**MEDICINE**

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**Abstract:**

 **Medicine is the treatment of ailment. Medicine is of many types. Traditional method of medicine always paves the way the for the permanent solution to the health problems. Siddha medicine is a powerful method for treating some of the unanswerable health difficulties. PCOS is found among the women worldwide which could be treated through Siddha effectively.**

**Key terms:**

 **Medicine, Siddha medicine, PCOS, Ovary, Oogenesis,**

**Introduction:**

Medicine, the word is originated from the Latin “Medicina” which means the art of healing. Medicine is a word that is also used for the medication prescribed by a doctor to his patient.

**Medicine is a science of health and heals. The treatment of the ailment through the natural or artificial methods through continuous practice of the traditional practitioners or through the proper education in which a person is getting exposed to the healing field through the methodologies framed and formulated by the experts and made as literacy. Medicine is clearly and neatly given hereunder:**

**Noinaadi Noimudhal Naadi Adhuthanikkum**

**Vaainaadi Vaaippach Cheyal**

* **Kural No :** 1
* **Paal :** Porutpaal ( Wealth )
* **Iyal :**Natpiyal ( Friendship )
* **Adikaram :**Marundhu ( Medicine )

The above quote is from Thirukkural, a wonderful poem form couplet which is written by Thiruvalluvar. The meaning of the above is:

A physician should enquire the nature of the disease, its cause, method of cure and then treat it faithfully based on the medical rule. For any kind of disease the above explanation is the base. Physician’s treatment will be successful only by prescribing the right formulation of medicine.

**Medicine fields:**

Medicine field is boundless and it is based on the anatomy and physiology of an individual. The various fields of medicine are:

* General Medicine
* Forensic medicine
* Obstetrics & Gynecology
* Anesthesiology
* Pediatrics
* Cardiology
* Neurology
* Urology
* Dermatology
* Emergency medicine

**Types of medicines:**

Based on the origin, medicine is mainly of two types: Modern and Traditional

**Modern medicine system:**

Modern system of medicine is an advanced and emergency mode of medicinal method. Modern medicine has done much to the human society in the fields of infectious diseases and **sos** mode of treatment to the emergency cases. In most other fields, it is mostly control that it aims for, which is another name for palliation (Ajai R.Singh, MD.,2010). Modern medicine, or medicine as we know it, started to emerge after the Industrial Revolution in the 18th century. In the years following World War II, medicine won major battles against smallpox, diphtheria, and polio. In the same period it also produced treatments to control the progress of Parkinson's, rheumatoid arthritis, and schizophrenia. It made realities of open-heart surgery, organ transplants, test-tube babies. (James Le Faun, 2012).

Modern medicine developed very quickly and made major contributions to disease control in the past century. Interestingly, despite a rapid growth in knowledge and techniques in modern medicine, the end of the last century also saw a dramatically increased interest in traditional medicine. The increasing public demand for its use has led to considerable interest among policy–makers, health administrators and medical doctors on the possibilities of bringing traditional and modern medicine together. The practice of traditional medicine is mainly based on conventional use and personal experience (WHO, 2000).

**Traditional medicine system of India:**

Traditional Systems of medicines always played a crucial role in satisfying the global health care needs. They are continuing to do so at present and shall play a major role in future also. India is known for its traditional medicinal systems—Ayurveda, Siddha, and Unani. Medical systems are found mentioned even in the ancient Vedas and other scriptures. The Ayurvedic concept appeared and developed between 2500 and 500 BC in India (Partha Pradip Adhikari and Sathya Bhusan Paul, 2017).



**Recognized systems of Indian medicinal practice** (Partha Pradip Adhikari and Sathya Bhusan Paul, 2017)

 Among the traditional medicine of India Siddha is a very old medical practice which was practiced by the Siddhars. It was believed that there were eighteen siddhars like Agathiyar, Thirumoolar, Bogar, Konganar, Therayar, Karuvurar, Edaikkadar, Chattamuni, Sundaranar, Ramadevar, Pambati, Machamuni, Kudambai, Azhuganni Siddhar, Agapai Siddhar, Nandhidevar, Kakapusundar. Among them Agathiyar is considered as the Father of Tamil Literature.  He compiled first Tamil grammar called Agathiyam. He is believed to be direct disciple of Lord Siva (crisiddha.tn.nic.in, 2015).

**Siddha Medicine:**

The term ‘*Siddha*’ has come from ‘*Siddhi*’- which means achievement. *Siddhars* were the men who achieved supreme knowledge in the field of medicine, yoga or *tapa* (meditation) (Narayanaswami, 1975).

Siddha medicine is one of the most ancient medical systems of India. Siddha is the mother medicine of ancient Tamils/Dravidians of peninsular South India. The word Siddha means established truth. The persons who were associated with establishing such a Siddha school of thought were known as Siddhars. They recorded their mystic findings in medicine, yoga, and astrology in Tamil. Fundamental Principles of Siddha include theories of Five Elements (Aimpootham), and Three Forces/Faults (Mukkuttram). The Eight Methods of Examination (Envakai Thervukal) is used to determine diagnosis, etiology, treatment and prognosis (J Joseph Thas,2007).

**Treating the ailments through Siddha medicine:**

 Siddha has safe herbal and herbo mineral treatment for psoriasis, eczema, alopecia, diabetic ulcer, warts, vitiligo, pemphigus, pompholyx, leprosy, and many more very common and rare diseases. Lifestyle modifications including diet are important (J Joseph Thas,2007).

Today women mainly suffer from the Poly Cystic Ovary Syndrome (PCOD). This is found all over the world. In case of allopathy Metformin alone is given for regulating the normal menstrual cycle to overcome the PCOD problem. But Siddha is proved to be a best cure for the above said complication.

**Anatomy of the Ovary and normal menstruation:**

# Ovaries:

The primary female reproductive organs, or gonads, are the two ovaries. Each ovary is a solid, ovoid structure about the size and shapes of an almond, about 3.5 cm in length, 2 cm wide, and 1 cm thick. The ovaries are located in shallow depressions, called ovarian fossae one on each side of the uterus, in the lateral walls of the pelvic cavity. They are held loosely in place by peritoneal ligaments.

## Structure:

The ovaries are covered on the outside by a layer of simple cuboidal epithelium called germinal (ovarian) epithelium. This is actually the visceral peritoneum that envelops the ovaries. Underneath this layer is a dense connective tissue capsule, the tunica albu ginea. The substance of the ovaries is distinctly divided into an outer cortex and an inner medulla. The cortex appears more dense and granular due to the presence of numerous ovarian follicles in various stages of development. Each of the follicles contains an oocyte, a female germ cell. The medulla is a loose connective tissue with abundant blood vessels, lymphatic vessels, and nerve fibers.



## Oogenesis:

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Female sex cells, or gametes, develop in the ovaries by a form of meiosis called oogenesis. The sequence of events in oogenesis is similar to the sequence in spermatogenesis, but the  timing and final result is different.

 Early in fetal development, primitive germ cells in the ovaries differentiate into oogonia. These divide rapidly to form thousands of cells, still called oogonia, which have a full complement of 46 (23 pairs) chromosomes.

Oogonia then enter a growth phase, enlarge, and become primary oocytes.. The diploid (46 chromosomes) primary oocytes replicate their DNA and begin the first meiotic division, but the process stops in prophase and the cells remain in this suspended state until puberty.

 Many of the primary oocytes degenerate before birth, but even with this decline, the two ovaries together contain approximately 700,000 oocytes at birth. This is the lifetime supply, and no more will develop. This is quite different than the male in which spermatogonia and primary spermatocytes continue to be produced throughout the reproductive lifetime. By puberty the number of primary oocytes has further declined to about 400,000.

Beginning at puberty, under the influence of Follicle Stimulating Hormone (FSH), several primary oocytes start to grow again each month. One of the primary oocytes seems to outgrow the others and it resumes meiosis I. The other cells degenerate. The large cell undergoes an unequal division so that nearly all the cytoplasm, organelles, and half the chromosomes go to one cell, which becomes a secondary oocyte.. The remaining half of the chromosomes go to a smaller cell called the first polar body.

The secondary oocyte begins the second meiotic division, but the process stops in metaphase. At this point ovulation occurs. If fertilization occurs, meiosis II continues. Again this is an unequal division with all of the cytoplasm going to the ovum, which has 23 single-stranded chromosomes. The smaller cell from this division is a second polar body. The first polar body also usually divides in meiosis I to produce two even smaller polar bodies.

If fertilization does not occur, the second meiotic division is never completed and the secondary oocyte degenerates. Here again there are obvious differences between the male and female. In spermatogenesis, four functional sperm develop from each primary spermatocyte. In oogenesis, only one functional fertilizable cell develops from a primary oocyte. The other three cells are polar bodies and they degenerate.

## Ovarian Follicle Development:

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An ovarian follicle consists of a developing oocyte surrounded by one or more layers of cells called follicular cells. At the same time that the oocyte is progressing through meiosis, corresponding changes are taking place in the follicular cells. Primordial follicles, which consist of a primary oocyte surrounded by a single layer of flattened cells, develop in the fetus and are the stage that is present in the ovaries at birth and throughout childhood.

Beginning at puberty, follicle-stimulating hormone stimulates changes in the primordial follicles. The follicular cells become cuboidal, the primary oocyte enlarges, and it is now a primary follicle. The follicles continue to grow under the influence of follicle-stimulating hormone, and the follicular cells proliferate to form several layers of granulose cells around the primary oocyte. Most of these primary follicles degenerate along with the primary oocytes within them, but usually one continues to develop each month. The granulosa cells start secreting estrogen and a cavity, or antrum, forms within the follicle. When the antrum starts to develop, the follicle becomes a secondary follicle.

The granulose cells also secrete a  glycoprotein substance that forms a clear membrane, the zona pellucida, around the oocyte. After about 10 days of growth the follicle is a mature vesicular (graafian) follicle, which forms a "blister" on the surface of the ovary and contains a secondary oocyte ready for ovulation.

## Ovulation:

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Ovulation, prompted by luteinizing hormone from the anterior pituitary, occurs when the mature follicle at the surface of the ovary ruptures and releases the secondary oocyte into the peritoneal cavity.

The ovulated secondary oocyte, ready for fertilization is still surrounded by the zona pellucida and a few layers of cells called the corona radiata. If it is not fertilized, the secondary oocyte degenerates in a couple of days. If a sperm passes through the corona radiata and zona pellucida and enters the cytoplasm of the secondary oocyte, the second meiotic division resumes to form a polar body and a mature ovum

After ovulation and in response to luteinizing hormone, the portion of the follicle that remains in the ovary enlarges and is transformed into a corpus luteum. The corpus luteum is a glandular structure that secretes progesterone and some estrogen. Its fate depends on whether fertilization occurs.

If fertilization does not take place, the corpus luteum remains functional for about 10 days; then it begins to degenerate into a corpus albicans, which is primarily scar tissue, and its hormone output ceases.

If fertilization occurs, the corpus luteum persists and continues its hormone functions until the placenta develops sufficiently to secrete the necessary hormones. Again, the corpus luteum ultimately degenerates into corpus albicans, but it remains functional for a longer period of time.

**What is Poly Cystic Ovary Syndrome?**

 

Polycystic ovary syndrome (PCOS) is a condition in which the ovaries produce an abnormal amount of androgens, male sex hormones that are usually present in women in small amounts. The name polycystic ovary syndrome describes the numerous small cysts (fluid-filled sacs) that form in the ovaries. However, some women with this disorder do not have cysts, while some women without the disorder do develop cysts. (Yoladna Smith, 2000).

### Polycystic Ovary Syndrome in Siddha: (Dr.R.Vinodhini, et al., 2018)

As name describes poly means many, cystic means water filled sac-like structure i.e. when many cysts are formed in the ovary **soolagam**of a women is called Poly cystic ovary diseases.

PCOS is characterized by fluid filled sac like structures in the ovary and is termed as Sinaipaineerkattti. The clinical features of PCOS have already been described in the Siddha literatures such as “YUGI MUNI VAITHIYA KAAVIYAM” AND “THIRUMOOLAR KARUKIDAI VAITHIYAM” etc. Siddhar Thiruvalluvar also called as Thiruvalluva Nayanaar in his Siddha Medical Monograph “Gnanvettiyaan-1500” has discussed about female reproductive problems like Infertility, PCOS and Fibroids etc. in detail. The following verses from the above literature explain the clinical features of PCOS

சூதகத்தில் வாய்வதுபோய்ச் சொக்குங் காலைச்

 சுருதியெனும் வன்னிபித்தந் துணையாய்ச் சேரும்

மாதவிடாய் நாகமதும் வஸ்துக் கட்டும்

 மாதாந்தம் கட்டினதால் மாது தேகம்

ஊதுஉடல் சரீரமெல்லாங் கருப்பை துந்து

 உதிரநீர் சூசிகா வாய்வுந்த் தோன்றி

வாதனையால் வயிறுடம்பு பெருத்து ஊதி

 மகத்தான அடிமூலம் வாதஞ் சேர்ந்தே .

 -ஞானவெட்டியான்-1500

Due to the collection of gas in the ovary, leads to the increase of body temperature. Due to this reason the ovum will not be released properly. This may leads to the increase of body weight and conversion of the ovum into follicles and instead of released as a menstrual period it will be retained in the ovary.

In siddha system, the treatment is by adopting internal and external medicine, food, healthy life style, yogam and asanas. PCOS may be due to deranged vatham and kabam with dietary changes and lifestyle modification. According to Panchaboodham and Mukkutram theory bitter and astringent taste influences vatham and neutralizes pitham, kabam. Hence plants which are bitter and astringent taste may be administered for the treatment of PCOS as it is pathology of Kabavatham.

PCOS may be termed as Sinaipaineerkatti, Soothagavaayu, Susigaavaayu. As there is a common practice of using Insulin Sensitizing Drug (ISD) in the treatment of PCOS, Madhumega kudineer is selected for the study considering the above phenomenon. The description of the ingredients of Madhumega kudineer (Dr.R.Vinodhini,et al., 2018).

**Effective single herbs for PCOS along with Siddha Properties:** (Dr.R.Vinodhini,et al., 2018)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S.No.** | **Tamil Name**  | **Botanical Name**  | **Phytochemicals**  | **Siddha Properties**  |
|  | *Kalyanamurungu*  | *Erythrina variegata* L*.*  | 3-eicosyne, Squalene, Gallic acid, Caffeic acid, Phytol, Butanoic acid.  | *Suvai-Kaippu, Kaarppu.* *Thanmai- Veppam.* *Pirivu- Kaarppu.*  |
| 2.  | *Karunjeeragam*  | *Nigella sativa* L*.*  | Nigellinine-N-oxide,Nigellicine, Arenasterol-5-ene, lophenol, α-hederin and fatty acids.  | *Suvai- Kaippu.* *Thanmai-Veppam.* *Pirivu-Kaarppu.*  |
| 3.  | *Sathakuppai*  | *Anethum graveolens* L.  | Carvone, limonene, α-phellandrene, diterpene, cineole, myrcene, paramyrcene, dillapiole, isomyristicin, myristicin, myristin, apiol, dillapiol, gallic acid.  | *Suvai-Inippu,Kaarppu.* *Thanmai-Veppam.* *Pirivu-Kaarppu.*  |
| 4.  | *Nochi*  | *Vitex negundo L.*  | Nishidine, Negundoside, Hydrocotylene, Nishindaside, Essential oil  | *Suvai-Kaippu, Kaarppu, Thuvarppu.* *Thanmai- Veppam.* *Pirivu- Kaarppu.*  |
| 5.  | *Malaivembu*  | *Melia azadirach L.*  | Terpenoids and limonoids like l-Cinnamoyl-3-acetyl-11-hydroxy meliacarpin,l-Cinnamoyl- 3-methacrylyl-l1-hydroxy meliacarpin, Deacetylsalannin, α & β-Pinene,α- Terpinene & Terpineol,Kaempferol-3-O-β-rutinoside, Kaempferol-3-L-rhamno-D-glucoside, Rutin.  | *Suvai- Kaippu.* *Thanmai- Veppam.* *Pirivu- Kaarppu.*  |
| 6.  | *Aatru thumatti*  | *Citrullus colocynthis* L*.*  | Cucurbitacin-E,I,J,L,T, Coloside A, Colocynthitin, Colocynthin, Isovitexin, Citrullol  | *Suvai- Kaippu.* *Thanmai- Veppam.* *Pirivu- Kaarppu.*  |

## What is male PCOS? (Sanchari Sinha Dutta, 2022).

Male relatives of women with PCOS may develop similar clinical characteristics (male PCOS) because of the inheritance of certain susceptible genes responsible for the PCOS pathogenesis. Besides hormonal and metabolic abnormalities, male PCOS is characterized by early-onset androgenetic alopecia (baldness), hypertrichosis (excessive hair growth anywhere on the body), or acne.

Men with PCOS-like symptoms are at higher risk of developing cardiovascular and metabolic disorders. In this context, studies have shown that the first-degree relatives of women with PCOS are genetically more likely to have insulin resistance, obesity, cardiovascular disease, type 2 diabetes mellitus, and early-onset androgenetic alopecia. The presence of PCOS-like characteristics can predispose men to develop prostate cancer, benign prostate hyperplasia, and prostatitis later in life.

## Hormonal characteristics of male PCOS

Men with early-onset androgenetic alopecia exhibit similar hormonal changes associated with PCOS. Moreover, there is an association between male PCOS and the hormonal landscape of insulin resistance and metabolic syndrome. Given its high prevalence among male family members of women with PCOS, early-onset androgenetic alopecia is considered to be a prominent sign of male PCOS.

The shared hormonal landscape between early-onset androgenetic alopecia and PCOS includes reduced levels of follicle-stimulating hormone, sex hormone-binding globulin, testosterone, and epitestosterone, and increased levels of luteinizing hormone, prolactin, and dehydroepiandrosterone sulfate.

Like women with PCOS, men with early-onset androgenetic alopecia have increased activity of the adrenal gland. Regarding fertility potency, there is evidence suggesting that men with moderate to severe early-onset androgenetic alopecia have poor semen quality. However, it is not known whether men with PCOS-like symptoms exhibit the same feature.

## Metabolic characteristics of male PCOS

Early-onset androgenetic alopecia is associated with a number of metabolic changes, including reduced insulin sensitivity and sex hormone-binding globulin levels. A reduced sex hormone-binding globulin level is considered to be a risk factor for hyperglycemia, insulin resistance, diabetes, hyper triglyceridemia, and hypertension in men with early-onset androgenetic alopecia. A higher prevalence of these metabolic changes together with early-onset androgenetic alopecia has been observed in brothers of women with PCOS.

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