

Formulation And Evaluation of Polyherbal Syrup for Treatment of Polycystic Ovarian Syndrome

MADHURA R JADHAV¹, DHANASHREE B MORE², PIYUSH JANGAM³

^{1, 2} Student, Arihant college of Pharmacy, Ahilyanagar.

³ Asst. Prof, Arihant college of Pharmacy, Ahilyanagar.

Abstract— polycystic ovarian syndrome is a common hormonal condition that women of reproductive age. It usually starts during adolescence, but symptoms may fluctuate over time. PCOS may cause hormonal imbalance, irregular periods, excess androgen levels and cysts in ovaries. Irregular periods, usually with lack of ovulation, can make it difficult to be pregnant. PCOS is a leading cause of infertility. PCOS is a chronic condition and cannot be cured. Different pharmaceutical treatments have been proposed for PCOS. Recent reports have indicated the increased use of complementary treatments. Herbal medicine as a part of complementary medicine, was introduced in Indian Ayurvedic system of medicine, traditional Persian and Chinese medicine. Medicinal herbs have use for long term treatment of gynecological and infertility problems of PCOS patients. In this study, we formulate and evaluate a polyherbal syrup for polycystic ovarian syndrome which can regulates menstrual cycle, improve hormonal balance, increase fertility and support PCOS (polycystic ovarian syndrome) related symptom.

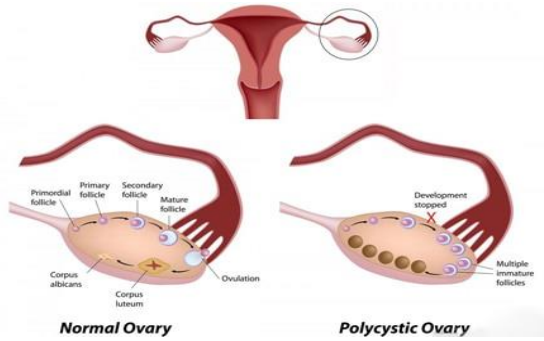
Index Terms- Polycystic ovarian syndrome, PCOS, Polyherbal syrup, Herbal medicine, complementary medicine, Infertility, hyperandrogenism.

I. INTRODUCTION

Polycystic ovary syndrome is a condition characterized by hormonal imbalances, irregular periods, or the growth of small cysts on one or both ovaries. Women with PCOS have an abnormal increase in the body's androgen levels, which disrupts the development of follicles, resulting in the appearance of many small follicles called polycysts. follicle. When the patient has polycystic ovary syndrome, there will be a thick shell that makes the follicles unable to develop. Every month, the egg does not break the shell and ovulation does not occur, leading to the patient's inability to conceive.

Polycystic ovary syndrome occurs very commonly, affecting up to 1 in 5 women of reproductive age.

Direct effects on reproduction, metabolism (insulin resistance, impaired glucose tolerance...) and psychological characteristics (increased anxiety, depression...), the risk of diseases Cardiovascular disease, diabetes mellitus, etc. In addition, patients often show symptoms such as dry skin, hair growth, ... leading to a worsening of quality of life. Therefore, effective treatment of PCOS will reduce the risk of other dangerous complications. Stein and Leventhal are regarded to have been the first investigators of polycystic ovary syndrome (PCOS). Polycystic ovarian syndrome is one of the frequent conditions, which affect both metabolic and reproductive systems. PCOS is best known for hormonal imbalance, irregular menstrual cycle and hyper- androgenism. The pathogenesis of this disorder is not clear yet although it probably has epigenetic origin; therefore, it is non-curable disorder. This chronic and heterogeneous disorder manifests itself as menstrual dysfunction, infertility, hirsutism, acne, and obesity. Different pharmaceutical treatments have been proposed for PCOS. However, they have disadvantages, such as adverse effect, low compliance of patient with long term pharmaceutical treatment, low efficacy and contraindications in some cases; therefore, complementary treatments can be proper alternatives. Herbal medicines or products obtained from plant or natural resources have been widely used throughout the history of mankind. Plants and animals are best resources of natural medicinal treatments.



Characterization of PCOS:

1. Oligoovulation or anovulation
2. Clinical or biochemical indications of hyperandrogenism.
3. Polycystic ovaries on ultrasound.

A. Oligoovulation or anovulation of PCOS: Oligoovulation is when ovulation happens once in a while or erratically, and as a general rule, is delegated having 8 or less periods in a year. Consistently, a woman ovulates or releases a create egg once per month, around halfway through her cycle.

B. Clinical and biochemical indications of hyperandrogenism: A Clinical or biochemical indication of hyperandrogenism is: hirsutism, androgenic alopecia, skin break out, acanthuses Nigerians. Hirsutism: It might be a clinical indication of hyperandrogenism. The wisdom of the closeness of hirsutism as an issue relies upon social and ethnic segments. Cause by hair development.

- Chin
- Chest
- Upper back
- Lower back
- Upper midriff
- Upper arm
- Forearm
- Thigh or leg

C. Polycystic ovaries on ultrasound: Ultrasound is the premier extensively used technique for the ultrasound examination of PCO. The sonographic criteria have been thusly balanced and, along these lines, the addition in ovarian volume (>10 cm³) and the proximity of >12 follicles with a broadness of 2 to 9 mm at smallest in one ovary [13]. In extension to these criteria, other restorative

- conditions that can cause steady an ovulation and androgen excess should be restricted, for example,
- Hyperprolactinemia/hyperthyroidism
- Congenital adrenal hyperplasia, traditional and no established structure
- Cushing's disorder; secretary ovarian tumor of adrenal androgens.

Pathophysiology:

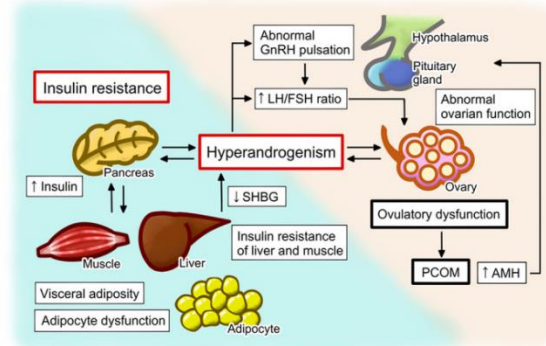


Figure:

Pathophysiology of polycystic ovary syndrome (PCOS). Hyperandrogenism is a key feature and has a synergistic effect with insulin resistance to induce the development of PCOS. Individual contributions of hyperandrogenism and insulin resistance differ from patient to patient, which accounts for the heterogenous nature of PCOS and its presentation. Hyperandrogenism, ovulatory dysfunction, and polycystic ovarian morphology (PCOM) are the characteristics defined in the 2003 Rotterdam criteria. Hyperandrogenism, ovulatory dysfunction, aberrant gonadotropin-releasing hormone (GnRH) pulsation and the resulting abnormal gonadotropin secretion, and insulin resistance comprise the vicious cycle that underpins the pathophysiology of PCOS. The abnormalities in the ovarian function of women with PCOS include the hypersecretion of androgens and ovulatory dysfunction, which causes PCOM. The hypersecretion of androgens is caused by intrinsic dysfunction of theca cells and/or the hypothalamus-pituitary-ovarian axis, while hyperandrogenism causes abnormal GnRH pulsation and gonadotropin secretion through the aberrant negative or positive feedback of progesterone and estrogen. The abnormal gonadotropin secretion in patients with PCOS is characterized by a high luteinizing hormone (LH)/follicle-stimulating hormone (FSH) ratio, which

induces ovarian dysfunction, including the hypersecretion of androgens. In addition, the high concentration of anti-Müllerian hormone (AMH), which is secreted by the pre-/small antral follicles that accumulate in the ovaries of women with PCOS, further exacerbates the ovarian dysfunction by having deleterious effects on the follicular microenvironment and/or GnRH pulsation. Hyperandrogenism is further aggravated by hyperinsulinemia, which develops secondary to insulin resistance. Hyperinsulinemia causes an increase in androgen secretion by theca cells and an inhibition of the production of sex hormone-binding globulin (SHBG) in the liver, thereby increasing the circulating concentration of bioactive free testosterone. Insulin resistance develops in tissues such as liver and muscle, and is associated with visceral adiposity and adipocyte dysfunction, which are exacerbated by hyperandrogenism.

Diagnosis:

PCOS may be diagnosed if you have two or more of the following signs or symptoms:

- irregular or no periods
- features of ‘clinical androgen excess’ (e.g. pimples and excess hair growth) or higher than normal androgen levels (shown in your blood test) – androgens are male-type hormones
- polycystic ovaries visible on an ultrasound (i.e. more than 20 partly-developed eggs are visible on your ovaries or your ovaries are enlarged).
- A blood test for anti-Müllerian hormone (AMH) level can be done instead of an ultrasound. Don’t need to have an ultrasound to confirm PCOS if you have irregular or no periods and high androgen levels. Ultrasounds are not recommended for women under 20 years of age.

Polycystic ovary issue (PCOS) could be a perplexing condition that is most routinely broke down by the closeness of two of the three taking after criteria: oligo-or anovulation, by then hyperthyroidism, hypothyroidism, hyperprolactinemia, hypogonadotropic hypogonadism, and less than ideal ovarian dissatisfaction must be kept away from. If the peaceful accompanies hirsutism, by then late beginning natural adrenal hyperplasia, androgen-emitting ovarian tumor, androgen-discharging adrenal tumor, Cushing issue and exogenous androgen use

must be disallowed. Assurance required pathognomonic ovarian endings and the clinical arrangement of three of hirsutism, amenorrhea, and chunkiness. The following symptomatic defining moment happened 30 quite a while a short time later, when scientists inside the late 1960s and mid 1970s acclaimed disturbances inside the hypothalamic-pituitary pivot.

Hyperandrogenism: Hyperandrogenism is a key component of PCOS. Despite the fact that the adrenal organ may contribute, hyperandrogenism is primarily ovarian in starting point among ladies with an essential analysis of PCOS. In different populaces around the globe, it has been discovered that most ladies with PCOS have raised dimensions of serum androgens; be that as it may, typical dimensions might be found in certain ladies. For an analysis of PCOS, it is adequate to have raised serum androgen levels or an organic articulation of hyperandrogenism (skin break out or hirsutism).

Heftiness: 40% to half of ladies with PCOS are hefty. This heftiness is typically of the android type, with expanded midsection to-hip proportions. Whenever present, corpulence exacerbates insulin obstruction and expands the hazard for diabetes and cardiovascular malady. The treatment of stoutness ought to be a noteworthy focal point of preventive social insurance for ladies with PCOS. Nonetheless, weight reduction in such patients is hard to accomplish. This might be expected to a limited extent to a debilitation of the adiposity lipolysis, which thusly is connected to insulin obstruction.

Ovarian Diagnosis:

The polycystic ovary is effectively analyzed. It is expanded, typically more noteworthy than 9 mL with in excess of 8 mL incidentally situated cystic structures (10 mm) in a sonographic plane encompassed by an expanded stromal mass (25% of the ovarian volume). Nonetheless, in spite of the fact that we and others have demanded these severe criteria, a sonographic range exists. Polycystic ovaries may at times be missing in ladies with the majority of the other great clinical qualities of PCOS. The symptomatic workup should start with a careful history and physical examination. Clinicians should concentrate on the patient's menstrual history, any

vacillations in the patient's weight and their effect on PCOS indications, and coetaneous discoveries (e.g., terminal hair, skin break out, alopecia, acanthosis Nigerians, and skin labels). Patients ought to likewise be gotten some information about variables identified with basic co morbidities of PCOS. As indicated by the Rotterdam criteria, determination requires the nearness of no less than two of the accompanying three discoveries: hyperandrogenism, ovulatory brokenness, and polycystic ovaries. A solitary ovary meeting either or both of these definitions is adequate for finding of polycystic ovaries.

Symptoms:

- Irregular periods
- Acne
- Hair loss or hair thinning on scalp.
- Excessive bleeding during the periods.
- No periods
- Excessive facial or bodily hair.
- Eggs do not ovulate.
- Infertility or difficulty in becoming pregnant.
- Enlarged ovaries with cysts.
- Increase the sugar.
- Darkening of the skin.
- Depression
- anxiety
- Mood swings
- Irritation

Etiology:

The exact reason for PCOS is dark; it is gotten on to be a multi factorial condition with a genetic part. Around 20– 40% of first-degree female relatives of women with PCOS proceed to make PCOS themselves, contrasted with evaluated 4– 6% prevalence inside the normal people.

The fundamental driver of PCOS:

- Genetic inclination
- Life style
- Environments
- Increased insulin
- Increased androgens
- Increased estrogen
- Irregular periods
- Weakened resistant framework

- Bead dietary
- Dirty nourishment
- Hormonal awkwardness
- Inflammation

Treatment:

Treatments of PCOS must be tailored to the specific needs of each patient; goals of therapy may include ameliorating hyperandrogenic symptoms, inducing ovulation, regulating menstruation, and preventing cardiometabolic complications. For women with PCOS, irregular menstruation, hirsutism, and infertility are the most distressing symptoms. Due to the complex etiology of PCOS, its treatment is rarely nontherapeutic, rather being personalized based on prevailing signs and symptoms. Several complementary therapies have been suggested for the management and treatment of PCOS. Diet and lifestyle changes are regarded as the cornerstone of PCOS management. Different pharmacological and non-pharmacological interventions can be used to relieve the most prominent symptoms of PCOS, such as menstrual irregularities, androgen-related symptoms, and infertility-causing anovulation. For the regulation of metabolic comorbidities in PCOS, there are numerous therapeutic approaches with potential benefits; however, it is also crucial to acknowledge that no single treatment can fully address the range of metabolic abnormalities in PCOS diagnosed women. Combining lifestyle changes with medications for various ailments results in greater metabolic benefits and improvements in metabolic comorbidity parameters than monotherapies do. Additionally, treatment should also take into consideration increased levels of anti-Müllerian hormone (AMH), plasma metabolomics, and gut microbiota composition, which are severe characteristics of PCOS, in addition to focusing on primary traits. It includes medications like:

- Oral contraceptive and anti-androgens
- Insulin sanitizers
- Ovulation inducers
- Calcium and vitamin D supplements

Herbal drugs like ashwagandha, Gokhru, Shatavari, neem, Brahmi, Tulsi are more effective than any other drugs. Ayurvedic medicines have no side effects and adverse reaction on body.

Ayurveda treatment for Ovarian cysts involves medicine which act on balancing doshas and hormones, correction of Agni, inflammation along with relief in symptoms. Panchakarma treatment like virechan (therapeutic purgation), basti(enema), nasya (nasal medication), raktamokshan, vaman(emesis).

Benefit of herbal therapy compared to conventional therapy is that herbal therapy is safe with lesser side effects and presence of multiple active compounds in medicinal herbs altogether provides a potentiating effect. One can use herbs for a longer duration with fewer side effects which is imperative since PCOS requires a long-term management. They can prove to be efficacious in treating the contributing factors of PCOS, providing relief for symptoms, and healing the body by boosting your immune system. We can combine the herbal remedies with PCOS friendly diet and exercise plan to boost the effectiveness of the chosen botanical treatment.

Ayurvedic herbal remedies for PCOS:

Ayurvedic treatment is by applying a multi-pronged approach towards –

- Correcting the hormonal imbalance,
- Treatment to obesity and avoiding high cholesterol levels,
- Treatment to insulin resistance.

1. Gokhru:

Chhota Gokhru (*Tribulus terrestris*) is also known as gokshura, bhakhdi, puncture vine, goat-head. It is an annual shrub distributed in Mediterranean, subtropical and warm climatic regions such as India, China, Southern USA, Mexico, Spain, and Bulgaria. Chhota Gokhru (*T. terrestris*) is generally known as noxious weed because of its small woody spiny fruits. The greyish brown fruit powder of *Tribulus terrestris* contains flavonoids, glycosides, alkaloids, steroids and saponin derivatives such as tigogenin, hecogenin, ruscogenin, diosgenin, chlorogenic and sarsasapogenin. Due to diuretic, analgesic, anti-diabetic, anti-urolithic, aphrodisiac, anthelmintic and anti-microbial properties, it is used in traditional medicines.

Gokshura, also known as Goksuraka, Gokhuri, Gokshra, Devil's thorn, Goat head, Small Caltrop,

Gokharu, or Gokhri is a vital element used to cure urinary diseases, polycystic ovary syndrome (PCOS), prostate gland problems, heart ailments and kidney problems. It may also aid in the development of muscle growth, increased and cognitive activity.

In India, gokshura may be used in Ayurvedic medicine to treat asthma, edema, cough, and renal problems, as well as to aid with hair loss, rheumatic pain, headache/stress, menstruation, weak nervous system, obesity, piles, and eye problems. This herb has been discovered to have hypotensive, anti-microbial, anti-cancer, aphrodisiac and diuretic qualities by researchers.



- Name: Gokhru
- Kingdom: Plantae
- Clade: Tracheophytes
- Order: Zygophyllales
- Family: Zygophyllaceae
- Genus: *Tribulus*
- Species: *T. terrestris*
- Chemical/botanical name: *Tribulus terrestris*,

- Biological source: The smaller or Chhota Gokhru is the dried ripe seeds of *Tribulus terrestris* Linn., belonging to family *Zygophyllaceae*.
- Chemical constituents: Alkaloid, Steroidal saponins, resins, fixed Oils, semidrying oil, peroxidase, diastase, proteins and protein fraction (10.85 %), 14 amino acids 6 of which are essential amino acids, starch, fructose, sucrose, a cardiac glycoside carboline alkaloids, harmane, harmaline Harman and tetrahydroharmine.
- Morphological characteristics:
- Flowers: Solitary, axillary, or leaf-opposed, yellow or white, 8–12 mm in diameter, and appear in July–August
- Fruits: Globose, hairy, 5-angled, spinous, and produced in autumn
- Seeds: Obliquely pendulous, with a hard seed coat, and several seeds in each coccus
- Cocci: 5–12 woody cocci, each with two pairs of hard sharp spines, one pair longer than the other
- Roots: 4–5 inches long, brown in color, and bear a sweet aroma
- Leaves: Paripinnate, oblong, with an acute-mucronate apex, obtuse-cuneate base, and entire margin
- Uses: Some of the symptoms of PCOS are enlarge ovaries, excess male hormone and absence of ovulation. Gokhru contain certain elements which might help in management of ovarian health and might improve the levels of hormones which are responsible for ovulation and fertility.
- Potential uses of Gokhru: Gokshura may be an extremely useful herb for many common ailments.
- It is also used in urinary disease, kidney functions, digestion, joint pain, brain functioning, cardiac
- functioning, skin health, acne, hair loss, etc.
- Mechanism of action: It eliminates excessive water and decrease the size of cysts, increase the exercise capacity fight glucose intolerance and also prevent and control diabetes in women affected by PCOS.

2. Ashwagandha:

Ashwagandha, also known as *Withania somnifera*, is an apoptogenic herb with a rich history in Ayurveda and traditional medicine. It's native to India and has been used for centuries to promote overall health and well-being in both men and women. Ashwagandha contains more than 50 compounds that have different

effects on the body, but it's most commonly used for its apoptogenic properties.

Ashwagandha can play a role in supporting women with PCOS for many reasons:

Stress Management:

One of the standout features of Ashwagandha is its ability to alleviate stress. It works by regulating the body's stress response and reducing cortisol levels, the primary stress hormone. Research shows that people who take ashwagandha experience improved mood, less anxiety, lower morning cortisol, a slower heart rate, and lower blood pressure. Lowering stress levels can be particularly beneficial for women with PCOS, as stress can fuel the condition and exacerbate many of the associated symptoms.

Hormone Balance:

Ashwagandha can play a crucial role in balancing hormones for women with PCOS by regulating the menstrual cycle, reducing androgen levels, and improving insulin sensitivity. Women with PCOS are more likely to have thyroid disorders and research shows ashwagandha can also support thyroid hormone balance. A happier thyroid means healthier hormones. another promising benefit of ashwagandha that makes it a favorable natural remedy for PCOS.

Blood Sugar Regulation:

Ashwagandha can help lower blood sugar levels and decrease insulin resistance, two driving factors of PCOS. It does this by boosting insulin secretion and improving our muscle's sensitivity to insulin.

Inflammation: There are many research studies showing ashwagandha's anti-inflammatory effects by reducing oxidative stress. Because inflammation is a key driver of PCOS, ashwagandha is a beneficial herb for this condition. Lowering inflammation also makes it easier for us to lose weight, and weight loss itself can lead to significant improvements in PCOS symptoms.

Fertility: Ashwagandha has traditionally been used in Ayurvedic medicine to improve sexual health and fertility in both men and women. It reduces stress and inflammation in the body and regulates hormones, supporting a healthy menstrual cycle and improving fertility outcomes in women with PCOS. Because PCOS impacts women's hormones so significantly,

poor sexual function and low sex drive are quite common.



- Name: ASHWAGANDHA
- Kingdom: Plantae
- Subkingdom: Tracheobionta
- Division: Magnoliophyta
- Class: Magnoliopsida
- Subclass: Asteridae
- Order: Solanales
- Family: Solanaceae
- Genus: *Withania*
- Species: *W. somnifera*
- Chemical / botanical name: *Withania somnifera*, Indian ginseng
- Biological source: It consists of the dried roots and stem bases of *Withania somnifera* Dunal, belonging to family *Solanaceae*.
- Chemical constituents: Alkaloids, steroidal, lactones, tropine, Cusco hygrine, withanolides, withaferin, β -sitosterol, carbohydrates, stigmaterol, glycosides, nitrogen containing steroidal saponins, triterpenoid glycoside, triterpenoid saponins, steroidal saponins, diosgenin, cardenolide saponins, Somnine isopelletierine, anaferine, cuseohygrine, Ana hygrine.
- Storage condition: Store protected from heat, moisture and against attack of insects and rodents at room temperature.
- Morphological characteristics: it's all parts are covered with whitish, stellate trichomes. Branching is extensive; leaves are simple, alternate or sub-opposite, ovate, entire, basis cunate, 10 cm long. The roots are stout, long tuberous, fleshy, whitish-brown.

- Uses: Ashwagandha has shown promising results in helping women with PCOS manage their symptoms. It can reduce stress and anxiety, which are often associated with hormonal imbalances characteristic of PCOS. It can also improve hormonal balance, regulate the HPA axis, and promote ovulation.
- Mechanism of action: Ashwagandha can play a crucial role in balancing hormones for women with PCOS by regulating the menstrual cycle, reducing androgen levels, and improving insulin sensitivity. Women with PCOS are more likely to have thyroid disorders and ashwagandha can also support thyroid hormone balance. It balances the cortisol level, cortisol is a stress hormone produced by the adrenal gland. It lowers the anxiety and improves the sleep.

3. Shatavari:

Shatavari is an Ayurvedic herb that has been used for centuries to treat a variety of female health problems, including PCOS. It is known for its adaptogenic properties, which means that it helps the body adapt to stress. Shatavari also has anti-inflammatory and antioxidant properties, which can help to reduce the symptoms of PCOS.

Ayurveda shows very good results in treating these hormonal disorders in which "SHATAVARI" is mentioned as an herb of choice to treat various reproductive and other health issues related to female health. It doesn't mean that this herb cannot be used in males. Shatavari in Latin called as "*Asparagus racemosus*" is an herb native to India, Sri Lanka and Nepal and nowadays is one among the endangered species. It grows up to 1-2 meters in height.

There is some scientific evidence to support the use of Shatavari for PCOS. One study found that Shatavari improved ovulation and menstrual regularity in women with PCOS. another study found that Shatavari reduced androgen levels in women with PCOS.

In addition to its potential benefits for PCOS, Shatavari has a number of other health benefits. It is a good source of antioxidants, which can help to protect the body from damage caused by free radicals. Shatavari is also a good source of fiber, which can help to regulate digestion and promote weight loss

Shatavari increases the production of prolactin, a hormone that is important for breastfeeding. Hormone balancing. Shatavari has been used to attempt treat conditions related to hormone imbalance such as polycystic ovarian syndrome (PCOS) and infertility. Reduce symptoms of menopause.



- Name: SHATAVARI
- Kingdom: Plantae
- Clade: Tracheophytes, angiosperms, Monocots
- Order: Asparagales
- Family: Asparagaceae
- Subfamily: Asparagoideae
- Genus: *Asparagus*
- Species: *A. racemosus*
- Chemical / botanical name: Asparagus Racemosus Root
- Biological source: *Asparagus racemosus* commonly known as Shatavari or Kurilo is a spinous shrub with tuberous roots found commonly in the tropical and subtropical regions of Nepal, India, Australia, and Africa.
- Chemical constituents: Steroidal, tramontane, Saponins, Shatavrin-I-IV, shatavnin-I is the major

Glycosides with 3 glucose and rhamnose moieties to sarsasapogenin.

- Morphological characteristics: Shatavari (*Asparagus racemosus*) has many morphological characteristics, including:
 - Roots: Shatavari has tuberous roots that are fleshy, spindle-shaped, and about one meter long. They are white on the inside and light ash-colored on the outside, and are more or less smooth when fresh. When dried, they develop longitudinal wrinkles and have no distinct odor.
 - Stems: Shatavari is a climber with stems that can grow up to 4 meters long.
 - Branches: Shatavari's branches are modified into cladodes with long basal decurved spines. Phylloclade's: Shatavari has small, shiny green, pine-needle-like phylloclade's (photosynthetic branches).
 - Flowers: In July, Shatavari produces small white flowers on short, spiky stems.
 - Fruit: In September, Shatavari produces blackish-purple, globular berries
 - Uses: Shatavari, also known as asparagus racemosus or buttermilk root, has many uses, including:
 - Reproductive health
 - Shatavari is considered the best herb for female reproductive health in Ayurveda. It can help with menstrual health, regulate menstrual cycles, and alleviate symptoms of hormonal imbalances. It can also help balance women during menopause and pregnancy.
 - Lactation
 - Shatavari is a galactagogue, which means it can increase breast milk production by increasing prolactin, the hormone that stimulates milk production.
 - Digestion
 - Shatavari can improve digestion.
 - Immunity
 - Shatavari can help create a robust immune system and treat alopecia areata.
 - anti-inflammatory and antioxidant properties
 - Shatavari can help manage stress and enhance overall well-being. It can also help treat ulcerative colitis, peptic ulcers, mouth ulcers, and canker sores. The juice extracted from the Shatavari plant leaves can be used to address wounds.

- Menopause symptoms
- Shatavari is rich in phytoestrogens like saponins and flavonoids, which can help with menopause-related symptoms like hot flushes, lack of sleep, depression, irritability, vaginal dryness, and urinary problems.
- Mechanism of Action: *Asparagus racemosus*, (Asparagaceae) is traditionally used in Indian medicine (Ayurveda). It helps in promoting normal development of ovarian follicles, regulates menstrual cycle and revitalizes the female reproductive system mainly due to its phytoestrogen (natural plant-based estrogen). It also helps in combating the hyperinsulinemia. The presence of estrogenic compound or phytoestrogen in Shatavari effectively balances estrogen levels, stops bleeding, and supports the restoration of the endometrium.

4. Neem:

Azadirachta Indica, fast growing plant of the mahogany family (*Meliaceae*), valued as a medicinal plant, as a source of organic pesticides, and for its timber. Neem – Needless to highlight, a blood purifier which cleanses the whole body. Neem is likely native to the Indian subcontinent and to dry areas throughout South Asia. It has been introduced to parts of Africa, the Caribbean, and numerous counties in South and Central America. The plant has long been used in Ayurvedic and folk medicine and is used in cosmetics and in organic farming applications. Neem (*Azadirachta Indica*) is an evergreen tree of southeastern Asia that is widely distributed in the Indian subcontinent. The height of this tree is approximately 15-20 m and sometimes even up to 35-40 m. The word A. Indica was derived from the Persian language. The Azad means “free,” and the dirakht is meaning “tree,” and “I” refer to “Indian origin.”. Neem is a common name, and also, it’s known with the name of Nimbay, Veppai, Ariyaveppu, Vepa in India. More than 300 compounds are derived from different parts of neem, such as leaves, flower, seed, fruit, bark, and root. Non-isoprenoids and isoprenoids metabolites are two major groups of these compounds. Some active constituents of neem include nimbidin, sodium nimbidate, nimbin, nimbolide, gallic acid, azadirachtin, and polysaccharides. Nimbidin, as a major constituent

extracted from neem seeds, demonstrated several biological activities such as anti-inflammatory, anti-pyretic, anti-diabetic, anti-fungal, and anti-ulcer activities. The spermicidal activity of nimbin has been reported in humans. Nimbolide has been shown to exert anti-malaria and antibacterial effects. Several studies have been reported the different pharmacologic effects of neem, including hypolipidemic, hepatoprotective, antimicrobial, anticancer, and anti-diabetes properties. In line with these properties, the US National Academy of Science (NAS) has stated the neem tree as a tree that is solving global problems.



- Name: NEEM
- Kingdom: Plantae
- Clade: Tracheophytes
- Order: Sapindales
- Family: Meliaceae
- Genus: *Azadirachta*
- Species: *A. Indica*
- Chemical constituents: Tannins, rutin, 6-desacetylnimbinene, nimbandiol, nimbolide, ascorbic acid, n-hexaconazole and amino acid, 7-

desacetyl-7-benzoylazadiradione, flavonoids, glycosides, 7-desacetyl-7-benzoylgedunin, nimbiol, 17-hydroxyazadiradione.

- Biological source: Neem consists of the fresh or dried leaves and seed oil of *Azadirachta Indica* J. Juss (*Melia Indica* or *M. azadirachta* Linn.)
- Morphological characteristics: Neem trees (*Azadirachta Indica*) have many morphological characteristics, including:
 - Leaves: Alternate, compound, and evergreen, with 20–40 cm long blades and 2–30 dark green, serrated leaflets that are 3–8 cm long. Young leaves are reddish or purplish, and the terminal leaflet is often absent. The leaves are glabrous and glossy green when mature, and are clustered at the ends of the branches. During extreme drought, the leaves may fall off.
 - Flowers: Small, cream-colored, and fragrant, with five petals and a diameter of about 1 cm. The flowers grow in clusters that are 15–25 cm long and contain 150–250 flowers.
 - Fruit: Olive-like, with a diameter of 1–3 cm and a sweet pulp that surrounds a single seed. When ripe, the fruit is yellow and can be roundish or elongated oval in shape.
 - Seeds: Brown, elongated, and 1.5–2.5 cm long.
 - Bark: Grey, and becomes fissured and flaky in older trees.
 - Sap: In humid climates, older trees may exude a sticky, foul-smelling sap.
 - Wood: Strong and durable, with interlocked grains that make it difficult to split. Neem wood is heavy and is used to make cart axles, oars, and felloes for cart wheels
- Uses: Neem (*Azadirachta Indica*), a tree native to India, has many uses, including:
 - A blood purifier which cleanses the whole body.
 - Skincare
 - Neem has antibacterial and anti-inflammatory properties that can help with acne, oily skin, and irritated skin. It can also help repair damaged skin cells because it's rich in vitamin E.
 - Dental care
 - Neem bark and leaf extract can help prevent cavities and gum disease.
 - Fungal infections
 - Neem has antifungal properties that can help treat fungal infections, such as toenail fungus.

- Dandruff
- Neem can help cure dandruff and eliminate itchiness and inflammation in the scalp.
- Immunity
- Neem's antibacterial and antifungal properties can help keep infections at bay and purify the blood of harmful toxins.
- Other uses
- Neem can also be used as an insect and mosquito repellent, to treat wounds, reduce joint pain, and exfoliate skin.
- Mechanism of action: PCOS can interfere with ovulation and impact fertility but by consumption of neem leaves it treats problems of infertility. Neem is known to have hormone balancing properties. According to Ayurveda, PCOS is a 'Kapha' and 'vata' disorder which disturb the process of ovulation in women of fertile age group. By consumption of neem it balances the 'Kapha', also it is known to keep the immune system healthy.

5. Tulsi:

Tulsi is an aromatic shrub in the basil family *Lamiaceae* (tribe ocimeae) that is thought to have originated in north central India and now grows native throughout the eastern world tropics. Within Ayurveda, tulsi is known as “The Incomparable One,” “Mother Medicine of Nature” and “The Queen of Herbs,” and is revered as an “elixir of life” that is without equal for both its medicinal and spiritual properties. Within India, tulsi has been adopted into spiritual rituals and lifestyle practices that provide a vast array of health benefits that are just beginning to be confirmed by modern science. This emerging science on tulsi, which reinforces ancient Ayurvedic wisdom, suggests that tulsi is a tonic for the body, mind and spirit that offers solutions to many modern-day health problems.

Tulsi is perhaps one of the best examples of Ayurveda's holistic lifestyle approach to health. Tulsi tastes hot and bitter and is said to penetrate the deep tissues, dry tissue secretions and normalize kapha and vatta. Daily consumption of tulsi is said to prevent disease, promote general health, wellbeing and longevity and assist in dealing with the stresses of daily life. Tulsi is also credited with giving luster to

the complexion, sweetness to the voice and fostering beauty, intelligence, stamina and a calm emotional disposition. In addition to these health-promoting properties, tulsi is recommended as a treatment for a range of conditions including anxiety, cough, asthma, diarrhea, fever, dysentery, arthritis, eye diseases, otalgia, indigestion, hiccups, vomiting, gastric, cardiac and genitourinary disorders, back pain, skin diseases, ringworm, insect, snake and scorpion bites and malaria.

Considered as a potent adaptogen, tulsi has a unique combination of pharmacological actions that promote wellbeing and resilience. While the concept of an “adaptogen,” or herb that helps with the adaptation to stress and the promotion of homeostasis, is not widely used in Western medicine, Western science has revealed that tulsi does indeed possess many pharmacological actions that fulfill this purpose.

The medicinal properties of tulsi have been studied in hundreds of scientific studies including in vitro, animal and human experiments. These studies reveal that tulsi has a unique combination of actions that include: antimicrobial (including antibacterial, antiviral, antifungal, antiprotozoal, antimalarial, anthelmintic), mosquito repellent, anti-diarrheal, anti-oxidant, anti-cataract, anti-inflammatory, chemo preventive, radioprotective, hepato-protective, neuro-protective, cardio-protective, anti-diabetic, anti-hypercholesterolemia, anti-hypertensive, anti-carcinogenic, analgesic, anti-pyretic, anti-allergic, immunomodulatory, central nervous system depressant, memory enhancement, anti-asthmatic, anti-tussive, diaphoretic, anti-thyroid, anti-fertility, anti-ulcer, anti-emetic, anti-spasmodic, anti-arthritis, adaptogenic, anti-stress, anti-cataract, anti-leukodermal and anti-coagulant activities. These pharmacological actions help the body and mind cope with a wide range of chemical, physical, infectious and emotional stresses and restore physiological and psychological function.



- Name: TULSI
- Kingdom: Plantae
- Clade: Tracheophytes
- Order: Lamiales
- Family: *Lamiaceae*
- Genus: *Ocimum*
- Species: *O. tenuiflorum*
- Biological source: Tulsi consists of the fresh and dried leaves of *Ocimum* species like *Ocimum sanctum* L. and *Ocimum basilicum* L. etc.
- Chemical constituents: Chemical constituents: Orientin, Vicenin, Eugenol, Linolenic Acid, Ursolic Acid, Essential oil, mucilage, camphor, Ocimarin, isorientin, aesculetin, orientin, chlorogenic acid, isovitexin, aesculin, gallic acid, vitamins A, Vitamin C and rosmarinic acid.
- Morphological characteristics: Tulsi, also known as holy basil or Indian basil, has many morphological characteristics:
- Leaves: Simple, opposite, and ovate or oblong-ovate, up to 5 cm long, and usually somewhat toothed. The leaves can be green or purple, depending on the variety, and are strongly scented and hairy.

- Stems: Hairy and sometimes woody, and can be erect and much branched.
- Flowers: Small, purplish or white, and tubular, with green or purple sepals. The flowers are borne in terminal spikes or elongate racemes in close whorls, and are sometimes longer than 5 mm.
- Fruits: Small, sub globose or broadly oblong nutlets, with yellow to reddish seeds.
- Uses: Tulsi can help cure fever.
- Tulsi leaves are used to treat skin problems like acne, blackheads and premature ageing.
- Tulsi is used to treat insect bites.
- Tulsi is also used to treat heart disease and fever.
- Tulsi is also used to treat respiratory problems.
- Basil is antispasmodic, appetizer, carminative, galactagogue, and stomachic. It is used for stomach cramps, gastric catarrh, vomiting, intestinal catarrh, constipation and enteritis. It had been sometimes used for whooping cough as an antispasmodic. Tulsi has antioxidant properties and reduces blood glucose levels. Thus, it is useful for diabetics. Tulsi reduces total cholesterol level.
- Mechanism of action: *Ocimum tenuiflorum* L. (Lamiaceae) is a traditional herbal medicine commonly known as Tulsi. *Ocimum tenuiflorum* is potentially effective for polycystic ovarian syndrome. It has got excellent anti-androgenic properties to decreasing the androgen production (Hyperandrogenism). They also used against multiple ailments and holds promise in the management of obesity and its co-morbidities.

6. Brahmi:

The "herb of grace" is known as water hyssop, Indian Pennywort, and Bramhi. Brahmi is an ancient herb known for its neuroprotective and cognitive-enhancing properties. Brahmi scientific name is *Bacopa monnieri*. The term Brahmi is derived from Brahman or the Hindu god Brahma, both of which refer to the global mind or consciousness. Therefore, Brahmi symbolizes Brahma's strength. It may also be because Brahmi has a tonic effect on the nervous system. Researchers found that Brahmi (*Bacopa*) helped reduce hypoglycemic symptoms. In addition, it aids in glucose regulation and facilitates a normal, healthy lifestyle for the individual. PCOS have main cause of lack of

sleep and Brahmi helps to improve sleep, most people have irregular sleep patterns due to stress, poor diet, and lack of exercise. Brahmi can improve sleep patterns and alleviate insomnia by reducing hyperactivity and anxiety. Brahmi's anti-aging properties and antioxidants make it a powerful herb for promoting tissue repair and collagen production. It is used to reduce the appearance of stretch marks and skin discoloration after pregnancy or rapid weight loss, which are common reasons for seeking out pharmaceutical and Ayurveda remedies. Brahmi's anti-inflammatory properties may also help people with acne and skin sensitivity. Brahmi plant benefits relieve the symptoms of various ailments, including PCOS, bronchitis, congestion, chest colds, and sinusitis. It improves overall general health.



- Name: BRAHMI
- Kingdom: Plantae
- Clade: Tracheophytes
- Family: Plantaginaceae
- Genus: *Bacopa*
- Species: *B. monnieri*
- Biological source: Brahmi, also known as *Bacopa monnieri*, is a perennial herb that grows in warm wetlands and is native to Australia, India, and other regions.
- Chemical constituents: *monnieri* contains alkaloid brahmin, nicotine, herpestine, bacosides A and B, saponins A, B and C, triterpenoid saponins, stigmasterol, β -sitosterol, betulinic acid, D-

mannitol, stigmasterol, α -alanine, aspartic acid, glutamic acid, and serine and pseudojubilogenin glycoside.

- Morphological characteristics: Brahmi (*Bacopa monnieri*) is a small, creeping herb with the following morphological characteristics:
- Leaves: Sessile, fleshy, opposite, and ovate with a dotted lower surface. They can be oblong, obovate, or spatulate, and are 6–25 leaves per branch, 2.5–10 mm long, and very obtuse. The leaves are also succulent and relatively thick, and can be 1/8-inch-wide and 5/8 inch long.
- Flowers: Small, actinomorphic, and axillary, with 1–3 pedicelled flowers. They can be white, light bluish, or purple, with 4–5 petals and purplish strips on the upper lip. The calyx is 7 mm long, with an upper sepal that is broadly ovate and lateral sepals that are linear lanceolate. The corolla is 7–9 mm long, with lobes that are nearly equal and anthers that are bluish purple.
- Other characteristics: The plant has ascending branches that root at nodes, and can grow in slightly brackish conditions. It can be propagated through cuttings.
- Uses:
 - It may have analgesic potential (pain killer)
 - It may have anti-inflammatory potential
 - It may have anti-microbial property (may kill microbes and bacteria)
 - It may have anti-convulsant potential (may be helpful in seizures)
 - It may have anti-depressant property (may relieve depression)
 - It may have anxiolytic property (reduces anxiety)
 - It may have anti-neoplastic property (may help in cancer)
 - It may have antioxidant property
 - It may have beneficial properties for liver health
 - It may have an immuno-stimulatory potential (may stimulate the immune system)
 - It may have sedative potential (may induce sleep and calmness)
 - It may have anti-ulcer potential.
- Mechanism of action: Women with PCOS are known to have a higher risk of developing depression and adult ADHD (Attention deficit

hyperactivity disorder). It is a neurodevelopmental disorder. But by consumption of *Bacopa monnieri* there is significant reduction of ADHD symptoms. Brahmi may help prevent anxiety and stress. It is considered an adaptogenic herb, meaning that it increases your body's resistance to stress. So, it will lead to have cognition enhancing property (Nootropic) and less stress which is crucial in the women suffering from PCOS. Brahmi helps to reduce stress and anxiety by elevating your mood and reducing levels of cortisol, a hormone that is closely linked to stress level and is play a crucial role in PCOS. By the reduction of cortisol level, it helps in the treatment of PCOS.

Vitamins:

Vitamins that are used in preparation of syrup:

- I. Vitamin C: Vitamin C plays an important role in the regulation of the menstrual cycle and ovarian function. Ascorbic acid excretion is increased and declines immediately prior to ovulation, and then immediately increases again just after temperature rises post-ovulation. This reflects uptake of ascorbic acid in the pre-ovulatory ovary, which then facilitates proper ovulation. These ascorbic acid levels are stimulatory to the hormones progesterone and oxytocin and have been found in high concentrations in the corpus luteum. High levels of ascorbic acid present in the ovaries may be responsible for collagen synthesis, which is required for follicle and corpus luteum growth, as well as repair of the ovary post-ovulation. PCOS patients exhibit oxidative stress. In patients with PCOS, oxidative stress is closely associated with metabolic disorders, ovulation disorders, and difficulties in embryo transfer. This may be the reason why PCOS patients have an abnormal metabolic state and reduced fertility. Consequently, numerous studies are devoted to the treatment of polycystic ovaries by improving oxidative stress and have achieved a degree of curative effect. Antioxidants are a group of substances that help to capture and neutralize free radicals, thereby eliminating their damaging effects on the body. It may be helpful to treat PCOS with antioxidants or drugs that promote the antioxidant process in the body. Normally, the damaging effects of reactive oxygen species can be

offset by a sophisticated antioxidant system, which involves enzymatic antioxidants, such as superoxide catalase, dismutase, paraoxons, and peroxidase, as well as nonenzymatic antioxidant substances, such as vitamin C. Several findings suggest that antioxidant intervention may improve insulin resistance and lipid metabolism in polycystic ovary syndrome.

II. Vitamin B: It is essential for fat metabolism. It is also known as pantothenic acid. Women with PCOS are also in the risk group of developing type 2 diabetes, which makes them more sensitive to insulin. This is why metformin is often used in the treatment of PCOS. Unfortunately, this medicine has an influence on the reduction in vitamin B12 levels after just a few months of intake and is accompanied by an increase in the concentration of homocysteine. Moreover, the inability to get pregnant and random stillbirth in women with PCOS may also be a consequence of the clinical deficiency of B12. In addition, in patients with hyperhomocysteinemia, stillbirth was observed more frequently than in women with correct homocysteine concentration. The researchers have a hypothesis those vitamins soluble in water that has antioxidant properties and participate in metabolic transformations as regulators may be supplemented together with a reduction diet, thus being beneficial in the treatment of PCOS. The B vitamins are very important in helping to correct the symptoms of PCOS. Vitamins B2, B3, B5 and B6 are particularly useful for controlling weight, and here's why: Vitamin B2 helps to turn fat, sugar and protein into energy. B3 is a component of the glucose tolerance factor (GTF), which is released every time blood sugar rises, and vitamin B3 helps to keep the levels in balance. Vitamin B5 has been shown to help with weight loss because it helps to control fat metabolism. B6 is also important for maintaining hormone balance and, together with B2 and B3, is necessary for normal thyroid hormone production. Any deficiencies in these vitamins can affect thyroid function and consequently affect the metabolism.

III. MATERIAL AND METHODOLOGY

Instruments used:

a. Weighing balance:



b. Water bath:



c. Heating mantle:



d. Magnetic stirrer:



Figure a: Boiling of powder drug

Other material used:

1. Glass beaker
2. Measuring cylinder
3. Petri dish
4. Funnel
5. Tripod stand
6. filter paper
7. Mortar pestle
8. pH paper

Other:

Preservatives:

- Methyl Paraben
- Propyl Paraben



Figure b: Filtration of extract

Method of Extraction: *Extraction of crude drugs by decoction method.*

DECOCTION: DECOCTION IS A METHOD OF EXTRACTION BY BOILING HERBAL OR PLANT MATERIAL (WHICH MAY INCLUDE STEMS, ROOTS, BARK AND RHIZOMES) TO DISSOLVE THE CHEMICALS OF THE MATERIAL.

1. GOKHRU:

- THE COLLECT LEAVES OF GOKHRU AND DRY THEM AT ROOM TEMPERATURE IN THE SHADE.
- POWDER THE DRIED LEAVES USING MORTAR AND PESTLE.
- ADD 5 GRAMS OF THE POWDERED LEAVES TO 50 ML OF PURIFIED WATER.
- PLACE THE WATER IN A BEAKER AND HEAT IT USING A HEATING MANTLE TO A TEMPERATURE OF 60°C.
- AFTER 20 MINUTES FILTER THE EXTRACT.
- THIS EXTRACT IS USED IN FORMULATION.

2. ASHWAGANDHA:

- THE COLLECT ROOTS OF ASHWAGANDHA AND DRY THEM AT ROOM TEMPERATURE IN THE SHADE.
- POWDER THE DRIED ROOTS USING MORTAR AND PESTLE.
- ADD 5 GRAMS OF THE POWDERED ROOTS TO 50 ML OF PURIFIED WATER.
- PLACE THE WATER IN A BEAKER AND HEAT IT USING A HEATING MANTLE TO A TEMPERATURE OF 60°C.
- AFTER 20 MINUTES FILTER THE EXTRACT.
- THIS EXTRACT IS USED IN FORMULATION.



Figure a: Boiling of powdered drug



Figure b: Filtration of extract



Figure b: Filtration of extract

3. SHATAVARI:

- THE COLLECT ROOTS SHATAVARI AND DRY THEM AT ROOM TEMPERATURE IN THE SHADE.
- POWDER THE DRIED ROOTS USING MORTAR AND PESTLE.
- ADD 5 GRAMS OF THE POWDERED ROOTS TO 50 ML OF PURIFIED WATER.
- PLACE THE WATER IN A BEAKER AND HEAT IT USING A HEATING MANTLE TO A TEMPERATURE OF 60°C.
- AFTER 20 MINUTES FILTER THE EXTRACT.
- THIS EXTRACT IS USED IN FORMULATION.



Figure a: Boiling of powdered drug

4. NEEM:

- The collect leaves of Neem and dry them at room temperature in the shade.
- Powder the dried leaves using mortar and pestle.
- Add 5 grams of the powdered leaves to 50 ml of purified water.
- Place the water in a beaker and heat it using a heating mantle to a temperature of 60°C.
- After 20 minutes filter the extract.
- This extract is used in formulation.

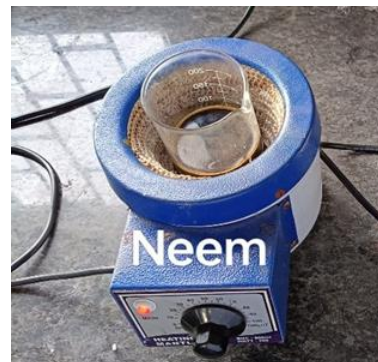


Figure a: Boiling of powdered drug



Figure b: Filtration of extract

5. TULSI:

- The collect leaves of Tulsi and dry them at room temperature in the shade.
- Powder the dried leaves using mortar and pestle.
- Add 5 grams of the powdered leaves to 50 ml of purified water.
- Place the water in a beaker and heat it using a heating mantle to a temperature of 60OC.
- After 20 minutes filter the extract.
- This extract is used in formulation.



Figure a: Boiling of powdered drug



Figure a: Boiling of powdered drug



Figure b: Filtration of extract



Figure b: Filtration of extract

6. BRAHMI:

- The collect leaves of Brahmi and dry them at room temperature in the shade.
- Powder the dried leaves using mortar and pestle.
- Add 5 grams of the powdered leaves to 50 ml of purified water.
- Place the water in a beaker and heat it using a heating mantle to a temperature of 60-degree Celsius.
- After 20 minutes filter the extract.
- This extract is used in formulation.

IV. METHODOLOGY

Formulation of syrup

➤ Procedure:

1. After decoction of crude drugs. Mix each extract (10 ml each).
2. Addition of Sugar Syrup: Add 60 ml of sugar syrup and preservatives (Methyl Paraben and Propyl Paraben) in a small amount.
3. Addition of Water-Soluble Vitamins: Dissolve water-soluble vitamins like Vitamin C, Vitamin B5, and Vitamin B12 in sterile water. Mix 5 ml of each vitamin solution into the syrup solution.
4. Addition of flavoring agent: Few amounts of natural Pineapple flavor is added.
5. The final product is labelled and passed for evaluation tests.

Formula:

Sr.no	Content	Quantity
		Each 5 ml contains

	Gokhru	300 mg
	Ashwagandha	200 mg
	Shatavari	200 mg
	Neem	200 mg
	Tulsi	100 mg
	Brahmi	100 mg
	Vitamin B5	5 mg
	Vitamin B12	1.2 µg

	Vitamin C	40 mg
	Methyl Paraben	0.01 mg
	Natural Pineapple flavor	0.01 mg
	Sugar syrup	QS
	Purified water	QS

Finished product analysis:

Sr. No.	Test	Specification	Observation
1	Description	A brown coloured clear solution, free from visible suspended particles, filled in amber bottle	A brown coloured clear solution, free from visible suspended particles, filled in amber bottle
2	pH	4.0 - 5.0	4.30
3	Weight Per ml	1.22 ± 0.03 g/ml (1.19 g/ml to 1.25 g/ml)	1.200 g/ml
4	Net Filled Volume	NLT 100 ml ± 1 ml	101 ml
5	Leak Test	To Comply	Complies
6	Identification By TLC		
A	Gokhru	Complies with Test	Complies
B	Ashwagandha	Complies with Test	Complies
C	Shatavari	Complies with Test	Complies
D	Neem	Complies with Test	Complies
E	Tulsi	Complies with Test	Complies
F	Brahmi	Complies with Test	Complies
7	Identification by Chemical Method		
A	Vitamin C	Complies with Test	Complies
B	Vitamin B12	Complies with Test	Complies
C	Vitamin B5	Complies with Test	Complies
8	Microbial limit Test:		
a	Total Bacterial Count	NMT 10 ³ CFU / ml	50 ^{CFU} / ml
b	Total fungal Count	NMT 10 ² CFU / ml	<10 CFU / ml
c	<i>E. Coli</i>	Absent / ml	Complies
d	<i>Salmonella</i>	Absent / 10 ml	Complies
e	<i>Pseudomonas aeruginosa</i>	Absent /ml	Complies
f	<i>Staphylococcus aureus</i>	Absent / ml	Complies

V. RESULT

The polyherbal syrup for treatment of Polycystic Ovarian Syndrome is prepared and evaluated. The results are tabulated below:

Sr.no	Test	Result
1.	Thermal stability	Stable since one month
2.	Density	1.200 g/ml
3.	Colour	Brown Colour
4.	Odour	Characteristic odour
5.	Taste	Sweet pineapple
6.	pH	4.0 - 5.0
7.	Appearance	Turbid

CONCLUSION

PCOS (polycystic ovarian syndrome) is one of the most frequent female reproductive illnesses. PCOS therapies are primarily aimed at normalizing the ovary's functioning. Medications are used to control menstrual cycles, induce ovulation, and treat insulin resistance, hyperandrogenism, and obesity-related PCOS. Varied medicines are used to treat PCOS with varied symptoms; however successful therapy for PCOS remains a challenge. Some medicinal herbs that have been evaluated have multiple potential therapeutic effects in polycystic ovarian syndrome, insulin resistance, hyperandrogenism, oligo/amenorrhea, and obesity. As a result, further pre-clinical and clinical research is needed to investigate the efficacy of herbal medications in PCOS. This review aids in understanding the efficacy of medicinal plants in the treatment and management of polycystic ovarian syndrome.

Medicinal plants are still widely used in healthcare in many countries due to traditional practices, social harmony and minimal side effects.

The formulated herbal formulation shows the effective therapeutic activity against the Polycystic Ovarian Syndrome.

The formulation has zero side effects and used in PCOS (Polycystic Ovarian Syndrome).

Finally, we can conclude that all tests of herbal syrups prepared within limits show the prevention of Polycystic Ovarian Syndrome.