A Review on Herbal Teas for PCOS: Evidence-Based Benefits for Hormonal and Metabolic Health

Denees Sinha[1] , Takeshwar Kumar[1], Harsh Vaishnav[2] ,Abhishek Pratap[2], Gyanesh Kumar Sahu[1*]

1. Rungta Institute of Pharmaceutical Sciences & Research, Kohka, Kurud, Bhilai

2. Rungta Institute of Pharmaceutical Sciences, Kohka, Kurud, Bhilai

Corresponding Author-

Dr Gyanesh Kumar Sahu

Professor & Dean

Email-drgyaneshkumarsahu@gmail.com

ABSTRACT:

Polycystic Ovary Disease (PCOD), a common endocrine disorder affecting women of reproductive age, is marked by hormonal imbalances, irregular menstrual cycles, and metabolic disturbances. While conventional treatments are available, their associated side effects have led to an increased interest in natural remedies. This study aims to develop and evaluate a herbal tea blend as a complementary therapeutic option for managing PCOD, using a selection of carefully chosen medicinal herbs. prepare herbal tea with new combinations using plant species such as ashwagandha, Chasteberry, fennel, chamomile, shatavari, ginseng, coriander seeds, cinnamon in spite of fact that plant materials form the basis of drug development and herbal formulations are popular, there are few articles on clinical efficacy and safety. In this article, we will discuss how herbs can be useful in certain areas of clinical and preventive health, and what further analysis is needed to understand whether habitually use can promote healthy lifestyles more commonly.

KEYWORDS: PCOD, Menstrual, Hormone regulation.

1. INTRODUCTION: -

Women of reproductive age are susceptible to the widespread hormonal disorder known as polycystic ovarian syndrome, or PCOS. Although symptoms may change over time, they often begin in adolescence. Hormonal imbalances, irregular periods, high testosterone, and ovarian cysts can all be symptoms of PCOS. (1) Getting pregnant might be challenging if you have irregular periods, which typically include no ovulation. One of the main causes of infertility is PCOS. There is no treatment for PCOS, which is a chronic disorder. (2) However, certain symptoms can be alleviated by medicine, fertility therapies, and lifestyle modifications. The cause of PCOS is unknown but women with a family history or type 2 diabetes are at higher risk. Polycystic ovary syndrome (PCOS) affects an estimated 8–13% of reproductive-aged women. Up to 70% of affected women remain undiagnosed worldwide. PCOS is the commonest cause of anovulation and a leading cause of infertility. PCOS is associated with a variety of long-term health problems that affect physical and emotional wellbeing. PCOS runs in families, but there are ethnic variations in how PCOS manifests itself and how it affects people. (3)

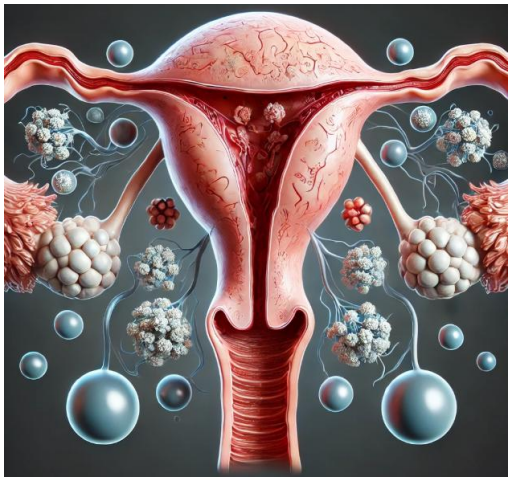

Figure no .1

1.1 ETIOLOGY: -

PCOD, a multifactorial endocrine disorder, arises due to a combination of genetic, hormonal, metabolic, and environmental factors. The specific causes vary among individuals, but the following are the key contributors to its development (4)

1. Hormonal Imbalances – Hyperandrogenism Elevated levels of male hormones (androgens) such as testosterone disrupt normal ovarian function, leading to follicular arrest and the development of multiple ovarian cysts, Dysregulated Gonadotropin Secretion. An altered ratio of luteinizing hormone (LH) to follicle-stimulating hormone (FSH) promotes excessive androgen production and hinders normal follicular maturation. Progesterone Deficiency. Insufficient progesterone due to anovulation exacerbates hormonal imbalances. (5)
2. Insulin Resistance and Hyperinsulinemia Insulin resistance is a hallmark of PCOD, where cells become less responsive to insulin, leading to increased blood sugar levels. To compensate, the pancreas secretes more insulin (hyperinsulinemia), which stimulates ovarian theca cells to produce excess androgens, further disrupting the hormonal balance. (6)
3. Genetic Predisposition A family history of PCOD or metabolic disorders suggests a genetic link. Specific gene mutations associated with insulin signaling and androgen production may contribute to susceptibility. (7)
4. Inflammatory and Metabolic Factors Chronic low-grade inflammation is commonly observed in PCOD and is believed to play a role in promoting insulin resistance and ovarian dysfunction. - Obesity exacerbates metabolic disturbances and is a significant risk factor, though PCOD also occurs in lean women. (8)
5. Environmental and Lifestyle Factors Exposure to endocrine-disrupting chemicals (EDCs) such as bisphenol A (BPA) may interfere with hormone regulation. Sedentary lifestyles and diets high in processed carbohydrates and unhealthy fats contribute to weight gain, insulin resistance, and worsened PCOD symptoms. (9)
6. Other Possible Factors, Prenatal Exposure to high androgen levels in the womb may predispose individuals to PCOD later in life. Stress Chronic stress may impact hormonal regulation and contribute to the onset or exacerbation of PCOD symptoms. (10)

Understanding the etiology of PCOD helps in designing targeted treatments and lifestyle interventions to manage the condition effectively. (11)

1.2 PATHOPHYSIOLOGY:

The pathophysiology of PCOD is complex and involves interactions between hormonal imbalances, metabolic dysfunctions, and genetic predispositions. It primarily revolves around Hyperandrogenism, insulin resistance, and dysregulated gonadotropin secretion, which together lead to the hallmark symptoms of PCOD. (12)

1. Initial Trigger Genetic predisposition or environmental factors.

2. Hormonal Dysregulation Increased LH secretion and decreased FSH activity.

3. Hyperandrogenism Excessive androgen production disrupts follicular maturation.

4. Metabolic Dysfunction, Insulin resistance and obesity aggravate hormonal imbalances.

5. Anovulation and Menstrual Irregularities, Result from impaired follicular development. Understanding this pathophysiology helps guide therapeutic interventions aimed at correcting the underlying hormonal and metabolic disturbances in PCOD. (13)

1.3 Symptoms of PCOD

1. Irregular Periods
2. Excess Androgen (Male Hormones)
3. Weight Gain and Difficulty Losing Weight
4. Insulin Resistance and Elevated Blood Sugar Levels
5. Thinning Hair and Hair Los
6. Depression and Anxiety
7. Increased Risk of Other Health Conditions
8. Pelvic Pain(14)

1.4 Complications

1. Infertility
2. Gestational diabetes or pregnancy-induced high blood pressure
3. Miscarriage or premature birth
4. Nonalcoholic steatohepatitis — a severe liver inflammation caused by fat buildup in the liver
5. Metabolic syndrome — a cluster of conditions including high blood pressure, high blood sugar, and unhealthy cholesterol or triglyceride levels that significantly increase your risk of heart and blood vessel (cardiovascular) disease
6. Type 2 diabetes or prediabetes
7. Sleep apnea
8. Depression, anxiety and eating disorders
9. Cancer of the uterine lining (endometrial cancer) (15)

2. HERBAL TEA: -

Herbal tea is a beverage made by infusing herbs, flowers, leaves, seeds, or roots in hot water, without using actual tea leaves from the Camellia sinensis plant (which is used for black, green, oolong, and white teas). Instead, herbal teas are typically made from a variety of plants that offer different flavors and health benefits. (16)

Figure no. 2

Key Features of Herbal Tea:

Ingredient: - (17)

a) Herbs (e.g., mint, chamomile, lavender)

b) Flowers (e.g., hibiscus, rose, chamomile)

c) Roots (e.g., ginger, licorice root, turmeric)

d) Seeds (e.g., fennel, caraway)

e) Barks (e.g., cinnamon, birch)

f) Fruits (e.g., lemon, berries) (18)

2.1 How Herbal Tea Work

1. Regulating Hormones:

a) Spearmint Tea: Reduces androgens (male hormones), improving hirsutism (excess hair growth).

b) Chasteberry Tea: Balances progesterone and estrogen, supports menstrual regularity.

2. Improving Insulin Sensitivity:

a) Cinnamon Tea: Improves insulin resistance and stabilizes blood sugar.

b) Green Tea: Boosts insulin sensitivity and reduces oxidative stress.

3. Reducing Inflammation:

a) Ginger Tea: Reduces inflammation and supports digestion.

b) Turmeric Tea: Fights inflammation and helps with insulin regulation.

4. Promoting Menstrual Health:

a) Raspberry Leaf Tea: Tones the uterus and helps regulate periods.

5. Managing Stress:

a) Holy Basil Tea: Reduces cortisol and helps manage stress.

b) Chamomile Tea: Promotes relaxation and improves sleep.

6. Supporting Liver Health:

a) Dandelion Tea: Detoxifies the liver and helps balance estrogen levels. (19)

2.2 INGREDIENT USED IN FORMULATION OF HERBAL TEA: -

2.2.1 Chasteberry Plant:

Chasteberry (Vitex agnus-castus) is a plant known for its medicinal properties, particularly in managing hormonal imbalances and menstrual issues. Here's the scientific classification of the chasteberry plant:

Figure no. 3

Scientific Classification of Chasteberry:

a) Kingdom: Plantae
b) Phylum: Angiosperms (Flowering plants)
c) Class: Eudicots
d) Order: Lamiales
e) Family: Lamiaceae (Mint family)
f) Genus: Vitex
g) Species: Vitex agnus-castus (20)

Part of plant

For the treatment of Polycystic Ovary Disease (PCOD), the fruit (berries) of the chasteberry plant (Vitex agnus-castus) are primarily used.

a) Pharmacological Activity
b) Neuroprotective Effects
c) Potential Anticancer Activity
d) Antispasmodic Effects
e) Antimicrobial Activity
f) Gastroprotective Properties
g) Antioxidant Activity
h) Anti-inflammatory Effects
i) Hormonal Regulation

Phytoconstituents of Chasteberry

a) Iridoids
b) Apigenin and Luteolin
c) Chasteterebin and Vitexicarpin (21)

2.2.2 Shatavari

Shatavari (Asparagus racemosus) is a widely used herb in Ayurvedic medicine, known for its adaptogenic, hormonal, and reproductive health benefits, particularly for women.

Figure no. 4

Scientific classification of Shatavari

a) Kingdom: Plantae
b) Phylum: Angiosperms (Flowering plants)
c) Class: Monocots
d) Order: Asparagales
e) Family: Asparagaceae
f) Genus: Asparagus
g) Species: A. racemosus

Part of plant

For PCOS (Polycystic Ovary Syndrome), the part of Shatavari (Asparagus racemosus) that is commonly used is its root.

Pharmacological Activity

a) Estrogenic Activity
b) Menstrual Cycle Regulation
c) Fertility Enhancement
d) Adaptogenic Properties
e) Anti-inflammatory Activity
f) Immunomodulatory Effects
g) Antioxidant Activity
h) Antidiabetic Effects

How Shatavari is Used for PCOD

a) Regulating Hormones: Balances estrogen levels, helping with irregular periods and hormonal imbalance.
b) Improving Ovulation: Stimulates ovarian function and supports regular ovulation, aiding fertility.
c) Reducing Stress: Acts as an adaptogen, lowering cortisol and managing stress-related symptoms.
d) Supporting Insulin Sensitivity: Helps manage insulin resistance, common in PCOS.
e) Anti-inflammatory: Reduces inflammation, supporting overall metabolic health. (21)

2.2.3 liquorice: -

Liquorice is a plant whose root is used for its sweet and slightly bitter flavor, and it's often used in candies, herbal remedies, and sometimes in beverages.The root contains glycyrrhizin, which gives it its characteristic sweet flavor and can have some health benefits, such as soothing the throat and digestive system. However, consuming large amounts of liquorice can lead to health issues, like high blood pressure, due to the glycyrrhizin. (22)

Figure no. 5

Scientific Classification of Liquorice:

1. **Kingdom:** Plantae
2. **Phylum:** Angiosperms (Flowering plants)
3. **Class:** Eudicots
4. **Order:** Fabales
5. **Family:** Fabaceae (Legume family)
6. **Genus:** *Glycyrrhiza*

7. **Species:** *Glycyrrhiza glabra* (the most commonly used species for liquorice production) (23)

Pharmacological Activity

1. Anti-inflammatory Activity
2. Antiviral Activity
3. Antioxidant Activity
4. Hepatoprotective Activity
5. Anti-ulcer Activity
6. Anticancer Activity
7. Immune System Modulation (24)

Part of plant

- **Polycystic Ovary Syndrome** (PCOD), the primary part of the **liquorice** plant used is the **root.**

Phytoconstituents of Liqurice

1. Glycyrrhizin (Glycyrrhizic acid)
2. Flavonoids
3. Saponins
4. Triterpenoids
5. Polysaccharides
6. Aspartic acid**,** glutamic acid**,** and glycine
7. Anethole**,** caryophyllene**,** and eugenol
8. Caffeic acid and ferulic acid
9. β-sitosterol

2.2.3.1 How Liquorice Root is Used for PCOD:

A. Hormonal Regulation (Anti-androgenic Effects)

Excess testosterone is common in women with PCOD, leading to symptoms like **hirsutism** (excess hair growth), acne, and scalp thinning. Liquorice contains **glycyrrhizin**, which helps lower **androgen** levels by inhibiting the enzyme that converts hormones into more potent forms of androgens.

B. Menstrual Regulation

Liquorice root may help regulate **menstrual cycles** by balancing the hormones involved. It is believed to reduce **testosterone levels** and promote a more regular flow, which can be helpful for women with irregular cycles due to PCOD.

C. Anti-inflammatory Benefits

PCOS is associated with **chronic low-grade inflammation**. Liquorice has potent **anti- inflammatory** properties, thanks to compounds like **flavonoids** and **glycyrrhizin**. By reducing inflammation, liquorice may help with the metabolic dysfunctions associated with PCOD.

D. Improvement in Insulin Sensitivity

Liquorice may improve insulin resistance, a common issue in women with PCOS, helping in better blood sugar control (25)

3. CONCLUSION: -

In conclusion, the herbal powder combination containing, Shatavari, Liquorice, Chasteberry and Fennel shows promising potential for managing Polycystic Ovary Syndrome (PCOS). The herbal powder combination of Ashwagandha, Shatavari, Gokhru, Fanugreek, Fever nut, Liquorice, Chasteberry and Fennel presents a promising adjunctive therapy for PCOS management, offering a natural and potentially effective approach to addressing the complex hormonal and metabolic imbalances associated with the condition. Further research and clinical trials are warranted to elucidate their precise mechanisms of action and optimize their therapeutic use in PCOS management. Always consult with a healthcare professional before starting any new treatment regimen, especially for managing a complex condition like PCOS.

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