International Journal on Science and Technology (IJSAT)
E-ISSN: 2229-7677 ● Website: www.ijsat.org ● Email: editor@ijsat.org

Therapeutic Efficacy of Sathakuppai Kudineer (Anethum graveolens) in the Management of Soothaga Thadai (Amenorrhea) within the Siddha Medical Framework - A Review

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Abstract

Background

In the Siddha system of medicine, Amenorrhea—termed Soothaga Thadai—is understood as a pathological derangement of the Mukkutram (three humors). It is specifically attributed to the stagnation of Vatham and Kapha, which culminates in the obstruction of Abaana Vayu, the vital force responsible for downward physiological excretion. Sathakuppai Kudineer, a polyherbal decoction primarily featuring the seeds of Anethum graveolens, is traditionally indicated for its emmenagogue and "cleansing" properties.

Objective

This review synthesizes the traditional Siddha pathophysiology of Soothaga Thadai and evaluates the pharmacological mechanisms of Sathakuppai Kudineer in restoring menstrual regularity through a modern phytochemical analysis.

Methodology

A systematic review was performed utilizing classical Siddha literature, including the Sikitcha Rathna Deepam, alongside contemporary pharmacological databases.

Results

Sathakuppai exhibits Ushna Veeryam (Hot Potency) and Karppu Suvai (Pungent Taste), which facilitate the liquefaction of stagnant Kapha and the pacification of Vatham. Modern analysis reveals that its

bioactive constituents, such as Carvone, Limonene, and specific flavonoids, exert phytoestrogenic and antispasmodic effects. Recent clinical evidence suggests that Sathakuppai Kudineer improves endometrial thickness and encourages the physiological onset of menses by normalizing Abaana Vayu flow.

Conclusion

Sathakuppai Kudineer represents a viable, non-hormonal, and cost-effective therapeutic intervention for secondary amenorrhea and oligomenorrhea, bridging ancient traditional wisdom with evidence-based phytochemistry.

Keywords

Sathakuppai, SoothagaThadai, Amenorrhea, Siddha Medicine, Abaana Vayu, Anethum graveolens, Kudineer.

1. INTRODUCTION

The Siddha system of medicine, originating in Tamil Nadu, South India,making it an ancient and traditional healing approach. It is one of the oldest forms of treatment in human history, Indian traditional medical systems play a crucial role in global healthcare needs.

PCOS is a reproductive endocrine disorder in women. This condition arises from an imbalance in female sex hormones, resulting in the formation of cysts in the ovarian antral follicles.The conversion of an egg into a 'functional cyst stop ovulation, leading to the disruption of the menstrual cycle and causing amenorrhea. The manifestation of multiple cysts on ovarian follicles due to hormonal imbalances defines the characteristic features of PCOS.[1]

METHODS AND MATERIALS

This review article is to explore the phytochemical constituents of Sathakuppai kudineer. The information is gathered from classical literature sources, utilizing databases like Google search and Pubmed, as well as from Siddha formulary of India .[1]

Ingredients of Sathakuppai kudineer[3][4]

Trachyspermam ammi (Oomam) - 4g

Anethum graveolens (Sathakuppai)-4g

Bambusa vulgaris (Moongil) – 4g

Crateva magna (Mavilangam) – 4g

Smilax china (Parangichakkai) – 4g

Zingiber officinale(Chukku) – 4g

Piper longum (Thippili) – 4g

Plumbago zeylanica root (Kodiveli ver)- 4g

Plumbago zeylanica root bark (Kodiveli verpattai)– 4g

Nigella sativa (Karuncheeragam) – 4g

Water (Neer)– 120ml

Method of preparation:

Purified dried Oomam, Sathakuppai, Moongil, Mavilingam, Parangichakkai, Chukku, Thippili, Kodiveliver, Kodiveliverpattai, Karuncheeragam are taken in equal proportions then finely powder separately. These powders are then combined in **equal quantitative proportions** to achieve a homogenous polyherbal mixture. A decoction was prepared by boiling the polyherbal mixture of 1 gram in 120 ml of water. The boiling process was maintained until the volume reached a **reduced concentration of 30 ml**. Following the reduction, the liquid was filtered to yield a clear aqueous extract, which was administered to the patient while warm.

Dosage : 30 ml (Morning)

Duration : 3 days

Indication : Amenorrhea

Individual medicinal plants :

Sathakuppai (Anethum graveolens)[3][4]

Scientific evidence:

Anethum graveolens is studied for its effects on amenorrhea - the absence of menstruation—primarily due to its interaction with the endocrine system and its "emmenagogue" properties (substances that stimulate menstrual flow).

1. **Phytoestrogenic Activity**

   It contains chemical compounds like **flavonoids** (specifically **vicenin** and **kaempferol**) and **polyphenols** that act as **phytoestrogens**.[8]

2. **Regulation of Gonadotropins**

Research suggest extracts can influence the hypothalamic-pituitary-gonadal (HPG) axis.

Hormonal Balance: Studies in ethnopharmacology indicate that it may increase the concentration of Leuteinizing Hormone (LH) and Follicle-Stimulating Hormone (FSH).[8]

3. **Smooth Muscle Stimulation**

Seed oil contains high concentrations of **carvone** and **limonene**.

Uterine Contraction: These terpenoids are thought to have a mild stimulatory effect on the smooth muscles of the uterus.

Oomam(Trachyspermamammi):

Scientific evidence:

Trachyspermum ammi is investigated for its role in treating amenorrhea primarily due to its emmenagogue and phytoestrogenic properties.

1. **Phytoestrogenic Activity**

Phytochemicals like **flavonoids** and **sterols** found in the seeds may interact with estrogen receptors. This helps in regulating the hormonal balance necessary to trigger the shedding of the uterine lining[10]

2. **Blood Flow:**

It has ability to improve pelvic blood circulation. By increasing blood flow to the uterus and ovaries, it can help stimulate a suppressed menstrual cycle.[9]

3. **Antispasmodic**

Thymol - Reduces uterine tension to facilitate normal shedding.[9]

Moongil(Bambusa vulgaris):

Scientific evidence:

Research has demonstrated that extracts from Moongil leaves possess significant estrogenic properties.

Hydro-alcoholic extracts of the leaves have been shown to increase uterine wet weight and trigger vaginal opening. [13]

2. **Emmenagogue Properties**

It is researched for its ability to induce uterine contractions and improve blood flow to the pelvic region.[12]

3.**Phytochemical Profile**

Acetyl-choline: Bamboo plants have been found to contain unusually high levels of **acetylcholine**, which acts as a neurotransmitter that can influence smooth muscle contractions in the uterus[11].

Mavilingam(Crateva magna):

Scientific evidence:

1. **Estrogenic and Uterotropic Effects**

Scientific studies have explored Mavilangam for its "**estrogen-mimicking**" properties.

- **Mechanism:**Bark extracts has shown that they can increase uterine weight and induce vaginal cornification (a sign of estrogenic activity)
- **Application in Amenorrhea:** By acting as a natural phytoestrogen, it helps stimulate the growth of the endometrial lining.[14]

2. **Hormonal Regulation in PCOS**

- Studies indicate that the **hydroalcoholic** extract of the bark helps restore the balance of sex hormones (Estrogen, Progesterone, and LH/FSH ratios).
- **Ovarian Health:**it shows that Mavilangam extracts can reduce the number and size of ovarian cysts .[15]

3.**Key Bioactive Phytochemicals**

- **Lupeol:** A potent triterpenoid researched for its anti-inflammatory and hormonal-modulating properties.[15]
- **beta-sitosterol:** A plant sterol that acts as a precursor to hormones and contributes to the plant's estrogenic profile.[14]
- **Flavonoids &Saponins:** These provide the antioxidant environment necessary for the ovaries to function without the interference of oxidative stress.[16]

Parangichakkai (Smilax china)

Parangichakkai (Smilax china) is highly regarded for its ability to treat hormonal imbalances and reproductive issues like **amenorrhea**

The roots of Smilax china contain bioactive compounds—specifically **steroidal saponins**, **flavonoids**, and **tannins**—that influence the female reproductive system

- **Phytoestrogenic Activity:** Many of the steroidal saponins found in Parangichakkai act as precursors to hormones.[17]
- **Anti-Inflammatory and Immunomodulatory Effects:** Chronic inflammation in the pelvic region or conditions like Polycystic Ovary Syndrome (PCOS) can cause amenorrhea.[18]
- **polyphenols** in Parangichakkai reduce oxidative stress and inflammation,

Sarsasapogenin– steroid sapogenin balance endocrine system

QuercetIn / kaempferol–falvenoids that reduces oxidative stress in ovaries.

Resveratrol–improve blood flow and support metabolic health.[17]

Kodiveliver and verpattai(Plumbagozeylanica)

Kodiveli as a powerful emmenagogue.

- extracts of the root bark stimulate the smooth muscles of the uterus. This "uterotonic" effect induces contractions, which can help shed the endometrial lining
- **Plumbagin** is the primary bioactive naphthoquinone found in the root bark.
- **Plumbagin**can influence the hypothalamic-pituitary-gonadal axis. While high doses are studied for anti-fertility effects,
- Kodiveli is a potent digestive stimulant. Research confirms it increases the secretion of digestive enzymes. Improving general metabolism is often a clinical prerequisite for restoring a regular menstrual cycle.[6]

Chukku(Zingiberofficinale)

Chukku contains bioactive compounds like **Gingerenone-A** and **Diosgenin**.

- These compounds have shown the ability to interact with enzymes like **CYP-17α-hydroxylase**, which is involved in steroidogenesis
- In cases of amenorrhea caused by PCOS or hormonal imbalances, Chukku helps inhibit excess androgen synthesis and supports the estrogenic activity required to stimulate the menstrual cycle.
- By modulating prostaglandins, Chukku improves blood circulation to the pelvic region.[5]

Thippili(Piper longum)

Its role as a bio-enhancer and its direct impact on the hypothalamic-pituitary-gonadal (HPG) axis.

Bio-Enhancement

- **Piperine** increases the bioavailability of other medicinal compounds (like those in Kodiveli or Parangichakkai).
- In treating amenorrhea, Thippili ensures that the phytoestrogens and uterine stimulants from other herbs are actually absorbed by the gut and reach the reproductive tissues instead of being excreted.[19]

Regulation of the HPG Axis

Thippili has adaptogenic properties that help normalize the secretion of Gonadotropin-Releasing Hormone (GnRH), which is essential for triggering a period.

Piper longum can help reduce body fat and improve insulin sensitivity. This addresses the root cause of amenorrhea in many women by lowering the excess androgen (male hormone) production associated with insulin resistance.[20]

Karuncheeragam(Nigella sativa)

Insulin Sensitizing & PCOS Management

The most common cause of amenorrhea today is Polycystic Ovary Syndrome (PCOS

- **Thymoquinone**, the primary active compound in Karuncheeragam, acts as an insulin sensitizer.
- High insulin levels trigger the ovaries to produce excess testosterone (which stops periods). By lowering insulin, Karuncheeragam reduces androgen levels, allowing the body to resume a normal ovulatory cycle and ending amenorrhea.
- Nigella sativa contains phytoestrogens that can bind to estrogen receptors in the body.
- Karuncheeragam can help normalize the LH/FSH ratio.[7]

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