

**ROLE OF CHITRAKA IN THE MANAGEMENT OF PMOS – AN AYURVEDIC
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ABSTRACT

Polyendocrine Metabolic Ovarian Syndrome (PMOS) is a multiple hormonal, metabolic and reproductive disorder involved by multi-systemic patho-physiology which encompasses insulin resistance, chronic inflammation and metabolic dysfunction alongside reproductive symptoms. From an Ayurvedic perspective, PMOS can be understood as a multifactorial condition involving *Agnimandhya* (*Jatharagni* and *Dhatvagni*) leading to the formation of *Ama* and subsequent vitiation of *Kapha* and *Vata doshas* with predominant involvement of *meda dhatu* and *Artava vaha srotas*. This review highlights the role of *Agni* in the pathogenesis and management of PMOS and discusses the principles of *Samprapti Vighatana* through *Nidana Parivarjana*, *Pathya Ahara-Vihara* and *Aushadha*. Special emphasis is given on *Agni Deepana* and *Ama Pachana* as primary therapeutic approaches. Among Ayurvedic drugs, *Chitraka* is recognized for its potent *Agni Deepana* and *Ama Pachana* properties, making it beneficial in the management of PMOS by improving metabolism and restoring reproductive health. Therapeutic principles including *Deepana-Pachana*, *Vatanulomana*, *Mridu Virechana* and *Rasayana* therapy are discussed for restoring *Dosha* balance, improving *Dhatu* formation and normalizing *Artava* function.

KEYWORDS: PMOS, *Ama*, *Chitraka*, *Agni*, *Deepana*, *Pachana*, *Rasayana*.**INTRODUCTION**

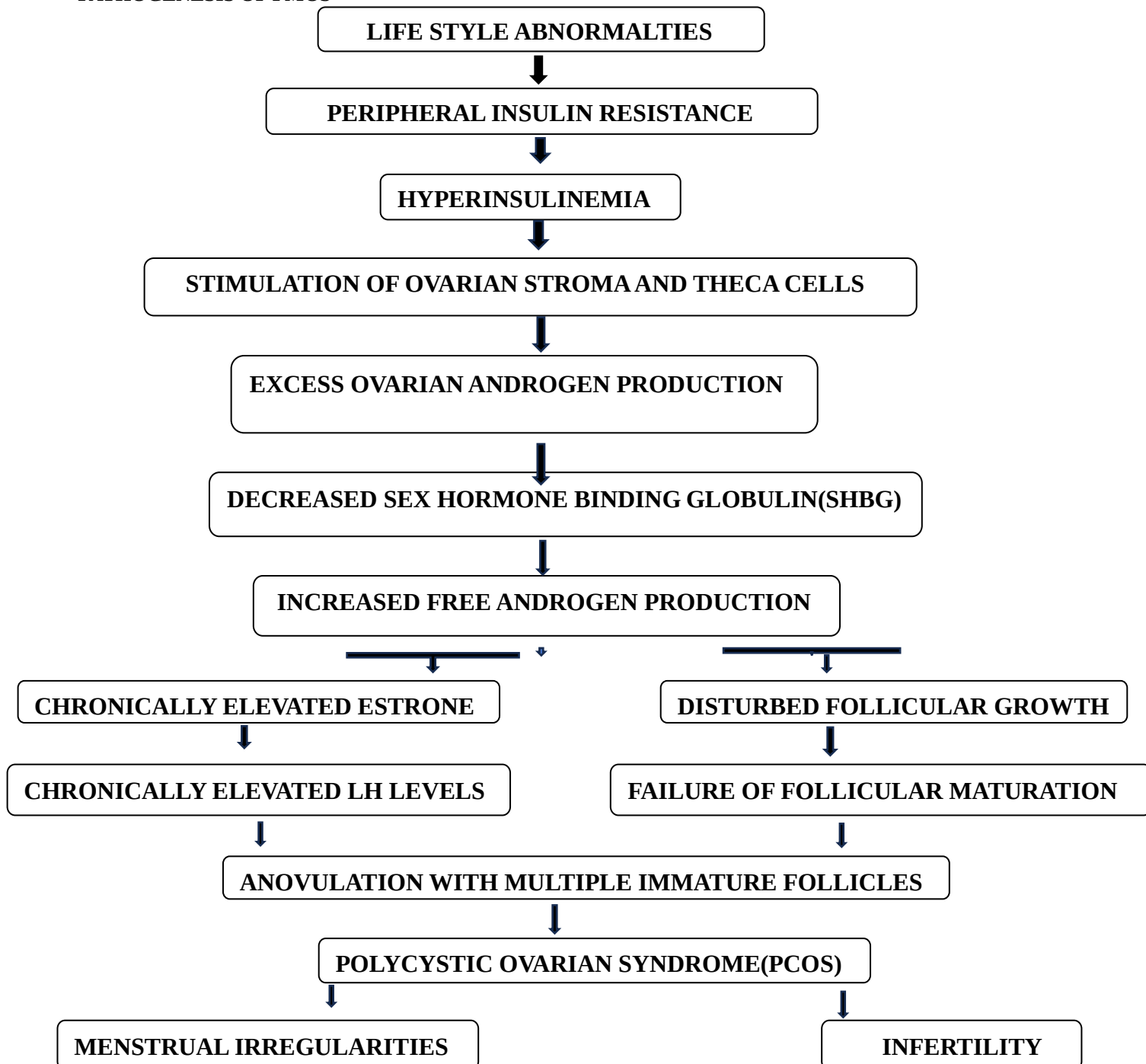
Polycystic Ovarian Syndrome (PCOS) recently renamed as Polyendocrine Metabolic Ovarian Syndrome (PMOS) following a global consensus process endorsed by the American Society for Reproductive Medicine (ASRM) and published in The Lancet in 2026.^[1] This condition is not merely a disease of ovarian cysts; it involves multiple hormonal, metabolic, reproductive and inflammatory pathways. Nearly 70% of women with this condition worldwide remain undiagnosed.^[2] The most common metabolic factors associated with PMOS include obesity, insulin resistance, type 2 diabetes mellitus, fatty liver disease, dyslipidemia, hyperandrogenism, cardiovascular symptoms, endometrial hyperplasia and endometrial cancer making it a significant lifestyle disorder affecting 22–26% of young women of reproductive age in India.^[3] Although PMOS has not been directly described in classical Ayurvedic texts, several gynaecological disorders such as *Yoni Vyapat* (*Arajaska*, *Bandhya*,

Lohitakshaya) and *Artavadushti* described by both Acharyas Charaka and Sushruta; *Pushpaghni Jathaharini* described by Acharya Kashyapa; *Nashtartava* described by Acharya Sushruta exhibit clinical similarities with this condition.^[4] From an Ayurvedic perspective, these disorders can be understood as originating from *Agnimandya*; progressing through sequential *Dhatu Dushti* and ultimately affecting *Artava*. The pathogenesis involves imbalance of *Dosha*, *Dhatu* and *Upadhatu*. Management focuses on *Nidana Parivarjana* along with the administration of *Deepana-Pachana* and *Agneya Artavajanana Dravyas*. Among these, *Chitraka* is considered one of the most effective drugs due to its potent *Deepana* and *Pachana* properties, which enhance *Agni*, reduce *Medo Dushti*, alleviate *Srotorodha* and help restore normal ovarian and menstrual function in the management of PMOS.

ETIOLOGY OF PCOS

The exact cause of PMOS is not clearly known in modern medicine. It is considered as a multi factorial

disorder involving environmental factors like diet, sedentary lifestyle and stress.

PATHOGENESIS OF PMOS

Unhealthy lifestyle leads to insulin resistance which makes the pancreas to produce more insulin (Hyperinsulinemia). This excess insulin stimulates the ovaries, especially the theca cells, to produce more Androgens (male hormones). Normally, these androgens are converted into estrogen; but in PMOS it fails to happen. High insulin levels also reduce the production of Sex Hormone Binding Globulin (SHBG) in the liver. Since SHBG regulates androgen levels, its decrease leads

to more free and active androgens in the blood. These excess androgens further worsen insulin resistance, creating a vicious cycle. High androgen levels disturb normal follicle development in the ovaries. As a result, follicles do not mature properly leading to Anovulation. The immature follicles accumulate in the ovaries giving them a polycystic appearance. Hormonal imbalance also prevents the normal estrogen and LH surge required for ovulation. Due to lack of ovulation, progesterone is not

produced and the endometrium continues to grow without proper shedding. This leads to Irregular or delayed periods (oligomenorrhea/amenorrhea) or heavy and prolonged bleeding when menstruation occurs.

DIAGNOSTIC CRITERIA^[5]

Rotterdam Criteria for Diagnosis of PMOS

1. Menstrual Abnormalities like Amenorrhea/Oligomenorrhea
2. Clinical & Biochemical evidences of Hyperandrogenism - Clinical features include hirsutism, acne and hairloss; Biochemical evidences include increased serum testosterone levels.
3. USG appearance of polycystic ovaries - Presence of 12 or more follicles in either ovary measuring 2-9mm and Necklace pattern shows more than 12 follicles with increased ovarian volume(>10ml).

Diagnosis is based on the presence of any two of the following 3 criteria.^[6]

Signs and Symptoms^[7]

Menstrual dysfunction is a common feature of PMOS, ranging from Oligomenorrhea to Amenorrhea(primary or secondary) and also include dysfunctional uterine bleeding characterized by abnormal mid-cycle bleeding patterns. Women with PCOS often present with a history of infrequent menstrual cycles occurring only three to six times per year. Approximately 50% of patients experience weight gain, difficulty in losing weight and obesity which increases the risk of developing Diabetes Mellitus and cardiovascular diseases in later life. Clinical features such as Acanthosis Nigricans (dark, thickened skin patches on the neck), Hirsutism (excess hair growth in male pattern), fat deposition, oily skin, seborrhea and severe acne(particularly in adolescents) are commonly observed. Infertility due to anovulation is another important feature. The ovaries are often enlarged and contain multiple small cysts.

BIOCHEMICAL ABNORMALITIES ASSOCIATED WITH PMOS^[8]

Hyperandrogenemia, Hyperinsulinemia, Hyperlipidemia, High serum estrogens, Hyperprolactinemia, Hypersecretion of LH, Insulin resistance, Low serum SHBG, Low FSH, Low serum progesterone, Hyperhomocysteinemia.

Ayurvedic Concept of PMOS^[9]

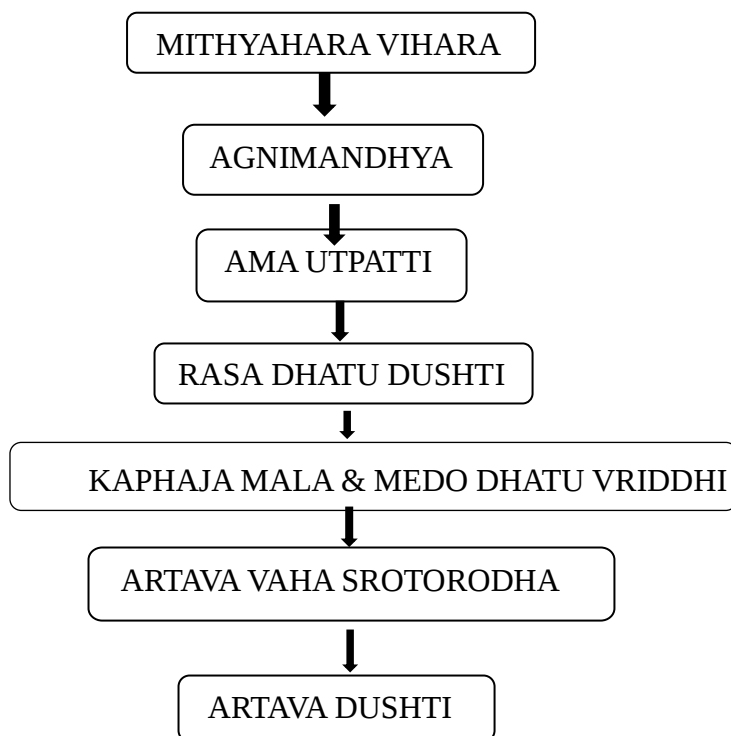
Although PMOS is not described as a distinct disease entity in Ayurveda, several conditions mentioned under *Yoni Vyapad* such as *Arajaska*, *Bandhya*, *Lohitakshaya*, *Shandi*, *Pushpaghni Jataharini*, *Nashtartava* and *Artavakshaya* show close clinical resemblances. *Charaka Samhita* describes *Arajaska* as a condition where there is impairment of the reproductive system leading to amenorrhea due to malnourishment and vitiation of *Pitta*. *Chakrapani Datta*(Commentator of *Charaka Samhitha*) explains amenorrhea as one of its key features. According to *Sushruta Samhita*, *Bandhya* is classified

under *Vataja Yoni Vyapad*, where vitiated *Vata* leads to destruction of *Artava*, which can be interpreted as anovulatory cycles resulting in infertility. *Charaka* also mentions that some deficiency in a part of *Beeja* during the formation of *Artava* results in *Bandhyatva* (infertility). *Pushpaghni Jataharini* described in *Kashyapa Samhita* (Revati Kalpadhyaya), refers to women who experience regular but ineffective menstrual cycles which closely resembles anovulation and features of hyperandrogenism. *Sushruta* describes *Nashtartava* as a condition caused by obstruction of *Artavavaha Srotas* due to vitiated *Kapha* or *Vata*, leading to absence of menstruation.

Role of Agni in PMOS^[10]

In the view of Ayurveda, *Jatharagni* is the prime factor responsible for proper digestion and metabolism that makes *Aahaar Rasa* which nourishes all the *dhatu*s. All *dhatu*s have its own metabolic fire called *Dhatvagni* which regulates metabolism at the tissue level. All *dhatvagnis* act on simultaneous *dhatu*s and produce *uttara dhatu*(subsequent *dhatu*), *upadhatu* and their malas *Rasadhatvgni* acts on *Ahara Rasa* forms the *Rasa dhatu* and its *Upadhatu Artava*. *Raktadhatvgni* acts on *Rasa dhatu* and forms *uttara dhatu*, the *Rakta dhatu*. *Rakta dhatu* gives proper colour, quantity and flow to *Artava*. So *Artava* is formed as an *Upadhatu* of *Rasa dhatu* from *Ahara Rasa* through the action of *Rasadhatvgni* supported by proper *Jatharaghi*, *Raktadhatvagni* and balanced *Doshas*. Here *vata* and *Kapha* are the main *doshas*; and *Rasa*, *Mamsa*, *Medo*, *Artava*(*Updhatu*) are the *dushyas* involved. This involves *Rasavaha*, *Mamsavaha*, *Medovaha* and *Artavavaha srotas*. *Doshadhisthana* is *Pakwasaya*, *Vyadhiadhishtana* is *Garbhashaya*(ovaries and uterus). The disease manifests in *Yoni*, *Twak* and *Sarva Shareera gata*; follows both *Bahya* and *Abhyantara roga marga*. Proper functioning of *Jatharagni* and *Dhatvagni* is essential for the formation of healthy *Dhatu*s and their *Upadhatu*s.

SAMPRAPTI



RASAPANCHAK

According to Ayurveda due to excessive intake of *Guru, Snigdha, Sheeta* and *Abhishyandi Ahara*, *divaswapana* and *ratrijagarana* leads to vitiation of *Kapha* and *Vata* *Dosha* causing *Agnimandya*. The first *dhatu* affected is *Rasa Dhatu* and its *Updhatu* is *Rajah (artava)*, if *Rasa Dhatu* not nourished properly it will lead to *Aartava Kshaya/Nashta Aartava* which clinically corresponds to *Oligomenorrhea/Amenorrhea* – one of the most common manifestation observed in PMOS. The second and third *dhatu* are *Rakta & Mamsa Dhatu* whose involvement leads to features such as *Vaivarna*(impaired complexion), *Pidika*(acne), *Alasya*(laziness), *Daurbalya* (generalized weakness) and *Krishna varna*(acanthosis nigricans) which are the frequently observed symptoms of PMOS. Aggravated *Vata* vitiates *Kapha* abnormally, which blocks the *Artavavaha srotas* and causes *Granthi lakshana*(Polycystic ovary). When *meda dhatu* is affected it will lead to improper fat deposition which further leads to *Sthaulya*(obesity); another important feature of PMOS. Further involves *Asthi dhatu*, as *Kesha* is its *Updhatu*, *asthi dhatu dushti* manifests as *Atiloma*(Hirsutism). Another symptoms seen in PCOS are *Keshapalithya* (premature greying of hair), *Khalithya*(hair loss); which are the characteristic hyperandrogenic features of PMOS. *Majja dhatu* helps in nourishment of brain cells(central nervous system) and endocrine regulation, *dushti of majja dhatu* results in *manasika vikara* such as *Chintya*(anxiety), *Vishada*(depression), mood swings & hormonal disturbances and all of which are the commonly associated symptoms of PMOS. Finally, impairment of *Artava* due to defective nourishment leads to *Beeja Dushti* and Anovulation resulting in Infertility. Thus

PMOS can be understood as a disorder originating from *Agnimandya*, progressing through sequential *Dhatu Dushti* and ultimately affecting *Artava*.

SAMPRAPTI VIGHATANA

Substances that act opposite to the *Nidana* (causative factors) and *Samprapti* (pathogenesis) of PMOS help in reducing aggravated *Doshas* and correcting the disease process. *Dravyas* possessing *Katu and Tikta Rasa*; *Laghu, Ushna, Tikshna, Sara, Ruksha, Vishada, Khara* and *Sukshma Guna*; *Ushna Veerya*; *Katu Vipaka* and actions such as *Deepana, Pachana, Anulomana, Rechana, Shamana, Chedana* and *Lekhana* karmas are beneficial for *Samprapti Vighatana* (breaking the pathogenesis). Subsequently, *medo-hara Dravyas* should be administered for comprehensive management of PMOS. Additionally, *Tikta Rasa Dravyas* are preferred for *Agni Deepana* and *Ama Pachana*.

ROLE OF CHITRAKA IN THE MANAGEMENT OF PMOS^[11]

Botanical Name: *Plumbago zeylanica* Linn.

Family: *Plumbaginaceae*.

Common Name: *Ceylon Leadwort*.

Synonyms: *Anala, Agni, Agnika, Jyothi, Dahana, Jarana, Vyala, Dipana, Dvipi, Chitraka*.

Part Used: *Mula*

Rasa Panchaka

Rasa: *Katu*.

Guna: *Laghu, Ruksha, Tikshna*.

Vipaka: *Katu*.

Virya: *Ushna*.

Prabhava: *Deepana Pachana*.

Dosha Karma: *Kapha Vata shamaka* – *Vata shamaka* due to *Ushna Virya*; *Kaphahara* due to *Katu rasa*, *Laghu*, *Ruksha*, *Tikshna guna*; *Katu vipaka* and *Ushna virya*.

Karma: *Deepana*, *Pachana*, *Grahi*, *Shulaprasamana*, *Arshoghna*, *Lekhaniya*, *Triptighna*, *Bhedaniya*.

Chemical Constituents: Plumbagin, Chitraneone, Zeylanone, B-sitosterol, Campesterol, Stigmasterol, Flavonoids and Tannins.

Pharmacological Action: Digestive, Stimulant, Anti-inflammatory, Lipid lowering activity, Insulin sensitizing effect.

MODE OF ACTION

Chitraka acts by four major principles.

1. *Deepana–Pachana* (Enhances Digestion and Metabolism)

Chitraka stimulates *Jatharagni* and *Dhatvagni*, aids in the digestion of *Ama* and improves metabolic activity. This reduces *Medo* accumulation which is the key factor in PMOS.

2. *Vatanulomana* (Regulates *Vata*)

Chitraka normalizes the direction and movement of *Vata*. This relieves obstruction and supports proper functioning of *Apana Vata*, which is essential for normal ovulation and menstruation.

3. *Mridu Virechana* (Mild Purgatives)

Chitraka eliminates vitiated *Kapha dosha*, clears channels (*Srtoshodhana*) and thus corrects metabolic imbalance without causing excessive depletion.

4. *Rasayana* (Rejuvenating and Hormonal balance)

Chitraka promotes tissue nourishment, improve reproductive health, regulate endocrine function and also help in stress reduction, which plays a significant role in PMOS.

INDICATIONS OF CHITRAKA MENTIONED IN VARIOUS SAMHITAS

REFERENCE	NAME OF THE DRUG	KARMA / USES	AMAYIKA PRAYOGA / VIŚIṢṬA YOGA
Ca.Ci.5 (Gulma Chikitsā)	Chitraka	Gulmahara	Trayūṣaṇādi Ghṛta
Ca.Ci.6 (Prameha Chikitsā)	Chitraka	Pramehahara	Madhvāsava
Ca.Ci.7 (Kuṣṭha Chikitsā)	Chitraka	Kuṣṭhaghna	Mustādi Chūrṇa
Ca.Ci.12 (Śvayathu Chikitsā)	Chitraka	Śothahara	Citrakādi Ghṛita
Ca.Ci.13 (Udara Chikitsā)	Chitraka	Udarahara	Pañcakola Ghṛita
Ca.Ci.14 (Arśa Chikitsā)	Chitraka	Arśoghna	Takrāriṣṭa
Ca.Ci.15 (Grahaṇī Chikitsā)	Chitraka	Grahaṇīhara	Chitrakādyā Guṭikā
Ca.Ci.16 (Pāṇḍuroga Chikitsā)	Chitraka	Pāṇḍuhara	Navāyasa Chūrṇa
Su.Ci.4 (Vātavyādhi Chikitsita)	Chitraka	Vātahara	Sādhāraṇa Yoga
Su.Ci.9 (Kuṣṭha Chikitsita)	Chitraka	Kuṣṭhaghna	Mahānīla Ghṛita
Su.Ci.11 (Prameha Piḍakā Chikitsita)	Chitraka	Pramehahara	Dhanvantara Ghṛita
Su.Ka.8 (Sarpadaṣṭa Viśachikitsita)	Chitraka	Viśaghna	Ajitagada
Su.Ut.42 (Gulma Pratiśedha)	Chitraka	Gulmahara	Chitraka Gulma pratiśedhopakrama
A.H.Ci.3 (Kāsa Chikitsā)	Chitraka	Kāсахara	Agastya Harītakī Rasāyana
A.H.Ci.8 (Arśas Chikitsā)	Chitraka	Arśoghna	Takrāriṣṭa
A.H.Ci.9 (Vidradhi–Vṛuddhi Chikitsā)	Chitraka	Śophahara	Sukumāra Ghṛita
A.H.Ci.10 (Gulma Chikitsā)	Chitraka	Gulmahara	Dantī Harītakī Avaleha
A.H.Ci.15 (Udara Chikitsā)	Chitraka	Udarahara	Nārāyaṇa Chūrṇa

MODE OF ACTION

Chitraka possessing *Katu Rasa*; *Laghu*, *Ruksha*, *Tikshna* gunas; *Ushna virya* and *Katu vipaka* make it an effective *Deepana–Pachana dravya*. It stimulates *Jatharagni* and *Dhatvagni*; and promotes proper digestion and metabolism of *Ahara rasa* preventing the formation of *Ama*, correcting metabolic disturbances associated with PMOS. The *Lekhana* property of *Chitraka* plays an important role in clearing *Srotorodha* (obstruction of channels), especially in the *Artavavaha srotas*. This facilitates proper movement of *Apana Vata* and promotes regular menstruation and ovulation. Thus *Chitraka* not

only corrects the metabolic pathology underlying PMOS but also acts at the reproductive level by restoring normal menstrual and ovarian functions. Research conducted on granulosa cells of rats with different concentrations of Plumbagin (PLB) demonstrated that plumbagin exerts an inhibitory effect on the abnormal proliferation of ovarian granulosa cells suggests its role in preventing abnormal follicular growth, reduces cystic changes in ovaries, improves ovarian morphology and supports normal follicular development. Studies further show that Plumbagin helps decrease androgen levels and improves progesterone secretion, thereby promoting normal

follicular development and ovarian function. It also exhibits insulin-sensitizing and anti-proliferative actions by suppressing the PI3K/Akt/mTOR signaling pathway, which is commonly overactivated in PMOS and associated with insulin resistance and abnormal follicular growth.^[12]

DISCUSSION

PMOS which is previously referred to as PCOS, is a multifactorial endocrine disorder in which Hyperinsulinemia acts as a key pathogenic factor that stimulates excess androgen production from ovarian theca cells resulting in impaired follicular development and chronic anovulation. In Ayurveda, the condition similar to this may arise from the disorder involving *Agnimandya*, *Ama* accumulation and obstruction of *Artava vaha srotas*. *Agnimandya* leads to improper digestion and metabolism causing *Ama* formation which blocks body channels and disturbs normal hormonal and reproductive functions. Therefore correction of *Agni* and removal of *Ama* form the main line of treatment. *Chitraka* is widely recognized as a potent *Deepana Pachana dravya* that stimulates *Jatharagni* and *Dhatvagni*, digests *Ama*, removes obstruction and improves metabolic activity. *Agnimandya* is relieved by *Chitraka* by its *Deepana karma*, *Ama* formation was reduced by its *Pachana karma*, *Medo vriddhi* is reduced by its *Ushna Tikshna gunas*. Due to its *Lekhana karma* it helps in clearing *Srotorodha*, restoring normal *Artava* formation and ovulation. Plumbagin (PLB) which is the major bioactive constituent of *Chitraka*, shown significant pharmacological activities such as Insulin sensitizing, antioxidant, anti-inflammatory and antiproliferative activities in experimental studies. By improving Insulin sensitivity, Plumbagin reduce hyperinsulinemia and excess androgens thereby helps in normalizing menstrual cycle and ovarian function. Its antiproliferative action may further help in reducing abnormal ovarian stromal growth and follicular cyst formation which is commonly seen in PMOS. Thus the therapeutic effects of *Chitraka* can be understood by both Ayurvedic principles and modern pharmacological mechanisms, indicating its potential as an effective drug in the management of PMOS.

CONCLUSION

As PMOS is said to be associated with *Agnimandya*, *Medo dushti* and *Artava vaha srotas* dysfunction, *Chitraka* (*Plumbago zeylanica*) plays a significant role in the management of PMOS due to its *Deepana*, *Pachana*, *Kapha-Vatahara*, *Lekhana* and *Srotoshodhana* properties described in Ayurveda. *Chitraka* helps in correcting these underlying pathological factors by improving *Agni* and metabolism and reducing *Medo vriddhi* that helps in regulating menstrual cycle by improving ovulation and reducing associated symptoms such as obesity and hormonal imbalance. Modern studies also indicate that *Chitraka* possesses anti-inflammatory, antioxidant, insulin-sensitizing and metabolic regulatory activities; which further support its potential utility in PMOS

management. However, *Chitraka* is a potent drug with *Ushna* and *Tikshna* properties, it should be administered in appropriate dosage and under proper medical supervision. Thus, *Chitraka* can be considered as a valuable Ayurvedic drug in the management of PMOS, especially when combined with suitable *Ahara*, *Vihara* and lifestyle modifications.

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