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**The study on Siddha herbo-mineral formulation *Linga Chenduram* for the treatment of Cervical cancer (*Alkul Puttru*) - A Review****SORUBAN T<sup>\*1</sup> AND VISWESWARAN S<sup>2</sup>****1:** Siddha Teaching Hospital, Kaithady, Sri Lanka**2:** Associate Professor, Department of Gunapadam, National Institute of Siddha, Chennai - 600047**\*Corresponding Author: Dr. Thiruvancheeswaran Soruban: E Mail: [sorruthiru@gmail.com](mailto:sorruthiru@gmail.com)****Received 8<sup>th</sup> Feb. 2022; Revised 9<sup>th</sup> March 2023; Accepted 7<sup>th</sup> May 2023; Available online 1<sup>st</sup> June 2023****ABSTRACT**

On a worldwide basis, cancer represents the largest cause of death in both men and women. Cancer is a disease of cells in the body where there was abnormal growth of cells and is originated due to lack of proper regulation in cell cycle. Cervical cancer is the fourth most common cancer among women globally. According to the Siddha classical literature the term *Puttru* denotes the Cancer. *Yoni Puttru/Alkul Puttru* is one of the types of cancer and is more closely related to the signs and symptoms of Cervical Cancer. *Linga Chenduram* one of the preparations mentioned in *Anuboga Vaithiya Navaneetham*, is indicated for *Alkul Puttru* where *Lingam* (Cinnabar) is the primary constituent. Cinnabar consists of more than 96% mercury sulfide (HgS). The Siddha formulations such as *Puttru Pathakam*, *Panchamuga Chendhuram*, *Pancha Paasana Chendhuram*, *Ashta Bairava Chendooram* etc where cinnabar is present as one of the ingredient. These formulations having scientific evidence on in vitro studies substantiated the classical Siddha literature evidence which claims the Anti cancerous treatment. These literature evidences to pharmacological activity of cinnabar proves the Anti-inflammatory, Analgesic and Anxiolytic activities. Hence *Linga Chenduram* can be used in the treatment of cancer. Future studies, in vitro and in vivo are underway to pave the way for the development of anticancer properties.

**Keywords: *Linga Chenduram*, Cervical Cancer, Siddha medicine, *Yoni Puttru*, *Alkul Puttru***

## INTRODUCTION

Cancer is a disease of cells in the body [1]. It is recognized as abnormal growth of cells and it originates due to lack of proper regulation in cell cycle [2]. There are many different types of cells in the body, and many different types of cancers which arise from different types of cells. Cervical cancer is the fourth most common cancer among women globally, estimated 604 000 new cases and 342 000 deaths in 2020. About 90% of the new cases and deaths occurred in low- and middle-income countries in 2020 worldwide [3].

Siddha medicine is one of the ancient medical systems among the southern part of India; Northern and Eastern part of Sri Lanka [4-6]. This system is assumed that when the normal equilibrium of three humors (vatham, pitham and kabham) is disturbed, disease is caused [7]. Chemistry of the system has been found well developed into a science auxiliary to medicine and alchemy. It was found useful in the preparation of medicines as well as in transmutation of basic metals into high metal [8]. The Siddha system has developed a rich and unique treasure of drug knowledge in which use of metals and minerals is liberally made.

The mineral and metal-based drugs in Siddha System are categorized under the following categories: 1. *Uppu (Lavanam)*-

drugs that are dissolved in water and get decrepitated when put into the fire giving rise to vapor. 2. *Pashanam*: drugs that are water insoluble but give off vapors when put in to fire 3. *Uparasam*: Similar to pashanam chemically but have different actions. 4. *Rathinam and uparathinam*, which include drugs based on precious and semi-precious stones 5. *Loham*: metals and metal alloys that do not dissolve in water but melt when put in to fire and solidify on cooling. 6. *Rasam*: drugs that are soft, sublime when put in to fire changing into small crystals or amorphous powders. 7. *Gandhakam*: sulphur is insoluble in water and burns off when put into fire [7, 9]. *Lingam* (Cinnabar) is the one of the compound of Rasam [10].

This system has numerous treatment methods in the form of verses in classical Siddha text books and manuscripts. According to the Siddha classical literature, the term *Puttru* denotes the Cancer. *Yoni Puttru / Alkul Puttru* is one of the types of cancer and is more closely related to the signs and symptoms of Cervical Cancer *Linga Chenduram* is one of the preparations mentioned in *Anuboga Vaithiya Navaneetham* indicated for *Alkul Puttru*.

## OBJECTIVES

- To collect the literature evidence of medicines indicated for puttru (Cancer)

which contains *Lingam* as one of the ingredient.

- To collect the scientific evidence for anti-cancer properties of *Lingam* and Latex of Thirugukalli

## STUDY METHODOLOGY

Literatures from authentic siddha and traditional text books, dissertations, theses, original articles and research papers from electronic databases such as Science direct, Pub Med, Google-Scholar and recent advancements in anti-cancer evaluation of *Lingam* and *Thirugukalli* latex were taken into this study for review.

## RESULT AND DISCUSSION:

### Ingredients of *Linga chenduram* [11, 12, 13]

Purified *Lingam* (Cinnabar) - 17.5g (5*Varaganedai*), *Thirugukalli* Latex (*Euphorbia tortilis*) - Sufficient, *Utthamani* flowers (*Pergularia daemia*) - 70g (2 *Palam*) and *Vellaierukkam* flowers (*Calotropis procera*) - 70g (2 *Palam*)

**Dosage :** 16 mg – 32 mg [11, 12, 13]

**Vehicle :** Cow Butter, Milk [11, 12, 13]

### Indication:

*Mega Noi* (Sexually Transmitted Disease), *Kiranthi* (Syphilis), *Pun* (Wound), *Purai* (Pus), *Karuppai Puzhukkal* (Uterine Worm infestation), *Alkul Puttru* (Cervical Carcinoma) and *Nunakkai Kiranthi* (Syphilitic Tumor) [11, 12, 13].



Figure 1: Preparation Process of *Lingam Chenduram* [12, 13]

**A:** Powdering the purified *Lingam*

**B:** Grinding with Thirugukali Latex

**C:** Making *Villai*

**D:** Making *Kavasam* with *Uthagamani* and *Vellarukku* flowers

**E:** Dried *Villai*

**F:** Sealed with mud pots

**G:** Incineration

**H:** After Incineration of the mud pot.

**I:** After Separation of the Mud pots

**J:** Separation of *Kavasam*

**K:** After *Kavasam* Separated

**L:** Grinding the *Villai*

**Lingam (Cinnabar/ Red sulfide of mercury)**

*Lingam* (Cinnabar) has been used in traditional medicines for thousands of years for various ailments. It is primarily used in various preparations like *Pachai karpooora mathirai*, *Markandan Mezhu*, *Linga kulambu*, *Linga Chenduram*, *Surathiku Kuligai*, *Linga Kattu*, *Mantharakasathiku Mathirai* *Linga Pathangam* for its pharmacological actions such as Antipyretic, Anti-diarrhoeal, Anti-inflammatory, Analgesic and Anxiolytic. It is considered to be least toxic among the mercurial preparation and hence indicated in many of the Pediatric medicinal formulations of Siddha [14].

Cinnabar obtained as an ore, is the naturally occurring mineral with mercury in combination with sulfur, and is red in color. Hence it was called red mercury sulfide.

Cinnabar consists of more than 96% mercury sulfide (HgS) [15, 16]. *Linga Chenduram* comprises of Cinnabar as one of the main ingredient in this review study, as per scientific paper evidences searched so far, Anti-cancer activity wasn't found in Cinnabar. The evidences to pharmacological activity of cinnabar proves the presence of Anti-inflammatory, Analgesic and Anxiolytic activities. This proves that Cinnabar can be used in the treatment of cancers. *Pattu karuppu* one of the siddha formulation, when subjected to SEM analysis determined the elements similar to Cinnabar (Hgs). Kannan, N *et al*, In vitro cytotoxicity assay in *Pattu Karuppu* confirmed that the live cells were more in Hek 293 than MCF-7 cell lines, while damaged cells and debris were observed in MCF-7 [17].



Figure 2: Raw *Lingam*

Table 1: In-Vitro study of medicines containing *Lingam* as one of the ingredients

Name of the medicines	Cell lines	Ic <sub>50</sub> value	Type of cancer
<i>Panchamuga Chendhuram</i>	MCF-7	60 µg/mL	Breast cancer [18]
<i>Namachivaya Chenduram</i>	Hela	50 µg/mL	Cervical cancer [19]
<i>Pancha pashana Chenduram</i>	MCF-7	59 µg/mL	Breast cancer [20]
<i>Ashta Bairava Chenduram</i>	OSCC	50 µg/mL	Oral squamous cell CA [21]
<i>Puttru pathakam</i>	MCF-7	60µg/mL	Breast cancer [17]
<i>Kaalamega narayana Chendhooram</i>	OSCC	50 µg/mL	Oral squamous cell CA <sup>22</sup>

As shown in **Table 1**, *Panchamuga Chendhuram*, *Namachivaya Chenduram*, *Pancha pashana Chenduram*, *Ashta Bairava Chenduram*, *Puttru pathakam* and *Kaalamega*

*narayana Chendhooram* these Siddha mineral formulas are containing *Lingam* as one of the ingredients and they are scientifically proved in the In-Vitro study to anti-cancerous effects.

**Table 2: List of medicines indicated for cancer having *Lingam* as one of the ingredients**

Name of the medicines	Indication
<i>Nandhi mezhugu</i>	<i>Kanna puttru</i> (Buccal Carcinoma), <i>Kuri puttru</i> (Cervical Carcinoma), <i>Aankuri puttru</i> (Penile Carcinoma) [23]
<i>Malaippambu oil</i>	<i>Puttru</i> (Carcinoma) [24]
<i>Kaalameganarayana Chenduram</i>	<i>Puttru</i> (Carcinoma), <i>Kannap puttru</i> (Buccal Carcinoma) [25]
<i>Rathina Maanikka Chenduram</i>	<i>Ratha Puttru</i> (Carcinoma) <i>Anda Puttru</i> (Testicular Carcinoma) [26]
<i>Kuttathukku Pugai</i>	<i>Linga Puttru</i> (Penial Carcinoma) [27]
<i>Puttru Pugai</i>	<i>Alkul Puttru</i> (Cervical Carcinoma) [27] <i>Linga Puttru</i> (Penial Cancer)

As per the literature evidence (**Table 2**), *Nandhi mezhugu*, *Malaippambu oil*, *Kaalameganarayana Chenduram*, *Rathina Maanikka Chenduram*, *Kuttathukku Pugai* and *Puttru Pugai* these Siddha mineral formulas are mentioned in the of classical Siddha text book for the treatment of the Cervical Cancer (*Alkul Puttru*) and they are contain *Lingam* as one of the ingredients.

#### Latex of *Thirugukalli* (*Euphorbia tortilis*)

##### Taxonomy

Kingdom:	Plantae
Phylum:	Spermatophyta
Class:	Magnoliopsida
Order:	Euphorbiales
Family:	Euphorbiaceae
Species:	<i>Euphorbia tortilis</i>

Botanical Name: *Euphorbia tortilis*  
Rottler ex W.Ainslie [28]

#### Geographical Distribution:

Peninsular India and Sri Lanka, Kerala: Idukki, Tamil Nadu: Coimbatore, Kancheepuram, Tiruchchirappalli, Tirunelveli, Tiruvannamalai [29, 30].

#### Description:

Armed thick fleshy shrubs to trees, stem spirally twisted, 3 angled, spines to 1 cm. Leaves small, deciduous. Cyathia axillary, in clusters; peduncles 0.5 cm; involucre cupular, 3 x 5 mm; glands 5, thick; male flowers in groups of 5; stalk 1.5 mm; female flowers-laterally pendulous; ovary 3 x 7 mm, sharply 3-angled. capsule 8 mm across. Flowering and fruiting: June – August [20, 30].

**Parts Used:** Latex [31]

**Chemical Constituents of Latex:**

Pentacyclic triterpenoids,  $3\beta$ -friedelinol,  $3\alpha$ -friedelinol, friedelin, epi-friedelinyl acetate and

taraxerol. Carbon 44.5%, Hydrogen 6.81%, Nitrogen 1.42% and Sulfur 0.06% [31].

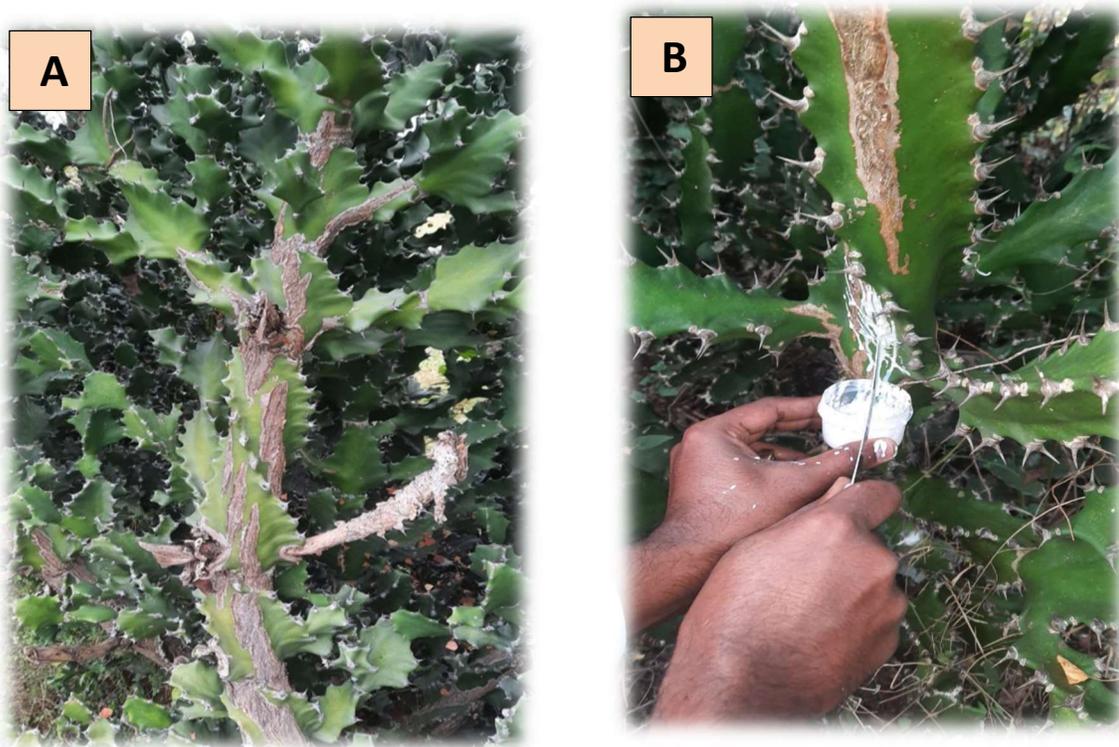


Figure 3: A: *Thirugukalli* and B: Latex collecting from the stem of *Thirugukalli*

**Anti - Cancerous activity - Euphorbia tortilis Latex**

Anju V. *et al.*, Terpenes and Biological Activities of *Euphorbia tortilis*, study results, Latex extract of *Euphorbia tortilis* was inactive on the normal cardiac myoblasts cell line H9C2 within the concentration range of 10-100 $\mu$ g/ml, while the cell growth inhibition of the extract at 100 $\mu$ g/ml on Hela cell line was found in minimal amount (3.06%) [32].

**CONCLUSION:**

According to Siddha Classical Literature and Scientific research evidences, *Lingam* based Siddha formulas was found to contain Anti - Cancerous activity. As per study results, the ingredients of *Linga Chenduram* was found to possess Anti-cancer properties and hence further In-vivo and In-vitro studies could be performed for further evaluation of Anti-cancer activity in Cervical Cancer.

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