can cause gastric irritation and its long-term safety and efficacy for the treatment of PCOD is still ongoing research[12].

1.2.5 Ovulation Induction

Women with PCOD who have trouble getting pregnant can get ovulation induction. These treatments allow the ovaries to release eggs and increase the chances of pregnancy. While clomiphene citrate is a drug used to

induce ovulation, stronger drugs such as gonadotropins can be used in difficult cases. However, these treatments can increase the risk of multiple pregnancy and Ovarian Hyper-Stimulation Syndrome (OHSS), which can be serious. Close observation by a physician during ovulation induction is important[13].

1.2.6 Assisted Reproductive Technologies (ART)

Women with PCOD may choose ART such as *In Vitro* Fertilization (IVF) if ovulation induction and other treatments do not result in pregnancy. ART involves fertilizing eggs outside of the body and transferring them to be implanted in the uterus. While ART offers hope for women with infertility due to PCOD, it can be emotionally and financially challenging. In addition, ART is associated with risks, including a higher risk of miscarriage and certain pregnancy complications[14].

The appeal of naturopathic and herbal medicine is being revived in an age dominated by pharmaceuticals. Many people are turning to herbs as an alternative or addition to traditional medicine. Medicinal plants have many benefits, including their organic nature, holistic approach, and low potential for side effects. One of the main benefits of herbs is their organic origin. Unlike chemicals that are usually synthesized in the laboratory, herbs are derived from plants and have long been used in traditional medicine systems.

Herbs are grown and stored sustainably, which makes them good for the environment. The herbal medicine includes a holistic healing approach that uses the connection between body, mind, and spirit. Herbal systems such as *Ayurveda* and Traditional Chinese Medicine look at the body as a whole with an emphasis on restoring balance and harmony. Herbal medicine focuses on general health and well-being, often focusing on the root cause of illness rather than just alleviating symptoms. When used correctly, herbal remedies are generally less painful and less painful.

Herbs contain a combination of bioactive compounds that work synergistically to reduce the risk of adverse reactions. In addition, herbs have been passed down from generation to generation, and there is a lot of information about their side effects and contraindications. The scientific community is increasingly aware of the healing potential of herbs. Studies have revealed the bioactive compounds in medicinal plants, their mechanisms of action and their beneficial effects on various ailments. This article reviews the efficacy of various herbs in the treatment of PCOD as shown in Table 1. Therefore, selecting herbs

Table 1. Detail list of active bioactive constituents and mechanisms responsible for effective therapy of PCOD

Sl. No.	Common name of the Plant	Scientific Name	Bioactive Constituents	Mechanisms responsible for the treatment of PCOD
1	Cinnamon	*Cinnamomum verum*	Cinnamaldehyde, cinnamic acid, and procyanidins	Anti-inflammatory effects, modulation of steroidogenesis, antioxidant properties and anti-androgenic activity
2	Fenugreek	*Trigonella foenum-graecum*	Steroidal saponins (furostanol and spirostanol glycosides), alkaloids, flavonoids, and fibers	Regulation of insulin sensitivity and glucose homeostasis, anti-inflammatory and antioxidant effects, hormonal modulation, improvement in lipid profile, ovulation induction and fertility enhancement
3	Gymnema	*Gymnema sylvestre*	Gymnemic acids, saponins, flavonoids, and polyphenols	Regulation of glucose homeostasis and insulin sensitivity, modulation of hormonal imbalances, anti-inflammatory and antioxidant effects, lipid metabolism
4	Saw palmetto	*Serenoa repens*	Fatty acids (such as lauric acid and oleic acid), phytosterols (such as B-sitosterol), and flavonoids	Anti-androgenic effects, regulation of hormonal imbalances, reduction of inflammation, improvement in hair growth
5	Spearmint	*Mentha spicata*	Rosmarinic acid, flavonoids (such as luteolin), and volatile oils (such as carvone)	Anti-androgenic effects, hormonal modulation, regulation of insulin sensitivity, reduction of inflammation

Table 1. Continued....

Sl. No.	Common name of the Plant	Scientific Name	Bioactive Constituents	Mechanisms responsible for the treatment of PCOD
6	Licorice	*Glycyrrhiza glabra*	glycyrrhizin, flavonoids, and triterpenoids	Hormonal modulation, anti-inflammatory effects, antioxidant properties, regulation of insulin sensitivity, and improvement in lipid metabolism
7	*Turmeric*	*Curcuma longa*	Curcumin, demethoxycurcumin, and bisdemethoxycurcumin	Anti-inflammatory and antioxidant effects, regulation of insulin sensitivity and glucose metabolism, hormonal modulation, reduction of androgen levels, improvement in lipid profile
8	Berberine - containing Plants.	*Coptis chinensis*	Berberine	Regulation of insulin sensitivity and glucose metabolism, anti-inflammatory effects, hormonal modulation, reduction of androgen levels, improvement in lipid profile
		Hydrastis canadensis		
		Phellodendron amurense		
		Berberis vulgaris		
		Berberis aristata		
9	Chaste Tree Berry	*Vitex agnus-castus*	Flavonoids, iridoid glycosides	Hormonal modulation, regulation of prolactin levels, restoration of menstrual regularity, reduction of androgen levels, and improvement in premenstrual symptoms

to effectively treat PCOD will open many new avenues for drug discovery and development.

2. Cinnamon (*Cinnamomum verum*)

Cinnamon tree (*Cinnamomum verum* or *Cinnamomum cassia*) is an evergreen tree native to Southeast Asia, particularly Sri Lanka, India, Indonesia, and China. This aromatic tree has a long history as a spice and food, thousands of years old. Cinnamon's unique taste and aroma make it an excellent commodity in both ancient trade and modern cooking. In addition to its culinary properties, cinnamon has many medicinal properties that have attracted researchers and traditional healers. Here, we explore the history, uses, and health benefits of cinnamon combined with scientific research.

Cinnamon is a spice extracted from the bark of a tree, traditionally used in many cultures for its medicinal properties. Several studies have investigated the beneficial effects of cinnamon in the treatment of certain aspects of PCOS, particularly insulin resistance and metabolic syndrome. Insulin resistance is a common feature of PCOS and can lead to additional complications such as obesity and type 2 diabetes[15-17].

Cinnamon, a popular spice derived from the bark of the Cinnamon tree, has been studied for the treatment of PCOD. Cinnamon is rich in many active compounds such as cinnamic acid, cinnamaldehyde and proanthocyanidins that contribute to its medicinal properties. Cinnamon is generally considered safe when used in food or as a supplement. However, excessive, or prolonged use may cause adverse effects such as gastrointestinal upset or allergic reactions[18-22].

Mechanisms of action include insulin sensitivity, anti-inflammatory effects, changes in steroidogenesis, antioxidant properties, and antiandrogenic activity. Clinical evidence for effective treatment of PCOD includes insulin sensitivity and glycemic control, hormonal imbalance, menstrual irregularity, lipid control, weight control, fertility and ovulation. Although the available evidence shows a positive effect, better-controlled clinical studies are needed to determine the optimal dose, timing and long-term safety of cinnamon in the treatment of Respect PCOS.

3. Fenugreek (*Trigonella foenum-graecum*)

Fenugreek (*Trigonella foenum-graecum*) is an herb native to the Mediterranean region and parts of Southern Asia. Fenugreek has a long history of traditional medicinal and culinary use, gaining popularity for its many

health benefits. From aiding digestion to controlling blood sugar levels, these herbs have many medicinal properties. In this article, we explore the history, uses, and health benefits of fenugreek supported by scientific research. The use of fenugreek dates back thousands of years, with evidence of its cultivation found in ancient Egypt, Greece and Rome.

It is a popular ingredient in traditional medicine for a variety of ailments, including *Ayurveda*, Chinese medicine, and Greek medicine. In culinary applications, fenugreek seeds and leaves are widely used to add a special flavour to Indian, middle Eastern and north African cuisines. The leaves have a distinct and pleasant herbaceous flavour, while the seeds are slightly bitter and contain some frankincense[23-25].

Fenugreek (*Trigonella foenum-graecum*), a herb with a long history of medicinal use, has shown therapeutic benefits in various forms of PCOD. In addition to lifestyle changes, medical services, and complementary therapies, the use of fenugreek (*Trigonella foenum-graecum*) as a natural remedy has also become popular for its beneficial effects in the treatment of PCOS. Fenugreek contains many bioactive substances, including steroidal saponins (furostanol and spirostanol glycosides), alkaloids, flavonoids, and fibres that contribute to its medicinal properties. Used in moderation as a cooking spice or supplement form, fenugreek is generally considered safe. However, excessive, or prolonged use may cause gastrointestinal irritation or allergic reactions[26-28].

Mechanisms of action include regulation of insulin sensitivity and glucose homeostasis, anti-inflammatory and antioxidant effects, hormone regulation, improvement of blood lipids, induction of ovulation, and improvement of fertility.

Evidence for good treatment of PCOD includes insulin sensitivity and glucose metabolism, hormonal balance and menstrual regularity, lipid profile and cardiovascular health, activity ovarian function and ovulation, weight management and body composition, androgen levels and hirsutism.

4. Gymnema (*Gymnema sylvestre*)

Gymnema sylvestre is a tree native to India, Africa, and Australia. This amazing herb has been used in *Ayurvedic* medicine for centuries for its unique ability to lower sugar levels. Gymnema has gained a lot of attention in recent years for its health benefits, especially for diabetes management and weight management. In this article, we cover the history, traditional uses and health benefits of Gymnema, supported by scientific research. The name "*Gymnema*" is derived from the Greek words "*gymnos*" meaning "*naked*" and "*nema*" meaning "thread", referring to the fibrous appearance of the plant.

In *Ayurvedic* medicine, gymnastics has traditionally been used to treat many ailments, including diabetes, obesity, digestive problems, and malaria. One of the most interesting properties of gymnema is its ability to affect the sweet taste receptors on the tongue. Chewing gymnastics for a while inhibits the perception of sugar, making sugary foods tasteless[29-33]. *Spoon Gymnema* (*Gymnema sylvestre*) is a tree that lives in India and other parts of Asia. It has been traditionally used in *Ayurvedic* medicine for its healing properties.

Gymnema is often known for its ability to reduce sugar cravings and promote healthy blood sugar levels. This tool will be especially useful for women with PCOS because insulin resistance is one of the diseases. In PCOS, body cells do not respond to insulin, resulting in hormone imbalances and high insulin levels that cause a variety of symptoms. By improving insulin sensitivity, gymnastics can help control insulin and its related complications in women with PCOS. Complementary and alternative therapies such as the use of medicinal plants have attracted attention with their effectiveness in the treatment of PCOS. *Gymnema sylvestre* is a promising herb in the treatment of Polycystic Ovary Syndrome (PCOS). Gymnema contains many bioactive compounds, including gymnemic acid, saponins, flavonoids and polyphenols that contribute to its medicinal properties[34-37].

Mechanisms of action include regulation of glucose homeostasis and insulin sensitivity, regulation of hormone imbalances, anti-inflammatory and antioxidant effects, lipid metabolism and weight control. *Gambit vine* is generally considered safe when used as directed. However, like all herbs, it can cause minor gastrointestinal upset or allergic reactions in some people.

Although the leaves of gymnastics have shown potential in the treatment of PCOD due to the many bioactive compounds they contain and their mechanism of action, scientific evidence is currently limited. Better controlled clinical trials are needed to

confirm efficacy, determine dosage and timing, and ensure long-term safety.

5. Saw Palmetto (*Serenoa repens*)

Saw palmetto (*Serenoa repens*) is a small tree native to the southern United States. Native Americans have used the fruit of this plant for hundreds of years as an herbal remedy for the treatment of many ailments. In recent years, palmetto has gained popularity as a natural product, especially for its benefits in promoting prostate health. In this article, we explore the history, traditional uses, and health benefits of saw palmetto, backed by scientific research. The use of saw palmetto dates back to native Americans who used its fruit for medicinal purposes. They believe that the herb has healing properties and can reduce urinary problems and growth in men. Saw palmetto got its name from its leaf-like leaves, and the fruits of the plant have medicinal properties. These berries contain many bioactive compounds, including fatty acids, phytosterols and flavonoids, which are believed to contribute to their health benefits[38-41].

Saw palmetto (*Serenoa repens*) is a promising herb in the management of PCOD. Saw palmetto contains a variety of bioactive compounds, including fatty acids (such as lauric and oleic acid), phytosterols (such as beta-sitosterol), and flavonoids that contribute to its medicinal properties.

The main feature of PCOD is the increased production of androgens (male hormones), which can cause hirsutism (excessive hirsutism), acne, and other androgen-related symptoms. Saw palmetto is thought to inhibit 5-alpha reductase, the enzyme responsible for converting testosterone to dihydrotestosterone (DHT), a more potent androgen. Saw palmetto may help reduce androgenic symptoms in women with PCOD by lowering DHT levels[42-44]. The mechanism of action includes anti-androgenic effects, regulation of hormonal imbalances, pain relief and enhancing hair growth.

Saw palmetto has shown potential in the treatment of polycystic ovary syndrome due to its antiandrogenic effects and control of hormonal imbalances, but scientific evidence is currently limited. Better controlled clinical trials are needed to confirm efficacy, determine dosage and timing, and ensure long-term safety.

6. Spearmint (*Mentha spicata*)

Peppermint (*Mentha spicata*) is a pleasant and fragrant herb belonging to the mint family. Native to Europe and the Mediterranean region, mint has been valued for centuries for its food, medicinal and aromatic properties. From adding freshness to tea and meals to its health benefits, mint has found its way into traditional and modern medicine. In this article, we explore mint's history, traditional uses, and health benefits backed by scientific research. The use of mint dates back to ancient Greece and Rome, where it was used as an herb and for its refreshing aroma.

The word "mint" itself comes from Greek mythology, where the goddess Persephone transformed Menthe into this herb. Peppermint has been added to beverages throughout history, used as an herb, and used as an ointment for many purposes. Its pleasant and stimulating aroma is also used in aromatherapy to promote relaxation and reduce stress[45-48]. Peppermint (*Mentha spicata*), a herb with a long history of traditional medicinal use, has shown therapeutic benefits in many forms of PCOD. Peppermint contains many bioactive compounds such as rosmarinic acid, flavonoids (such as luteolin) and essential oil (such as carvone) that contribute to its medicinal properties[49-52].

Mechanisms of action include antiandrogenic effects, hormone replacement, insulin resistance, and pain relief. There is some evidence for effective treatment of PCOD, including reducing androgen, improvement in hirsutism, irregular menses and ovulation.

Although peppermint shows potential in the treatment of polycystic ovary syndrome due to its antiandrogenic and hormone-regulating effects, the available scientific evidence is limited. Better controlled clinical trials are needed to confirm efficacy, determine dosage and timing, and ensure long-term safety.

7. Licorice (*Glycyrrhiza glabra*)

Licorice (*Glycyrrhiza glabra*) is an annual herb known for its unique symptoms and medicinal properties. Native to the Mediterranean region and parts of Asia, liquorice root has been used for thousands of years in various medical systems, including *Ayurveda* and

Traditional Chinese Medicine (TCM). Its roots are rich in bioactive compounds that contribute to its health benefits. In this article, we explore the history, traditional uses, and health benefits of liquorice root, backed by scientific research. The use of liquorice dates to ancient civilizations and is valued for its unique sweetness and medicinal properties.

In traditional medicine, liquorice root is used to treat respiratory diseases, and digestive problems, and improve overall health. The scientific name for liquorice, Glycyrrhiza, is derived from the Greek words "*glykos*" meaning "sweet" and "*rhiza*" meaning "root". The natural sweetness of the plant makes it a popular ingredient in desserts, beverages, and desserts[53-55].

Complementary and alternative therapies such as the use of medicinal plants have attracted attention with their effectiveness in the treatment of PCOD. Licorice root (*Glycyrrhiza glabra*) is a promising herb in the treatment of Polycystic Ovary Syndrome (PCOD). Although liquorice has potential in the treatment of PCOS due to its many bioactive compounds and mechanism of action, the available scientific evidence is limited[56-59].

Liquorice root contains many bioactive compounds, including glycyrrhizin, flavonoids, and triterpenoids that contribute to its medicinal properties. Mechanisms of action include hormone modulation, anti-inflammatory effects, antioxidant properties, modulation of insulin sensitivity, and enhanced lipid metabolism.

8. Turmeric (*Curcuma longa*)

Turmeric (*Curcuma longa*) is a yellow spice that has been valued for thousands of years for its food, medicine, and cultural significance. Native to south Asia, particularly India, turmeric is an important ingredient in Indian cooking and is used in *Ayurvedic* medicine for its healing properties. In recent years, turmeric has gained worldwide attention for its health benefits backed by extensive research. In this article, we explore the history, traditional uses, and evidence-based health benefits of turmeric, supported by scientific research data. The use of turmeric dates back to ancient India, where it was considered a sacred spice and used in rituals and ceremonies.

It is also an essential part of the Indian medicine *Ayurveda*, which is believed to balance the three energies (*Vata*, *Pitta*, and *Kapha*) and improve overall health. Due to its deep golden colour, turmeric is referred to as the "golden spice" and is used as a natural dye in textiles and cosmetics[60, 61].

Complementary and alternative therapies such as the use of medicinal plants have attracted attention with their effectiveness in the treatment of PCOD. Turmeric (*Curcuma longa*) is a promising herb in the treatment of polycystic ovary syndrome[62-64]. Turmeric contains many bioactive compounds, including curcuminoids, demphoxycurcuminoids, and bisdemethoxycurcuminoids that contribute to its medicinal properties.

Mechanisms of action include anti-inflammatory and antioxidant effects, changes in insulin sensitivity and glucose metabolism, hormone regulation, lowering of androgen levels, and improvement of blood lipids.

9. Berberine-containing Plants

Berberine is a natural compound found in many plants and has a long history of use in traditional medicine such as *Ayurveda* and Traditional Chinese Medicine (TCM). Extracted from the roots, stems, and bark of certain plants, berberine has received a lot of attention in recent years for its health benefits and extensive research. In this article, we explore the sources of berberine in various herbs and explore the evidence-based health benefits of this potent ingredient, backed by scientific research[65-70].

Many herbs contain large amounts of berberine, which facilitates their medicinal use. Some of the main sources of berberine are:

Berber species: Plants in the genus *Berberis*, commonly known as berberine, are rich in berberine.

Young tiller (European tiller) and young tiller (Indian tiller) are well-known examples.

Coptis: Coptidis, also known as Chinese coptis, is an herb native to China and is an important component of berberine in Chinese medicine.

Hydrastis canadensis: Goldenseal is a North American herb that is high in berberine and has a long history of herbal medicinal use.

Cortex Phellodendri: Also known in Chinese medicine as Phellodendron bark or Cortex Phellodendri, this herb is another source of berberine. Berberine, a bioactive compound found in many plants,

has shown potential therapeutic effects in many forms of PCOD.

Therefore, berberine-containing herbs such as *Berberis*, Coptidis Rhizoma, *Hydra canadensis*, and *Phellodendron*. *Phellodendron* are effective in the treatment of PCOD[71-73].

Mechanisms of action include regulation of insulin sensitivity and glucose metabolism, anti-inflammatory effects, hormone regulation, androgen reduction, and improvement of blood lipids.

Berberine is generally considered safe when used as directed. However, it can cause gastrointestinal irritation and potential drug interactions and should be used with caution in certain situations.

10. Chaste Tree Berry (*Vitex agnus-castus*)

Chasteberry, scientifically known as *Vitex agnus-castus*, is a medicinal herb that has been revered for centuries for its ability to promote women's health. Native to the Mediterranean region, this tree produces small fruits that are used in traditional medicine such as *Ayurvedic* and European medicine. Chasteberry is popular in modern herbal medicine for its role in balancing female hormones and addressing various developmental issues. In this article, we will delve deeper into the historical use, traditional use, and evidence-based benefits of chaste tree fruits backed by scientific research. Chasteberry has a rich history in traditional medicine where it is used to support women's health and hormonal balance.

Ancient healers recognized its ability to reduce irregular menstrual bleeding, relieve symptoms of Premenstrual Syndrome (PMS), and address hormonal imbalances in women. The name "chaste tree" comes from the belief that eating the fruit of this plant could reduce libido and cause ancient monks to use it to promote chastity, hence the Latin name "agnus-castus" meaning "chaste lamb"[74-77].

The use of herbs, including herbs, in addition to traditional medical treatments, has increased interest in the management of PCOD. Chasteberry (*Vitex agnus-castus*), a plant with a long history of use, has been shown to have therapeutic potential in many forms of PCOS[78-81].

Chasteberry contains many bioactive compounds, including flavonoids, iridoid glycosides and essential oils that contribute to its medicinal properties. Its mechanism of action includes hormone regulation, prolactin level control, regular menstrual cycles, lowering of androgen levels and improvement of premenstrual symptoms.

11. Conclusion

In conclusion, herbal products seem to show promise in the treatment of polycystic ovary syndrome. PCOD is a hormonal problem that affects many women worldwide, causing many symptoms and health problems. While conventional medical therapy is important for managing PCOS, herbal products are an effective and effective way to complement existing medical treatments. Certain herbs such as cinnamon, fenugreek, gymnosperm leaves, saw palmetto, liquorice root, herbs containing berberine, turmeric, peanuts, and peppermint have been shown to address many aspects of PCOS, including insulin resistance. imbalance and related symptoms. These herbal products may have benefits such as improving insulin sensitivity, regulating menstrual bleeding, reducing hirsutism and promoting fertility.

While research on herbal products for PCOD is still ongoing, early evidence and centuries of traditional use indicate their effectiveness and safety. However, individual reactions may differ and it is especially important for pregnant, lactating women and women with the following diseases to consult a doctor before using herbs. The use of herbal products for PCOS shows increasing interest in their effectiveness and health benefits. As more research is done, we can find many herbs that are effective in managing PCOD and offer hope to women seeking self-care and self-care for hormonal status. By using a combination of traditional medicine and herbal medicine, women with PCOS can embark on a journey to better health and well-being with the many benefits of the natural world.

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