

# **Pharmacological Actions and Siddha Therapeutic Efficacy of the Kalarchi Formulation in PCOS Management - An overview**

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## **Abstract**

In the traditional Siddha system of medicine, Uterine healthcare is associated with equilibrium of Three Humours. Polycystic Ovary Syndrome (PCOS), traditionally recognized as SinaipaiNeerkatti or SoothagaVaayu, is a multifaceted endocrine disorder. The Siddha formulation comprising Kalarchikai (Caesalpiniabonduc), Lavangapattai (Cinnamomumzeylanicum), Sukku (Zingiberofficinale), and Moosambaram (Aloe barbadensis) offers a holistic therapeutic approach. This study overviews the synergistic actions of these ingredients in restoring the LH/FSH ratio, improving insulin sensitivity, and inducing ovulation.

## **Keywords**

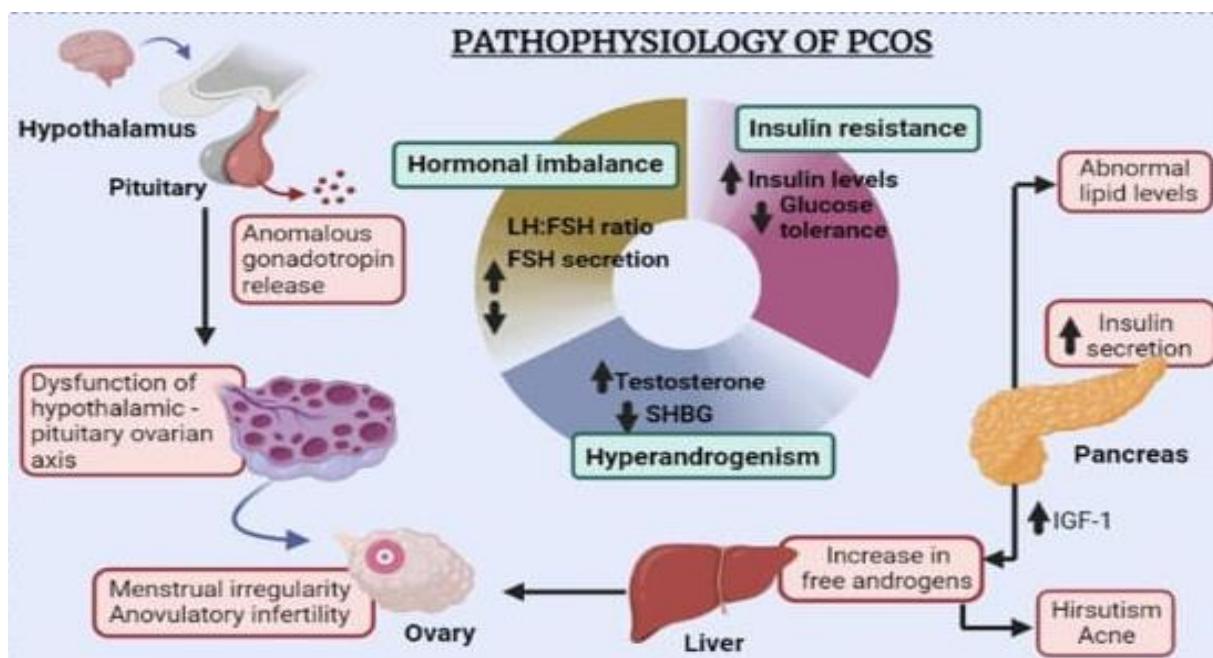
Uterine health care, three humours, Polycystic Ovary Syndrome (PCOS), Siddha Formulation, Therapeutic approach .

## **1. Introduction**

The Siddha system of medicine emphasizes the equilibrium of three humors—Vali, Azhal, and Iyam—for maintaining reproductive health. PCOS is viewed as a disorder where the accumulation of Iyam leads to cyst formation and vitiated Vali disrupts the menstrual cycle [3]. The Kalarchi formulation is specifically designed to address these humors through targeted pharmacological actions [2].

## Pathophysiology and Siddha Principles:

In Siddha, PCOS management necessitates the clearing of metabolic toxins (Ama) and the stimulation of digestive fire (Agni). The ingredients in this formulation focus on Agni Deepanam (appetizer) and Pachana (digestive) effects to clear metabolic obstructions [7]. This process is vital for regulating ApanaVayu, the force responsible for menstruation.



## Pharmacological Review of Ingredients

Kalarchikaai (Caesalpinia bonduc):

Kalarchikaai is the primary functional component. Its seed kernels contain cassane-type diterpenoids, such as caesalpinins, which exhibit significant anti-androgenic properties [5].



**Hormonal Regulation:** In experimental models, a high dose of 500 mg/kg has been shown to restore the balance of Luteinizing Hormone (LH) and Follicle-Stimulating Hormone (FSH) [5].

Uterine Action: Research indicates its action is mediated through cholinergic receptors and calcium ion influx, ensuring proper myometrial tone [9].

Sukku (*Zingiber officinale*):

Sukku acts as a metabolic catalyst. It neutralizes Ama and addresses obesity, a common comorbidity in PCOS [7].



Anti-inflammatory Action: It lowers circulating levels of TNF- $\alpha$  and C-reactive protein (CRP), mitigating the chronic low-grade inflammation associated with PCOS [8, 10].

Bio-enhancement: It improves the intestinal permeability, thereby increasing the bioavailability of other complex diterpenoids in the formulation [7].

Lavangapattai (*Cinnamomum zeylanicum*):

Lavangapattai addresses the endocrine-metabolic axis by acting as an insulin mimetic.

Glycemic Control: It enhances the expression of glucose transporter-4 (GLUT4), reducing hyperinsulinemia and subsequent androgen production [4].



Antioxidant Potential: It protects oocytes from oxidative stress and helps alleviate painful uterine spasms (Soothagavali) [4, 8].

Moosambaram (Aloe barbadensis extract):

Moosambaram is a potent emmenagogue used to "break" the obstruction of menstrual flow (Soothagathadai) [1].



Uterine Clearance: Its active anthraquinone glycosides stimulate pelvic circulation, facilitating the regular shedding of the endometrial lining [1].

### **Synergistic Mechanism and Scientific Validation**

The "multi-targeted" approach of the Kalarchi tablet ensures that while some herbs "scrape" the cysts.

In-silico Studies: Molecular docking has shown that compounds like Inositol and Xanthosine in this formulation have high binding affinities for enzymes like CYP17, which is responsible for androgen synthesis [6].

Comparison with Conventional Therapy: Unlike Metformin or Letrozole, which may have side effects, the Kalarchi formulation addresses the root cause by balancing the Mukkutram without a "rebound" effect [4, 6].

### **Clinical Observations and Preparation**

The efficacy of the tablet depends on the Suddhi (purification) of ingredients, such as removing the outer skin of Sukku and purifying the Kalarchikaii kernels [1, 7].

Kalarchi Tablet Preparation:(11)

Kalarchiparuppu - 20 gram

Sukku Powder - 20gram

Periyalavangappattai - 20gram

Moosambaram(Kariyabolam) - 40gram

To prepare the medicine, first purify the Sukku by peeling the skin and extract the kernels from the Kalarchikaai shells. Individually grind the kernels, peeled ginger, and Cinnamon into fine powders, then sieve them through a fine cloth (Vastrakayam) to remove coarse fibers. Separately powder the Moosambaram and combine all ingredients in a stone mortar(Kalvam). Gradually add water while grinding continuously until the mixture forms a smooth, non-sticky dough. Roll the paste into small, Turkey Berry-sized (500mg) tablets and shade-dry them in a dust-free area for two to three days. Once completely hardened, store the tablets in an airtight glass jar for use.

Clinical observations show that consistent use leads to regulated 28-30 day cycles, reduced ovarian volume in ultrasounds, and improved fertility rates [4, 5].

## 2. Conclusion

The Kalarchipolyherbal formulation provides a scientifically validated, holistic alternative for managing PCOS. By integrating metabolic, anti-inflammatory, and endocrine-regulating herbs, it restores the natural rhythmic cycle of the reproductive system.

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