



## Review on *uttāmaṇi karukku* a pediatric traditional medicine

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### ABSTRACT

According to World Health Organization (WHO) more than 80% of the world's population relies on traditional practitioners and their armamentarium of medicinal plants in order to meet health care needs in spite of modern medicine which is well established worldwide. In *cittā* traditional system foremost awareness has been given to Pediatric population which is considered as the backbone of the developing nation. There are various medicinal formulation and lifestyle practices which are till date in practice. One among the pediatric disease *kaṇa māntam* is treated with a sastric formulation *uttāmaṇi karukku*. In spite of various medicines used in other system of medicine, till date in Tamil Nadu the practice of *Vacampu (piḷḷai maruntu)* has its own role, the raw drug has its own positive and negative effects it is overcome with its purification method.

### Keywords:

*cittā*, *kaṇa māntam*, *uttāmaṇi karukku*, Pediatric.

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CODEN : IJRPHR

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### To access this article online

Website : <http://www.ijrphr.com/>

DOI : 10.121/ijrphr/02.0203.350

### Quick response code



### How to cite this article:

Easwari D, Sociya Parvin M, Soundararajan DKS, Review on *uttāmaṇi karukku* a pediatric traditional medicine, International Journal of Reverse Pharmacology and Health Research, 2019, 2(3), 20-25.

Received: April, 2019.

Accepted: June, 2019.

## INTRODUCTION

The ancient *cittā* system, a tradition presumed to be lost is now finding its way back into the hearts and lives of people worldwide. Ancient wisdom in its nativity remains conserved by the teaching imparted by sages in primordial times, even in our postmodern world. <sup>2</sup>*Cittā*, as a common noun known as “*realized, perfect one*”, a term generally applied to a practitioner who has through his practice realized his dual goal of superhuman powers and bodily immortality.

According to *cittā*, 96 *tattuvam* influence the activities of the individual from birth to death. This system also believes body- mind- spirit is inseparable is always taken into consideration as a whole as their interconnectedness is a pre-established cosmic design of existence.

As the population increasing day by day there is an exponential increase and emergence of new diseases. The environment is getting more and more polluted, the humanity has almost come to a stage where the various available preventive measures are to be valued much well than the existing curative measures. Apart from Prevention and cure which exist in all systems, *cittā* system in addition also believes strongly in the transcendental (immortality).

*Cittā* medicine deals formally and systematically with each medical subject and is usually describes in a poetic verse format so that the knowledge could be passed down orally over generations from *cittā* physicians to their disciples<sup>3</sup>. Similar to other Indian system of medicine *cittā* also follows *mukkurram* theory and states that psycho-biological aspect is governs by 3 *mukkurram vaḷi*, *ālāl* and *aiyam* any change in body is due to the imbalance of these *mukkurram*<sup>4</sup>.

*Aṇupava vaittiya kaḷañciyam* a classical *cittā* text classifies the diseases of childhood into 108 diseases which further classified into various sub-types based on the change in nature of disease presentation. One among the disease is *māntam* which is a very common entity in the pediatric population; *kaṇa māntam* is a classification of the disease *māntam* for which the sastric formulation *uttāmaṇi karukku* has been given.

<sup>5</sup>Symptoms of *kaṇa māntam* are:

“*Aruntu meyyiḷait tirumalu maṭikkaṭic curamun  
Tiruntu mūkkilnīr vaṭitalum vayiruppum ciraṇōy  
Purinti raiccalum palavitam vayirupōk kuṭaṇē  
Varuntu kaṇṇiṇil mayakkamu māṅkaṇa māntam*”

- *Kuḷantai maruttuvam* (verse 91)

- Weight loss
- Cough
- Fever
- Watery Nasal discharge
- Headache
- Diarrhea
- Bloating abdomen
- Drowsiness

*Cittā* literature describe a group of herbals suitable for pediatric population based on the pediatric organ developments, keeping pharmacokinetic and pharmacodynamics in mind, which indicates the in depth knowledge of *cittā* medicinal system in pediatric diseases. Drugs used in *uttāmaṇi karukku* are briefly described.

The taxonomical classification, chemical constituents, *Cuvai* parameters, method of preparation of the drug, their activities has been described briefly in the upcoming topics.

***Uttāmaṇi karukku***: (Internal medicine)

*Karukku*- to grind, to burn, scorch, tan, darkens by heat <sup>7</sup>

**Ingredients:**

<i>Vacampu</i>	<i>Acorus calamus L.</i>	10 gram
<i>Uttāmaṇi</i>	<i>Pergularia daemia (Forssk.)Chiov.</i>	100 ml
<i>uppu</i>	<i>Sodium chloride</i>	1 gram

Purification of *vacampu*:

The most important part of the drug preparation which makes the toxic drug into non toxic, it is one of the real identity of *cittā* system.

*Vacampu cāmpal kuṇam*:

“*tērumē vacampāṇatil cāmpaltāṇ*

*Nīrumēcalamtāṇ atilīṭa uṇṇil*

*Vīrukoṇṭu veḷivarum pētiyūm*

*mārumēṇru vakuttaṇar nantiyē*”

- *Citamparatāṇu piḷlai poruṭpaṇṇu nūl part -1*

Method of preparation:

<sup>6</sup>*Vacampu* has been calcinated by traditional cow dung method, *Uttāmaṇi* leaves are collected and juice is extracted, which is mixed with salt(Sodium chloride) and calcinated *vacampu* and the mixture is heated until the juice is fully absorbed and made powdery, at last again it is triturated and given for administration.

Dose: 13 to 200 mg

Adjuvant: Hot water

Figure 1- *Uttāmaṇi karukku* preparation.



Figure

tāmaṇi karukku

2- Ut-

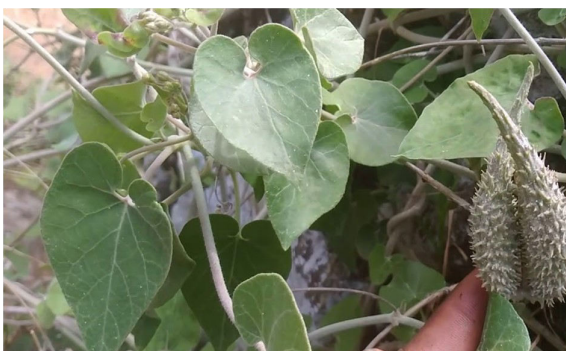


### PROPERTIES OF THE DRUG:

#### *Uttāmaṇi karukku*: *Uttāmaṇi*:

A slender, hispid, fetid- smelling perennial climber. Leaves opposite, membranous, 3-9 cm long and wide, broadly ovate, orbicular or deeply cordate.

Figure 3- *Pergularia daemia*



### Taxonomy

Kingdom	: Plantae
Subkingdom	: Tracheobionta
Super division	: Spermatophyta
Division	: Magnoliophyta
Class	: Magnoliopsida
Subclass	: Asteridae
Order	: Gentianales
Family	: Asclepiadaceae
Genus	: <i>Pergularia</i>
Species	: <i>P. daemia</i> (Forsk) Chiv
Other names	: vēliparutti, uttamamakāṇi, uttamakannikai
Parts used	: Leaves, roots and root bark
Parts used in the Trial drug	: Leaves

*Cuvai* : *kaippu*

*Taṇmai* : *veppam*

*Pirivu* : *kārppu*

Action : Anti pyretic, Antispasmodic, Nervine tonic, Sedative Stomachic, Anthelmintic, Laxative, Expectorant (N. Balakrishnan et al 2009) , Emetic, Anti inflammatory.

Active constituents :

- Lupeol
- Beta sitosterol
- Quercetin
- Kaemferol
- Alpha -Amyrin
- Beta- Amyrin
- Betaine
- Isohamnetin

*Uttāmaṇi potukuṇam*:

“*Icikkum valiyiraippum ettaṭippum ēkum*<sup>6</sup>

*Pacikkumati māntamum pōm pār*”

- *Akattiyar kuṇavākaṭam*.

The verse denotes *uttāmaṇi* helps to relieve from *icivu (vali)*, *iraippu* and *ati māntam*. Appetite will be increased.

Medicinal properties:

Gastro Intestinal system:

1. Digestive disturbance, Flatulence
2. Loss of appetite
3. Gastric ulcer
4. Choleric diarrhea in children
5. Treat infantile diarrhea and Malarial intermittent fevers.

Respiratory system:

Cough, Fever, Cold, Asthma, Whooping cough and Capillary bronchitis.

-*Nadkarni's Indian material medica vol-I*

**Table 1. Acute toxicity of *P. daemia***

Treatment	Dose oral (g/kg BW) <sup>a</sup>	Quantal symptoms	Quantal mortality
Control (vehicle)	10 mg/kg	0/10	0/10
Test extract	0.5	0/10	0/10
	1.0	0/10	0/10
	1.5	0/10	0/10
	2.0	0/10	0/10
	2.5	3/10	2/10
	3.0	2/0	0/10

A g/kg body weight/os. (S. C. Jain et al, 1998)

From Table 1, it is evident that the plant extract was well tolerated orally in mice up to a dose of 2.0 g/kg BW with no mortality or serious side effects<sup>9</sup>.

<sup>10</sup>Among the aqueous and ethanolic extracts tested, the ethanolic extract of the aerial parts of *Pergularia daemia* possess Hepatoprotective activity against CCl<sub>4</sub> intoxication in rats.

<sup>11</sup>The methanolic extract produced zone of inhibition against *S. aureus* only which showed 19 mm in 75µL, 20 mm in 100µL and 21 mm in 125µL concentration. In chloroform extract active against *K. pneumoniae* and *S. aureus* which produced 17 and 12 mm in 75µL, 18 and 13 mm in 100µL and 19 and 15 mm in 125µL concentrations. In aqueous extract was the most effective against all three test pathogens, but the maximum zone of inhibition was shown at 125µL concentration which produced 15mm against *E. coli* and *K. pneumoniae*, 22 mm zone of inhibition against *S. aureus*.

<sup>11</sup>*A. niger* and *Penicillium sp.* were highly susceptible to chloroform extract (22 and 19 mm) followed by aqueous extract (17 and 20 mm) and methanolic extract (16 and 16mm) at 125µL concentration respectively.

Acute toxicity study:

<sup>10</sup>The ethanolic and aqueous extracts did not cause any mortality up to 2000 mg/kg and were considered as safe as per OECD guidelines<sup>15</sup>.

Figure 4- *Acorus calamus*



**Table 02. Antibacterial activity of methanol, chloroform and aqueous extract of *Pergularia daemia* (Forsk.) Chiov.** (Ramanathan R et al, 2013)

S.No	Test bacteria	Zone of inhibition (Diameter in mm)								
		Methanol extract			Chloroform extract			Aqueous extract		
		75µL	100µL	125µL	75 µL	100µL	125µL	75µL	100µL	125µL
1	<i>Escherichia coli</i>	-	-	-	-	-	-	-	-	15
2	<i>Klebsiella pneumonia</i>	-	-	-	17	18	19	11	13	15
3	<i>Staphylococcus aureus</i>	19	20	21	12	13	15	19	20	22

**Table 02. Antifungal activity of methanol, chloroform and aqueous extract of *Pergularia daemia* (Forsk.) Chiov.** (Ramanathan R et al, 2013)

S. No	Test fungi	Zone of inhibition (Diameter in mm)								
		Methanol extract			Chloroform extract			Aqueous extract		
		75 µL	100µL	125µL	75 µL	100µL	125µL	75 µL	100µL	125µL
1	<i>Aspergillus niger</i>	14	15	16	19	20	22	15	16	17
2	<i>Penicillium sp.</i>	13	15	16	17	18	19	18	19	20



*A. calamus* is a perennial plant with creeping and extensively branched, aromatic rhizome, cylindrical, up to 2.5 cm thick, purplish-brown to light brown externally and white internally. At the rhizome forming, perennial that can grow to 2 meters resembling an iris<sup>12</sup>

#### TAXONOMY

Kingdom	: Plantae
Division	: Magnoliophyta
Class	: Liliopsida
Order	: Acorales
Family	: Acoraceae
Genus	: <i>Acorus</i>
Species	: <i>calamus</i> / <i>A. aromatics</i> / <i>A. calamus</i> var. <i>americanus</i>

Other species : *Acorus gramineus*

Other Tamil names

ukkiram, vacam, vacai, vēṇi, cuṭuvāṇ, uraippāṇ, pēr collā maruntu, piḷḷai maruntu<sup>6</sup>, koṭi kevuṛi, vaṅkirācam, kiṁaṇattippi, viṣaram, ōmacam, tiripaṅkucāti, ācuvētayam, vacuntakirumiyari.

Parts used : Dried Rhizome

Parts used in the trial drug : Ash of the Rhizome.

*Cuvai* : *kārppu*, *kaippu*

*taṇmai* : *Veppam*

*Pirivu* : *kārppu*

#### Action :

Stomachic, Anti periodic, Stimulant, Disinfectant, Germicide, Carminative, Expectorant and Antispasmodic.

#### Constituents :

- Alpha – asarone- 1.17%
- Beta- Asarone- 92.68%
- Delta- Asarone- 2.27%
- 1-8 cineole, Terpinolene, sugar 8.342%
- Nitrogen 2.029%, Protein 10.318%
- A volatile essential oil- acronic.
- A bitter principle- acoretin( choline calamine)
- The essential oil of *Acorus calamus* is yellowish brown and is found to be composed of as aryl aldehyde, esters of palmitic acids and a small quantity of phenol, eugenol, methyl eugenol, calameneol and calameone.

- Indian Materia Medica (P. No: 35)

#### Active constituents:

The rhizomes of *A. calamus* Linn. has mixed fatty acids, as indicated by gas chromatography of the corresponding methyl esters were myristic (1.3%), palmitic (18.2%), palmitoleic (16.4%), stearic (7.3%), oleic (29.1%), linoleic (24.5%) and arachidic (3.2%). The nature of the sugars was defined by paper chromatography and confirmed by direct comparison with authentic samples. Composition of the sugars, as indicated by densitometer, was maltose (0.2%), glucose (20.7%) and fructose (79.1%). The content of the oil in dried sweet flag rhizomes was 1.20+/-0.12%. Acorenone was dominant in the rhizomes (20.86%) followed by isocalamendiol (12.75%). Besides Monoterpene hydrocarbons, sequestrine ketones, (Trans- or Alpha) Asarone (2, 4, 5-trimethoxy-1- propenylbenzene), and Beta-asarone (cis- isomer) and eugenol were also identified. Some other compound identified in *A. calamus* are (-)-4-Terpineol, 2-Allyl-5-ethoxy-4-methoxyphenol, Epieudesmin, Lysidine, (-)-Spathulenol, Borneol, Furyl ethyl ketone, Nonanoic Acid, 2,2,5,5-Tetramethyl-3-hexanol, Bornyl acetate, Galgravin, Retusin, (9E,12E,15E)-9,12,15- Octadecatrien-1-ol, Butyl Butanoate, Geranylacetate, Sakuranin, Acetic Acid, Camphor, Isoelemicin, á-Ursolic acid, Acetophenone, Dehydroabietic acid, Isoeugenol Methylene, Apigenin 4',7-dimethyl ether, Dehydrodiisoeugenol, Linalool, Elemicin, Linoleic acid<sup>13</sup>.

The biochemical constituent in *Vacampu* is asarone. This compound has analgesic, sedative and neuro depressive activity which can produce sedation and hence reduce the irritable cry among neonates. In neonates with diarrhea, the spasmolytic and antisecretory effect of the extract can reduce the frequency of loose stools<sup>14</sup>.

<sup>12</sup>Heavy Metals Analysis The content of heavy metals such as lead was present within the permissible limit, cadmium; mercury and arsenic were not found in the drug *Acorus calamus* (table.4).

Table. 4. Heavy Metals Analysis (Ushakanthan et al., 2017)

S. No.	Name of the Element	Results	Permissible Limit
1	Lead	0.0914 ppm	10 ppm (WHO)
2	Cadmium	Not detected	0.3 ppm (WHO)
3	Arsenic	Not detected	3 ppm (API)

The eth-

anolic extract of *Acorus calamus* significantly protects against liver injuries resulting in improved serum biochemical parameters such as SGOT, SGPT and SALP<sup>16</sup>.

Fatty acids in *Acorus calamus* have palmitic acid and its ester which possess significant antifungal and antibacterial activity<sup>17</sup>. Various essential oil components present in essential oils like linalool, 1,8-cineol, caryophyllene,  $\alpha$  humulene, and asarone have been reported to possess anti-oxidant activity.

*Uppu:*

*Sodium chloride*

Other names: *kaṛiyuppu, cōṛruppu, kaṭaluppu, vīṭṭuppu, ilavaṇam, camuttira lavaṇam*<sup>18</sup>.

***Kaṛiyuppiṇ potukuṇam:***

“*Māntam porumalaṛum vāyuvumpōmtīpaṇamām  
tontitta aiyan toṭarumō- cantatamum  
akkiṇiyiṇ puṣṭi aṭaruṇ kaṛiyuppāl  
cikkukiṇṛa nīriṇaṅkuṇ ceppu*”

*Kaṛiyuppāl māntam, vāyirrup porumal, vāyu, kapam nīṅkum. Nīraṭaiṇṇu tūrum. Paciyum camākkiṇiyum atikap- paṭum.*

## CONCLUSION

*Cittā* medicine has its own unique identity in its formulation of drugs. Despite of, various climatic change and geographical nature changes, the composition of drug most of its activities are similar mainly *uttāmaṇi karukku*, the herbo mineral combination has its own composition which has Hepatoprotective and Anti oxidant activity. *Uttāmaṇi karukku* will be more prioritized by further scientific validation.

## FINANCIAL SUPPORTS

Nil

## CONFLICTS OF INTEREST

None declared.

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