



Treatment of Pediatric Spasms by Ipomea Pes-Caprae Fumes (Kuthirai Kulambu Plant)- A Review

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Abstract

Siddha system is the holistic and spiritual way of healing empowered with strong scientific base. Ancient scientists of siddha treated dearranged humours by both internal and external therapies. Pugai (fumigation) is among the external therapies followed. Here it is an evidence-based study to illuminate the science behind fumigation process of the plant (*Ipomea pes caprae*) kuthirai kulambu to treat pediatric spasms. *Ipomea pes caprae* antagonize smooth muscle contractions by acting isoprenoide leice β - Damascenone and E- phytol in the same range as that of papaverine a general spasmolytic agent. Surprising fact is that β -damascenone and E- phytol are volatile chemical components, hence this can be used in fumigation.

Keywords: Fumigation, Kuthirai Kulambu Pugai, Pediatric Spasms, *Ipomea Pes-Caprae*

INTRODUCTION:

Siddha system is one of the ancient systems of medicine followed in the southern parts of India. As *Andapindathathuvam* (What exist in nature, exists in man; what exist in man, exists in nature) is considered as the core concept of siddha system, the diagnostic and therapeutic procedures are designed based on this aspect. According to mode of treatment, Siddha system classifies medicine into two classes.

Internal Therapy (*Aga Maruthuvam*)- The medicines which has to be administered orally comes under this class. 32 subtypes are classified under this group.

External therapy (*Pura Maruthuvam*)-

The therapeutic procedures which are followed other than internal medicines. 32 subtypes are classified under this group also. Siddhars has given equal importance to external medicines as compared with Internal medicines. External therapies in this system of medicine are like diamond in the rough. The therapies and medications of siddha are valued more not only because of its traditionality but also for its strong scientific integrity. When the scientific facts behind the therapies were revealed, it will illuminate the light that ancient siddhars are not only traditional scientists but they are system scientists. PUGAI (FUMIGATION) is one among those valuable external

therapies followed. Here in this paper, a scientific fact behind one of the fumigation procedure done to treat pediatric spasms with the help of Kuthirai Kulambu is discussed briefly.

FUMIGATION (PUGAI OR DHOOPAM):

Fumigation is nothing but impregnation of

fumes to diseased human. Fumes can be produced by ignition of defined herbs, minerals, metals or certain formulations for specific diseases.

It can be done in two ways.

1. Nasal route- The fumes are made to inhale by the patients

DISEASES	FUMES USED	BOTANICAL NAME
SUVASA NOI	OOMATHAMPOO PUGAI	Datura metal
MOORCHAI	AGATHIYAR KULAMBU PUGAI	A Siddha formulary medicine
KUZANTHAIGALIN ISIVU	KUTHIRAI KULAMBU PUGAI	<i>Ipomea pes-caprae</i>

Table 1: Fumigation methods in siddha according to siddhar aruvai maruthuvam ¹

2. Fumes are made in contact with affected part. haemorrhoids, chronic ulcers and fistula in ano.
- Some Herbo mineral preparations are widely used in fumigation in case of

DISEASES	FUMES USED	BOTANICAL NAME
PARPUZHU	KANDANKATHIRI PUGAI	Solanum surattense
AZI VIRANAM	VIRANA DHOOPAM	A Siddha formulary medicine

Table 2: Fumigation methods in siddha according to siddhar aruvai maruthuvam ¹

SCIENTIFIC INTEGRITY OF FUMIGATION: FUMES BY NASAL ROUTE:

FUMES AT AFFECTED SITE:

Fumigation therapy to affected site is mainly used in siddha system as disinfectant and to prevent microbial contamination. In other systems like sterilization and pesticide control, Fumigation is the most common and most effective way used.

Eg. Sterilizing Operation theatres

Fumigation may be used as a better option may be because of following concepts

1. No residues persist over the surface after treatment, While in sprays, some residues may stay.
2. Fumigants are volatile, While sprays are seldom volatile
3. Fumigation can reach, Where other type of procedures can't

KUZANTHAIGALIN ISIVU (PAEDIATRIC SPASMS)-KUTHIRAI KULAMBU PUGAI- SIDDHA ASPECT:

In siddha aspect. Kuthirai kulambu denotes

- Horse hoofs (seevam) – an animal product
- Adambu (kuthirai kulambu) - Herb

Despite of the usage of horse hoofs here we discuss about the herb adambu [*Ipomea pes-caprae*] in the treatment of pediatric spasms for its proved direct anti The future researches may reveal the truth.

spasmodic activity and volatile nature. It doesn't mean that the seeva porul kuthirai kulambu does not possess those properties.



Figure 1: *Ipomea pes caprae*



Figure 2: Horse Hoofs



Figure 3: Bilobed structure of leaf



Figure 4: Distribution of plant

According to Siddha texts

- Siddhar Aruvai Maruthuvam-kuthirai kulambu is prescribed for isivu
- Balavagadam- It is prescribed for maantha valippu
- T.V.Sambasivampillai Dictionary - Isivu refers
 - Stomach ache
 - Violent strain of nerve or muscle
 - Sudden violent attack followed by senselessness

- Spasm of muscles due to action of nerves

DESCRIPTION OF HERB:

BOTANICAL NAME: *Ipomea pes-caprae* (L) R.Br

SYNONYM: *Ipomea biloba*

FAMILY: Convolvulaceae

TAMIL NAME: Attukkal, Kuthirai kulambu, Adappamkodi, Adambu

DISTRIBUTION: Sea shore (Goa, Pondicherry etc)²

PHYTOCHEMICAL COMPONENTS:

Ipomea contains 32 active phytochemical compounds identified representing 97.5% of them are volatile.³

RESEARCHES CARRIED OUT ON Ipomea pes-caprae:

1. Anti spasmodic activity of beta-damascenone and E-phytol isolated from Ipomea pes-caprae.⁴

The crude extract of the plant has shown to **antagonize smooth muscle contractions** induced by several agonists. Bioassay-guided fractionation of IPA resulted in isolation of anti spasmodically acting isoprenoids beta-damascenone and E-phytol. Their anti spasmodic potencies were found to be in the same range as that of papaverine, a general spasmolytic agent.

2. Anti inflammatory activity of Ipomea pes-caprae⁵

This study shows that Ipomea pes-caprae has a significant anti inflammatory activity, probably due to reduction of prostaglandin and leukotriene formation.

3. Isolation and identification of compounds with Antinociceptive action from Ipomea pes-caprae⁶

This study reveals glichidone, betulinic acid, alpha- and beta amyryn acetate; isoquercetin etc, showed

pronounced antinociceptive properties in mice.

4. Antinociceptive property of methanolic extracts of ipomea pes-caprae⁷

The results of the study revealed that methanolic extracts and ethyl acetate exhibits considerable antinociceptive activity against both phases of pain [neurogenic and inflammatory].

SPASM AND NOCICEPTORS:

SPASM: Spasm is a sudden involuntary contraction of muscle, group of muscles or hollow organ. Spasm occurs in both skeletal and smooth muscle contractions.

Ipomea pes-caprae acts as antagonist to involuntary smooth muscle contractions.

NOCICEPTORS: Receptors of pain

These receptors are specialized for the detection of stimuli that are capable of damaging tissue and that are subjectively perceived painful.

Distribution: skin, viscera, muscles, joints, meninges.

Stimulated by: inflammatory mediators like bradykinin, serotonin, prostaglandin, cytokines.

Mechanical, thermal, chemical stimuli.

MECHANISM OF SPASM:⁸

INFLAMMATORY MEDIATORS STIMULATES NOCICEPTORS RECEPTORS TRAVEL THROUGH 3 FIBRES

Localised Pain		
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On prolonged stimulation to c-fibers cause smooth muscle contraction⁹.

ACTION OF IPOMEA ON INVOLUNTARY SMOOTH MUSCLE CONTRACTION:

A α FIBRES	A β FIBRES	C FIBERS
Thinly Myelinated	Highly Myelinated	Unmyelinated
Cause Rapid	Cause Light Pain	Cause Slow Diffuse Pain

Activity of Ipomea	USES
Anti-Inflammatory Activity	RELIEVES INFLAMMATION
Anti-Nociceptive Activity	Silence Nociception
Anti-Spasmodic Activity	Relieves Spasms

CONCLUSION:

Based on the references, we have concluded that the use of Ipomea may be a better and more effective choice for pediatric spasms. With this we can eliminate the dependency on animals for this medicine.

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