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# INTERNATIONAL RESEARCH CONFERENCE ON SIDDHA MEDICINE (IRCSM-2022)

*"Enhance Immunity for Healthy Life Through Siddha Medicine"*

under the sphere of

**JAFFNA UNIVERSITY INTERNATIONAL CONFERENCE-2022**

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**POST CONFERENCE E- MAGAZINE**









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**Post Conference e - Magazine of the 3<sup>rd</sup> International Research Conference on  
Siddha Medicine (3<sup>rd</sup> IRCSM-2022)**

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## Message from the Conference Joint Editors



It is with huge ecstasy that we bring out the proceedings of the 3<sup>rd</sup> International research Conference on Siddha Medicine (3<sup>rd</sup> IRCSM 2022) with its special theme on Immunity Development through Siddha Medicine.

This year, a large number of papers were submitted to the conference. Each paper was subject to review by 2–3 reviewers. The acceptance rate is 12% for the technical

papers, 6% for case study presentation and 30% for popularization article. The papers came from specific countries around the globe, from academia, medical officers and students. We have 3 technical tracks and 5 keynotes. The conference lasts for 4 days and provides abundant activities including Pre-conference workshop, Proceedings publication, Conference and presentation for case study reports and popularization articles.

We would like to precise our inmost gratefulness to the authors whose technical offerings are presented in the proceedings. The significance of the research presented in this conference represents a step added towards Immunity Development through Siddha Medicine.

**Dr. (Mrs), Sailajah Sivarajah & Dr. Thavarasah Vijayakumar**

**Senior lecturer & Lecturer**

**Unit of Siddha Medicine**



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# **CASE STUDY REPORTS**

## An Ayurvedic Management of *Janu Sandhigatavata*: A Case Study

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### Background

*Sandhigatavata* (Osteoarthritis) is the most common musculoskeletal condition and major cause of disability among elderly population in Sri Lanka as well as in the globe. It is estimated 30.8 million adults have osteoarthritis at present. The burden of the disease is expected to rise with an aging population and prevalence will be increased at least 130 million individuals around the globe by the year 2050. *Sandhigatavata* manifested due to vitiation of *Vata Dosha*. *Sandhigatavata* is *krichchasadya vyadhi* because all the *Vatavyadhis* are difficult to cure and they are said as *Mahagada*. Symptoms of *Sandhigatavata* are *Sandhi shoola*, *Sandhi shotha*, *Akunchana Prasara Janya Vedana* and *Hanti Sandhi*. The Clinical features of *Sandhigatavata* is resembled with Osteoarthritis which have Joint pain, Swelling, Stiffness Disability and Crepitations over joint. There is no satisfactory, comprehensive & time bound treatment schedule for Osteoarthritis available at present. Different therapeutic intervention are adopt to succeed this painful condition but still relatively low cost and effective treatment modalities are not in the present practice. So new therapeutic intervention should be designed to improve the patient's quality of life.

### Objectives

To study on the efficacy of treatment protocol in the management of *Janu Sandhigatavata*.

### Methods

#### Case Report

A fifty six year old female patient presented with pain (*Shoola*), Stiffness (*Stabdhata*) and restricted movement (*Hanti Sandhi*) in right knee joints since two years was selected to the study. Further; she complaints pain aggravated during activities, cold climate, especially in the evenings and night. She was taken analgesic drugs with various analgesic balm over one year to manage the condition, but not cured. On examination, it was elicited that the movements was restricted (RM) in the knee joints and tenderness was noticed at the tip of patella without swelling. The study was conducted at I.P.D., Department of *Kayachikitsa*, for a period of 21 days. Hematological Investigations such as FBS, Lipid Profile, ESR, and radiological report of Digital X-Ray in knee joint were taken and findings were within normal limits. Signs and symptoms of the *Sandhigatavata* were recorded before and after the treatments. The results were assessed on the basis of symptomatic improvement using visual Analog scale.

Medicine	Mode of	Dosage	Duration
<i>Rasna 07 Decoction + Tryodashanga Guggulu</i>	Oral	120ml bd	1 <sup>st</sup> 14 days
<i>Rasna 22 Decoction + Yogaraja Guggulu</i>	Oral	120ml bd	15-21 days

Table-1: Internal Medicine Recommended

External Treatments	Used Medicine	Dosage	Duration
<i>Abhyanga – Janu sandhi</i>	<i>Kubjaprasarini oil</i>	Morning 30ml	1 <sup>st</sup> 14 days
<i>Upanaha Sweda (paste)</i>	<i>Koladi Lepa</i>	Morning 100g	1 <sup>st</sup> 14 days
<i>Matra Vasti</i>	<i>Narayana oil</i>	Evening (2pm)	15-21 days

Table -2: External Therapeutic procedure Recommended

Assessment criteria - *Shoola* (pain), *Sthambha* (stiffness) and *Hanti Sandhi* (restricted movements) has been assessed before and after the treatment. Changes of the intensity of signs and symptoms were recorded a Performa. Effect of treatment regimens were evaluated by symptomatic relief based on the grading system during the period of 21 days. Patient was advice to attend clinic after two week for follow up effect of the treatment protocol.

Symptoms	Grading parameters
<i>Shoola</i> (pain)	0– No Pain 1– Mild Pain (nagging, annoying, interfering little with activities of daily livings) 2– Moderate Pain (interferes significantly with activities of daily livings)
<i>Sthambha</i> (Stiffness)	0– No stiffness 1– Mild, has difficulty in moving the joints without supports 2 – Moderate, has difficulty in moving, can lift only with support
<i>Hanti Sandhi</i> (Restricted movements)	0– Can do work unaffectedly 1– Can do strenuous work with difficulty 2– Can do daily routine work with great difficulty

Table – 3: Grading parameters

Statistical Analysis - Data were collected and analyzed the percentage wise reduction of the signs and symptoms before and after the treatment regimen.

## Results

Clinical Features	Before Treatment (BT)	After Treatment (AT)
<i>Shoola</i> (pain)	3	0
<i>Sthambha</i> (Stiffness)	2	1
<i>Hanti Sandhi</i> (Restricted)	2	1

Table-4: Effect of clinical sign and symptoms of treatment regime

It was observed that *Shoola* (Pain) was completely cured and 80% relief was obtained to *Hanti Sandhi* (Restricted movements) and *Sthambha* (Stiffness) in the affected knee joints.

## Conclusion

Considering the above findings it can be concluded that above treatment protocol is effective in the short term management of *Janu Sandhigataavata*. Treatment modality can be prescribed as a standard procedure for *Janu Sandhigataavata*. Further clinical trials, cytotoxic studies and drug standardization should be conducted to evaluate the efficacy of above treatment regimen with larger sample to draw a generalized conclusion.

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## Effectiveness of Ayurveda Treatment on Sarvanga Roga (Myelomalacia)

### A Case Study

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#### Background

Myelomalacia is a pathological condition referring to the softening of the spinal cord. Possible causes of Myelomalacia include cervical myelopathy, hemorrhagic infarction or acute injury, such as that caused by intervertebral disc extrusion. There are limited treatment opportunities in Allopathic Medicine for Myelomalacia. According to Ayurveda, it can be considered as *Sarvanga Roga*. In *Charaka Samhita*, aggravated *Vayu* may cause constriction of the vessels and ligament as a result of which there will be contracted, entire body called *Sarvanga Roga*. In this study, 59 years old male patient attended at OPD of the Ayurveda Hospital, Pallekalle, with a confirmed diagnosis of spinal cord compression with resultant Myelomalacia changes at C3-C4 posterior midline disc extrusion causing severe Spinal canal stenosis. On examination, minor motor and sensory functions detected below the level of lesion. Ayurveda treatment plan was based on internally, *Agni-deepana*, *Ama-pachana*, *Shodhana*, *Shamana* and *Tharpana*. External treatment procedures involved *Salisastika Pinda-Swedana*, *Virechana Karma* and *Yoga Vasti*.

#### Objective

The objective of this case study was to study the effectiveness of Ayurveda treatment plan on Myelomalacia (*Sarvanga Roga*)

#### Methodology

Treatment plan was based on according to general line of treatment of *Vata Vyadhi* in *Charaka Samhita*. In the first two-week, patient was treated with *Dashamoola Kashaya* 120ml twice a day, *Navarathna kalka* 2.5g twice a day, and *YogarajaGuggulu* (1Guggulu) twice a day. From third week to fifth week, patient was treated with *DashamoolaBaliranda Kashaya* 120ml twice a day, *Navarathna kalka* 2.5g twice a day, *YogarajaGuggulu* (1Guggulu) twice a day, *Vata GajendraVati* (3Vati) twice a day, *Avipaththikara Choorna* 5g twice a day. In the sixth to eight weeks, patient was treated with *Maharasnadi kashaya* 120 ml twice a day, *Navarathna kalka* 2.5g twice a day, *Yogaraja Guggulu* (1Guggulu) twice a day, *Vata GajendraVati* (3 Vati) twice a day, and *Avipaththikara Choorna* 5g twice a day.

In addition, *Sarvanga Dara* with *Kubjaprasaranee* oil for 8 days, *Salisastika Pinda swedana* for 7days, *Vireka Karma* with *Thrivruth Draksha Kashaya* for 1 day, *Niruha Vasti* with *Dashamoola Kashaya* and *Anuvasana Vasti* with *Narayana* oil for 8days were done. After two months of treatment, Clinical improvement was done according to ASIA SCALE.



## Result and Discussion

Before treatment, minor motor and sensory functions were detected below the level of lesion and sensory functions; such as light touch testing in right was 23/56 and in left was 19/56. Pinprick testing in right was 30/56 and in left was 34/56. Motor strength testing in left and right was 23/50. Significant clinical improvement was reported after 2 months of the Ayurveda treatment with improved motor strength testing (RT- 48/50, LT- 46/50), sensory testing, light touch testing (RT –52/56, LT- 52/56) and pinprick testing (RT – 52/56, LT –52/56).

In Ayurveda, Myelomalacia can be correlated with *Sarvanga Roga* as per explanation of Acharya Charaka in the context of Charaka *Samhita* in *Vata Vyadhi*. Hence, the general *Vata Vyadhi chikitsa* sutra was followed. The drugs used for the treatment rich in *Vata Hara*, and *Vrimhana* properties and helped in improving the muscles tone and bulk. The treatment improved motor functions in the limbs.

These *Pancha Karma* procedures and other treatment have given better results to the patient by reducing the signs and symptoms. By the end of the treatment, patient was able to walk with out support steadily and to perform the activities of daily life.

## Conclusion

The case study demonstrated the efficacy of selected Ayurveda treatment on clinical improvement of Myelomalacia (*Sarvanga Roga*). Therefore, it can be concluded that the Ayurveda treatment can be utilized as an alternative treatment for similar kind of neurological diseases.

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## **Effect of Gas Bulathadi Nasya, Suwadakottamadi Kashaya and Iramusuadilepa in the form of Thalam on patient suffering from Ardhavabhedaka (Migraine)**

### **A case study**

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### **Introduction**

Clinical features of Ardhavabhedaka are severe tearing and pricking pain in one half of the head (Uttamanga Ardha Athiva Janthoh Sambheda Toda) and giddiness (Bhrama). Pain tends to appear fortnightly, every ten days or suddenly (Pakshat Dashahad Athva) (Singhal, 1974). It is a disease occurring due to vitiation of Tridosha (Singhal, 1974). Ardhavabhedaka can be correlated with migraine. In migraine usually there may be a moderate or severe headache; hemicranial or generalised, nausea, vomiting, anorexia and photophobia. Migraine with Aura and Migraine without Aura are some varieties of migraine (Golwalla, 1989). Sushruta prescribes to conduct Nasya Karma (Singhal, 1974) and Lepa (application of pastes on the head) (Singhal, 1974) in treatment of Ardhavabhedaka (migraine). Thalam is a treatment method practiced in Kerala. In this treatment, oil and pastes are applied on head. Thalam has some similarities with Hisagallum, a Sri Lankan Traditional medical procedure practiced in treatment of Ardhavabhedaka (migraine).

Iramusuadilepa as a Hisagallum is described in Sri Lankan Traditional medicine in treatment of Ardhavabhedaka (migraine) (Karunarathna, 1967). Gas Bulathadi Nasya along with Suwadakottamadi Kashaya is also prescribed as a treatment for Ardhavabhedaka (migraine) (Jayasekara, 1948).

### **Case Report**

A patient suffering from Ardhavabhedaka (migraine) selected from OPD, Ayurveda Hospital, Rathnapura. Selected patient was thoroughly examined and severity of the symptoms were recorded using a specially prepared grading scale as used in previously published research papers (Parekh and Rajagopala, 2009).

### **Treatment method**

Duration of the treatment got 10 days and follow up period is 14 days. Treatment method is given in table 1.

Day	Treatment
Day 1-3	Gas Bulathadi Nasya
Day 4 -10	120ml of Suwadakottamadi Kashaya twice a day before meals
	Iramusuadilepa in the form of Thalam once a day at 10.00 am

Table 1. Treatment Plan

### Preparation of of Suwadakottamadi Kashaya

12 g each of pericarp *Terminalia chebula* (Family: Combretaceae; Sinhala name: Aralu), entire plant of *Solanum virginianum* (Family: Solanaceae.; Sinhala name Katuwelbatu), stem of *Tinospora cordifolia* (Family: Menispermaceae.; Sinhala name: Rasakinda), rhizomes of *Zingiber officinale* (Family: Zingiberaceae; Sinhala name: Inguru) and root of *Saussurea lappa* (Family: Compositae; Sinhala name: Suvandakottam) taken, mixed with 1920ml of water and boiled down to 240ml

### Preparation of Iramusuadilepa in the form of Thalam

10 g each of rhizomes of *Acorus calamus* (Family: Araceae; Sinhala name: Vadamkaha), roots of *Hemidesmus indicu* (Family: Periplocaceae.; Sinhala name: Iramusu) and *Glycyrrhiza glabra* (Family: Fabaceae; Sinhala name: Welmi) and *Saussurea lappa* (Family: Compositae; Sinhala name: Suvandakottam) were taken and ground well. 10 gm of seeded fruit pulp of *Tamarindus indicum* (Family: Fabaceae; Sinhala name: Siyambala) was dissolved in 50ml of water so as to make a thick solution and this was mixed with the ground paste.

### Preparation of Gas Bulathadi Nasya

10gm each of entire plant of *Pepper elder* (Family: Piperaceae, Sinhala name: Wathura Gas/Diya Bulath) and *Desmodium triflorum* (Family: Fabaceae; Sinhala name: Undupiyaliya) and 2 gm of cloves of *Allium sativum* (Family: Fabaceae; Sinhala name: Sudulunu) were taken, pounded and juice was extracted by squeezing. The resultant juice used in Nasya Karma as Gas Bulathadi Nasya Aushadha

### Results

After conduction of Gas Bulathadi Nasya, complete (100%) relief was observed in Bhrama (Vertigo). Partial relief (33.3 % to 75%) was observed in other symptoms in the patient. Complete relief (100%) was observed in all the symptoms such as headache, nausea, vomiting, vertigo, anorexia and photophobia in the patient after completion of entire treatment that is Gas Bulathadi Nasya followed by Suwadakottamadi Kashaya and Iramusuadilepa in the form of Thalam.

## Discussion

Ardhavabhedaka is a disease described under Shiro Roga .It is a disease occurring due to vitiation of Tridosha. Nasya Karma is the best treatment for diseases in Urdhava Jatrugata Pradesha especially head. As Ardhavabhedaka, is also disease in head (Urdhava Jatrugata Pradesha), Nasya Karma is the best treatment to expel vitiated Dosha especially Kapha Dosha.

As ingredients of Gas Bulathadi Nasya, Iramusuadilepa and Suwadakottamadi Kashaya possess Madhura Rasa, Lavana Rasa, Snighdha Guna and UshnaVeerya. Therefore, they pacify vitiated Vata Dosha. These ingredients possess property of Madhura Rasa, and Tikta Rasa. Hence, it pacifies vitiated Pitta Dosha. As these ingredients possess Katu Rasa, Tikta Rasa, Kashaya Rasa, Theekshna Guna ,Ushna Veerya and Katu Vipaka it pacifies vitiated Kapha Dosha. Therefore, conduction of Nasya Karma using Gas Bulathadi Nasya, conduction of Thalam using Iramusuadilepa and oral administration of Suwadakottamadi Kashaya are beneficial in treatment of Ardhavabhedaka (migraine).

Analgesic, ant inflammatory activities of ingredients of Gas Bulathadi Nasya, Iramusuadilepa in the form of Thalam and Suwadakottamadi Kashaya are scientifically proven. Therefore, these drugs are beneficial in management of Ardhavabhedaka (migraine)

## Conclusion

It is decided that conduction of Gas Bulathadi Nasya, followed by Suwadakottamadi Kashaya and Thalam using Iramusuadilepa is beneficial in treatment of Ardhavabhedaka (migraine).

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## **Effect of Virechana Karma, Rathu Pokuru Wadamal Kashaya and Hulanthaladi Lepa in Vicharchika (eczema) - A case study**

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### **Background**

Vicharchika is a type of Kshudra Kustha (minor skin disease). According to Charaka and Shustruta Samhita, clinical features of Vicharchika are Kandu (itching), Shyava Pidaka (blackish brown eruptions) and Bahu Srava (copious exudation), Rajyo (cracks), Ruja (severe pain) and Ruksha (roughness in the skin). Vicharchika can be correlated with eczema based on the clinical presentations. Clinical features of eczema are itching, cracking, redness and swelling in the skin, papules, vesicles and exudation. (Murthy, 2016) No satisfactory treatment is available in contemporary medical practice except antihistamines and topical steroids.

Virechana Karma is prescribed as a therapeutic measure in treatment of Kushta. (Kushwala, 2018). As Vicharchika is also a type of Kushta, Virechana Karma can be performed. Some traditional physicians conduct Virechana Karma with Aralu Snehekola Kashaya and prescribes Hulanthaladi Lepa in treatment of Vicharchika (eczema). One Traditional physician family prescribe Ratu Pokuru Wadamal Kashaya in treatment of Vicharchika (eczema) with effective results.

So far, no known scientific study has been conducted to evaluate the effects of these treatments. Hence the present study was undertaken.

### **Methodology**

A patient suffering from Vicharchika (Eczema) was selected from the Ayurveda hospital, Pallekele. Selected patient was thoroughly examined and severity of the symptoms was recorded using a specially prepared grading scales used in previously published research papers (Chandrakar *et al*, 2018).

### **Treatment plan**

The selected patient was treated with Virechana Karma using Aralu Snehekola Kashaya. After Virechana Karma, the patient was treated with oral administration of Ratu Pokuru Wadamal Kashaya and external application of Hulanthaladi Lepa. Duration of the treatment was 8 days and follow up period was 8 days.

### **Preparation of of Ratu Pokuru Wadamal Kashaya**

20gm each of dried seeds of Koththamalli (*Coriandrum sativum*), fresh flowers of Pokuru Wadamal (*Hibiscus rosa-sinensis*) and fresh entire plant of Kalukammeriya (*Solanum nigrum*) were mixed with 1920ml of water and boiled down to 240ml.

### **Preparation of Hulanthaladi Lepa**

50g of fresh leaves of Hulanthala (*Ageratum conyzoides*; Family: Asteraceae) and 10g of fresh rhizomes of Kaha (*Curcuma longa*, Family: Zingiberaceae) was ground well with 30ml of water and applied over the affected area.

### Preparation of Aralu Snehekola Kashaya

Aralu Snehekola Kashaya was prepared and administered according to Sri Lankan Traditional physicians. 60g of leaves of Senehe Kola (*Cassia senna*, Family: Fabaceae) and 60g of pericarp Aralu (*Terminalia chebula*, Family: Combretaceae) were boiled with eight Patha (1920ml) of water and boiled down to 1 Patha (240 ml).

### Procedure of Virechana using Aralu Snehekola Kashaya

240ml of Aralu Snehekola Kashaya was administered for one day as Virechana Aushadha according to the practice of traditional physician who mentored this research.

### Results

After completion of Virechana Karma (purgation), it was observed that symptoms such as Kandu (itching), Ruja (pain) and Rukshata (roughness in the skin) were partially reduced by 33.3%. On the Day 8, after completion of entire treatment 100% relief was observed in Pidaka (blackish brown eruptions) and Ruja (pain) and partial reduction was observed in Kandu (itching), Vaivarntata (depigmentation), Rajyo (cracks) and Rukshata (roughness in the skin) by 66.7 %.



Figure 1: Relief of Symptoms

### Discussion

Virechana Karma is beneficial in treatment of Kushta as it eliminates vitiated Dosha accumulated in the body especially Pitta Dosha. Ingredients of Aralu Senehekola Kashaya, Rathu Pokuru Wadamal Kashaya and Hulanthaladi Lepa pacify vitiated Vata, Pitta and Kapha Dosha due to its Ayurvedic pharmacodynamic properties.

Analgesic, anti-inflammatory, antioxidant and immunomodulatory, antibacterial activities of ingredients of Aralu Snehekola Kashaya, Rathu Pokuru Wadamal Kashaya and Hulanthaladi Lepa are scientifically proven. Therefore, these drugs are beneficial in management of Vicarchika (eczema).

## **Conclusion**

Based on the results, it is concluded that conduction of Virechana Karma using Aralu Snehekola Kashaya followed by internal administration of Rathu Pokuru Wadamal Kashaya and external application of Hulanthaladi Lepa is beneficial in treatment of Vicharchika (eczema). Further, it is recommended that this research should be performed with a larger number of patients.

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## EFFECT OF RAKTHAMOKSHANA USING GHATI YANTHRA FOLLOWED BY DASHAMULA BALA RASNA KASHAYA, MRUTTIKA SVEDA AND KATI VASTHI USING KARPASADI THAILA IN GRIDHRASI (SCIATICA)

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### Background

Gridhrasi (sciatica) is a common disease among present population. In Ayurveda, Gridhrasi is mentioned under Vata Vyadhi. Clinical features of Gridhrasi are stiffness and severe pain starting in the lumbar region moving downward through thigh, knees, calves and feet (Kumarasinghe, 1994). Gridhrasi can be correlated with sciatica. Sciatica is a term used to describe nerve pain in the leg that is caused by irritation and/or compression of the sciatic nerve. Sciatica characterized by pain along the course of sciatic nerve at the back the thigh and running down the inside of the leg (Thomas, .(1988 Charaka and Sushruta Acharya describes Shiravedhana (venipuncture) as a therapeutic measure in treatment of Gridhrasi (Sciatica) (Kumarasinghe, 1996 and Buddhadasa, 2007). Raktamokshana can be done through Ghati Yantra (cupping) (Srinivas Acharya, 2006). Patil *et al.* has conducted a research on Role of Raktamokshana by Ghati Yantra in treatment of Gridhrasi (sciatica) and reported it as an effective treatment (Patil *et al.* , 2016). Therefore, it was decided to conduct Raktamokshana using Ghati Yantra in the present study. Snehana (oleation) and Sveda (sudation), are described as therapeutic measures under general treatment of principles of Vata Roga (Buddhadasa, 2007). Mruttika Sweda (fomentation with keeping hot mud packs on lumbar region) is described in the management of Shoola (Amritpal Singh, 2007). Sneha (oleation) are described as therapeutic measures under general treatment of principles of Vata Roga (Buddhadasa, 2007). Kati Vasti is one method of administering Bahya Snehana to Kati Pradesha (Lumbar sacral region). Karpasadi Thaila is an oil described in Ayurveda Aushadha Samgraha which can be indicated in treatment of Gridhrasi (Anonymous, 1980). As Kati Pradesha is affected in Gridhrasi (Sciatica), Kati Vasti using Karpasadi Thaila may be beneficial. Dashamoola Bala Rasna Kashaya is indicated in treatment of Gridhrasi (Sciatica) with effective results (Kumarasinghe, 1977) So far not known scientific study has been conducted evaluate effect of these treatment. Therefore, the present study that is Raktamokshana using Ghati Yantra followed by Dashamoola Bala Rasna Kashaya, Mruttika Sveda and Kati Vasti using Karpasadi Thaila was undertaken.

### Objectives

To study the effect of Raktamokshana using Ghati Yantra followed by Dashamoola Bala Rasna Kashaya, Mruttika Sveda and Kati Vasti using Karpasadi Thaila in treatment of Gridhrasi (Sciatica).



## Methodology

### Clinical study

A patient suffering from Gridhrasi (sciatica) was selected from Rural Ayurvedic Hospital, Padaviya. Severity of the clinical features was recorded using a specially prepared proforma. Grading scale common to all symptoms are given below. The symptoms are assessed separately. Lesage' sign (Straight Leg Raising Test / SLRT) test was also done.

### Grading Scale

Grade 0 = Does not feel

Grade 1 = Feels occasionally

Grade 2 = Feels intermittently

Grade 3 = Feels often

Grade 4 = Feels always

### Treatment plan

Duration of the treatment was 17 days. Treatment plan is given in Table 1.

Day	Treatment
Day 1,2,3	Raktamokshana
Day 4 -17	160ml of Dashamoola Bala Rasna Kashaya thrice a day at 6.00 am before meals
	Mruttika Sweda once a day at 9.00 am
	Kati Vasti using Karpasadi Thaila once a day at 10.00 am

Table 1: Treatment Plan

### Results

After completion of Rakthamokshana, it was observed that radiating pain and stiffness were partially relieved by 50%. On completion of entire treatment lower back pain was partially relieved by 66.7%. A complete relief in symptoms such as radiating pain, numbness and stiffness were observed after completion of entire treatment as given in (Table 2).

Lesage' sign (Straight Leg Raising Test/SLRT) was positive before the treatment. After completion of entire treatment SLRT became negative.

Symptoms	Before Treatment	After Rak-tamokshana	End of the Whole Treatment		
		Grade	Percentage of Relief	Grade	Percentage
Pain in Lower	Grade 3	Grade 3	0%	Grade 1	66.7%
Radiating Pain	Grade 4	Grade 2	50%	Grade 0	100%
Numbness	Grade 2	Grade 2	0%	Grade 0	100%
Stiffness	Grade 2	Grade 0	50%	Grade 0	100%

Table 2: Percentage of Relief Symptoms

## Discussion

Raktamokshana using Ghati Yantra eliminates vitiated Dosha accumulated in the body. Hence Raktamokshana is effective in treatment of Gridhrasi.

Kati Vasti is a method of Snehana (external oleation), and it is effective in management of Vata Roga including Grdhrasi (sciatica). Karpasadi Thaila is an oil described in Ayurveda Aushadha Samgraha which can be indicated in treatment of Gridhrasi (Anonymous, 1980). Ingredients of Karpasadi thaila possess the properties that can pacify vitiated Vata Dosha. Also Anti-inflammatory, analgesic and antioxidant properties of Ingredients of Karpasadi Thaila are scientifically proven. Due to these properties Karpasadi Thaila is beneficial for management of Gridhrasi (Sciatica).

Ayurveda pharmacodynamic properties of ingredients of Dashamoola Bala Rasna Kashaya can pacify vitiated Vata Dosha. Ingredients of Dashamoola Bala Rasna Kashaya possess anti-Inflammatory, analgesic and antioxidant properties. Due to these properties of Dashamoola Bala Rasna Kashaya is beneficial for management of Gridhrasi (Sciatica).

Mruttika Sweda is described in the management of Shoola (Amritpal Singh, 2007). Conduction of Sweda Karma using Mud (Mruttika Sweda) is beneficial in treatment of Gridhrasi (sciatica).

## Conclusion

It is concluded that conduction of Raktamokshana using Ghati Yantra (Cupping) followed by internal administration of Dashamoola Bala Rasna Kashaya and external application of Mud Therapy, Kati Vasthi by using Karpasadi Thaila is beneficial in treatment of Gridhrasi(Sciatica).

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## வைரஸ் நோய்களுக்கு எதிராக செயற்படும் நோயெதிர்ப்பு சக்தியுடைய குடிநீரின் எதிர்ப்பாற்றல் -நோயாளியின் பரிசோதனை அறிக்கை

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### அறிமுகம்

சாதாரண தடிமல் பொதுவாக மனிதருக்கு ஏற்படும் நோயாகும். இது Rhino virus ,எனும் கிருமியால் ஏற்படுகிறது. (Samir Bhat Peter .et.al 2013).தற்காலங்களில் COVID-19 எனும் வைரஸ் நோய்த்தாக்கம் சீனாவில் உள்ள உவான் பிரதேசத்தில் இருந்து உருவெடுத்து உலகம் பூராகவும் பெருவாரியாக பரவியுள்ளது. Pneumonia associated with COVID-19 உலகில் அதிகளவு மரணவிகிதங்களை ஏற்படுத்தியுள்ளது. இதற்கு காரணம் போதியளவு வைரஸ் நோய்களுக்கு எதிராக போரிடும் மருந்துகளின் பற்றாக்குறையும், அதற்கு எதிராக முழுமையாக போரிடும் வக்சின் போன்றவை போதியளவு இன்மையும் காரணமாக அமையலாம்.( Sum.et.al.2020). சித்தமருத்துவமானது “உணவே மருந்து மருந்தே உணவு” தத்துவப்படி இவை மனித உடலில் நோய் எதிர்ப்பாற்றலை உருவாக்கும் திறனாற்றல் கொண்டவை. சித்த மருத்துவமானது நேரடியாக கொரோனா வைரசினில் தாக்கம் புரிவதில்லை. அவை மனித உடலில் நோய் எதிர்ப்பாற்றலை உருவாக்கி அதன் மூலம் வைரஸ் கிருமிகளை விரட்டியடிக்கின்றன. ஊழ்ஜனா-19 நோயானது ஐயசுரம் (கபசுரம் ) சுரத்தினூடு ஒத்துப்போவதாக யுகி வைத்தியசிந்தாமணி கூறுகிறது. (Mudhalivar.2004)இ இந்நோய்க்கு சமூக இடைவெளியைப் பேணல், கைகளை அடிக்கடி கழுவுதல், முகக்கவசம் அணிதல் மற்றும் தனி நபர் நோய் எதிர்ப்பாற்றலை ஏற்படுத்துதல் முக்கியமானவை. பொதுவாக மூலிகைகளின் சாறு, அதனுள் உள்ள வேதிகைப்பொருட்கள் என்பவற்றை ஆராய்ந்த போது சில மூலிகைகள் வைரஸ் நோய்க்கு எதிராக போரிடும் ஆற்றல் உள்ளன என கண்டுபிடிக்கப்பட்டுள்ளது. சித்த மருந்துகளின் சில மருந்துக்கலவைகள் உடலில் நோய் எதிர்ப்பாற்றலை ஏற்படுத்துபவை. பல்வேறு பட்ட மூலிகை ஆராட்சிகள் சில மூலிகைகளின் செயற்திறன் கொரோனா வைரசிற்கு எதிராக போராடக்கூடியவை என அறியப்பட்டுள்ளன.

### நோயாளின் அறிக்கைகள்

08 நோயாளிகள் பொதுவான முறைப்பாடாக dry cough, chest pain and fever since an average duration of 4 days. அவர்கள் PCR பரிசோதனை செய்யுமாறு கேட்கப்பட்டார்கள். ஏனெனில் அவர்களுக்கு Covid19 இருக்கிறதா என்பதை அறிவதற்காக செய்யப்பட்ட பரிசோதனையில் 5 பேருக்கு Covid19 இருந்தது. இந்த நோயாளிகள் வீட்டிலே சுய தனிமைப்படுத்துவதற்கு உட்படுத்தப்பட்டு அவர்களுக்கு மூலிகை மருந்து கொடுப்பதற்கு திட்டமிடப்பட்டது.

Shortness of breath, dizziness and chest pain indicate lowered levels of oxygen in blood. Checking oxygen saturation was not possible for all patients as they were home quarantined. But they were asked to inform immediately if any of these symptoms occur or if there is increase in fever. In clinical findings patients have chief major complaints like dry cough, fever, chest pain, throat pain and tiredness.

Table-1: Demographic details (showing confirmation of Covid19 by following tests):

Case No.	Sex	Age	PCR
01	M	65	-
02	M	46	+
03	M	34	+
04	M	58	+
05	F	35	-
06	F	37	+
07	M	53	+
08	F	38	-

**Therapeutic intervention:**

Table-2: Details about the symptoms:

Case No.	Sex	Age	Treatment period	Fever	Dry Cough	Chest Pain	Throat Pain	Tiredness
1	M	65	14	5	4	2	3	10
2	M	46	14	4	5	-	-	8
3	M	34	14	6	3	-	2	7
4	M	58	14	5	-	-	3	9
5	F	35	14	3	3	-	-	10
6	F	37	14	7	2	-	-	12
7	M	53	14	5	-	-	3	9
8	F	38	14	3	3	-	-	7

Table -3: Therapeutic intervention:

Medicines	Dose	Timings
Immune Booster Decoction	60 ml	3times a day

### Immune Booster Decoction

#### Contents

1. மிளகு	-5 பங்கு	
2. கரம்பு	-5 பங்கு	
3. மஞ்சள்	-5 பங்கு	
4. ஓமம்	-5 பங்கு	
5. திப்பலி	-5 பங்கு	
6. அன்னாசிப்பூ	-5 பங்கு	
7. சித்தரத்தை	15 பங்கு	
8. கடுக்காய்த்தோல்	-15 பங்கு	
9. அதிமதுரம்	-15 பங்கு	
10. வேர்கொம்பு	- 15பங்கு	
11. தாளிசபத்திரி	-5 பங்கு	ஆதாரம் -மருத்துவர் வீரவாகு அவர்களின் பரம்பரை முறை (இந்தியா)

மேற்படி குடிநீர் செய்யப்பட்டு காலை, மதியம், இரவு என 60 மிளிற்றர் சுதர்சன மாத்திரையுடன் 14 நாட்களுக்கு நோயாளிகளுக்கு கொடுக்கப்பட்டது.

#### ஆய்வின் முடிவுகள்

காய்ச்சல் 1- 7 நாட்கள் இருந்தது. வறட்டு இருமல் 8 நோயாளிகளிலும் காணப்பட்டன. உடல் பலவீனம் 10 நாட்களுக்கு இருந்தது.

#### விவாதித்தல்

பொதுவாக ஐய ரோக்தில் கைப்பு, துவர்ப்பு சுவையுடைய சித்த மருந்துகள் உபயோகப்படுத்தப்படுகின்றன. கைப் புச் சுவை சுரப் பிகளின் சுரப் புக் கள் , உமிழ் நீர் சுரத் தல் , அதிக ளவு உடற் குடு என்பவற்றைக்குறைக்கின்றன. இதனால் சிறுநீரக செயற்பாடும், மலம் வெளியேறும் செயற்பாடும் ஒழுங்காக்கப்படுகிறது. இச்செயற்பாடுகளினால் உடலில் உள்ள நஞ்சுகள் வெளியேற்றப்படுகின்றன (Anaivarai. 2009). துவர்ப்பு சுவையுடைய மூலிகைகள் நுரையீரலில் உள்ள சளியை வெளியேற்றுகின்றன. இதனால் சரியானளவு எடுக்கும் போது தொண்டையில் உள்ள தீவிரதாபிதத்தை குறைக்கிறது.( The pungent taste will remove phlegm from the lungs. When taken in the correct quantity, it reduces the inflammatory diseases of the throat( Bhavistiva and Hanivz.2016). சித்த மருந்துகள் வைரஸ் புரதங்களுக்கு எதிராக மட்டுமல்ல, நிணநீர் குழியங்களில் எதிர்ப்புசக்தியை கொடுத்து வைரஸ் நோய்க்கு எதிராக போரிடக்கூடியன.

Earlier research reports of Zandi et al. show that curcumin alkaloid and the two derivatives of curcumin, namely gallium-curcumin and Cu-curcumin, revealed notable antiviral activity against Herpes Simplex Virus Type 1 in an *in-vitro* study(Zandit. *Et.al.2010*). Curcumin, isolated from the turmeric, was reported to inhibit viral gene expression. Piperine derived from *Piper nigrum* and *Piper longum* shows antipyretic, antioxidant, and anti-tumor properties. *Piper longum* fruit oil has demonstrated significant anti-inflammatory activity in rats(Kumar *et.al.2009*). Piperine alkaloid of pepper and long pepper has been reported for antioxidant activity through its free radical scavenging effect through *in-vitro* and *in-vivo* studies (Mittal and Gupta.2000).

Studies on *Zingiber officinale* attribute the antiviral activity to the flavonoid compounds isolated from the rhizome (Krishnan *et.al.2009*).Glycyrrhizic acid found in the *Glycyrrhiza glabra* inhibits H1N1 virus growth, facilitates virus inactivation, and acts as an immunomodulator(Arora*et.al.2011*). *Glycyrrhiza glabra* acts as an immune stimulant by stimulating the macrophages(Wagner and Jurcic.2002).

*Terminalia chebula* exhibits antiviral activity against HSV-1 which is probably intermediated through inhibition of initial entry of HSV-1 virus and free virus particle inactivation. In another study, it was reported that the Chebulagic acid and Punicalagin isolated from the herb chebulic myroblan was liable for the anti-viral effect against HSV-1 and the possible mechanism of drug action also was dealt. *Terminalia chebula* has shown antiviral activity against the influenza A virus (Badmaev , Nowakowski.2000).

It revealed that the functionally significant formulations against corona viral protein showed a more efficient inhibitory effect against viral replication.

### முடிவுரை

நோயாளிகளில் பரிந்துரைக்கப்பட்ட சிகிச்சை முறையில் mild and moderate குறிகுணங்களுள்ள நோயாளிகளை சித்த ஆயுர்வேத மருந்துகளைப் பயன்படுத்தி சிகிச்சிக்கக்கூடியதாக இருக்கிறது. எந்தவொரு நோயாளிக்கும் மருந்துகளினால் ஏதாவது பக்கவிளைவுகள் உண்டாவது அவதானிக்கப்படவில்லை. இந்த சிறு ஆய்வு சித்த ஆயுர்வேத மருந்துகளால் கொவிட் தொற்றுக்குரிய மருந்துகள் கண்டுபிடிக்கும் வரை பயன்படுத்துவதற்கு சிறந்த ஒரு ஆவனமாகும். .

Consent of Patients: Author has undertaken the consent of all patients to publish this case series. Limitation of Study: Study is conducted in small number of cases. This treatment protocol need to be tried in more number of cases so as to create evidence based document adopting standard treatment protocols for its validation.

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# The Effect of *Ksharapātana* in the Management of fourth-degree Hemorrhoid

## A Case Study

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### Background

Hemorrhoids are defined as an abnormal dilation and distortion of the vascular channel together with destructive changes in the supporting connective tissue within the anal cushion.[1] In Ayurveda classics particularly *Susruta Samhitha* hemorrhoids correlates as *Arsha* which have been mentioned under the *Ash-tamahagada*. According to *Acharya Susruta*, hemorrhoids can be divided into six classes as *Vataja* (due to the action of the deranged Vayu), *Pittaja* (due to the action of deranged Pitta), *Kaphaja* (due to the action of deranged Kapha), *Raktaja* (due to the action of the vitiated blood), *Samiipdtaja* (due to the concerted action of the deranged Vata, Pitta and Kapha) and *Sahaja* (congenital).[2] There are lots of treatment methods have been used to cure in hemorrhoids not only Allopathic, but also Ayurveda as well. Steroid's injections, Ligations, Bands and Lessar therapy are main treatment used in western medicine.[3] Oral administrations (*Beshaja*), Alkali powder (*Kshara*), Cauterization (*Agni*), and Excision (*Shasra*) are main para treatment options which have been described in *Sustruta Samhita*. [2]

*Ksharapātana* is a para surgical procedure indicated in the management of hemorrhoids which has been extensively described in *Susrutha Samhita* under the category of eight major diseases. It is mentioned that *kshara* can exert properties of incision(*chedana*), excision(*bhedana*) and scraping(*lekhana*) without using surgical instruments. [4]It helps to destroy unhealthy vitiated tissues and remove debris while promoting the growth of new granulations. *Kshara* is a water- soluble caustic extract derived from the ash of *Achyrenthus aspera*, and sea shells powder. This study aims to identify the effectiveness of the *ksharapātana* in the management of fourth-degree hemorrhoids.

### Objective

To identify the effectiveness of the *ksharapātana* in the management of fourth degree hemorrhoids.

### Methods

This is case study, which was carried out in Shalya Clinic in Gampaha Wickramarachchi Ayurveda Teaching Hospital. A 48-year-old male patient visited Shalya clinic with the complains of severe pain, bleeding per rectum, protrusion of a mass from anus in permanently. After systemic examination the case was diagnosed as a fourth-degree hemorrhoid at 3, 7 and 11 O' clock positions. This case was managed with *ksharapātana*. The patient should be placed in a raised-up position in a clean and well-equipped place on a plain slab or on a clean bed with his head resting on the lap of an attendant and the anal region

exposed to the sun. In this position the waist should be made to elevate a little and to rest on a cushion of cloths or blankets. The neck and the thighs of the patient should be drawn out, and then secured with trappings and held fast by the attendants so as not to allow him to move. Then *Kshara* was applied on the protruded edematous mass with the help of spatula and after one minute it was neutralized with the application of lime juice. This procedure was performed for 14 days without administration of any other medicine.

## Results:

### Observational Criteria

Criteria	Symptom	Grade
Pain	Absent	0
	Mild	1
	Moderate	2
	Severe	3
Bleeding per rectum	Absent	0
	Mild	1
	Moderate	2
	Severe	3
Protrusion of the mass	Absent	0
	Mild	1
	Moderate	2
	Severe	3

### Assessment Criteria

Assessment	Therapeutic Period				
	In course Assessment	Follow-up period			
	Before Treatment	Day 1	Day 14	1Month	2 Month
Pain	3	2	1	0	0
Bleeding per rectum	3	2	1	0	0
Protrusion of the mass	3	2	1	0	0

Edematous mass became shrink and per rectal bleeding resolved. Further the patient relieved from all symptoms gradually within the period of treatment.

## Discussion

This treatment method of *Ksharapātana* is not a newly found method, it was mentioned in various authentic texts.[5] In *Susrutha Samhitha* this para surgical method is indicated in the treatment of hemorrhoids. [2] Most of the time this procedure carryout only once per week. That means, procedure continue with the one-week interval. Also, *Ksharapātana* was carried out by using *Theekshana Kshara* especially using *Gloriosa superba* like ingredients. Due to that *Theekshana* ingredients, procedure has been carried out with the interval of one week. Although in our case study, we used only *Achyranthes aspera* alkali powder for this *Ksharapātana* process.[5] This *Achyranthes aspera* alkali powder is considered as mild alkali powder.[6] Therefore, we proceed this treatment continuously 14 days without having any interval. This case study demonstrates the effect of *ksharapātana* in the management of fourth degree- hemorrhoid in which edematous mass became shrink and per rectal bleeding resolved, further relieving the other symptoms gradually, on this ground it could be postulated that the *ksharapāta* would be effective in the management of fourth-degree hemorrhoid

## Conclusion

It was postulated that the *ksharapātana* would be effective in the management of fourth-degree hemorrhoid. However, if this study conducted with the large number of patients, we could get the conclusion regarding its efficacy and effectiveness.

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# **NATURAL RESOURCES & INDIGENOUS MEDICINE**

## BIO SYNTHESIS OF NANO METALS FROM NATURAL RESOURCES USED IN SIDDHA SYSTEM OF MEDICINE: A REVIEW

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### Introduction:

Siddha system is mainly based on natural resources like herbs, metals, minerals, zoological and marine products. Siddhars have in-depth knowledge in all areas like medicine, yoga, breathing exercise, alchemic chemistry, medical astrology, synthetic preparation, extraction without using any advanced equipment. They quoted that “*ver paru thazhai paru minjinakkal parpa chenduram mella mella pare*”. According to this statement herbal medicines are the first choice of drug to treat patients with various illnesses. Herbal sources are very safe and easily administrated to various type of illnesses.

In the siddha system, we enormously used metals and mineral formulations in the form of *parpam*, *chendooram*, *chunnam*, *mezhu*, *kuligai* etc. Siddhars have classified metals into 11 types, salts into 25 types, metal salts in 64 types and minerals in 120 types. They have used these metals and minerals as medicines after the completion of various processes like purification, incineration, calcination, burning, grinding processes etc.

Siddhars have been prepared the medicines from waste products also. For example, *Muttai ottu parpam* was prepared from egg shells of birds, *Sirattai thailam* from coconut shell, whereas *eragu parpam* was from feathers of birds and urine from animal and human was used during various steps of medicine preparation that includes purification and grinding process, in addition cow dung has been used for the calcinations process.

Due to the scarcity of metals, they have been described some techniques to extract the metals and minerals from natural resources like plant and animal products and from other metals. For example, copper extracted from *poonagam* (earth warm) the method is described in Siddha text *Gunapadam thathu seeva vaguppu* and *Vangam* (Lead) extracted from *manosilai* (red orpiment). They have been explained some techniques to separate the active ingredients from plant materials also. That is mentioned as *saththu*, *uppu*, *sarkarai* etc in siddha literatures and that are used as medicines such as *kuppaimeni uppu*, *naiuruvi uppu*, *seenthil sarkarai*, *koovai kizhangu mavu* etc.

Metals and minerals play a vital role in the treatment of health ailments which have been scientifically proved as antibacterial, antifungal, anti-microbial, anti-inflammatory etc. But naturally available metals, minerals and their ores are difficult to identify. Synthetic drugs have more complications and are also don't suitable for all types of patients.

Over the last few decades, nanotechnology has been increasingly used in medicine, including applications for diagnosis, treatment, and tumor targeting in a safer and more effective manner. Nanoparticle (NP)-based drug delivery systems have shown many advantages in cancer treatment, such as good pharmacoki-

netics, precise targeting of tumor cells, reduction of side effects, and drug resistance (Dadwal et al., 2018; Palazzolo et al., 2018)

Hence nanoparticles from natural resources are more important. In the current world, Nanoparticles are isolated/ separated from the natural resources by using modern instruments such as scanning electron microscope (SEM), energy dispersive X-ray analysis (EDAX), gas chromatography – mass spectrometry (GCMS) etc. These bio-synthesized minerals from natural resources are more or less in nanosize which can be used for chemotherapy. But in ancient times Siddhars have in-depth knowledge in the mineral containing herbs without using modern instruments and listed those herbs also.

Siddhars described the procedure to identify and separation of elements from these plants and other resources like Hair, *Poonagam* (Earth warm), *Inthirakoba Poochi* (Red velvet ant) and feathers of a peacock. (Thiyagarajan R, 2013)

Medicines from herbal products are safer than metal and mineral preparations. Therefore, these mineral containing herbs can be used in all types of patients. So, this traditional isolation, extraction or separation techniques from bio-sources are more useful to this modern world to reduce the complications.

Siddhars described the herbs/ natural resources based on the presence of metals as follows,

#### Mineral containing herbs:

##### Scientific review:

Lead containing herbs: (Thiyagarajan R, 2013)	Mercury containing herbs: (Uthamarayan. K. S, 2013)	Copper containing herbs: (Thiyagarajan R, 2013)	Silver containing herbs	Gold containing herbs
<ul style="list-style-type: none"> <li>▪ <i>Surai</i> (<i>Lagenaria siceraria</i>)</li> <li>▪ <i>Ponnanganni</i> (<i>Alternanthera sessilis</i>)</li> <li>▪ <i>Veliparuthi</i> (<i>Pergularia Daemia</i>)</li> <li>▪ <i>Seenthil</i> (<i>Tinospora cordifolia</i>),</li> <li>▪ <i>Sirupeelai</i> (<i>Aervva lanata</i>)</li> <li>▪ <i>Vellarugu</i> (<i>Enicostemma axillare</i>)</li> </ul>	<p>Herbs which are having white flowers are contain mercury.</p> <ul style="list-style-type: none"> <li>▪ <i>Adhatodai</i> (<i>Justicia adhatoda</i>)</li> <li>▪ <i>Nilavembu</i> (<i>Andrographis paniculate</i>)</li> </ul>	<ul style="list-style-type: none"> <li>▪ <i>Avuri</i> (<i>Indigofera tinctoria</i>)</li> <li>▪ <i>Thekku</i> (<i>Tectona grandis</i>)</li> <li>▪ <i>Kovai</i> (<i>Coccinia grandis</i>)</li> <li>▪ <i>Sirukeerai</i> (<i>Amaranthus tricolor</i>)</li> <li>▪ <i>Senthara</i> (<i>Fumaria parviflora</i>)</li> <li>▪ <i>Mookirattai</i> (<i>Boerhavia diffusa</i>)</li> <li>▪ <i>Kanja</i> (<i>Cannabis Sativa</i>)</li> </ul>	<ul style="list-style-type: none"> <li>▪ <i>Ventham</i> (<i>Trigonella foenum</i>)</li> <li>▪ <i>Kollu</i> (<i>Dolichos biflorus</i>)</li> </ul>	<ul style="list-style-type: none"> <li>▪ <i>Ponnanganni</i> (<i>Alternanthera sessilis</i>)</li> <li>▪ <i>Manjal karisalai</i> (<i>Eclipta prostrata</i>)</li> </ul>

The results of SEM analysis showed the high-density silver nanoparticles synthesized by *Trigonella foenum Graecum* seed extract confirmed the development of silver nanostructure. Average size of the particle synthesized were 48nm with size range 40 to 55nm. The biosynthesized silver nanostructure by employing Fenugreek seed extract was demonstrated and confirmed by the characteristic peaks observed in the XRD image. The XRD pattern showed three intense peaks in the whole spectrum of 2 value ranging from 25 to 50 theta. the bio reduction of aqueous Ag<sup>+</sup> ions by the seed extract of the *Trigonella foenum Graecum* plant has been demonstrated. In the present study found that seeds can be a good source for the synthesis of silver nanoparticles (Jithesh Pooloth, 2013).

*Coccinia indica* and *Magnifera indica* were found to contain comparatively higher quantity of copper, while other medicinal plants with normal amount of copper, similarly Mn is present in more quantity in *Aloe perfoliata*, *Cassia auriculata*, *coccinia indica*, *Dendropthea (Host M. indica)* and *Nelumbium nucifera* (Hazeena begum V,1997).

### **Conclusion:**

In current medical world, the application of nanomedicine particularly in cancer treatment tremendously increased which may induce more side effects, complications etc. From ancient siddha literature, well documented higher order siddha formulations with natural resources of herbal, metal and minerals have been indicated for cancer treatment. When analysing the above said higher order medicine and herbs used for these preparations are indicated that the presence of nanometals. This study concluded that, to overcome the unwanted effects induced by cancer nanomedicine, higher order medicine with the presence of nano-metal from natural resources can be used. This study may motivate us to validate the siddha formulation and herbs containing nanometals to established siddha nanomedicine.

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## Cardioprotective Medicinal Plants and Therapeutic Formulations used in Siddha System of Medicine – A Review

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### Introduction

Cardiovascular diseases are considered a group of diseases that include arrhythmia, Myocardial infarction, congestive heart failure, atherosclerosis, high blood pressure, cardiac arrest, ischemia, and other circulatory diseases. Out of 16 million deaths under the age of 60 due to Non communicable diseases in this estimation 40 % of deaths are caused by CVD. Incidence of coronary artery disease (CAD) in Sri Lanka has doubled over the past two decades. According to the Annual Health Statistics 2007, incidence of CAD ranged from 645.5 to 1364.5 cases per 100,000. It was the leading cause of hospital deaths in the country during the last 10 years accounting for nearly 10% of all hospital deaths. In India poor intake of vitamin C and selenium for the major reason for decreased antioxidant activity, it increases the risk of CVD (Buttros J, 2009). Secondary metabolites such as cardiac glycosides, alkaloids, flavonoids, carotenoids, polyphenolic compounds, saponins, terpenoids present in plants were considered as the potent agents for cardioprotective activity. In current, the modern treatment uses antiplatelet drugs, thrombolytics, Nitroglycerine, blood thinners, ACE inhibitors, Beta-blockers, and pain reliever to treat CVD. The major side effects of thrombolytic drugs are fragments of the clot may migrate to other vessels and cause obstruction, severe hypertension, kidney damage in patients with kidney disease, major bleeding in the brain, etc., (Sruthi, 2012). clopidogrel may cause nasal bleeding, excessive tiredness, dizziness, nausea, etc., Nitroglycerine may produce the side effects of increases heart rate, flushing, vomiting, etc., beta-blockers may lead to difficulties in sleeping or nightmares, affect the blood supply to hands and feet, slow heart rate, etc., side effects of ACE inhibitors, side effects include hyperkalaemia, dizziness, loss of taste, etc.

WHO estimates 80 % of the population in developing countries still use indigenous herbal drugs for primary health care needs because of its safety, efficacy, non-toxic, affordable, increased therapeutic value and easily available as compared to modern medicines (Nontokozo Z. Msomi, 2018). The Siddha medicinal herbals contain high polyphenols, alkaloids, phytosterols, flavonoids, tannins, proteins which enhance the free radical scavenging potential; it decreases the risk of heart diseases. Some Yoga postures like *Sarvangasanam*, *Mayuraasanam*, *Pranayamam* which are mentioned in Siddha literature to enhance the cardiac functions and strengthen the heart. In this review article describe tremendous number of formulations mentioned in Siddha literature it seems to be a great therapeutic effect against cardio vascular diseases.

### Materials and Methods

Type of Study: Literature review

The information was acquired from various Siddha literature like *Gunapadam mooligai/thathuvaguppu*, *Uyirkakkum Siddha maruthuvam*, *Anuboga vaithya navaneetham*, *Therankarisal*, *Yugimuni vathakaviyam*,



Kadukkaivallaraithanimaanbu, Agasthiyar vaithiya vallathi 600etc., and by literature searching in electronic databases such as PubMed, Google Scholar, etc.

## Results and Observation

Table: 1 Siddha herbals possessing cardio protective activity

S.No	Herbal Name	Part Used	Phytochemical Constituents/ Extracts	Model/ Experiment	Inference
1	<i>Zingiber officinale Roscoe</i> (Zingiberaceae)	Rhizome	Gingerols and shogaols Ethanol extract of Ginger	i) In vivo /Wistar rats	i)Decrease all the cardiac enzyme activity (Amran ,2015)
2	<i>Vitis vinifera L.</i> (Vitaceae)	Seeds	Resveratrol, potassium tartrate Tartaric acid	ii)In vivo / Adult wistar rats	i) Enhance the cardiac functions (Murugesu muthaliyar K.S ,2003) ii) Prevent adverse effect against doxorubicin and Improves cardiac ventricular function.(Babaei.,2016)
3	<i>Allium sativum L.</i> (Liliaceae)	Bulb	Garlic extract	i)In vivo/ Adult Male rat	Reduces oxidative stress and protects the heart. (Gomaa A M S ,2018)
4	<i>Terminalia arjuna</i> (ROXB.)Wight &Arn.	Bark	Triterpenoid, Flavonoids/ alcoholic extract	ii) In vivo / Wistar albino rats iii) In vivo / Wistar albino rabbits /alcoholic extract	i)Decreases heart rate Protect heart against cardiovascular diseases. (Abinaya ,2017) ii) Protects from oxidative stress. ( Gautham et al., 2001) iii) Augments myocardial endogenous antioxidants,without causing any cellular injury (Gautham et al.,2008)

S.No	Herbal Name	Part Used	Phytochemical Constituents/ Ex-	Model/ Experiment	Inference
5	<i>Coriandrum sativum</i> L. (Apiaceae)	Seeds	Poly phenolic compounds	i)In vivo / Wistar rats	Avoid myofibrillar damage ,reduce oxidative stress,increased left ventricular functions (Neha Dhyani et al, 2020)
6	<i>Bauhinia variegata</i> L. (Orchidaceae)	Root	Ethanolic and aqueous extract	i)In vivo/ Wistar albino rats	Presence of anti arrhythmic activity . ( Rajesh kumar Sharma et
7	<i>Arachis hypogea</i> (L.) (Fabaceae)	Seed	Resveratrol	i)In vitro/ Wistar albino rats	Presence of cardio protective activity. ( Farah Naz .,2016)
8	<i>Urginia indica</i> (Lilliacae)	Bulb	Scillaren A and B/ Methanolic extract	In vitro	Cardiac stimulant and Presence of anti oxidant activity ( Dipa mahato , 2018)
9	<i>Moringooleifera</i> L. (Moringaceae)	Leaf	Hydro alcoholic extract	In vivo /Wistar albino male rats	Present cardioprotective and anti-oxidant activity for Doxorubicin induced cardiotoxicity in rats. (Mukesh nandave et al .,2009)
10	<i>Nelumba nucifera</i> Gaertn. (Nelumbonaceae)	Leaf	Nelumbine Nupharine/ Alcoholic extract	In vivo /Male albino wistar rats	Decrease the lipid peroxidation and enhance membrane stabilizing property . (Subashini R,2011)
11	<i>Ocimum basilicum</i> L. (Lamiaceae)	Leaf	Rosmarinic acid / Ethanolic extract	i) In vivo/ Wistar albino rats.	Protects myocardium against isoproterenol induced infarction in Wistar albino rats (Fateme fathi-azad et al,2012)

Table: 2 Herbal formulations used for Cardiac ailments

S.NO	Herbal formulation	Dose
1	<i>Adathodaikirutham</i>	<i>Thekkarandiyalavu</i> (Kannusamypillai S.,2015)
2	<i>Mudakkotthanilagam</i>	<i>Kottai pakkalavu</i> (Ramachandiran S.P,2000)
3	<i>Lavangathichoornam</i>	6 grams (Ratthana nayagar and sons.B,2007)
4	<i>Pulichunnam</i>	65 – 130 mg (Ratthana nayagar and sons.B,2007)
5	<i>Puliyaaraikirutham</i>	2 -3 <i>Thekkarandiyalavu</i> (Kannusamypillai S., 2015)

Table 3: Herbo- mineral Siddha formulations indicated for Cardiac diseases

S. No	Herbo Mineral Formulations	Dose	Adjuvant
1)	<i>Gandhaga parpam</i>	130mg	<i>Milaguthylam</i>
2)	<i>Kariyuppu parpam</i>	<i>Thuvarayil kalpan-</i>	<i>Inji surasam</i>
3)			
4)	<i>Linga chendooram</i>	65 -97.5 gram	<i>Thirikadugu choornam</i>
5)	<i>Navachaaram</i>	325 – 975 mg	<i>Nannariver kudineer</i> (Thiyaga rajan,1952)
6)	<i>Arumuga chendooram</i>	488 mg	<i>Thirikadugu choornam</i>
7)	<i>Mahavasanthakusumagaram</i>	130mg	<i>Padikarapodi</i> (Kuppusamy mudhaliyar et al .,
8)	<i>Ruthravaayulingamathirai</i>	1/2 – 1mathirai	Morning -Ginger juice Evening-Chukkukudineer
9)	<i>Ruthra vaayu choornam</i>	5.2 5 – 6.3 gram	Hotwater (Abdula sayabu P.M,2017)
10)	<i>Ruthra vaayu mezhugu</i>	65 – 130 mg	Sugar ( Abdula sayabuS, 2017)

S. No	Herbo Mineral Formulations	Dose	Adjuvant
11)	<i>Siromani boopathi kulikai</i>	1/2 – 1 mathirai	Honey (Abdula sayabu P.M ,1995)
12)	<i>Pacchaikarpoorathychoornam</i>	4.2 – 5.25gram	Honey or ghee ( Abdula sayabu,1995)
13)	<i>Thamiraboopathi kulikai</i>	Thoothalangaialavu	Warmwater (Ratthana nayagar and sons.B,2007)
14)	<i>Panjaakinichendooram</i>	65- 130 mg	<i>Panjadeepakini legiyum</i> (Ratthana nayagar and sons.B,2007)
15)	<i>Viyosaathichoornam</i>	<i>Thirikadialavu</i>	Honey
16)	<i>Mahasutharsanachooram</i>	3 grams	Hot water (Ratthana nayagar and sons.B,2007)
17)	<i>Naagachendooram</i>	260 -520 mg	Honey
18)	<i>Lavanaparpam</i>	488 mg	Lemon juice (Ratthana nayagar and sons.B,2007)
19)	<i>Sandarasaparpam</i>	488 mg	Palm jiggery (Mohan R.C, 2001)
20)	<i>Mahaboopathiparpam</i>	130-260 mg	Ghee (Ratthana nayagar and sons.B,2007)
21)	<i>Linga kattu</i>	65- 130 mg	Ginger's juice
22)	<i>Kanagalingamezhugu</i>	65- 130 mg	Palm jiggery (Abdula sayabu P.M,2018)
23)	<i>Vaayurajalinga mezhugu</i>	130 -260 mg	Honey (Abdula sayabu P.M,2018)
24)	<i>Lingaveerachendooram</i>	65 -130 mg	Palm jiggery (Abdula sayabu P.M,2018)
25)	<i>Lingaathiubasanda maarutha chendooram</i>	488 mg	Butter
26)	<i>Seenalinga chendooram</i>	130mg – 162.5 mg	Honey
27)	<i>Veerachendooram</i>	32.5 – 65 mg	Ginger juice (Abdula sayabu P.M,2018)
28)	<i>Thiriyakkinichendooram</i>	260mg – 390 mg	Ghee (Abdula sayabu,1995, 2014)

Table 4: Siddha Formulations from Animal resources indicated for Cardiac diseases

S.NO	Preparations	Dose	Adjuvent
1		195 mg – 585 mg	Ghee
2		325- 650 mg	<i>Aanaikanjori chaaru</i>
3		130mg	Ghee or Butter ( Kannusami pillai,2015)
4	<i>Sirungi chendooram</i>	65 -195 mg	Ghee (Kuppusamy mudhaliyar et al ., 2014)
5	<i>Amayottu parpam</i>	65 – 130 mg	Ghee (Ratthana nayagar and sons.B,2007)
6	<i>Ambar mezhugu</i>	1.5 gram	Gulkand (Kannusamipillai,2015)

Table 5: External applicant of Siddha formulation for Cardiac ailments

S. no	Name of the Preparation	Route of admin-	Uses
1	<i>Aakirana thiravagam</i>	Inhalation	<i>Ruthra vaayu</i> ( Abdul sayabu P.M,1995)
2	<i>Maankombu ,Semmaram , chukku , Thuvaramparuppu , Mocchaikottai grind with hotwater.</i>	Paste applied over the chest region.	<i>Marbu vali</i> (Kuppusami muthaliyar C N,2016)

Table 6: Yoga Postures Mentioned in Siddha Literature

S.NO	YOGA POSTURES	INDICATION
1	<i>Sarvaangasanam</i>	This yoga posture will help to reduce the blood pressure and strengthen the heart.
2.	<i>Paschimottaasanam</i>	Increase the blood supply to the heart and relieves stress.
3.	<i>Mayuraasanam</i>	<i>Maarbu palappadum</i> . It strengthen the heart . Increases Blood circulations . Reduces stress and anxiety related disorder .
4.	<i>Trikonasana</i>	Reduces stress and stimulate the internal organs.
5.	<i>Gomukhaasanam</i>	Provides strengthen to the heart (Thiyagarajan R,2013)

## Conclusion

Cardiovascular diseases are one of the leading causes of morbidity and mortality worldwide. CVD is an important cause for one-fifth of the deaths in India. In Siddha system of medicine has a tremendous number of formulations indicated for heart ailments. Among which only a few are used in treatments currently. This article made an attempt to make a compendium of formulations indicated for cardiovascular diseases. So that, this review may help to enlist the *Siddha* herbs/ formulations having cardioprotective activity. Further scientific studies need to be evaluated the efficacy of these formulation using *in-vitro* and *in-vivo* techniques. Utilizing this information helps to inculcate for living with a healthy heart.

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## THERAPEUTIC USAGES OF *IPOMOEA PES-CAPRAE* (LINN.) (MUHUDU BINTAMBARU) IN SRI LANKAN TRADITIONAL MEDICINE

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### Background

*Ipomoea pes-caprae* (Beach morning glory) is a perennial, trailing vine that forms dense mats on beaches and sand dunes. Its bright green, glossy leaves and showy pink flowers, beautifully complement dull beaches throughout tropical and subtropical regions of the world. (Devall, 1992). *Ipomoea pes-caprae* is a useful thriving under conditions of sand blast and salt spray. (Chan et al, 2016). It contributes to the accretion of land and facilitates the establishment of other plants. (Lemmens, 2013). The knowledge on medicinal uses of *I. pes-caprae* are dispersed. Therefore, it was decided to collect them and record.

### Objectives

To collect and record therapeutic usages, phytochemical and scientifically proven bio activities of *Ipomoea pes-caprae*

### Methods

Medicinal uses were gathered from authentic Ayurveda and traditional medical books, from traditional practitioners and web search. Further, tested phytochemicals, scientifically proven bioactivities and other uses were also gathered from books, journals and web search.

### Results

#### Taxonomy

Kingdom-plantae, Division-Magnoliophyta, Class-Eudicotyledones, Order-Solanales, Family-Convolvulaceae, Genus-*Ipomoea*, Species-*Ipomoea pes-caprae* (L).R.Br. (Brown et al, 2020).

#### Morphology of the plant:

A prostrate, weak, perennial, not twining nor rooting at nodes with cylindrical, very long, glabrous and reddish stems, roots with a thick brown bark, leaves simple, alternate, deeply bilobed, lobes obliquely oval spreading, sub-coriaceous, glabrous, venation conspicuous on the lower surface and reddish, pellucid, midrib terminating in a mucro between the lobes; petioles 5—10 cm long, erect, glabrous, reddish with 2 glandular spots at the summit; flowers regular, bisexual, very large, solitary or 2 or 3 together, purplish-rose, on pedicels 2—3.7 cm Long. (Jayaweera, 2006).

#### Distribution of the plant

*Ipomoea pes-caprae* is widely distributed in beach throughout tropical and subtropical areas in the world. It occurs along beaches, coastal strands and tropical islands of tropical North and South America, east central Africa, West central Africa, India, Asia and Australia. (Manigaunha et al, 2010). It speacial-



ly grows the sea shores of both hemispheres. In Ceylon, it is very common on the sandy seashore all-round the island. (Jayaweera, 2006).

### **Synonyms for *Ipomoea pes-caprae***

**Botanical names:** *Ipomoea hitoha* Forsk., *Ipomoea tarnosa* F.-Vili. , *Ipomoea mariiima* R. Br., *Convolvulus pes-caprae* Linn., *Convolvulus mariiimus* Lamk.,. **English name:** Goal's Foot Creeper; **Sinhala name:** Mudu-bintamburu; **Tamil names:** Adambu, Adappangodi, Attukkal, Musattalai; **Sanskrit names:** Manmatha, Maravalli. Maryada, Raktapushpa. Sagara, Sagaramekhala. Yugmapatra. (Jayaweera, 2006).

### **Parts used in medicine:**

Leaves, roots and entire plant are used in medicine.(Anonymous, 2001).

### **Ayurveda pharmacodynamic properties:**

Rasa (Taste): Katu (Pungent), Kashaya (Astringent),

Guna (Qualities): Guru (Heaviness), Sheeta (Cold),

Veerya (Potency): Sheeta (Cold),

Vipaka (Post-digestive action): Katuka (Pungent),

Effect on Dosha :It pacifies vitiated Vata ,Pitta and Kapha Dosha (Anonymous, 2001).

### **Karma (action):**

Shotahara (Reduces swelling), Shulahara (Antispasmodic), Kushtagna (Reduce skin diseases), Rakta Shodhaka (Blood purification), Virechana (Purgative), Vamanakaraka (emetic), Vishanashaka (Antitoxic), Balya (Promotes strength), Mutrakaraka (Diuretic) (Anonymous, 2001).

### **Pharmaceutical preparation of *Ipomoea pes-capraea* (Bim tambaru)**

a).50gm of fresh leaves of *I. pes-caprae* (Bimtambaru) are ground well with 100ml of water and apply on affected area in treatment of Visarpa (Erysipelas), Amavata (Rheumatoid arthritis) and Shota (oedema). (Anonymous, 1994).

b). 50gm of dried powdered leaves of *I. pes-caprae* (Bimtambaru) is applied on ulcers occur due to Diabetes mellitus. (Anonymous, 1997).

c). 100gm of Fresh leaves of *I. pes-caprae* (Bimtambaru) are fried with 30ml ghee and apply on affected area in treatment of bone fractures. (Anonymous, 1997).

d).250gm of fresh leaves of *I. pes-caprae* (Bimtambaru) are boiled with 1000ml of water. The patients is given sitz bath ( Avagaha) with this medicated water in treatment of Gudabransha (Rectal prolapse) and Padaasadana (Inflammations in the foot) (Anonymous,1997) .

### **Experimental pharmacology of *Ipomoea pes-caprae*:**

1. Safrida et al, (2019) were tested Effect extract of *Ipomoea pes-caprae* leaf as anti-inflammatory non immunological in rat *Rattus norvegicus*. Safrida et al observed that *I. pes-caprae* leaf extract can be used as

an anti-inflammatory by decreasing rat feet edema volume. *I. pes-caprae* leaf extract has a prospect for non-immunological inflammatory natural drug candidates.(Safrida et al, 2019).

2. Venkataraman et al., (2013) were tested anti-ulcer activity of ethanolic extract from stems of *ipomoea pescaprae* (L.) r.br in wistar albino rats. Venkataraman et al observed that Phytoconstituents such as flavonoids, tannins,sterols and terpenoids together with other constituents may be responsible for the significant anti-ulcer effect of EESIP in aspirin and pyloric ligature induced ulcer models.(Venkataraman et al, 2013).

3. Pothula and Kanikaram (2015) evaluate the antiplasmodial activity of mangrove plant, *Ipomoea pes-caprae* against chloroquine-sensitive *Plasmodium falciparum* (3D7 strain) (*P. falciparum*) and cytotoxicity against brine shrimp larvae and THP-1 cell line (Pothula et al, 2015).

## Discussion

*Ipomoea pes-caprea* is a plant which has many therapeutic medicinal values, and Srilankan traditional practitioners use this plant widely. Leaves, roots and entire plant are used in Asian countries, Philippines, Brazil, Australia and Madagascar as a folkloric and traditional medicine in treatment of various ailments. Various medicinal preparation of *Ipomoea pes-caprea* are administrated internally in treatment of Rheumatoid arthritis, Gout arthritis, Ascites and Skin diseases in the form of decoctions, infusion and fresh juice, Externally it is used in the treatment of Skin diseaseses, Rheumatism, Carbuncles,Rectal prolapse, Bone fractures and colic in the form of Alepa (paste) and infusion. Anti-inflammatory, analgesic, immune modulatory, antioxidant, anti-ulcer properties are scientifically proven through in *vivo* and *vitro* studies and its safety has been scientifically proven through toxicity studies. Due to its Ayurveda Pharmacodynamic properties it pacifies vitiated Vata, Pitta and Kapha Dosha.

## Conclusion

It can be used externally as well as internally and clinically recommend as a external application which can used for long term for patient suffering from Rhuematiod arthris. It is concluded that *Ipomoea pes-caprea* is a plant with multi-faceted medicinal values.

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## பரராசசேகர கர்ப்பரட்சனையின் நவீன அறிவியல் பார்வை

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### அறிமுகம்

யாழ்ப்பாணத்தில் சித்தமருத்துவம் தொன்றுதொட்டு நடைமுறையிலிருந்து வருகிறது. அந்தவகையில் நல்லூர் இராஜதானியைக் கொண்டு பரராசசேகரன், செகராசசேகரன் எனும் மன்னர்கள் ஆண்டு வந்தனர். யாழ்ப்பாணத்தில் சித்தமருத்துவத்தை வளர்ப்பதற்கு பண்டிதர் சபை ஒன்றை நிறுவி மருத்துவத்தை மக்களுக்கு சிறப்பாகச் செய்து வந்துள்ளார்கள். அதற்காக இந்தியாவில் இருந்து ஏடுகளை வரவழைத்து பண்டிதர்களைக் கொண்டு மருத்துவ நூல்களை வெளியிட்டார்கள். இதில் கர்ப்பவதிகளின் நோய்நிலை, அதற்குரிய சிகிச்சை முறைகளைத் தொகுத்து சிறந்த மருத்து வகைகளைக் கொண்டு மருத்துவம் செய்தார்கள். கர்ப்பினித் தாய்மார்களுக்கான போசணைக் குறைபாடுகளை நீக்கவும், அவர்களுக்குரிய சிகிச்சைகளையும் மேற்கொண்டு தாய்சேய் நலவிருத்தியை சிறப்பாகச் செய்து வந்துள்ளார்கள். பரராசசேகரம் கர்ப்பரோக நிதானத்தில் கூறப்பட்ட கர்ப்ப இரட்சனை எனும் தாய்மார்களுக்கான கர்ப்பகால பராமரிப்பு (Antinatal care) பத்தொன்பதாம் நூற்றாண்டுவரை சிறப்பாக கையாளப்பட்டு வந்தது. அந்நிய நாட்டுப் படையெடுப்பினால் முக்கியமாக ஆங்கிலேயரின் வருகையுடன் சித்தமருத்துவத்தை விட ஆங்கிலேயரின் மருத்துவமுறையின் ஆக்கிரமிப்பால் இந்த சிகிச்சை முறைகள் சிதைவடைந்தன. ஏழாலை ஐ.பொன்னையா அவர்கள் இந்த ஏடுகளை நூலுருவாக்கம் செய்ததனால் இந்த மருத்துவ முறைகள் பாதுகாக்கப்பட்டு வந்துள்ளன. பரராசசேகரத்தில் கூறப்பட்டுள்ள கர்ப்ப இரட்சனையினை நவீன அறிவியல் நோக்கில் ஆராய்வதே இவ்வாய்வின் நோக்கமாகும்.

### குறிக்கோள்

பரராசசேகரத்தில் கூறப்பட்டுள்ள கர்ப்பரட்சை சிகிச்சை முறையினை நவீன அறிவியலில் ஆராய்தலும், அதனை மீண்டும் கர்ப்பரோக சிகிச்சையில் பயன்படுத்துவதை ஊக்குவித்தலுமாகும்.

### ஆய்வுமுறை

பரராசசேகரநூலில் கூறப்பட்டுள்ள கர்ப்பரட்சனை மூலிகை மருத்துவத்தை தேர்ந்து எடுத்து அதில் கூறப்பட்டுள்ள மரபுரீதியான அறிவியலை நவீன அறியல் முறையில் ஒப்புநோக்கி ஆராய்ந்து அதன் பயன்பாட்டையும் மக்களுக்கு விழிப்புணர்வையும் ஏற்படுத்துவதுமாகும். கர்ப்ப இரட்சனை என்பது கருவுற்ற தாயானவளுக்கு பத்து மாதங்கள் வரை குழந்தை வயிற்றினுள் வளரும் காலத்தில் தாய்க்கும், சேய்க்கும் ஏற்படும் ஊட்டச்சத்துக்களை ஈடுசெய்வதற்கும், கர்ப்பகாலத்தில் ஏற்படும் நோய்களுக்கு சிகிச்சை செய்யும் ஒரு கர்ப்பவதியின் கண்காணிப்பு மருத்துவ முறையாகும்.

கர்ப்ப இரட்சனையானது கருவுற்ற முதல் மாதம் தொடக்கம் பத்து மாதங்களுக்கும்

ஒவ்வொரு மாதத் தொடக்கத்திலும் முதல் மூன்று நாளைக்குக் மருந்துகளைக் முறைப்படி குடித்து வருவதன் மூலம் கருச்சிதைவு முதலிய விக்கினங்களின்றிப் பூரண சுகத்தோடு கர்ப்பம்(பொன்னையா(1998). கீழ்வரும் மூலிகைச் சரக்குகள் கர்ப்பரட்சனையில் குறிப்பிடப்பட்டுள்ளது. இவ் ஆய்வுப் பார்வையில் முதலில் மூலிகைகளின் போசணைப் பெறுமானங்களையும், அவை மருத்துவரீதியில் தாய்சேய் நலத்திற்கு ஏற்றதாக இருக்கிறதாவென நவீன அறிவியலையும், மரபுரீதியான அறிவியலையும் ஒப்பிட்டு ஆய்வு செய்யப்படுகிறது.

## அட்டவணை -1

முதல் மாதம் தொடக்கம் 10 மாதம் வரை கொடுக்கப்படும் மூலிகைச் சரக்குகள்

மாதம்	மூலிகைகள்
1ஆம் மாதம்	தாமரைப்பூ,சந்தணம்
2ஆம் மாதம்	நெய்தல்கிழங்கு,கோரை,கஞ்சா,அதிமதுரம்,இஞ்சிக்கிழங்கு,பால்
3ஆம் மாதம்	சந்தணம்,தகரம்,கோட்டம்,தாமரையல்லி,சீந்திர்தண்டு
4ஆம் மாதம்	நெய்தல்கிழங்கு,சீந்திர்தண்டு,நிலப்பனைக்கிழங்கு,நெருஞ்சிவேர்,பால்
5ஆம் மாதம்	சாரணைக்கிழங்கு, இலுப்பைப்பூ,அழிஞ்சில்விதை,தகரம்,எள்ளு,நெய்தற்கிழங்குபால்
	முயற்பித்து
6ஆம் மாதம்	கச்சேலம்,ஆமணக்குவேர்,நெய்தற்கிழங்கு,நீர்,தேன்
7ஆம் மாதம்	அதிமதுரம்,தாமரைவித்து,கோரை,விளாம்பிசின்,திப்பலி,நெய்தல்கிழங்கு,பால்
8ஆம் மாதம்	வட்டுவிதை,தேன்
9ஆம் மாதம்	கோரை,முந்திரிகைப்பழம்,நெய்தல்தண்டு,சீனி,தேன்
10ஆம் மாதம்	

-ஆதாரம்- பரராசசேகரம்

தாமரைப்பூ முதலாம் மாதம் சந்தனத்தோடு கலந்து கொடுக்கப்படுகிறது. தாமரைப்பூவை

மரபுரீதியாக கர்ப்பினித் தாய்மாருக்கு கொடுக்கப்பட்டு வந்திருக்கிறது. இதனை முன்னோர்கள் அறிவியல் கண் கொண்டு பார்ப்பதைவிட அனுபவரீதியான ஆய்வு மூலம் கொடுத்து வந்திருக்கிறார்கள். தாமரைப்பூவானது இனிப்பு, துவர்ப்பு சுவையுடையதால் குழந்தையை வளர்ப்பதற்கு இனிப்புச்சுவை உதவியாக இருக்கிறது என்பது மரபுரீதியான பார்வை. துவர்ப்புசுவை பொதுவாக வாதநோய்களை கட்டுப்படுத்துகிறது. எனவே தாய்க்கு கருவுற்ற காலங்களில் வலிப்புநோய் உருவாவது இயல்பு. மரபுரீதியாக அறிந்து தாய்க்கு வாதம் பிரகோபமடைவதை தவிர்ப்பதற்கும் காதுபோன்ற புலன்கள் பலம் பெறவும், அலி என்கின்ற பேடித்தனம், ஆண்மைக் குறைபாடு நீங்கும்.(முருகேசுமுதலியார், 2002. பக். 507)

நவீன அறிவியலில் தாமரை- *Nelumbo nucifera* தாமரைபூவிதையில் காணப்படும் போசணைகளைப் ஆராய்ந்தால்,

## அட்டவணை-2

தாமரைப்பூ,விதையில் காணப்படும் போசாக்குகள்

Nutrient	Amount	%
Calories	74	3.70%
Carbohydrates	17.23g	13%
Protein	2.60g	5%
Total Fat	0.10g	0.50%
Cholesterol	0mg	0%
Dietary Fiber	4.9g	13%
Folates	13mcg	3%
Niacin	0.400mg	2.50%
Pantothenic acid	0.377mg	7.50%
Pyridoxine	0.258mg	20%
Riboflavin	0.220mg	17%
Thiamin	0.160mg	13%
Vitamin C	44mg	73%
Sodium	40mg	3%
Potassium	556mg	12%
Calcium	45mg	4.50%
Copper	0.257mg	29%
Iron	1.16mg	14%
Magnesium	23mg	6%
Manganese	0.261mg	1%
Selenium	0.7mcg	1%
Zinc	0.39mg	3.50%

(Source: USDA National Nutrient data base).

தாமரைப்பூ ,விதையில் இரும்புச்சத்து, புரதம், விற்றமின்கள், தாதுக்கள், கூடுதலான நார்ச்சத்துக்கள் போதியளவு இருப்பதை அட்டவணை சுட்டிக் காட்டுகிறது. இவை உடல்நலத்திற்கு தேவையான எதிர் ஒட்சியேற்றிகளாகும். (anti-oxidants) இதில் காணப்படும் புரதம், அத்தியவசியமான அமினோ அமிலங்கள் காணப்படுகிறது. போதியளவு சமநிலை புரதங்கள் (well –balanced protein). மருத்துவரீதியாக மனிதனின் தேவையான உணவுச் சத்துக்களை கொண்டிருக்கின்றன. (Formulation of diets for Human). இதில் குளுட்டின் புரதம் இல்லை. இதனால் பாதுகாப்பான உணவு ஏனெனில் குளுட்டின் ஒவ்வாமை ஏற்படாது. தாமரைப்பூவில் போலிக்கமில்ம் அதிகளவு காணப்படுகிறது. போலிக்கமில்மும் விற்றமின் B12 சேர்ந்து DNA உருவாக்கலுக்கும், கலங்கள் பிரிவதற்கும் முக்கியமானது. (DNA synthesis & cell division) மேலதிகமாக கர்ப்பகாலத்தில் folate diet during pregnancy may help prevent neural –tube defects in the new borns. மகனீசியம், நாகம், செலீனியம், முக்கியமான எதிர்ஒட்சியேற்றிகளாகும். இவை நோயெதிர்ப்பு சக்தியை மனித உடலுக்கு இயற்கையாக கொடுக்கும்.

## 2. நெய்தல்கிழங்கு Nymphaea lotus

Nymphaea lotus seed

Moisture 5.31±0.32

Ash 1.33±0.11

Proteins 4.92±0.34

Lipids 13.23±1.01

Fiber 5.17±0.51

Carbohydrates 75.35±1.38

நெய்தல் கிழங்கானது கூடுதலான புரதங்களைக் கொண்டது. இது அதிகளவு போசணைகளைக் கொண்டது. அதில் அதிகளவு புரதம் இருக்கிறது. இது வேறு தானியங்களான அவரை, கடலை, கச்சான் போன்றவற்றை விட கூடுதலாக இருக்கிறது. [Musa .2012]. அதிகளவு புரதங்களைக் கொண்டிருப்பதால் போசாக்கின்மையை நெய்தல் தடுக்கிறது. . (Okia.*et.al.*2011 ).

Amino acid Concentration (g/100 g) FAO/WHO Ref. %Amino acid score N. lotus

Lysine 5.49

Isoleucine 4.52

Phenylalanine ,Tryptophan 1.21 ,

Valine 4.01

Methionine 1.23

Arginine 5.33

Histidine 2.43

Threonine 3.16

Cysteine 1.15

.Proline 3.55

Tyrosine 3.10

Alanine 4.02

Glutamic acid 12.11

Glycine3.61,

Serine 3.94

Aspartic acid 8.00

Total amino acid - 73.82

Total non-essential amino acid 39.48.

The arginine content of *Nymphaealotus* seeds was higher than the FAO/WHO[ FAO/WHO Expert Consultation 1991] recommendations for infants (Arginine 4.0 g/100 g). Methionine is needed for the synthesis of choline which in turn forms lecithin and other phospholipids in the body. When the diet is low in protein, for instance in alcoholism and kwashiorkor, insufficient choline may be formed; this may cause accumulation of fat in the liver [Adeyeye .2009].

நெய்தல் கிழங்கில் மனிதருக்கு தேவையான போசாக்குகள் காணப்படுகின்றது. அவை போசாக்கின்மை நோயிலிருந்து பாதுகாக்கின்றது. இந்த கிழங்கில் உள்ள arginine and histidine குழந்தைகளுக்கு பரிந்துரைக்கப்படுகிறது.

This nutritional information could be of great use to nutritionists, industrialists, researchers, policy makers development agencies and encourage the consumption of *Nymphaea lotus* and *Nymphaea pubescense*

seeds so that they become part of normal diet rather than being considered as ‘famine’ or ‘poor peoples’ food especially in arid regions

நிலப்பனைக் கிழங்கு, *Curculigo orchioides*

Mineral composition of *C. pilosa* rhizome. Parameter Composition of dried sample (µg/g)

Total carbohydrates 34.09±1.06

Total protein 11.01±0.97

Total fat 0.93±0.07

Crude fibre 34.76 ±0.05

Energy 188.77 Kcal/100 g

Data represent mean ± SEM (g/100g dry weight) of triplicat

Cu 0.54± 0.00

Mg 0.40± 0.03

Mn 0.36±0.02,

Ca 0.12±0.00 ,

Na 0.84±0.00 .

Fe 36.14±0.04

Zn 2.44±0.17

Cd 0.09±0.00,

Pb 0.39±0.02

Ni 0.15±0.00

Cr 0.41±0.00,

K 5.12±0.00

கூடுதலான காபோவைதரேற்று (34.09%) உள்ளது. இது உடல் ஆரோக்கியத்திற்கு உதவுகிறது. (Raaman et al. (2009). இதன் சக்தி numerous biochemical reactions not directly concerned with energy metabolism (Macdonald, 1999). இக்கிழங்கில் அதிகளவு இரும்புச்சத்து (Fe 36.14mg/100mg) காணப்படுகிறது. இது haemoglobin, myoglobin and the cytochrome pigments of the respiratory chain of mitochondria. உற்பத்திக்கு உதவுகிறது. Zinc is a trace mineral element important for the normal functioning of the immune system. The concentration of Pb, Cr, and Ni in CP rhizome is 0.52, 0.41, 0.12 (µg/g) dried sample, respectively. These values are lower than the recommended level for toxicity in plants (Hussain et al., 2009). பாரம்பரியமாக உபயோகிக்கும் நெய்தல் கிழங்கானது weaning preparation for infants and could be a suitable alternative for providing necessary nutrients to human judging from the high carbohydrate and dietary fiber content and adequate protein and low lipid content.

கர்ப்ப இரெட்சனையில் குறிப்பிடப்பட்டுள்ள மிகமுக்கியமான தாமரை, நெய்தல், நிலப்பனைக்கிழங்கு என்பவை மிக முக்கியமான போசாக்குள்ள மூலிகைகள் ஆகும்.

கஞ்சா எனும் மூலிகை மிகக் குறைந்தளவில் உபயோகிக்கப்படுகிறது. இந்த மூலிகையில் உள்ள போசணைகள் பின்வருமாறு

Outside of the frequently studied hemp seed, raw cannabis leaves and flowers could be considered one of



the most nutrient-dense foods on the planet. The raw plant material contains essential fatty acids, nine essential amino acids, dietary fiber, enzymes, vitamins, minerals, flavonoids, carotenoids, terpenes, and phytocannabinoid acids, all of which have the potential to benefit health. Raw cannabis leaves, stems, stalks, and seeds can provide the body with almost all of the essential nutrients including carbohydrates, protein, fat, water, vitamins, minerals, trace amounts of calcium, sodium, potassium, and omega-3 fatty acids.<sup>2</sup> Compounds in raw cannabis, particularly the phytocannabinoid acids, could be looked at as essential nutrients, rather than merely as therapeutic drugs. This takes raw cannabis out of the medical domain and transports it into the nutrition domain, where it's then viewed as a nutrient source similar to a dark green leafy vegetable.

அதிமதுரமானது பின்வரும் போசாக்குகளைக் கொண்டுள்ளது. Glycyrrhizic acid, one of the main active constituents, Isoflavones, a phytoestrogen (the plant equivalent of estrogen), Saponins, Flavonoids, another active constituent, Sugars and starches, Several amino acid, Gums, Essential oils, Minerals like manganese and phosphorus, B vitamins.

இஞ்சிக் கிழங்கு *Zingiber officinale*

Total Fat .0.8G,  
Saturated fat 0.2 g  
sodium 13mg,  
potassium 415mg  
Total carbohydrate 18 g  
Dietary fiber 2g,  
Sugar 1.7g  
Protein 1.8g  
Vitamin C- 8%  
Calcium-1%,  
Iron 3%  
vitamin B-6 10%,  
Magnesium 10%.

இஞ்சி கர்ப்ப கால வாந்தியை கட்டுகப்படுத்துகிறது.

சீந்தில் மிகமுக்கியமான காயகல்ப்ப மூலிகையாகும். இது போசாக்கினையும், நோயெதிர்ப்பு சக்தியையும் வழங்குகிறது. முக்கியமாக கர்ப்பகாலத்தில் உருவாகும் நீரழிவு நோய் வராமல் தடுப்பதில் பெரும் பங்காற்றுகிறது. கோரைக்கிழங்கு, தகரை, கோட்டம், சந்தணம் போன்ற மூலிகைகள் கர்ப்பவதிகளுக்கு ஏற்படும் நோய்கள், முக்கியமாக சர்ம நோய்களையும். உடலில் ஏற்படும் வெப்பத்தினையும் கட்டுப்படுத்த உதவுகிறது.

## மதிப்பீடு

கர்ப்பரெட்சனையானது பரராசசேகர மன்னர் காலத்தில் யாழ்ப்பாணத்திற்குரிய பாரம்பரியத்தோடு சித்த மருத்துவ பண்டிதர்களால் அனுபவக ரீதியாகவும், மெய்ஞான ரீதியாகவும் உணர்ந்து தயாரிக்கப்பட்ட கர்ப்பவதியின் போசாக்கு, மருத்துவம் என்பற்றை கருத்தில் கொண்டு உருவாக்கப்பட்ட முறையாகும். இந்த முறையினால் மேலைத்தேய மருத்துவம் இங்கு வேருண்ட முதல் மிகவும் சிறப்பாக கையாளப்பட்டு வந்திருக்கிறது. இதன் பிரயோகத்தால் குழந்தைகள் நிறையுள்ளதாகவும், ஆரோக்கியமாகவும் பிறந்திருப்பதும், தாயானவள் குழந்தைக்கு தாய்ப்பால் மட்டும் ஊட்டி பிள்ளை வளர்த்தாக

அறிந்திருக்கிறோம். தற்காலத்தில் கர்ப்பவதிகளில் பெரும்பாலானோர் கர்ப்பகால நீரழிவு வியாதிகளினால் அவதிப்படுவதையும், கொலஸ்ட்ரோல், இருதயநோய்த்தாக்கம், கர்ப்பகால வலிப்பு, சிறுநீரக தாபிதம், சாதாரண பிரசவம் செய்யமுடியாதநிலைமை போன்ற அவஸ்தைகளும், குழந்தைகள் முக்கியமாக நிறைகுறைவு, போசாக்கின்மை, ஓட்டிசம், செரிபரல் போல்சி, டவுன்சின்னோம் போன்ற பல நோய்களின் பால் அதிகளவு பீடிக்கப்படுவதையும் அவதானிக்கக்கூடியதாக இருக்கிறது. கர்ப்பவதி பராமரிப்பு கிளினிக் நடைபெறுகின்ற போதும் தாயும், சேயும் பல நோய்களுக்கு ஆளாகுவதும், குழந்தை பிறந்த பின் அவர்களுக்கு போசணை மட்டத்தினை உயர்த்துவதற்கு போசணை உணவுகள் வழங்கப்படுவதும் அவதானிக்கப்பட்டுள்ளது. ஆனால் பழைய காலத்தில் பாட்டிமார் கர்ப்பகால பராமரிப்பினை சிறப்பாக செய்து ஆரோக்கியமான குழந்தைகள் பெற்றெடுக்கப்பட்ட நிலையினை செவிவழித்தரவுகள் மூலம் அறிய முடிகின்றது. தற்கால அறிவியல் ரீதியாக கர்ப்பரட்சணயில் தாயின், சேயின் போசாக்கு மட்டத்தினை உயர்வாக பேணக்கூடிய மருத்துவ மூலிகைகள் முக்கியமாக தாமரை, நெய்தல் கிழங்கு, நிலப்பனைக்கிழங்கு, பால், தேன் போன்றவை பயன்படுத்தப்பட்டதோடு அவர்களுக்கு ஏற்படும் கர்ப்பகால தொந்தரவுகளான கர்ப்பகால வாந்தி, கர்ப்பகால இரத்தச்சோகை, சிறுநீரக பிரச்சினை, கர்ப்பகால வலி, கர்ப்பகால நீரழிவு போன்றன ஏற்படாமல் தடுக்கக்கூடிய மருத்துவ மூலிகைகளான நெருஞ்சில், சாறனை, சீந்தில், சந்தணம், கோரை, தகரை, இஞ்சி போன்ற மருத்துவ மூலிகைகள் உபயோகப்படுத்தப்பட்டுள்ளன. தற்காலத்தில் கர்ப்பவதிகளுக்கு தயாரிக்கப்படும் பால்மாக்கள் அவற்றில் சேரும் சிறுதானியங்கள் அதிகளவு பாரமான இடிகைகளினால் இடிக் கப்படுவதும், அவை கெட்டுப் போகாமல் இருப்பதற்கு இரசாயனங்கள் சேர்க்கப்படுவதும், அவற்றினை பொதி செய்வதற்கு நைதரசன் வாயுக்களின் பிரயோகம், அதற்கு சுவையூட்ட தேவையான இரசாயனங்கள் என மருத்துவத்துடன் வணிகம் சேர்ந்து விட்டது. இவற்றை கர்ப்பவதி உபயோகிக்கும் போது தாய்க்கும், குழந்தைக்கும் நஞ்சு இரசாயனங்கள் சேர்ந்து பல நோய்களை உருவாக்குகின்றன. எனவே நம்முன்னோர்கள் கூறிய முறைகளை தற்கால தொழில்நுட்ப வசதிகளை மேம்படுத்தி பாரம்பரிய மரபுரீதியான மருத்துவ, உணவு முறைகளை தற்கால அறிவியல் நோக்கில் ஆராய்ந்து மக்களுக்கும், மருத்துவர்களுக்கு விழிப்புணர்வு ஊட்டவேண்டியது காலத்தின் கடமையாகும்.

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# PHYTOCHEMICAL STUDIES AND PHARMACOLOGICAL ACTIVITIES OF

## *Myristica fragrans*: A REVIEW

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### Background

*Myristica fragrans* is an aromatic evergreen tree which belongs to Myristicaceae family. Nutmeg (seed) and Mace (arillus) which are two separate spices derived from the fruit of tree *Myristica fragrans*. Nutmeg is the seed kernel inside the fruit and mace is the red lacy covering (aril) on the kernel. These are used as spices in culinary and in traditional systems of medicine (Jayaweera DMA and Senaratna LK, 2006).

### Objective

To review the recent scientific evidences of phytochemical and pharmacological studies of *Myristica fragrans*.

### Methodology

A systematic literature search was carried out using PubMed and Google Scholar databases to review articles and to gather the information available in the literature regarding *Myristica fragrans* in the view of recent scientific evidences of phytochemical and pharmacological activities.

### Results and Discussion

#### Scientific Evidences on Phytochemical Studies of *Myristica Fragrans*

Table 01: Phytochemical studies of *Myristica fragrans*

Name of the Chemical constituents	Part Used	References
Lignan Compound	Root Extract	Ginting B, et al. (2020)
Macelignan	Nutmeg Mace	Paul S, et al. (2013)
Myristicin	Aril (Mace)	Naikodi MA, et al. (2011)
Myristicin	Essential oil	Wang Y, et al. (2004)
Myristicin, Myristic Acid & Trimyristin	Essential Oil	Setty JV, et al. (2020)
Myristic Acid & Myristicin	Essential oil	Qiu Q, et al. (2004)
Myristicin & Myrisisolignan	Seed	Yang XW, et al. (2008)
Myristigranol	Extract of Wood	Hiranrat A, et al. (2019)

#### Scientific Evidences on Pharmacological Activities of *Myristica Fragrans*

Following table shows the recent evidences on pharmacological activities of *Myristica fragrans*.

Table 02: Pharmacological activities of *Myristica fragrans*

Pharmacological activi-	Part Used	References
Anti-allergic activity	Extract of wood, nutmeg and mace	Champasuri S, et al. (2016)
Antibacterial activity	Extract of Seed	Paul S, et al. (2013)
	Essential Oil	Wang J, et al. (2019)
	Extract of crude seed kernel	Dzotam JK, et al. (2018)
	Hydrolats and Essential Oil	Matulyte I, et al. (2020)
Anti-cancer activity	Nutmeg Mace	Paul S, et al. (2013)
	Ethanolice Mace Extract	Suthisamphat N, et al. (2020)
	N-Hexane Root Extract	Ginting B, et al. (2020)
Anti-diabetic activity	Nutmeg Mace	Paul S, et al. (2013)
	Extract of Nutmeg	Pashapoor A, et al. (2020)
Anti-depressant activity	Herbal extract	Moinuddin G, et al. (2012)
Anti-inflammatory activ-	Extract of Wood, Nutmeg & Mace	Champasuri S, et al. (2016)
	Nutmeg Mace	Paul S, et al. (2013)
	Pericarp of Nutmeg	Zhang CR, et al. (2015)
Anti-microbial activity	Essential Oil	Setty JV, et al. (2020)
Anti-oxidant activity	Seed	Li CW, et al. (2020)
	Pericarp of Nutmeg	Zhang CR, et al. (2015)
Analgesic activity	Nutmeg seed kernels	Hayfaa AA, et al. (2013)
Gastro-protective activity	Extract of the Seeds	Sattar A, et al. (2019)
Hepatoprotective activity	Nutmeg Mace	Paul S, et al. (2013)
	Kernal extract of Nutmeg	Dkhil MA, et al. (2019)

## Conclusion

While reviewing the literature, it reveals *Myristica fragrans* shows therapeutic actions such as Appetizer, Carminative, Digestive, Stomachic and Aphrodisiac activities and *Myristica fragrans* shows therapeutic uses such as Indigestion, Loss of Appetite, Diarrhoea, Cough, Asthma and Sexual debility. Numerous studies have indicated that *M. fragrans* contains diverse phytochemicals such as Myristicin, Myristic Acid, Trimyristin, Elemicin, Safrole, Lignans, Neolignans, Maceneolignans etc. which exhibit many of pharmacological activities such as Anti-allergic activity, Antibacterial activity, Anti-cancer activity, Anticonvulsant activity, Anti-diabetic activity, Anti-diarrhoeal activity, Anti-depressant activity, Anti-fungal activity, Anti-inflammatory activity, Anti-microbial activity, Anti-oxidant activity, Analgesic activity, Aphrodisiac activity, Gastro-protective activity, Hepatoprotective activity, and Immunomodulatory effect. Myristicin, Myristic Acid, Trimyristin are the most active compounds among them.

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## A critical review on pharmacodynamics properties of *Mātāvr̥hatī Anupāna* on immunomodulatory action and transformation into a syrup form

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### Introduction

Sri Lankan Traditional Medicine (TM) paves a path for many disorders and was propounded down the generations through word of mouth. *Vatikā Prakaranaya* was one of the compendiums written by gathering such scattered knowledge all over the country. It is one of the most important indigenous medical pharmacopoeia named *Vatikā Prakaranaya Hevat Deśīya Behet Guli Kalka Pota* written by Dr. Illeperuma Arachchige Don Sadiris De Alwis Illeperuma in 1879. It contains diverse traditional drug preparations, with their *Anupāna*, and indications. *Mātāvr̥hatī Anupāna* is one of the formulae used with the *Buddharāja Kalka* indicated in the management of *Sanni* (mostly neurological disorders), *Semroga* (diseases related to phlegm), *Ilappu* (asthma) etc. <sup>[1]</sup> Syrups or *Śarkarā Kalpanā* are secondary type of preparations popularly used in Unani Medicine. It is prepared using *Hima* (cold infusion), *Phāṇṭa* (hot infusion), *Kvātha* (decoction) or *Arka* (distillation), mixing double the amount of sugar and boiling on the mild fire. They are palatable, convenient, can easily be administered, preserves active and volatile contents and sugar further has an enhanced action on upper respiratory disorders. <sup>[2]</sup> Preparing the *Anupāna* takes a long time therefore it is highly potential to develop this into a syrup form as it is readily available and can easily be used during pandemics such as COVID-19.

### Objectives

#### General Objective

To review the ingredients of *Mātāvr̥hatī Anupāna* and their pharmacodynamics properties

#### Specific Objectives

To identify the immunomodulatory action of *Mātāvr̥hatī Anupāna*

To introduce the use of *Mātāvr̥hatī Anupāna* as an immunomodulatory drug based on the concept of Ayurveda.

To transform it into a syrup form for easy usage during pandemics like COVID-19.

### Methodology

#### Collection of data

The study was conducted as a literature review and the data were collected from *Vatikā Prakaranaya*, *Śāraṅgadhara Saṃhitā* and online research articles. Ayurveda Pharmaceutics and the modern development processes of syrups were also reviewed.

#### Preparation of *Mātāvr̥hatī Anupāna*

Per the formulae tender leaves of *Adhatoda vasica*, *Solanum indicum*, *Wattakaka volubilis*, *Vitex negundo*, rhizomes of *Zingiber officinale* and *Allium sativum* were pounded, subjected to steaming, strained and filtered using a cotton cloth and 60ml of the juice was extracted. 6ml of *Tila Taila* (sesame oil) and



*Makaranda* (bee's honey) were added as *Prakṣepa Dravya* (additives).<sup>[1]</sup>

### Transformation into a syrup form

It was then converted into a syrup form by adding double the amount of sugar to the weight of the *Anupāna*, heated till there was an appearance of honey-like consistency or upon rubbing single thread like structure. The preparation was left to cool and filtered with a cotton cloth afterwards.<sup>[2]</sup>

### Results

Upon analyzing, the *Rasa* of *Mātāvṛhatī Anupāna* contain 62.5% *Tikta*, 50.0% *Katu*, 50.0% *Kaṣāya* etc. Out of *Guṇa*, 75.0% *Laghu*, 50.0% *Rūkṣa* etc. 75.0% of the drugs contain *Uṣṇa Vīrya* and rest are *Śīta Vīrya*. Of *Vipāka*, 62.5% *Katu* and the rest is *Madhura*. Among the *Doṣa Karma*, 75% is *Kaphavāta Śāmaka* and 87.5% of the drugs contain *Śvāsakāśahara*, 62.5% *Rasāyana*, 50% *Jvaraghṇa* and 37.5% *Kṛmighṇa*.<sup>[3]</sup> Moreover, some active compounds of these ingredients are glycosides, fatty acids, flavonoids, vitamin B complexes, iron, alkaloids, phenolic compounds, saponins, coumarins, tannins and terpenes.<sup>[4]</sup> Table 1 depicts the pharmacodynamics properties and active constituents of each of the ingredient in the *Mātāvṛhatī Anupāna*.

Table 1, Pharmacodynamics properties and active constituents of the ingredients<sup>[3], [4], [5], [6]</sup>

Name of the Ingredient		Pharmacodynamics Properties					Active constituent
Vernacular Name	Botanical Name	<i>Rasa</i>	<i>Guṇa</i>	<i>Vīrya</i>	<i>Vipāka</i>	<i>Doṣa Karma</i>	
<i>Mātā</i>	<i>Adhatoda vasica</i>	<i>Tikta Kaṣāya</i>	<i>Laghu, Rūkṣa</i>	<i>Śīta</i>	<i>Katu</i>	<i>Kapha Pitta Śāmaka</i>	Kaempferol, Quercetin
<i>Vṛhatī</i>	<i>Solanum indicum</i>	<i>Katu Tikta</i>	<i>Laghu, Rūkṣa</i>	<i>Uṣṇa</i>	<i>Katu</i>	<i>Kapha Vāta Śāmaka</i>	Solanine, Solanidine
<i>Auṣadha</i>	<i>Zingiber officinale</i>	<i>Katu</i>	<i>Laghu, Rūkṣa</i>	<i>Uṣṇa</i>	<i>Katu</i>	<i>Kapha Vāta Śāmaka</i>	Gingerols, Quercetin, β-bisabolene
<i>Kiriaguna</i>	<i>Wattakaka volubilis</i>	<i>Madhura</i>	<i>Laghu</i>	<i>Śīta</i>	<i>Madhura</i>	-	Coumaric acid sapogenins
<i>Nocci</i>	<i>Vitex negundo</i>	<i>Katu Tikta</i>	<i>Laghu, Rūkṣa</i>	<i>Uṣṇa</i>	<i>Katu</i>	<i>Kapha Vāta Śāmaka</i>	Viridiflorol, p-caryophyllene, 4-terpineol
<i>Lasuna</i>	<i>Allium sativum</i>	<i>Madhura Lavaṇa Katu Tikta Kaṣāya</i>	<i>Snigdha-Guru Tīkṣṇa Sara</i>	<i>Uṣṇa</i>	<i>Katu</i>	<i>Kapha Vāta Śāmaka</i>	Allicin, Alliin, Diallyl sulfide
<i>Taila</i>	<i>Sesamum indicum</i>	<i>Madhura Tikta Kaṣāya</i>	<i>Sūkṣma Uṣṇa Tīkṣṇa</i>	<i>Uṣṇa</i>	<i>Madhura</i>	<i>Vāta Kapha Śāmaka</i>	Linoleic, Oleic acids
<i>Makaran-da</i>	-	<i>Madhura-Kaṣāya</i>	<i>Laghu Viṣada</i>	<i>Uṣṇa</i>	<i>Madhura</i>	<i>Kapha Pitta Śāmaka</i>	Gallic, Pinocembrin, Abscisic acid

### Discussion

In *Mātāvṛhatī Anupāna*, predominant *Rasa* are *Tikta*, *Katu*, *Kaṣāya* and *Guṇa* are *Laghu* and *Rūkṣa*. These *Rasa* and *Guṇa* functions in the body by increasing the appetite, relieving throat, alleviating swelling, improving digestive power, cleansing the body channels, destroying worms, alleviating thirst, cleansing the vitiated *Kapha Doṣa*, *Dhātu* (body tissues) expelling *Mala* (metabolic waste), strengthening sense organs and *Ojas* etc. These actions are further facilitated by predominance of *Uṣṇa Vīrya* and *Katu Vipāka*.



This collectively aids in stimulating *Jaṭarāgni* (digestive fire) and the cellular metabolic functions. Hence, facilitate well formation of *Sapta Dhātu* (body tissues), which directly involves in the formation of *Ojas*. *Ojas* is termed as the essence of all *Dhātu* which acts as the body's mechanism to fight off and prevent diseases. As the predominant *Doṣa Karma*, *Kaphavāta Śāmaka* assist in managing the most of the respiratory disorders such as *Śvāsa*, *Kāsa* etc. Therefore, *Mātāvr̥hatī Anupāna* while pacifying vitiated *Doṣa* and *Dhātu* consecutively nourishes *Dhātu*, strengthens the body and stimulates the digestive fire. Thereby, boosting *Ojas* quantitatively and qualitatively while providing sustenance to *Vyādhikṣamatva*. Moreover, our *Ācārya*'s have highlighted upon *Rasāyana* action as it terminates the process of aging, improves intelligence, memory power, elongates lifespan, imparts complexion, mindfulness, refrain from diseases etc. Also, modern pharmaceuticals have been able to prove that the immunomodulatory, antioxidant, antimicrobial, anticancer, anti-mutagenic and anti-apoptotic actions are similar to that of effects created by *Rasāyana* action. Further, these actions reduces oxidative stress, increases cellular  $\text{Na}^+/\text{K}^+$  ATPase pump, maintains membrane fluidity, influences lipid raft formation, initiates bactericidal and bacteriostatic actions, scavenges free radicals, mediates inflammations etc. Thus, initiating the innate immunity sequence / cascade i.e. immunomodulation in the body.<sup>[7]</sup>

## Conclusion

*Mātāvr̥hatī Anupāna* alone can be indicated for managing disorders such as *Sanni*, *Semroga*, *Ilappu* etc. According to the analysed data *Mātāvr̥hatī Anupāna*, is found to exhibit antioxidant, anti-inflammatory and *Rasāyana* actions, which enhance body immunity theoretically. The pharmacodynamics properties of its ingredients and the active constituents per modern view highlights its immunomodulatory action. Also, preparing the *Anupāna* takes a long time therefore it is highly potential to develop this into a syrup form as it is readily available and can easily be used during pandemics such as COVID-19. However, more exhaustive chemical and clinical analysis needs to be conducted to confirm its immunomodulatory action.

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## PHYTOCHEMICAL STUDIES AND PHARMACOLOGICAL ACTIVITIES OF *Trigonella foenum*: A REVIEW

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### Background

Fenugreek is traditionally consumed as a medicinal plant since prehistoric time and is undoubtedly considered safe to human health. Fenugreek (*Trigonella foenum-graecum* L.) is an erect annual herb which belongs to the family of Fabaceae/ Leguminosae. It is cultivated as leafy vegetable, condiment and as a medicinal plant. The fresh tender leaves and stem are consumed as curried vegetables and the seeds are used as spices for flavouring almost all the dishes (Kumar N et al., 1997). It is an old medicinal plant which has been commonly used in traditional systems of medicine for therapeutic purposes.

### Objective

- To review the recent scientific evidences of phytochemical and pharmacological studies of *Trigonella foenum*.

### Methodology

A systematic literature search was carried out to review articles and to gather the information available in the literature regarding Fenugreek in the view of recent scientific evidences of phytochemical and pharmacological activities.

### Result and Discussion

#### Scientific Evidences on Phytochemical Constituents and Pharmacological activities

##### Phytochemical Constituents of *Trigonella foenum*

Fenugreek contains a number of steroidal sapogenins, specially diosgenin found in oily embryo. Two furastanol glycosides, F-ring opened precursors of diosgenin have been reported, as also hederagin glycosides. the alkaloid trigonelline, trigocoumarin, trimethyl coumarin and nicotinic acid are also present. From the seeds, mucilage as a prominent constituent, along with vitexin and isovitexin have been isolated. The stem contains diosgenin and trigoforin. Saponins isolated from leaves. Disogenin, gitogenin and tigo-genin isolated from seeds (Paranjpe P, 2001)

Trigonelline, a major alkaloid component of fenugreek, is reported to be responsible for most of its pharmacological activities (Subramanian SP and Prasath GS, 2014).

## Pharmacological activities of *Trigonella foenum*

Table 01: Pharmacological activities of Fenugreek

Pharmacological activity	References
Anti-diabetic activity	Najdi RA et al., (2019) Geberemeskel GA et al. (2019) Subramanian SP, et al. (2014) Haeri MR et al. (2012) Moorthy R et al. (2010) Xue WL et al. (2007) Puri D et al. (2002)
Anti-dyslipidemic activity	Xue WL et al. (2007) Chen Z et al. (2017) Subramanian SP et al. (2014)
Immunomodulatory effect	Hafeez BB et al. (2003)
Anti-oxidant activity	Tewari D et al. (2020) Upma C et al. (2013)
Anti-inflammatory activity	Ahmadiani A et al. (2001)
Anti-cancer activity	El Bairi K et al. (2017)

## Conclusion

Phytochemical evidences suggest major constituents found in Fenugreek are mainly Alkaloids, Flavonoids, Steroids, and Saponins. Fenugreek contains several steroidal Sapogenins, specially diosgenin found in the oily embryos. The alkaloid trigonelline, Trigocoumarin, Trimethyl Coumarin and Nicotinic acid are also present. From the seeds, mucilage as a prominent constituent, along with vitexin and Isovitexin have been isolated. The stem contains Diosgenin and Trigoforin. Saponins isolated from leaves. Disogenin, Gitogenin and Tigogenin isolated from seeds. Pharmacological evidences suggest Fenugreek possesses pharmacological activities such as Anti diabetic, Anti-dyslipidemic activity, Immunomodulatory effect, Anti-oxidant activity, Anti-inflammatory activity and Anti-cancer activity. This study was carried out to review the recent scientific evidences of phytochemical and pharmacological studies systematically.

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## A critical review on the immunomodulatory properties of ingredients of *Eladi Churna* and a novel conversion into lozenge form.

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### Background

There are several drugs used in the indigenous system of medicine that may modulate the immune system of the body. This immunomodulatory action is performed by their bioactive components and it is referred as *Rasayana* in Ayurveda. <sup>[1]</sup> Dried drugs that are well ground as starch, filtered by a cotton cloth are termed *Churna*.<sup>[2]</sup> *Eladi Churna* is commonly used in wide range of diseases including *Rajayakshma*, *Kasa*, *Swasa*, *Kaphaja Roga*, *Kanta Roga*, *Grahani*, *Arshas*, *Aruchi*, *Agnimandya*, *Pleeha Roga* etc. According to Ayurveda Pharmacopeia, it is used with *Anupana* like bee's honey.<sup>[3]</sup> Lozenges are solid medicinal preparations in a sweetened base; dissolve slowly in the mouth that can be prepared by molding into sugar-based tablets. They are palatable, can be used without an *Anupana* and the absorption effect is more. <sup>[4]</sup> Introducing of Indigenous drugs which can enhance the innate immunity of the body and modification of the formulation in user friendly way is timely needed in pandemic situation.

### Objectives



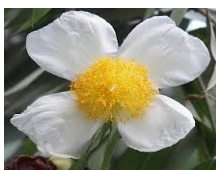


- To study and review the pharmacodynamics properties of ingredients of *Eladi Churna*
- To introduce use of *Eladi Churna* as an immunomodulatory drug based on the concept of *Ayurveda* and to modify *Eladi Churna* into a palatable lozenge form for easy usage.

### Methodology

Literature on *Ayurveda* and modern pharmaceutical standardization were reviewed and compiled. *Eladi Churna* was prepared according to the *Churna Paribhasa*, then converted into lozenge form. <sup>[5]</sup>

### Results

**Table 1.** Pharmacodynamics properties of ingredients of *Eladi Churna*

Ingredients	Ayurveda Pharmacodynamics pro:	Phytochemicals	Bioactivities
 1.Ela ( <i>Elettaria cardamomum</i> )	<i>Madura Katu Rasa, Laghu Ruksha Guna, Katu Vipaka, Sheeta Veerya, Kapha Vata Shamaka Deepana, Swasa Kasahara, Rasayana</i>	Flavonoids, Tannin, Terpenoids, Carotenoids, Essential oil	Immunomodulatory, Antioxidant, Antidiabetic, Anticancer, Gastro-protective, Insecticidal, Anti-inflammatory, Analgesic <sup>[6]</sup>
 2.Twak ( <i>Cinnamomum zeylonica</i> )	<i>Madura Katu Tiktha Rasa, Laghu Rooksha Theeksna Guna, Ushna Veerya, Katu Vipaka, Kapha Vata Shamaka Deepana, Krimighna, Rasyana</i> <sup>[7]</sup>	Flavonoids, Tannin Cinnamaldehyde, Eugenol, Benzaldehyde, Linalool, Pinene	Immunomodulatory, Anti-inflammatory, Analgesic, Antioxidant, Antidiabetic, Anticancer, Antitoxic, Antidiabetic, Antimicrobial, Neuroprotective <sup>[8]</sup>
 3.Nagakeshara ( <i>Mesua ferrea</i> )	<i>Kasaya Tiktha Rasa, Laghu Teekshna Guna, Katu Vipaka, Ushna Veerya, Kapha Pitta Shamaka Ama Pachana, Jvarahara, Vishahara, Chardihara,</i>	Flavonoids, Tannin, Terpenoids, Carotenoids, Carbohydrate, Protein	Immunomodulatory, Anti-inflammatory Antioxidant, Anticancer, Antitoxic, Antidepressant, Antimicrobial <sup>[9]</sup>
 4.Maricha ( <i>Piper nigrum</i> )	<i>Katu Rasa, Laghu Guna, Ushna Veeraya, Katu Vipaka, Kapha Vata Shamaka Deepana, Pachana, Krimighna, Balya, Rasayana, Swasa, Kasa, Jvarahara</i> <sup>[10]</sup>	Flavonoids, Tannin, Alkaloids, Glycosides	Immunomodulatory, Antioxidant Anti-inflammatory, Antimicrobial, Anticancer, Analgesic, Respiratory and GIT disorders <sup>[11]</sup>
 5.Kushta ( <i>Saussurea lap-pa</i> )	<i>Thiktha Katu Madura Rasa, Laghu Guna, Ushna Veerya, Vata Kapha Shamaka Swasa, Kasa, Jvarahara</i>	Palmitic, Linoleic acids, Flavonoids, Tannin, Alkaloids, Glycosides	Immunomodulatory, Antioxidant, Anti-inflammatory, Antimicrobial, Antispasmodic Fever, Respiratory disorders, Infectious and Inflammatory conditions <sup>[12]</sup>
 6.Pippali ( <i>Piper longum</i> )	<i>Katu Rasa, Laghu Teekshna Guna, Madhura Vipaka, Ushna Veerya, Vata Kapha Shamaka Deepana, Pachana, Krimighna,, Rasayana, Swasa, Kasa, Jvarahara, Kshayapaha</i>	Piperine, Caryophyllene, Sitos-terol,	Immunomodulatory, Analgesic, Anti-inflammatory, Antimicrobial, Antioxidant, Antispasmodic Fever, Respiratory disorders, Infectious and Inflammatory conditions, GIT disorders <sup>[13]</sup>



## Discussion

Ayurveda pharmacodynamic properties were discussed based on the *Rasa* (taste), *Guna* (properties), *Veerya* (potency), *Vipaka* (post digestive effect) and *Dosha Karma* (effects on body humors) of ingredients. As per the modern view, phytochemicals and the action of bioactive ingredients were considered. Different biological actions of six different tastes have been clearly described in *Caraka Samhitha* and *Ashtanga Hridaya Samhitha*. According to the reviewed data of *Eladi Churna*, *Katu* (Pungent), *Tikta* (Bitter) and *Madura* (Sweet) tastes were predominant. Pungent taste increases the hunger, cures disease of throat, skin diseases, kind of indigestion, oedema, reduces the swelling of ulcers, dries up the unctuous, fat and moisture, it is digestive, improves the taste, cleans the *Srotas* and eliminates the *Dosas*. *Tikta* (Bitter) by itself cures anorexia, worms, thirst, poisons, skin diseases, loss of consciousness, fever, nausea, burning sensation and mitigates *Pitta-Kapha*, dries up moisture, fat, faeces and urine. It is easily digestible, increases intelligences, cold in potency, cleanses breast milk and throat. Sweet taste produces greater strength of body tissues. It is very good for children, the aged, the wounded, the emaciated, improves the skin complexion, hairs, strength of the sense organs and *Ojas* (immunity).

Among the *Gunas* (Attributes), *Laghu Guna* (Lightness), *Teekshna Guna* (sharpness) and *Ruksha Guna* (roughness) were predominant in *Eladi Churna*. It was mentioned in the classics that *Laghu Guna* provides the lightness and it is easily digestible. *Ruksha Guna* clears the obstruction in *Srotas* and pacifies the *Kapha* while increasing the *Vata*. Furthermore, it is mentioned that *Teekshna Guna* increase the *Pitta*, stimulates the *Jataragni*, provides scraping action on *Srotas* in the body, mitigates the *Kapha* and *Vata* and clears the *Srotas* (body channels).

It was discovered that most of the ingredients of *Eladi Churna* are hot in potency (*Usna Veerya*). Hence, it increases the *Pitta* and *Jataragni* (digestive fire) promotes the digestive functions, mitigates the *Vata* and *Kapha*, metabolizes the undigested substance termed as *Ama*. *Ama* is immature, toxic substance which is formed as a result of malformation of *Saptha Dhathu* (seven body tissues) due to the *Mandagni* condition (lack of digestive fire). Due the properties of ingredients, *Eladi Churna* stimulates the digestion and well forms the *Saptha Dathua*. As the essence of *Saptha Dhathu*, *Ojas* (immunity) is well formed. *Ojas* is considered as the physical, mental and disease preventive strength of human body which protects the body from various diseases while promoting the *Vyadhiksamathva* (immunity). Among the *Dosa Karma*, Ingredients of *Eladi Churna* have ability to pacify *Kapha-Vata* and *Kapha-Pitta*. Almost all ingredients have *Agni Deepana*, *Swasa Kasahara*, *Jwarghna* and *Rasayana* properties. Ayurveda has emphasized that the *Tantra* which terminates the process of aging, gives long lifespan, improves intelligence, makes the cheerful mind, causes to refrain from diseases is termed as *Rasayana* (rejuvenate). Modern studies have proved the antioxidant and immunomodulatory actions of substances which are enriched with *Rasayana* properties. Modern pharmaceutical studies indicated that, all ingredients of *Eladi Churna* are consisted with Immunomodulatory, Antioxidant, Anti-inflammatory and antimicrobial properties. Due to the immunomodulatory properties of ingredients in *Eladi Churna* the innate immunity of the body is boosted and may help the body fight with infections as well as non-infectious diseases. Natural antioxidants facilitate the removal of harmful free radicals produced through cellular metabolism and from environmental stress, thereby



maintaining the structural integrity of immune cells. Modern studies have proved that, antioxidant vitamins enhance the immune response that are involved in protection from wide range of infectious diseases as well as non-infectious diseases

## Conclusion

According to the reviewed data it can be concluded that, *Eladi Churna* promotes the *Ojas*, enhances the *Vyadhikshamathva* because the ingredients of *Eladi Churna* is enriched with *Rasayana* property. It can be successfully indicated for respiratory tract disorders and fever because *Swasa Kasahara* and *Jwarghna* properties are naturally enriched with the *Eladi Churna*. Wide range of GIT disorders also can be managed due to its *Agni Deepana*, *Ama Pachana*, *Krimighna* and *Chardihara* qualities. According to the reviewed data of modern pharmaceutical studies, *Eladi Churna* can boost the innate immunity, protect the body from free-radicals and its harmful effects, manage the inflammations and attack with the pathogenic organisms like bacteria and viruses. Therefore, it can be recommended that it is highly potential to develop *Eladi Churna* as a lozenge form as it is user-friendly manner. Further chemical analysis of the lozenge and comparative study of drug efficacy tests are need to be conducted.

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## A review on *Mallotus philippensis* (LAM.) Muell. Arg. (*Kampilla*)

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### Background

*Mallotus philippensis* which belongs to and euphorbiaceae family is a used plant in Ayurveda. *Kampilla* often appears in rainforest margins in moderate to high rainfall areas, both tropical and sub-tropical regions including all over the Punjab, Uttar-Pradesh, Bengal, Assam, Burma, Singapore, and from Sind south wards to Mumbai, Australia, Malaya islands, Pakistan, Andaman Islands and Sri Lanka (Widen & Puri, 1980). It is also known as Monkey face tree or Kamala dye in English, *Hampirilla* or *Kuduvwelanga* in Sinhala, *Kapilavēdi* or *Kapilā* in Tamil *Kamala* in Hindi, *Kamalanguri* in Bengali, *Kapila*, *Kampilla*, *Kampilya*, *Kampillaka*, *Raktaphala*, *Recana*, *karkasa*, *Candra*, *Rakthanga* in Sanskrit. (Ayurveda Pharmacopeia, 1979). It is a common perennial tree, medicinally important plant specially in *Rasa śāstra* (Ayurveda study of mineral and metals) as an only herbal found in *Sādhārana Rasa* (The group of substances that have less power than mercury in *Rasa śāstra*) group (Mishra, 2018) (Ayurveda Pharmacopeia, 1979). Also, it considers as *Audbhida dravya* (herbal drugs) is well described in Caraka and Sushruta samhita. (Buddhadasa, 2007) (Trikamaji & Ram, 2014) (Hewageegana & Arawwala, 2020)

### Objective

Objective of this review was to provide an overview on pharmacological activities, medicinal properties of *Mallotus philippensis* and to study the purification methods that mentioned in *Rasa Shāstra*.

### Methodology

The information was collected from authentic Ayurveda texts, authentic texts in *Rasa Shāstra* and scientific journals.

### Results and Discussion

**Phytochemical composition** - Whole parts of the *Kampilla* are rich in secondary metabolites, which impart medicinal values to the plant. *Kampilla* also contains minute amount of tannic acid and volatile oil. According to early chemical investigation, *Kampilla* contains phenolic compound of which rottlerin (malotoxin) is the main compound. *Kampilla* also contains other compounds like wax. Traces of volatile oils, tannins, sugar, gum, starch, cellulosic materials, oxalic acid and mineral matter. The composition of phloroglucinol derivatives is relatively constant in materials of different origins. It is harmless and odourless and very stable. This dye when dissolved in fats in small amount gives a light-yellow colour which is natural to an extract of the leaves and flowers. (Sharma & Varma, 2011).

**Pharmacological activities according to Ayurveda** - According to Ayurveda texts, leaves, fruits, roots and red colour dust that cover the nut of *Kampilla* are mostly used (Saeed, et al., 2009). According to Ayurveda pharmacological properties of *Mallotus philippensis* *tikta* in *rasa*, *laghu*, *teekshna* and *ruksha* in *guna*, *ushna* in *veerya* and *katu* in *vipaka*, *Rechaka*, *Krimighna*, *Vibhedi*, *Ama - pachana*, *Deepana* and *Asrajit*. (Mishra, 2018) (Ayurveda Pharmacopeia, 1979).

**Pharmacological activities proven by the scientific research** - Pharmacological studies reported its anthelmintic (Tschrich, 1923), antibacterial (Velanganni, et al., 2011), antioxidant (Arfan, et al., 2007), anti-cancer, antileucemic (Khan, et al., 2013), purgative, antihistamine (Gangwar, et al., 2016), hepatoprotective, analgesic and wound healing activities. (Dargan, et al., 2011)

**Medicinal properties** - Therapeutically maximum are indicated in the treatment of worms (Anand, et al., 2013) (Geetha, et al., 2011), skin diseases (Bharali, et al., 2008), constipation (Trikamaji & Ram, 2014), (Shen-Ji P., 2001), carbuncle on backbone, wounds (Heinrich, 2000), helminthiasis, tumours, ascites, glandular swelling and flatulence etc. According to the authentic Ayurveda texts *Kampilla* has been used for *krimi roga*, *carma roga* (Buddadasa, 2007), *vrana*, *vibandha*, *gulma*, *ānaha* (Trikamaji & Ram, 2014), *udara roga* (Buddadasa, 2007) (Trikamaji & Ram, 2014), *arsha* (Trikamaji & Ram, 2014), *shoola* (Buddadasa, 2007), *jvara* and *prameha roga* (Buddadasa, 2007).

**Medicinal Preparations** (Mookerji, 1938) (Hewageegana & Arawwala, 2020) (Buha & Acharya, 2020)

Preparation	Indications
<i>Kāmali choorna and Kāmali surasāwa</i>	<i>Udvarta, Krimi, Gulma</i>
<i>Patolamuladi choorna</i>	<i>Udara</i> (Abdominal swelling like condi-
<i>Vatika-Krimighatani vati and krimikutara rasa</i>	<i>Krimi rōga</i> (Diseases are caused by
<i>Malahara -Kajjali Kodaya Malahara</i>	Wound cleansing, healing and chronic
<i>Varti- Krimignadi varti</i>	<i>Krimirōga</i>
Oils – <i>Vipadikahara grita taila, Kamali thaila</i>	<i>Carma rōga</i> (Skin diseases)
<i>Kāmali leepa</i>	<i>Dada</i> (Kind of a Skin disease)

Table 1 - Medicinal Preparations and indications of *Mallotus philippensis*

**Purification Methods (Shodhana karma)** - Literary sources of *Rasa śāstra* revealed about the purification methods of the reddish dust that cover the nuts (also known as *Kapili*). The reddish dust that covers the other parts of the plant (*Kapila*) is not often used medicinally. *Kapili/ Kāmālānguri* mentioned as the *Aushadōpayōgi varga* (best variety) It is recommended that the best variety of *Kampilla* be used for medicinal purposes if it forms a yellow stain on a piece of white paper. Also, the best variety dissolve in ether and alcohol and not dissolved in water. (Ayurveda Pharmacopeia, 1979) Purification is essential for the preparation of internal preparations.

To separate adulterated brick- red substance, the powder is spread on the water (Gang & Singh, 2010). After sometime the adulterated substance sinks at the bottom and *Kampilla* floating on the surface is gently collected, dried and used. This reddish dust are purified if subjected to *bhavana* (Thoroughly mixed with the liquid media and staged intermittent trituration followed by drying) with the juices of *Matulunga swarasa* (fresh juice of *Citrus medica*) and *ārdraka swarasa* (fresh juice of *Zingiber officinale*) (Mookerji, 1938) or *nimbuka swarasa* (fresh juice of *Citrus aurantifolia*) and *ārdraka swarasa* (fresh juice of *Zingiber officinale*) for three times using *Khalva yanthra* (Mortar and pestle). Incineration is not required as it is of plant origin. (Reddy, 2010) (Mishra, 2018)

## Conclusion

The present literature review has shown a current comprehensive literature analysis on *Mallotus philippensis* with respect to its pharmacological activities, phytochemical composition and medicinal properties. Its

phytochemical composition suggests the point that this plant has probable to be a favourable for chemotherapeutic uses in medicine. Apart from that the information prove that *Kampilla* is of significant biological benefit in various pharmacological activities. Hence, it is essential for future clinical studies to explain potency and safety of preparations of *Kampilla*. Furthermore, according to the references this plant has immense medicinal uses in Ayurveda. Especially in *Rasa śastra* mentioned, after completing purification process of reddish dust that cover the nuts it used for manufacture effective internal and external preparations. In conclusion, this literature review suggests the great capabilities of *Kampilla*. As little details are still known of this plant, it leads to carry on further studies of pharmacological and medicinal properties on *Mallotus philippensis*. This may help to develop more advanced pharmaceutical preparations for novel medicinal uses of *Mallotus philippensis* in the future.

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## Nutritional Properties, Pharmacological and Therapeutic Activities of *Vateria copallifera* (Retz.) Alston: A Review

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### Background

The genus *Vateria* belongs to the Dipterocarpaceae family and consists of three species, namely *V.indica*, *V.macroparva* and *V.copallifera*. (Samaradivakara *et al.*, 2017) The family Dipterocarpaceae, which is acknowledged as a plant family rich in a variety of bioactive chemical constituents. (Samaradivakara *et al.*, 2017) *Vateria* species are found in the evergreen forests of western Ghats from North Karnataka to Kerala and Sri Lanka. But *V.copallifera* is a plant endemic to Sri Lanka, known as *Hal* in Sinhala, *Ajakama*, *Sarjaka*, *Sarja* in Sanskrit, *Vellai-kungilian*, *Vellai-kunarikkam* in Tamil. (*Ayurveda Pharmacopoeia, Volume I, Part II*, 1979) In Sri Lanka, the plant is mainly found in the wet zone, below 1000 m altitude.

### Objectives

This review was conducted to provide an overview of pharmacological and therapeutic activities of *Vateria copallifera* and to evaluate the nutritional properties of flour obtained from 'Hal' fruits.

### Methodology

The data were collected from Ayurveda authentic texts and scientific journals. They were well documented, categorized, analyzed under different sections.

### Results and Discussion

#### Morphology

*Vateria copallifera* is a large tree, 40 m tall, 4 m girth under forest conditions, but never so large in cultivation branches dense, ascending. Twigs and panicles densely persistently draw fulvous tufted tomentose. The leaves are lamina 11-50 x 5 x 18 cm large, broadly to narrowly oblong, thickly coriaceous, drying to dull towny - brown, with obtuse to cordate base and 8 mm long-short abrupt tapering acute acumen. Flowers are panicles 25 cm long, 4 cm diameter, at the base, stout, with 12 cm long branches bearing 8 more or less seasonal flowers; bracts 10 x 6 mm, ovate, concave, acute. Flower bud 12 x 8 mm, lanceolate, relatively large, sepals hastate, subequal, imbricate at base only, subacute, petals cream, oblong, stamens 45-55, anthers yellow. Fruit is 11 x 7 cm, very large, ovoid, apiculate, with 2.5 cm thick fibrous, spongy pericarp and deeply impressed base. (Rajapaksha, 1998)



## Medicinal properties and pharmacological activities according to Ayurveda and Modern findings

	Medicinal properties	Pharmacological Activities
Ayurveda	<i>kaṣāya</i> (astringent) in <i>rasa</i> (taste), <i>lagu</i> (lightness), <i>ruksha</i> (dryness) in <i>guṇa</i> (attributes), <i>ushna</i> (hot) in <i>vīrya</i> (potency), <i>katu</i> (pungent) in <i>vipāka</i> (effect after digestion) ( <i>Ayurveda pharmacopoeia, Volume I, Part III, 1976</i> )	Reducing <i>kapha</i> and <i>pitta</i> ( <i>kaphapittanashaka</i> ), Purifies wounds ( <i>vr̥ṇaśodana</i> ), Regenerates healthy granulation tissues of wounds ( <i>vr̥ṇaropaṇa</i> ) ( <i>Ayurveda pharmacopoeia, Volume I, Part III, 1976</i> )
Modern findings	Acetate, Chrysophanol, Copalliferol A and B, Dipterocarpol hexamethyl coruleoellagic acid, Pentamethyl flavellagic acid, Resveratrol, Scopoletin, Sitosterol, Tannin, Tetramethylellagic acid, Triterpenes, Vateriferol, β-amyrin and etc. ( <i>Ayurveda pharmacopoeia, Volume I, Part III, 1976</i> ) (Ratnasooriya <i>et al.</i> , 2006) (Senadeera <i>et al.</i> , 2011) (Samaradivakara <i>et al.</i> , 2018)	Anti-bacterial, Anti-diarrhoeal, Anti-dote, Anti-inflammatory, Anti-oxidant, Anti-rheumatic, Anti-septic, Anti-ulcer, Diaphoretic, Disinfectant, Growth inhibitory activity on a number of cancer cell lines, Larvicidal, Sedative, Neuroprotective activity (Ratnasooriya <i>et al.</i> , 2006) (Ruhuna, 2008) (Senadeera, 2011) (Samaradivakara <i>et al.</i> , 2018) (Samanthi, 2019) (Ediriweera and Ratnasooriya, 2020) (NIWESGATHA COVID ROGIN SAD-HAHA AYURVEDA MAGA PENWIMA

Table 1

## Used parts of the tree and Indications

- Bark is used to treat diarrhea, rheumatic pains, ulcers, diabetes mellitus (Jñanavimala, 1959) (*Ayurveda pharmacopoeia, Volume I, Part III, 1976*) (Ratnasooriya *et al.*, 2006)
- Flowers is used to treat nervous system diseases, gastrointestinal tract infection, cardiovascular diseases, vision problems, ear diseases, skin diseases, carbuncles (*Ayurveda pharmacopoeia, Volume I, Part III, 1976*) (Senadeera, 2011)

- Resin is used to treat hemorrhoids, hemorrhages, carbuncles, disinfectant for corona virus (*Ayurveda pharmacopoeia, Volume I, Part III*, 1976) (NIWESGATHA COVID ROGIN SADHAHA AYURVEDA MAGA PENWIMA E book, 2021) (Senadeera, 2011)
- Seeds (oil extracted from seeds) is used to treat diseases caused by phlegm and bile, rheumatism (*Ayurveda pharmacopoeia, Volume I, Part III*, 1976) (Senadeera, 2011)
- Seeds (flour of seeds) is used to treat arthritis, hemorrhoid, to those who have been poisoned. (Jñānavimala, 1959) (*Ayurveda pharmacopoeia, Volume I, Part III*, 1976)

### Nutritional properties of *Hal* fruit

The smooth yellowish-brown fruit contains brown seeds as well it has a bitter taste. (In villagers, scraped fruit is put into a gunny bag and kept in a water-steam for one day to remove the bitter taste). (Rajapaksha, 1998) Thereafter it is mixed with rice flour and the mixture is used in various traditional preparations including *Hal kenda* (porridge), *Hal pittu*, *Hal helapa*, *Hal guti*, *Hal welithalapa*, *Hal roti*, etc. Digestive carbohydrates, fat, protein, starch, sugar, crude fiber, amylose, amylopectin, moisture contain the flour and it had the high antioxidant potential, low glycemic index and high phenolic content. (J.M.J.K. Jayasinghe, 2019) Scientifically proven the glycemic index of *Hal pittu* prepared from *Hal* flour, the result indicates that *Hal pittu* had a low GI Value ( $67 \pm 7$ ) [with glucose GI value is 48 ( $67/1.40$ )] (FAO/WHO, 1998). Low glycemic index diets are advisable for patients with type 2 diabetes. As well as it may help to lose weight, reduce the risk of cancer and heart diseases. (Recommendations, 2005; Senavirathna, 2005; Traditional and novel foods from indigenous flours: Nutritional quality, glycemic response, 2016)

### Conclusion

It is clear that this plant is a very valuable herb that has been utilizing in the system of indigenous medicine covering a vast range of applications. As well it's suitable for any person of any age to take food items to prepare from *Hal* flour due to its nutritional properties. Most of people are not aware of this herb, though the plant is native of Sri Lanka. As well little details is still known of this plant, this leads to carry on further studies of nutritional properties, pharmacological and therapeutic activities and develop more advanced pharmaceutical preparations for novel medicinal uses of *Vateria coallifera* in the future.

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## A BRIEF REVIEW ON *ITRIFAL E MUQIL*; A POTENTIAL *UNANI* COMPOUND DRUG

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### Introduction

*Itrifal e Muqil* is a *murakkab dawa* (compound drug) used in *Unani* system of medicine from ancient period. *Itrifal* is spoken for three fruits, which are *Haleela* (*Terminalia chebula* fruit), *Baleela* (*Terminalia belerica* fruit) and *Amla* (*Emblica officinalis* Gaertn fruit). Earlier it was believed that *Itrifal* is Indian origin but actually it is Greek origin because in Greek Tri is spoken for three. In *Ilmul Advia*, *Itrifaloon* and *Itrifal* words are used to explain *Itrifal*. *Trifalan* and *Trifaloon* words are also used for three leaves or which poses three leaves or trifoliate. In *Itrifal e Muqil*, the name is due to its chief ingredient *Muqil*<sup>1</sup>.

The different *Unani* classical texts had mentioned different formulae for *Itrifal e Muqil*. From that selected formula for this review contains *Post e Haleela* (*Terminalia chebula*), *Post e Baleela* (*Terminalia bellirica*), *Amla muqasshar* (*Emblica officinalis*), *Muqil arzak* (*Commiphora mukul*), *Maveez munaqqa* (*Vitis vinifera*) and *Asl* (Bee honey). *Itrifal e Muqil* is used in bleeding piles, Haemorrhoids, Dysentery, Constipation, Obesity, Chronic dyspepsia, Dyslipidemia etc. It has *Mulayyen*, *Muhallil e varm*, *Qabiz*, *Habis ud damm*, *Mujaffif*, *Qatil e kirm e shikm* and some other properties<sup>1,2,3</sup>.

### Objectives

1. To give an overview about *Itrifal e Muqil* and its therapeutic values.
2. To evaluate the effectiveness of *Itrifal e Muqil* in several disease conditions.

### Materials and Methods

#### Data collection

Ancient *Unani* texts such *Al Qanun Fil Tib* – Volume 2 and some other authorized pharmacopoeias were used to collect data on *Itrifal e Muqil*. Google scholar, PubMed and MEDLINE databases were used to search Journal articles.

#### Study designs

Explanations for *Itrifal e Muqil* from authentic books and Pharmacopoeias were collected. Overview about *Itrifal e Muqil*, Ingredients of *Itrifal e Muqil*, Method of preparation of *Itrifal e Muqil*, Dose and dosage form of *Itrifal e Muqil*, Actions of each and every single drug of *Itrifal e Muqil* and indications were included in that. Clinical trials of *Itrifal e Muqil* related journal articles were filtered. The journal articles from 2000-2020 were considered as eligible for this review.

## Data base analysis

The final summary was formulated after a thorough reading of all reading materials.

## Results and Discussion

### Main ingredients of *Ithrifal e Muqil*

*Post e haleel e Kabuli (Terminalia chebula), Post e Haleel e zard (Terminalia chebula), Post e Baleela (Terminalia Bellerica), Amila Muqasshar (Embilica officinalis), Muqil Arzak (Commiphora mukul), Maveez Munaqqa (Vitis vinifera), Bee Honey*

Different *Unani* classical texts had mentioned different formulae for *Ithrifal e Muqil*. From those selected formulae for this study contains *Post e Haleela, Post e Baleela, Amla, Muqil, Maweez, and Bee honey*.

*Ali Ibn sena* discussed *Muqil (Commiphora muqul)* is very active (ingredient/plant) in treating *Bawaseer. Saman e mufrit* and *Amraz e jild*. As it shows *Muhalil* (antiinflammatory), *Mulayyen* (laxative), *Munzij* (concoctive), *Habis ud dam* (haemostatic), *Musaffi e khoon* (Blood purifier) and *Musakkin* (analgesic) properties<sup>4,5</sup>. *Muqil* is used in urinary discharges, urinary concretions, tumors, inflammations, tubercular glands in the neck, ascites, asthma, respiratory disorders, gastro intestinal disorders, indigestion, flatulence etc. It helps to remove the bad humors from the body and is effective in different phlegmatic (*Bulghamī*) disorders like obesity, hyperlipidemia, and hypercholesterolemia (WHO). *Muqil* is also used in rheumatoid arthritis, osteoarthritis, sciatica, gout, paralysis, tremors, piles, loss of libido, nervous diseases, and skin diseases. Galen has mentioned it effective in crushing the urinary stones, passing urine properly, removing flatus, and relieving muscular pain. Its smoke opens the uterine os during delivery and eases the process of parturition. Razi has mentioned it useful for plague. *Muqil* resolves solid swelling (*Jamid Waram*). It is useful in intestinal ulcers, and resolves the hard swelling of testis, ovaries etc. Eating *Muqil* is useful in bronchitis, chronic cough, hemorrhoids and cleans up the uterus. It removes the obstructions of kidneys and urinary bladder. *Muqil* is also used externally in swellings, inflammations, wounds, non-healing ulcers, scrofulous, alopecia, scar marks and blemishes of the skin. Also useful in hernia, hydrocoele, ring worm, piles, warts, and proctitis, when used externally<sup>6</sup>.

*Post e haleela (Terminalia chebula)* has *Mushil e akhlath e salasa* (purgation of all *safra, sauda* and *bulghami* humours), *Mulayyen* (laxative), *Muhallil e varm* (antiinflammatory), *Muqavvi e Meda, ama vo Jigar* (strengthen the stomach, intestine, and liver), *Musaffi e khoon* (blood purifier), *Musakkin* (analgesic) and *Qabisath* (astringent) properties<sup>7,8,9,10</sup>. It increases motility of GIT<sup>10</sup>. The fruits of *Terminalia chebula* have been extensively used in *Ayurvedic, Unani* and *Homoeopathic* medicine. It is used in combination with *Bahera* in herbal formulation called “*Triphala*” (three fruits). The dried ripe fruits have traditionally been used in the treatment of asthma, sore throat, vomiting, hiccup, bleeding piles, gout, heart and bladder diseases. Its paste with water is found to be anti-inflammatory, analgesic and has purifying and healing capacity for wounds. It is given as adjuvant herb in chronic fever. It has been used to treat various ailments like hemorrhoids, dental caries, bleeding gums and oral ulcers, diarrhoea, gastroenteritis, malabsorption syndrome, vesicular and renal calculi, neuropathy, paralysis, memory loss, epilepsy, depression, diabetes, tumors, skin diseases, as well as intermittent fever, rheumatism, arthritis, gout, etc. The plant is

reported to have antibacterial, antifungal, antiviral, antioxidant, hepatoprotective, cardioprotective, antidiabetic, hypolipidemic, antispasmodic, and various other activities. The present study was designed to investigate the analgesic and anti-inflammatory activities of the ethanolic fruits extract of the *Terminalia chebula* so as to provide a scientific proof for the activity<sup>11</sup>.

*Post e Baleela (Terminalia bellerica)* has *Mulayyen* (laxative), *Qabisath* (astringent), *Musakkin* (analgesic), and *Muqavvi e Jigar* (strengthening the liver). Half ripe *Baleela* has *Mulayyen* (purgative) action<sup>12,13,14</sup>. These are used as laxative, tringent, anthelmintic and antipyretic. Fruits are useful in treatment of hepatitis, bronchitis, asthma, dyspepsia, piles, diarrhoea, coughs, hoarseness of voice, eye diseases, scorpion-sting and also used as a hair tonic. Pulp of the fruit is useful in dysenteric- diarrhoea, dropsy, piles and leprosy. Half ripe fruit is used as purgative. Kernel of the fruit is narcotic. Gum of the bark is demulcent and purgative. The triterpenoid presents in the fruits possess significant antimicrobial activity. Kernel oil has purgative action and its prolonged use is well tolerated in mice<sup>15</sup>.

*Amla (Embilica officinalis)* has *Mulayyen* (laxative), *Hazimath* (digestive corrective), *Muhallil e varm* (antiinflammatory), *Qabisath* (astringent), *Mubarriid* (cooling) and *Musakkin* (analgesic) properties<sup>14,16</sup>. It has its beneficial role in Identification and Chemical Constituents of Emblica cancer, diabetes, liver treatment, heart trouble, ulcer, anemia and various other diseases. Similarly, it has application as antioxidant, immunomodulatory, antipyretic, analgesic, cytoprotective, antitussive and gastroprotective. Additionally, it is useful in memory enhancing and lowering cholesterol level. It is also helpful in neutralizing snake venom and as an antimicrobial<sup>17</sup>. *Ayurveda, Siddha, Unani* systems of India the fruits, which are sour, astringent, bitter, acrid, sweet and anodyne. Exert several beneficial effects include cooling, ophthalmic, carminative, digestive, stomachic, laxative, dyspepsia, aphrodisiac, rejuvenative, diuretic, antipyretic and tonic. It is used in diabetes, cough, asthma, bronchitis, cephalalgia, ophthalmopathy, dyspepsia, colic, flatulence, hyperacidity, peptic ulcer, erysipelas, skin diseases, leprosy, haematogenesis, inflammations, anaemia, emaciation, hepatopathy, jaundice, diarrhoea, dysentery, haemorrhages, leucorrhoea, menorrhagia, cardiac disorders, intermittent fevers and premature greying of hair (Hair tonic)<sup>18</sup>.

*Ithrifal (haleela, baleela and amla)* act as laxative in chronic constipation and detoxifying agent in colon. Apart from the actions of single ingredients several *Unani* classical texts had mentioned *Ithrifal e Muqil* as a drug for bleeding and non-bleeding haemorrhoids, Obesity, Dysentery, chronic constipation<sup>5</sup> and some other ailments.

## Conclusion

This review indicates that *Ithrifal e muqil* shows appreciating results in several disease conditions and it provides more benefits from each and every ingredient of it. It is more effective compound drug used in *Unani* medicine with easily available drugs.

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## A critical review on pharmacodynamics properties of *Kharjuradi Mantha* and Introducing as an immunity booster drink.

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### Background

According to the Ayurveda, the natural process of preventing diseases and capability to resist the diseases is known as *Vyadhikshamatva* which is dependent on the balanced state of *Ojas*. This strength of the body can correlate with immunity in modern sciences.<sup>[1]</sup> The treatment regime which enhances the quality and amount of *Ojas* is *Rasayana*. Therefore, the drugs, food or any substances which are enriched with *Rasayana* properties, enhance the immunity.<sup>[2]</sup> *Mantha Kalpana* is a unique preparation described in *Ayurveda* which is prepared by using coarsely powdered drugs in one *Pala* quantity and mixed with four *Pala* of cold water.<sup>[3]</sup> According to *Sharangadhara Samhitha* *Kharjuradi Mantha* contains seven ingredients including *Kharjura*, *Draksha*, *Thithrindika*, *Amlika*, *Dadimabeeja*, *Parushaka* and *Amalaki*.<sup>[4]</sup>

### Objectives

- **General Objective** - To study and review the pharmacodynamics properties of ingredients of *Kharjuradi Mantha*.
- **Specific Objectives** - To identify the immunomodulatory properties of *Kharjuradi Mantha* and to introduce the *Kharjuradi Mantha* as an immunity booster drink.



### Methodology

Literature on *Ayurveda* and modern pharmaceutical standardization were reviewed and compiled.

### Results

**Table 1.** Pharmacodynamics properties of ingredients of *Kharjuradi Mantha*



Ingredients	Pharmacodynamics properties (Ayurveda)	Detected Phytochemicals	Bioactivities and Medicinal uses
 <p>1. <i>Phoenix dactylifera</i> (Kharjuara)</p>	<p><i>Madura Rasa, Guru Snigdha Guna, Madura Vipaka, Sheeta Veerya, Vata Pitta Shamaka</i></p> <p><i>Rasayana, Balya, Hridaya, Vajikarana,</i></p>	<p>Flavonoids, Tannin, Alkaloid, Carotenoids, Proteins, Vit B, Carbohydrate</p>	<p>Immunomodulatory, Antioxidant, Anticancer, Hepatoprotective, Anti-inflammatory, Antimicrobial</p> <p>Cough, Fever, Emaciation, Anaemia, Alcoholism. [5]</p>
 <p>2. <i>Vitis vinifera</i></p>	<p><i>Madura Amla Rasa, Snigdha Guru Guna, Sheeta Veerya, Madura Vipaka, Vata Pitta Shamaka</i></p> <p><i>Agni Deepana, Krimighna, Rasyana, Balya, Vajeekarana</i></p>	<p>Flavonoids, Tannin, Vitamins, Malic Acid, Tartaric and Racemic Acids.</p>	<p>Immunomodulatory, Expectorant, Anti-inflammatory, Hepatoprotective,</p> <p>Antioxidant, Anticancer, Antitoxic, Antimicrobial, Laxative, Cardioprotective</p> <p>Cough, Fever, Emaciation. [6]</p>
 <p>3. <i>Oxalis corniculata</i></p>	<p><i>Madura Amla Rasa, Laghu Ruksha Guna, Ushna Veerya, Amla Vipaka, Kapha Vata Shamaka Deepana,, Rasayana</i></p>	<p>Flavonoids, Tannin, Vitamin C, Alkaloid, Proteins, Carbohydrate, Malic Acid</p>	<p>Immunomodulatory, Anti-inflammatory, Hepatoprotective, Antimicrobial, Antioxidant, Anticancer [7]</p>
 <p>4. <i>Tamarindus indica</i></p>	<p><i>Madura Amla Rasa, Ruksha Guru Guna, Ushna Veerya, Amla Vipaka, Tridosha Shamaka Deepana</i></p> <p><i>Rasyana, Balya,</i></p>	<p>Flavonoids, Tannin, Vitamins, Malic Acid, Tartaric and Racemic Acids.</p>	<p>Immunomodulatory, Laxative, Anti-inflammatory, Hepatoprotective</p> <p>Antioxidant, Anticancer, Antitoxic, Antimicrobial, Cardioprotective [8]</p>

Ingredients	Pharmacodynamics properties (Ayurveda)	Detected Phytochemicals	Bioactivities and Medicinal uses
  <p>5. <i>Flacourtia indica</i></p>	<p><i>Madura Amla Kashaya Rasa, Laghu Guna, Sheeta Veerya, Amla Vipaka, Kapha Vata Shamaka Deepana</i></p> <p><i>Rasyana, Madahara Vajeeakarana, Hridaya,</i></p>	<p>Flavonoids, Tannin, Vitamins, Protein, Limonoids</p>	<p>Immunomodulatory, Anti-cancer, Anti-inflammatory, Hepatoprotective, Antioxidant, Antitoxic, Antimicrobial</p> <p>Liver and GIT disorders, Fever, Alcoholism <sup>[9]</sup></p>
  <p>6. <i>Phyllanthus emblica</i></p>	<p><i>Pancha Rasa, Laghu Guna, Sheeta Veerya, Madura Vipaka, Tridosha Shamaka</i></p> <p><i>Rasyana, Balya, Madahara Vajeeakarana, Hridaya, Agni Deepana,</i></p>	<p>Flavonoids, Glycosides, Tannin, Vit C, Protein, Carbohydrate, Phenolic</p>	<p>Immunomodulatory, Anti-cancer, Anti-inflammatory, Hepatoprotective, Nerve-Brain tonic, Antimicrobial</p> <p>Antioxidant, Antitoxic, Diabetes, Fever, Cancer, Alcoholism, Liver disorders <sup>[10]</sup></p>
  <p>7. <i>Punica granatum</i> (Dadima)</p>	<p><i>Madura Kashaya Amla Rasa, Laghu Snigdha Guna, Sheeta Veerya, Madura Vipaka, Tridosha Shamaka</i></p> <p><i>Jvarahara, Rasyana, Balya, Madahara,</i></p>	<p>Flavonoids, ellagic acid, Tannin, Vit C and E, Protein, Carbohydrate, Polyphenol</p>	<p>Immunomodulatory, Anti-cancer, Anti-inflammatory, Hepatoprotective, Neuroprotective, Antioxidant, Antimicrobial, Antidiabetic, Cancer, Skin disorders, Alcoholism, Liver disorders <sup>[11]</sup></p>



## Discussion

According to the pharmacodynamics properties of ingredients of *Kharjuradi Mantha*, *Madura Rasa* and *Amla Rasa* were predominant. Ayurveda has clearly mentioned the different effects of *Shad Rasa* (six tastes) in the human body. According to the basic concepts, drugs and diets having *Madura Rasa* are wholesome to the body, response to the growth of *Rasa* (essence of food), blood, muscles, fat, bone, marrows, semen and *Ojas* (immunity). It promotes the strength, longevity, complexion and alleviate *Pitta*, *Vata* and effects of poison. Drugs and diets having *Amla Rasa*, stimulate digestion and appetite, nourish and energise the body, enlighten the mind, strengthen the sense organ, alleviate *Vata*, good for heart etc. Among the *Guna*, *Laghu Guna* (lightness) was the major attribute. It was explained in the classics *Laghu Guna* provides the lightness and it is easily digestible. It prevents the obstructions of *Srotas* (body channels). Among the main two types of *Veerya*, *Sheeta Veerya* (cold) was predominant. *Sheeta Veerya* drugs provide comfort, stability, wetness, longevity, strength to the body and enhance the *Kapha* as well as the *Ojas*. Most of the ingredients in *Kharjuradi Mantha* were found to be having effects of *Tridosha Shamaka* action. So, it maintains the equilibrium state of body humours as the main objective of Ayurveda. Apart from that *Vata Pitta* and *Kapha Vata Shamaka* actions were omnipresent.

All most the all ingredients are enriched with the therapeutic effects of *Rasayana*, *Nadi-Indriya Balakara*, *Yakrit Uttejaka*, *Hridaya*, and *Agnideepana*. *Rasayana* is the main branch of Ayurveda which promotes longevity by preventing aging and etiopathogenesis of diseases. *Rasayana Karma* is a line of treatment that maintain the optimum level of *Rasa Dhathu* (body fluids) and disrupts the degeneration by interrupting the ageing and regulating the structure and functions of the body. Due to the properties of *Nadi-Indriya Balakara* and *Yakrit Uttejaka* all vital organs are regulated and maintained, metabolism and digestion is stimulated and corrected respectively. The specific therapeutic property of *Hridaya*, the circulation of *Rasa Dhathu* as well as quality and the quantity of *Ojas* is maintained and upgraded as the *Hridaya* is considered as seat of both *Rasa* and *Ojas*.

As per the reviewed data of modern pharmaceutical analysis, ingredients consisted with potential bioactive phytochemicals such as Alkaloids, Glycosides, Flavonoids, Steroid, Phenolic, tannins, Terpenoid, Carbohydrates, Proteins, vitamins and minerals that perform immunomodulatory, antioxidant, anti-inflammatory, analgesic, antipyretic, antimicrobial, hepatoprotective, cardioprotective, nephroprotective, neuroprotective properties etc. It was revealed that, all ingredients of *Kharjuradi Mantha* are consisted with immunomodulatory, antioxidant, anti-inflammatory and antimicrobial properties. Modern scientists have discovered a symbolic relationship in-between *Rasayana*, anti-oxidant and immunomodulatory properties. According to them, *Rasayana* substances exert multidimensional health benefits generally process the strong antioxidant and immunomodulatory activities by free radical scavenging properties. So, *Kharjuradi Mantha* destroy the free radicals and empowers the innate immunity by its immunomodulatory properties.

## Conclusion

According to the reviewed data it can be concluded that, *Kharjuradi Mantha* enhances the *Ojas*, boosts the innate immunity, stimulates the digestion, promotes the body strength and makes the body resistance for

wide range of diseases and protects the vital organs. And also, further chemical and clinical research studies for compound preparation are need to be carried out to validate health benefits of *Kharjuradi Mantha*.

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## A critical review on pharmacodynamical properties of ingredients of the Guducyadi Kvata and identifying the immunity enhancing properties

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### Introduction

*Guducyadi Kvata* (decoction) is a commonly used polyherbal decoction with a wide range of therapeutic spectrum. According to *Bhaisajya Ratnavali* it is a main decoction that is used to treat all types of *Jvara* (Pyrexia). Apart from that it is indicated for *Hrllasa* (Eructation), *Arocaka* (Anorexia), *Cardi* (Vomiting), *Pipasa* (Thirst) and etc. As correlated with the modern concept this decoction has the immunity enhancing effect which in turn gives the capability of treating all types of *Jvara*<sup>[1]</sup>.

*Guducī nimba dhānyāka padmakṇ rakta candanaṃ eṣa sarva jvarāhanti guducyādistu dīpanaḥ hrllāso rocakacardi pipāsā dāhañśanaḥ*<sup>[2]</sup>

Table 01: Information regarding the ingredients of *Guducyadi Kvata*<sup>[3]</sup>

Ingredient	Scientific Name	Used part
<i>Guduci</i>	<i>Tinospora cordifolia</i>	Stem
<i>Nimba</i>	<i>Azadirachta indica</i>	Bark
<i>Dhanyaka</i>	<i>Coriandrum sativum</i>	Seeds
<i>Padmaka</i>	<i>Prunus cerasoides</i>	Stem
<i>Rakta Candana</i>	<i>Pterocarpus santalinus</i>	Heart wood

This decoction was prepared using equal amounts of the ingredients and grinding them into a finely powdered form (*Choorna*) and 12g (1 *Tola*) of that powder is added to 192ml (16 *Tola*) of water and boiling it until it reduces to 1/4<sup>th</sup> of its original volume. Dosage of the decoction is 15-30 ml and is prescribed twice a day for 2-3 weeks period of time. <sup>[4]</sup>.

### Objectives

#### General Objectives

- To study and review the pharmacodynamic properties of the ingredients of the *Guducyadi Kvata* according to Ayurveda and according to modern concepts.

#### Specific Objectives

- To identify the *Vyadhikshamathva* properties of *Guducyadi Kvata*.
- To identify the immunity enhancing properties of *Guducyadi Kvata*.

## Methodology

Analyzing of pharmacodynamic properties of the ingredients of the *Guducyadi Kvata* according to Ayurveda and Modern concepts related to immunity via Ayurveda texts such as Ayurveda Pharmacopoeia, *Kashaya Samgaraya* and research articles

## Results

Table 02: Pharmacodynamic properties of the ingredients of *Guducyadi Kvata* according to Ayurveda

Ingredient	Rasa	Guna	Virya	Vipaka	Dosha Karma and other karma	Indications
<i>Guduci</i>	<i>Tikta</i> <i>Kashaya</i>	<i>Guru</i> <i>Snigdha</i>	<i>Ushna</i>	<i>Madhura</i>	<i>Tridosahara, Jvarahara, Rasayana, Balya, Kasa Svasahara, Krimihara, Kamala-Kushta-Vatarakta Nashaka</i> [5]	<i>Jvara, Trusha, Daha, Kamala, Pandu, Kushta</i> [1], [3]
<i>Nimba</i>	<i>Tikta</i> <i>Kashaya</i>	<i>Laghu</i>	<i>Shita</i>	<i>Katu</i>	<i>Kapha-Pitta hara, Jvarahara, Trushnahara, Kushtanashana, Krimighna</i>	<i>Jvara, Prameha, Kushta, Vrana, Krmī roga</i> [1], [3]
<i>Dhanyaka</i>	<i>Tikta</i> <i>Kashaya</i>	<i>Laghu</i> <i>Snigdha</i>	<i>Ushna</i>	<i>Madhura</i>	<i>Tridosahara, Jvaraghna, Daha- trushna nashana</i>	<i>Jvara, Trusha, Daha, Kushta, Cardi</i> [1], [3]
<i>Padmaka</i>	<i>Tikta</i> <i>Kashaya</i>	<i>Laghu</i> <i>Snigdha</i>	<i>Shita</i>	<i>Katu</i>	<i>Kapha-Pitta hara, Jvarahara, trushna nashana</i>	<i>Jvara, Raktapitta, Kushta, Visarpa, Cardi</i> [1], [3]
<i>Rakta Candana</i>	<i>Tikta</i> <i>Madhura</i>	<i>Guru</i> <i>Ruksha</i>	<i>Shita</i>	<i>Katu</i>	<i>Kapha-Pittahara, Jvara nashana</i>	<i>Jvara, Raktapitta, Daha</i> [1], [3]

The decoction is having predominantly *Pittashamaka Guna* and *Kapha* and *Vata shamaka* actions as well. It can be given for all types of *Jvara, Daha, Tvak Roga* and etc. [1]

Concept of immunity could be correlated to with the term *Vyadhikshamathva*. In order to give this *Vyadhikshamathva* action a medicine should have *Rasayana Guna*. *Rasayana Guna* enhances the nourishment of *Rasa Dhatu* as a result of that, it enhances the physical nourishment of the body, immunity, longevity and slow down the ageing process [6].

Table No: 03 Pharmacodynamic properties of a medicine that should possess in order to give *Rasayana* action<sup>[7]</sup>

<i>Rasa</i>	<i>Guna</i>	<i>Virya</i>	<i>Vipaka</i>
<i>Madhura</i>	<i>Guru</i>	<i>Sheeta</i>	<i>Madhura</i>

Table No: 05 Pharmacologic properties of each ingredient of the *Guducyadi Kvata* in relation to immunity enhancement<sup>[7]</sup>

<b>Ingredient</b>	<b>Chemicals Detected</b>	<b>Property related to immunity enhancement</b>
<i>Guduci</i>	Alkaloids, Steroids, Glycosides, Diterpenoid lactones, Polysac-	Anti-oxidant, Anti-pyretic, Immunomodulatory, Immune enhancing, Anti-microbial, Hepa-
<i>Nimba</i>	Azadirachtin, Nimbin, Nimbidin, Nimbolides Meliacin, Salanin <sup>[8]</sup>	Anti-Inflammatory, Anti-complimentary activity <sup>[1], [3]</sup>
<i>Dhanyaka</i>	Tannins, Terpenoids, Alkaloids, Phenols, Flavonoids <sup>[9]</sup>	Anti- viral, Immuno modulating <sup>[1], [3]</sup>
<i>Padmaka</i>	Flavones, Isoflavones, Palmitic acids, Oleic acids <sup>[10]</sup>	Anti-pyretic, Immuno modulating <sup>[1], [3]</sup>
<i>Rakta Can-dana</i>	Flavonoids, Terpenoids, Phenols, Alkaloids, Saponins <sup>[11]</sup>	Anti-Inflammatory, Anti-microbial, Anti-oxidant <sup>[1], [3]</sup>

This decoction is having anti-pyretic, anti-oxidant, detoxifying, Immunomodulatory actions<sup>[1], [3]</sup>.

## Discussion

When analyzing the pharmacodynamic properties of the *Guducyadi Kvata* it is having *Tikta*, *Kashaya Rasa*, *Guru Snigdha Guna*, *Sheetha Virya*, *Madhura Vipaka* and *Tridosha Shamaka* actions where it depicts the ideal qualities a *Rasayana* medicine when compared. All the ingredients have *Jvaraghna* and *Rasayana* guna as well. According to modern research finding it was found that the ingredients are having Alkaloids, Tannins, Glycosides, Flavonoids anti- pyretic giving anti-oxidant, anti-inflammatory, anti-viral, anti- bacterial along with immuno-enhancing, and immunomodulatory action.

## Conclusion

According the research findings it can be concluded that the *Guducyadi Kvata* having properties of a *Rasayana* medicine which enhances the *Ojas* of the body giving *Vyadhikshamathva*. According to modern researches it was also found several such qualities where it safe guard the body from free radicles and boost the immunity of the body system wise and also in generalized form. So, this is the time to conduct scientific researches and clinical trials on the valuable medicines like this in order to get the maximum use of such valuable medicine in a pandemic situation like this.

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## THE THERAPEUTIC USES OF *DARCHEENI* (*Cinnamomum zeylanicum*) A LITERATURE REVIEW

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### Background

In recent times, there has been an increase demand and wider acceptance for herbal drugs considering them to be natural products having fewer side effects and improved efficacy compared to synthetic drugs. A restriction in usage of synthetic drugs is seen due to its undesired side effects, antibiotic resistance and emergence of resistant pathogenic micro-organisms. Bio active compounds of medically valuable plants are extensively researched as they are chief ingredients in treating many ailments. They are also precursors for many modern drugs. The purpose of this comprehensive review is to produce an extensive knowledge on *Darcheeni* specially focusing on its different species, chemical constituents and its therapeutic potential mentioned in Ayurveda, Unani, Siddha and traditional systems of medicines. It is one of the most promising medicinal herbs belongs to the Lauraceae family. The bark of various cinnamon species is one of the most important spices used worldwide not only for cooking but also in traditional and modern medicines.

### Objectives

1. To study the medicinal uses of *Darcheeni* (*Cinnamomum zeylanicum*) in the view of Ayurveda, Unani, Siddha and traditional system of medicine
2. To study the chemical constituents and therapeutic activities of *Darcheeni* (*Cinnamomum zeylanicum*)

### Methodology

The present study done as literature review by using the classical *Unani* literatures, scientific articles, text books of Unani, Ayurveda and Siddha medicine, internet resources PubMed Google search, Google scholar. Further information was collected from the traditional medical practitioners.

The photochemistry, medicinal use of *Darcheeni* in the concept of traditional view, various methods of medicinal preparations of *Darcheeni*, relationship between some diseases and therapeutic effects of *Darcheeni* used as search strategy and search done in ethno botanical study reports, classical Unani, Ayurveda and Siddha medicinal texts

### Results and Discussion

#### *Darcheeni* (*Cinnamomum zeylanicum*) in Unani, Ayurveda and Siddha System of Medicine

Table No 1: *Darcheeni* in Unani, Ayurveda and Siddha system of medicine

	Unani	Ayurveda	Siddha
<b>Action</b>	<i>Daf e taffun,</i> <i>Jazib, Moharrik, Mulattif, Mufatteh,</i> <i>Mudir e haiz,</i> <i>Mudir e baul,</i> <i>Muharriq e bah,</i> <i>Mufarrih e qalb,</i> <i>Mufarrih e dimagh, Muqawwi e meda,</i> <i>Muqawi e aza e raeesa<sup>(29)</sup></i>	<i>Vishapaha</i> <i>Kanti Vaktra Rujahara</i> <i>Shiroruk Hara,</i> <i>Basti Shodana,</i> <i>Pittala</i> <i>Aruchi</i> <i>Kandu,</i> <i>Amavatha,</i> <i>Shukrahrut,</i> <i>Vataraja arsha,</i> <i>Kantashuddikara</i>	Stimulant, Carminative, Aphrodisiac, Anti-septic, Local anaesthetic, Rubefacient, Stomachic, Nutritive
<b>Uses</b>	Zof e meda (Weakness of stomach), Sual (Cough), <i>Dard e sar</i> (Headache), <i>Idrar e haiz</i> (Menorrhagia), <i>Bakr ul fam</i> (Hallitosis), <i>Zof e bah</i> (Sexual Weakness), <i>Zeequn nafs</i> (Asthma) <i>Ehthibas e baul</i> (Urinary retention <sup>(9,29)</sup> )	Cold, Hiccup, Diarrhoea, Lumbago, Whooping cough, Flatulence, Spermatorrhoea, Diarrhoea, Dysentery, Heart diseases, Fever due to cold <sup>(8,20)</sup>	Snake bite, spider bite, Remove toxin, Cough, Asthma, Abdominal pain, Internal piles, Body hot condition, Peptic ulcer, Menorrhagia, Dysentery, Body pain, Headache, Toothache Vomit, Indigestion <sup>(22)</sup>
<b>Dose</b>	1-2g <sup>(9,11,29)</sup> 375 mg-2g <sup>(16)</sup>	Dried bark 0.5 to 1 g <sup>(2)</sup> powder 1 to 3 g I divided dose per day, Cinnamon oil 2-5 drops once or twice a day <sup>(3)</sup>	Bark powder 65mg-260mg Oil 2-5 drops <sup>(22)</sup>
<b>Side effect</b>	-	Not good for <i>pitta</i> body type <sup>(8)</sup>	Not good for hot temperament <sup>(22)</sup>
<b>Corrective</b>	<i>Kateera, Asaroon<sup>(29)</sup> Roghan e Badam<sup>(11)</sup></i>		

#### Chemical constituents of *Darcheeni (Cinnamomum zeylanicum)*

Cinnamaldehyde<sup>(10,11,12,14,15,23)</sup>, Cinnamate<sup>(14)</sup>, Cinnamic acid<sup>(10)</sup>, Eugenol<sup>(11,12,15,29)</sup>, Phellandrene<sup>(10,11,12,23)</sup>, Coumarin<sup>(12,14)</sup>, Benzaldehyde<sup>(8,10)</sup>, Pinene<sup>(23)</sup>, Linalool<sup>(23,10)</sup>, Terpenes<sup>(14)</sup>, Essential oil<sup>(10,14,29)</sup>, Furfural<sup>(14)</sup>, Camphor<sup>(14)</sup>, Fibre<sup>(14)</sup>, Tannin<sup>(9,10,14,29)</sup>, Mucilage<sup>(9,10,14)</sup>, Sucrose<sup>(10,14)</sup>, Mineral<sup>(14,29)</sup> and Vitamins<sup>(14,29)</sup>



## Pharmacological activities of *Darcheeni* (*Cinnamomum zeylanicum*)

Antiseptic<sup>(6,10,12,13,16,29)</sup>, Antibacterial<sup>(10,15,16)</sup>, Aromatic<sup>(12,10)</sup>, Anodyne<sup>(12,13,14,16,17)</sup>, Antirheumatic<sup>(12,13,16)</sup>, Circulatory<sup>(12)</sup>, Digestive<sup>(3,8,9,12,13,14,16)</sup>, Stimulant<sup>(4,12,13,16,10,29)</sup>, Diaphoretic<sup>(3,4,6,12,13,16)</sup>, Stomachic<sup>(12,29)</sup>, Carminative<sup>(4,6,9,12,13,16)</sup>, Tonic<sup>(12,29)</sup>, Anti-inflammatory<sup>(8,15)</sup>, Alterative<sup>(4,16)</sup>, expectorant<sup>(4,9,13,14,16)</sup>, Anti emetic<sup>(15)</sup>, Nematocidal<sup>(15)</sup>, Mosquito larvicidal<sup>(15)</sup>, Insecticidal<sup>(15)</sup>, Antimycotic<sup>(15)</sup>, Analgesic<sup>(4,6,7)</sup>, Antidiabetic<sup>(6,8,15)</sup>, Warming<sup>(6,13,17)</sup>, Anti-fungal<sup>(16)</sup>, Antispasmodic<sup>(16)</sup>, Anti-viral<sup>(16)</sup>, Astringent<sup>(9,16)</sup>, Anticancer<sup>(15)</sup>, Hypolipidemic<sup>(15)</sup>, Anti-obesity<sup>(3)</sup>, Emmenagogue<sup>(9,13,15,16,29)</sup>, Demulcent<sup>(29)</sup>, Deobstruent<sup>(29)</sup>, Aphrodisiac<sup>(29)</sup> and Diuretic<sup>(29)</sup>

## Conclusion

The most important constituents of cinnamon are cinnamaldehyde and trans-cinnamaldehyde, thus contributing to the fragrance and to the various biological activities. It contains coumarins, acids, essential oil, fiber, tannin, mucilage and volatile contents. There are many authentic scientific research articles which have scientifically proved its beneficial actions in various diseases. *Cinnamon* possesses various therapeutic values like digestive, carminative, neuroprotective, antiseptic, diaphoretic, hypoglycemic, aphrodisiac, Anti-carcinogenic, Anti-microbial and Anti-lipidaemic. According to my literature review *Darcheeni* is a valuable source in medicinal field. It acts as many characters and used for unlimited diseases which can be cured. So this review will help to open the eyes of Pharmaceutical manufactures to synthesis of new drugs and of physicians to their practice.

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## Evaluate the Rasadi Panchaka of Murungadi lepa For Amavata: A Review

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### Introduction

Joint diseases (JD) represent, diseases affect to the joints, tendons, muscles, ligaments and associated structures and occurs with pain, stiffness, inflammation around the joints with varying degrees of disability. Madhavakara (700AD) was the first who described the features of Amavata in Madhava Nidana. It is a disease of Madhyama&Abyanthara Rogamarga hence it is said to be Krichrasadhya or Yapya. Also, it is a disease of Asthivaha and Rasavaha Strotas. According to the clinical features of Amavata, it is very closely resembling with the RA. Amavata is one of the challenging diseases for the physicians due to its chronicity, Incurability, Morbidity and complications. Hence it is more valuable to find ayurveda treatment for this disease. Also, prevalence of this disease is such a great. In present study selected as trial Ayurveda compound, mention in Deshiyachikitsa Sangrahaya, Amavata Chikitsa page number 689. It is coming under Upanahasveda. Upanahasveda mention in all Ayurveda authentic, according to the Susruta Samhitha mention, Paste is a initial treatment which is common to all inflammatory.

### Objective

To Evaluate the Rasadi Panchaka of Murungadilepa in the management of Amavata

### Methodology

This study conducts as a review study. Qualitative data will be collected by the classical Ayurveda textbooks and research papers publish in ResearchGate and PUBMED.

### Result

Murungadilepa mention in Deshiyachikitsa Sangrahaya, Amavata Chikitsa page number 689. Murungadilepa consist of Moringa bark (Moringa oleifera), fresh Rhizome of Inguru (Zingiber officinale), Dried Athasi seeds (Linum usitatissimum), Gallic (Allium sativum), Savidalunu and kasis. This compound Drug is use in external application as a Upanahasveda. Considering about each Drugs systemic action, Moringa oleifera has Vidahi, Shotha Hara, Viddradhipachana, Zingiber officinale has Shithaprashamana, Vedanasthapana, shotha hara action, Linum usitatissimum has Shothahara action, Allium sativum has Rakthokleshakaa, shothahara, Vedanasthapaka, Vishanashaka, Saindavalawana (Sodium Chloride Impura) has Shula nashana, Thridoshashamaka action, Kasisa (Iron sulphate) has Vathagna, shothagna, deepana, pachana action. Considering these drugs action, they have similar actions, shotha hara, Vedanasthapaa actions. Hence this compound drug act as a shothahara&Vedanasthapakalepa. Sandhiruk (joint pain), Sandhishotha (joint swelling) are the common symptoms in Amavata. Also, analysis rasa of the compound drug has 29% Thiktha rasa, 22% of Katu rasa, 14% of Madura, Amla, Lavana Rasa, & 7% of Kashaya Rasa. Considering About Guna compound drug has 22% Thikshna& Gru guna,

21% Laguguna, 4% of Ruksha&SnigdhaGuna, & 7% of pichchilaguna. Veerya of Murungadilepa has 86% Ushnaveerya. & 67% Kutu Vipaka. These Properties of Compound Drug doing grate work for give the drug action of Shotha Hara &VedanaSthapana

### **Discussion and Conclusion:**

According to the above description Murungadilepa hasaction of Shotha Hara &VedanaSthapanaushnarooksha, thikshnaguna&ushnavipaka. So this durg can act against Ama pachana& also its properties guru,snigdha,ushna,pichchila action have vatashamakaguna. Hence can conclude MurungadiLepa good for Amavatachikithsa. There will be doing clinical trial for get confirmative Knowledge about action of MurungadiLepa.

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# **HEALTH & INDIGENOUS MEDICINE**

## A REVIEW ON *IRSAL E ALAQ* (LEECH THERAPY) – A BLOODLETTING REGIMEN OF *ILAJ BIT TADBEER* (REGIMENAL THERAPY)

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### Background

According to Unani system of Medicine, Bloodletting is based on the concept of Humoral imbalance. Majority of diseases are caused by endogenous factors by excessive accumulation of morbid humors. Bloodletting is a method of general evacuation which removes the excessive quantity of humours present in the blood vessels. Bloodletting in the form of *Fasd* (Venesection), *Irsal-e-Alaq* (Leech therapy) and *Hijama bish Shart* (Cupping with scarification) is carried out for general and surgical diseases (Lone AH et al., 2011).

### Objectives

- To give an overview on the concept of *Ilaj-bit-Tadbeer* (Regimenal therapy), *Tadabeer-e-Istefragh-e-Dam* (Bloodletting Regimen) and *Irsal-e -Alaq* (Leech therapy)
- To obtain scientific evidences on the effectiveness of *Irsal-e -Alaq* (Leech therapy)

### Methodology

A literature review was carried out in Unani classical text books to give an overview on the concept of *Ilaj-bit-Tadbeer*, *Tadabeer-e-Istefragh-e-Dam* and *Irsal-e -Alaq*, and electronic search was carried out using Google Scholar and PubMed in order to obtain scientific evidences on evaluation of the effectiveness of *Irsal-e-Alaq*.

### Results and Discussion

#### ***Ilaj bit Tadbeer* (Regimenal Therapy)**

Regimenal therapy include changes in diet, physical exercise, lifestyle modification and measures to do *Tanqiya* (eliminate) the (morbid humours) from the body or *Imala* (divert) them by Cupping, Leeching, Venesection, Massage, Purgation, Emesis, Diuresis, Enema, Diaphoresis, Expectoration, Counter Irritation and Sitz Bath etc. Some other regimens are also used for elimination/ diversion of morbid material or resolution of the inflammation, like Turkish Bath, Irrigation and Fomentation (Taher MA et al., 2017).

#### ***Tadabeer Istefragh e Dam* (Bloodletting Regimens)**

Bloodletting is a method of general evacuation. It removes the excessive quantity of humours present in the blood vessels (Itrat M et al., 2013). Bloodletting in the form of Venesection, Leech therapy and Cupping with scarification is an essential part of Unani System of Medicine for general and surgical diseases.

It has been utilized for preventive as well as therapeutic measures for thousands of years by ancient Unani physicians (Lone AH et al., 2011).

Bloodletting is safer when the diseases not yet befallen the patient. It must be avoided in the initial stages of a disease because it renders the humours tenuous, and makes them become dispersed throughout the body and come to be admixed with healthy blood (Gruner O and Cameron A, 1929).

### ***Irsal-e-Alaq (Leech Therapy)***

'*Alaq*' is an Arabic word, which is synonymous for leech and the process of leech application is termed as *Taleeq* (Khan JA and Parray SA, 2018). *Irsal e Alaq* (Leech or Hirudo therapy) is a method of bloodletting which involves the withdrawal of blood in a considerable quantity from the body with the help of Leeches (Lone AH et al., 2011).

### **Classification of Leeches**

Eminent Unani physicians have advocated the use of non-poisonous leeches and stated their identification and differential characteristics in detail (Khan JA and Parray SA, 2018).

### **Chemical Composition of Leech Saliva**

A number of pharmacologically active substances have been found in leech saliva like; Hirudin, Calin, Hyaluronidase, Bdelin, Destabilase, Eglin, Decorsin, Hirustasin, Ghilanten, Guamerin, Piguamerin, Gelin, Platelet Activating Factor Antagonist and Bufrudin (Khalique A et al., 2016)

### **General Indications of *Irsal-e-Alaq* (Leech Therapy)**

Skin disorders such as Ring worm infection, Eczema, Alopecia, Tinea capitis & Chronic non healing ulcer, ENT diseases, Genito urinary diseases, Diseases of head, Diseases of breasts, Scrofula, Joint diseases, Sciatica and Cancer (Khan JA and Parray SA, 2018).

### **Contraindications of *Irsal-e-Alaq* (Leeching Therapy)**

*Taleeq* is contraindicated at the following sites: Stomach, epigastric region, around the spleen and liver, on buttocks, old aged and in lean individuals (Khan JA and Parray SA, 2018).

### **Complications of *Irsal-e-Alaq* (Leeching Therapy)**

Complications were divided into five categories including infection, allergy, prolonged bleeding, migration, and others (Pourrahimi M. et al., 2019)

### **Mechanisms of action**

According to Unani Medicine, leech therapy works on the principles of *Tanqiya-e-mawad* (Evacuation of morbid humors) and *Imala-e-mawad* (Diversion of humors). The effectiveness of this therapy may also be attributed to the *Musakkin* (sedative) and *Muhallil* (anti-inflammatory) actions of saliva of leeches (Alam SS et al., 2016)



## **Preservation of Leeches**

The leeches are to be preserved in the fresh spring water. The water needs to be changed every day or twice daily depending on the temperature (Munshi Y et al., 2008)

## **Preoperative procedure of *Irsal-e-Alaq* (Leech Therapy)**

Leeches should be collected preferably a day earlier. They should be held upside down to empty the stomach and sponged clean of the dirty viscid slime. Afterwards they are fed on a small quantity of blood from a goat or some other animal (Gruner O and Cameron A, 1929; Sina I, 1993)

## **Main operative procedure of *Irsal-e-Alaq* (Leech Therapy)**

The part to be treated should be washed with a solution of borax and rubbed until red. Leeches should be washed first and then applied. When the leeches get distended, they should be detached by dusting salt, borax or the ashes of burnt flax. In order to render the bites harmless, the treated area should be cupped to draw out some more blood (Gruner O and Cameron A, 1929; Sina I, 1993)

## **Post-operative procedure of *Irsal-e-Alaq* (Leech Therapy)**

If bleeding does not stop by itself, the bites should be dusted with burnt galls, powdered lime or ashes of powdered broken pottery, or some other styptic applied (Gruner O and Cameron A, 1929; Sina I, 1993)

## **Scientific evidences on the effectiveness of *Irsal-e-Alaq* (Leeching).**

1. Nigar Z. et al., (2011) evaluated the efficacy of *Taleeq* in Dawali and to provide safe & cost effective alternative treatment. From the results, researchers concluded that *Taleeq* was safe & well tolerated and has encouraging potential in prevention of complications of varicose veins.
2. Hilal R. et al., (2016) have conducted a study and have evaluated the effect of leeching in patients of osteoarthritis of knee.
3. Iqbal A. et al., (2018) carried out a study which was single group open clinical study. Leech therapy showed excellent results in symptomatic relief in 31 % of patients and complete cure in 9% without recurrence of the disease. 60% of the patients show mixed response of transient relief in symptoms.
4. Iqbal A. et al., (2018) have conducted a study to evaluate the effect of Leech therapy on Nar e Farsi (Eczema). It revealed that Leech therapy is safe, effective and of short duration therapy.

## **Conclusion**

It can be concluded that, it is evident that *Irsal-e-Alaq* can be used effectively for the management of general diseases and in various surgical traumatic conditions. Numerous active pharmacological ingredients which have been found in leech saliva are responsible to reduce blood coagulation, dissolve thrombi, reduce cholesterol and sugar content in blood, decrease blood pressure, improve the immune system, diminish oedema and improve microcirculation respectively. According to these findings, it may be suggested that leech therapy can produce better results either single therapy or as an adjuvant therapy with drug therapy for above mentioned general and surgical diseases.



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## Preparation of patient information banner on factors effect on *Shukrakshaya* (Oligospermia)

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### Background

*Shukrakshaya* or *Ksheenashukra* literally means low *Shukra* (sperm) count. *Charaka Samhita* has mentioned *Shukradhatu Kshaya Lakshana* in *Sutrasthana* (Sharma 2014) and its *Chikitsa* in *Sharirasthana* (Sharma, 2014). This condition can be closely correlated with oligospermia in modern science.

Oligospermia is defined as sperm concentration of less than 15 million sperm per millilitre. The World Health Organization (WHO) classifies sperm counts at or above 15 million sperm per millilitre (mL) of semen as average. Anything below that is considered low and is diagnosed as oligospermia (Healthline, 2018).

Oligospermia is the commonest cause of male subfertility (Healthline, 2018). In most of the cases, this can be controlled well by proper dietary advisers, lifestyle modifications and correction of environmental factors. In Ayurveda texts, separate chapters are allocated for provide such advisers (Kulkarni, 2010). In Ayurveda advisers on *Pathya Apathya Ahara Viharana* (wholesome and unwholesome foods and behaviours) is a major part of the management.

In the *Streeroga Prasutitantra* (Ayurveda Gynaecology Obstetrics) clinic established at the National Ayurveda Teaching Hospital, Borella considerable number of cases are attended to the subfertility treatments. Out of those couples, some of the male partners are needed support to improve the quality and the quantity of their seminal fluid or treatment for oligospermia. Benefits of Ayurveda treatments on sperm parameters are already proven by some clinical trials (Jandial, 2010; Chouhan et al., 2018; Verma et al., 2018). Even though, advisers provide in clinical setup, verbal information alone may not be always effective. Hence, it was decided to design a banner with the information on factors effect on *Shukrakshaya* (oligospermia) which believes to be effective as an information source for the cases who are searching diet and lifestyle support for improve sperm parameters.

### Objective

Preparation of patient information banner on factors effect on *Shukrakshaya* (Oligospermia)

### Methods

In June 2020, we designed a protocol titled “Environmental, behavioural and dietary risk factors on *Shukrakshaya* (oligospermia)”. This study obtained ethical approval by the Ethics Review Committee of the Institute of Indigenous Medicine, University of Colombo (NO: ERC/20/106) for conducting a case

control study at National Ayurvedic Teaching Hospital, Colombo, Sri Lanka. As a part of this research, this informative banner was designed.

### Methodology of the development of the banner

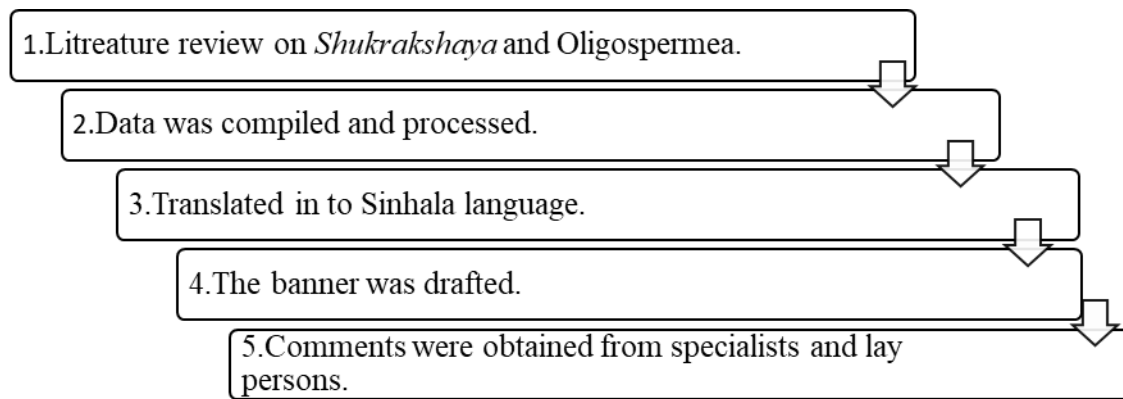


Figure 1 – Steps followed to design the banner

1. Ayurveda and modern literature study was done via research papers, text books and internet. *Pathya Ahara* and *Vihara* for *Shukrakshaya* (wholesome foods and behaviours for oligospermia), *Apathya Ahara* and *Vihara* for *Shukrakshaya* (unwholesome foods and behaviours for oligospermia), *Shukrakara Ahara* and *Vihara* (foods and behaviours which can increase sperm count) were considered as Ayurveda literature. Risk factors on oligospermia were considered as modern literature.
2. Collected data was processed and compiles in meaningful manner. Repetitions and un relevant data to Sri Lankan society were removed.
3. Terms were translated to Sinhala language (most common language in Sri Lanka) and converted to easily understandable words.
4. Drafted banner was shared with few people in the society to identify understandable and effectiveness of the message convey by the banner. Two persons with the medical background, one person in education field, and two lay persons were invited with their consent. They all were well understanding of Sinhala language and sufficient time was given for them to comment. Comments were recorded and revised the banner material accordingly.
5. Final banner was developed with a graphic designer and it was printed in a banner paper size of 5 feet of length and 3 feet of width.

### Publication of the banner

Banner was published at the premises of OPD *Streeroga Prasutitantra* (Ayurveda Gynaecology Obstetrics) clinic of National Ayurvedic Teaching Hospital, Colombo with the permission of hospital authorities.



Figure 2 - Patient information banner on factors effect on *Shukrakshaya* (Oligospermia)

By this study, we defined and pilot tested an easy-to-use development process of use patient information banner. Many published research articles were collected by the literature review (Kulkarni, 2010; Jandial, 2010; Chouhan et al., 2018; Verma et al., 2018; Sreejith & Prathibha, 2014). Dietary, behavioural and environmental risk factors were identified by those studies which could be adopted to educate local population of Sri Lanka who were in need of fertility.

Ayurveda has also mentioned about '*Shukrakara Ahara and Vihara*' (foods and behaviours which can increase sperm count) (Kulkarni, 2010; Sreejith & Prathibha, 2014). Some recommended *Aushadha* (drugs) can be taken as foods for our local society (ex: *Amla*, *Ardra*, *Shatavari*). The banner was designed according to results of this research (Ayurvedic and modern risk factors) and further findings from internet. Some research findings were neglected for designing the banner, because some factors were not practical and not common to Sri Lankan society. The banner was included recommended foods and behaviours and contraindicated foods and behaviours to increase male fertility. Some of the images were also included to make the banner more eye catching and colourful.

This document was prepared in Sinhala language which was the national language (Wikipedia, 2021) and the commonly speaking by the society. Collected materials were re organized after the discussions held with the peers. Comments were re-evaluated by the research team and finalized the document.

At the final stages of the study, it was identified this informative banner would be helpful to all the fertility treatment searching couples irrespective of *Shukrakshaya* (oligospermia). Further, it was a user friendly and budget friendly information method as we could advice our clients to keep a photograph image of the banner in their smart phone. Scientific methods of developing such informative documents were identified while conducting this study. It was decided to further improve designed document with those methods in future.

## Conclusion

This banner can be used as a patient information media on factors effect on *Shukrakshaya* (Oligospermia). Further male fertility enhancement diet and lifestyle awareness also could be obtained.

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# SYSTAMATIC REVIEW ON AYURVEDA INERVENTION FOR ENHANCING THE IMMUNITY OF CHIDREN

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## Background

A systematic review attempts to collate all the empirical evidence that fits pre-specified eligibility criteria in order to answer a specific research question. It uses explicit, systematic methods that are selected with a view to minimizing bias, thus providing more reliable findings from which conclusions can be drawn and decisions made (Antman et al 1992, Oxman and Guyatt 1993).<sup>(1)</sup> The immune system is very complex, and contains numerous types of cells and proteins that function to fight off infections and keep the body healthy. When etiological factors come in contact with the body they try to produce disease. At the same time the body tries to resist the disease. This power of the body, which prevents the development of diseases or resists a developed disease, is called Immunity.<sup>(2)</sup> Ayurveda has propounded the concept of immunity as *Vyadhikshamatwa*<sup>(3)</sup> Acharya Chakrapanidatta has interpreted the term *Vyadhi-ksamatwa* as *Vyadhi bala Virodhitwa* and *Vyadhyutpada Pratibandhakatwa*. Three types of *bala* (*Vyadhiksamatva* or immunity) in Ayurveda <sup>(4)</sup> ,*Sahaja, Kalaja bala, Yuktikrita*. Considering knowledge about the “Ayurveda intervention to enhance immunity of children” is more helpful to health care services, drug manufactures, therapists and other health care providers. And also doing systematic review, analyzing the result (such as percentage of cure, adverse effects, validity of the treatment and time that required to cure...etc.) And giving beneficial output, people may force to studying these things and also they may inferred more broadly than individual studies the condition.

## Objective

To collect scientific research data on Ayurveda intervention for enhancing the immunity of children and to analyses and arrange the data in systematic manner.

## Methodology

We conducted a systematic review in accordance with the methods recommended in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. Search strategy- Using electronic searching, a literature review was performed from the electronic databases inception from 2001 January to 2021 July in the MEDLINE, AMED, PubMed, Research Gate, and EMBASE. The following search terms were used Ayurveda, Children, Immunity, immunization, Jadad score, and Systematic review. The references of all included articles were also checked manually to identify additional eligible studies. Inclusion and exclusion criteria -The following criteria were used for inclusion in this study, Type of study: randomized controlled trials, Population: children under 16 year ,Language: In English. Exclusion criteria: the types of articles excluded from the analysis were reviews, retrospective studies, observa-

tional studies, case reports, animal studies, studies conducted on adults, unrelated studies, duplicate reports and nonrandomized trials. Quality assessment and publication bias -For each study, trial design, randomization, blinding, dropout rate, inclusion and exclusion criteria details of treatment method and control groups, main results were extracted from collected data and entered into per structural tables. Statistical analysis will be done using five point JADAD SCORE and summarized the results regarding to the topic. Clinical trials with 3 or 5 points were considered high quality.

## RESULTS

The search strategy generated a total of 70 researches .After initial screening of searches, 53 papers were retrieved for further evaluation. Out of that finally 13 RCT research papers were eligible for inclusion. Methodological quality of above 13 clinical trial based researches under the topic of Ayurveda intervention for enhancing the immunity of children were assessed by 5 point jaded score. According to Jadad scale any RCT able to complete  $\geq 3$  points consider as high quality trials and  $\leq 2$  points consider as low quality trials based on domains under risk of bias.

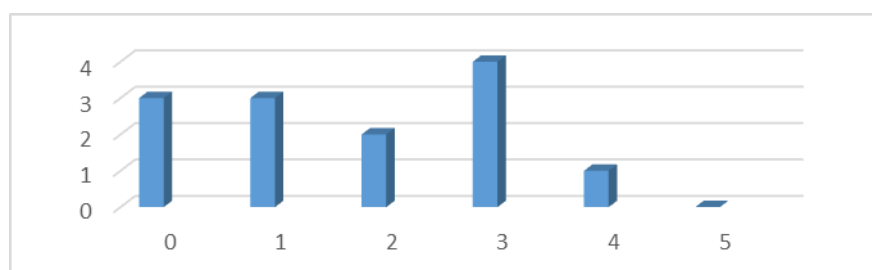


Fig 2 Final outcome of risk of bias assessment

## Discussion

In Ayurvedic texts, various acharays described countless useful dravya, formulations (*yogas*), mode of conducts for adults to enhance immunity (*bala* or *vyadhikshmatva*), similarly for healthy *ksheerapa* (infantile period), *ksheerannada* (1-2years age period) and *annada-awastha* (age period from 2-16 years). Acharya Kasyapa describe a special formulation by the name of “Lehana”, for this purpose which enhances immunity and also fulfill the nutritional requirements,thus minimizes infection episodes. The facts stated about lehana are as under - .To enhances growth & development by providing sufficient nutrition. 2. Promote health, complexion and strength (immunity). 3. Protect from various infections along with improving intellect and speech (delayed milestone).

In this study,

Overall 70 studies were recorded and 13 out of it had been conducted as Randomized Control Trials (RCTs) and 34 were review articles. But only 13 studies were included for the quality assessment. 38% out of all, were high methodological quality trials which obtain  $\geq 3$  points on Jadad scale.

Shailaja Uppinakuduru (2021) <sup>(6)</sup> aimed to evaluate Effect of *Swarnamrithaprashana* on Promotion of Immunity in Children on his study which obtain highest points on this study. According to this Pharmacological and clinical trials on *Suvarna Bhasma* proved that it helps to build immunity and cognition in children. Toxicological studies reveals that classical preparations are safe for long time use. Modern researches on

gold and gold compounds also support the *Suvarnaprashana* concept of Ayurveda. So there is need of today to update the current immunization schedule with *Suvarnaprashana* in child.

## Conclusion

The immunity start develop and mature, during fetal life, and just after the birth, to increase the immune system in children we have to started focus from the antenatal period. Just after the birth use the honey and *gritha* to stimulate the immune system of the new born. Gold is proved for its immunomodulatory effects, we should use different Lehana for enhances immunity and to minimizes infection episodes. Ayurveda have good approach to enhance the immunity of child, but there is no qualitative studies conducted regarding this topic. . For maintain higher quality and global acceptance, further studies must done based on recommended standard methodological process. Overall studies conclude that Ayurveda management for inducing immunity very well in children.

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## Therapeutic Potentials of *Rasna Thrayodasha Kashaya* . A Review

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### Introduction

*Kashayas* are main type of internal drug administration. One of them, *Rasna Thrayodasha kashaya* is a polyherbal Ayurvedic formulation. It contains thirteen ingredients; *Alpinia calcarata*, *Ricinus communis*, *Asparagus racemosus*, *Barleria prionitis*, *Tragia involucrate*, *Adhatoda vasica*, *Tinospora cordifolia*, *Cedrus deodara*, *Aconitum heterophyllum*, *Terminalia chebula*, *Cyperus rotundus*, *Hedychium spicatum*, and *Zingiber officinale*. It can use in the treatment of inflammation and pain related to *Amavata* which may be correlated with Rheumatoid arthritis<sup>[1]</sup> according to the allopathic medicine and other joint related disorders. As per the scientific researches, all ingredients in *Rasna Thrayodasha kashaya* have been identified as plants with therapeutic effects such as, analgesic, anti-inflammatory, and anti-arthritic. etc. A Review of those findings through the basic principles of Ayurveda may further confirm the suitability of *Rasna Thrayodasha kashaya* in the prevention of joint disorders.

### Objectives

This study aims to provide information about the therapeutic potentials of of *Rasna Thrayodasha kashaya* and Pharmacodynamic properties of the ingredients.

### Methodology

Existing Data of the *Rasna Thrayodasha kashaya* referred as *Rasna Kwatha* were collected from authentic Ayurveda texts, published research articles, and other relevant texts, scientific journals, and other web sources about the pharmacodynamic activities of *Rasna Thrayodasha kashaya*.

### Results and Discussion

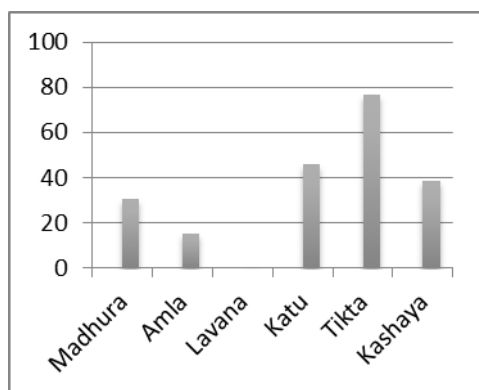
S. N	Sanskrit	Latin name	Rasa	Guna	Veerya	Vipaka	Doshagna
1	Rasna	<i>Alpinia calcarata</i>	Tikta	Guru	Usna	Katu	Kaphava-tahara
2	Eranda	<i>Ricinus communis</i>	Madhura	Guru Snigdha	Usna	Madhura	Vatahara
3	Shariva	<i>Asparagus race-mosus</i>	Madhura	Guru Snigdha	Sita	Madhura	Thidosha-nashana
4	Sahacara	<i>Barleria prionitis</i>	Madhura Tikta	Snigdha	Usna	Katu	Kaphahara

S. N	Sanskrit	Latin name	Rasa	Guna	Veerya	Vipaka	Doshagna
5.	Duhsparsa	<i>Tragia involu-crata</i>	Katu	Ushna	Usna	Katu	Vatakara
6.	Vasa	<i>Adhatoda va-sica</i>	Tikta Kashaya	Laghu	Sita	Katu	Kaphapitta-hara
7.	Amrutha	<i>Tinospora cordifolia</i>	Tikta Kashaya	Laghu	Usna	Madhura	Thridoshasha maka
8.	Devadaru	<i>Cedrus dcodara</i>	Tikta	Laghu Snigdha	Usna	Katu	Vatahara, Kaphahara
9.	Athivisha	<i>Aconitum het-erophyllum</i>	Tikta, Katu	Laghu, Ruksha	Usna	Katu	Kaphapitta-hara
10.	Abhaya	<i>Terminalia chebula</i>	Kashaya, Katu, Tikta, Amla, Madhura	Laghu, Ruksha	Usna	Madhura	Sarvadosha-prashamana
11.	Ghana	<i>Cyperus ro-tundus</i>	Tikta Katu Kashaya	Laghu, Ruksha	Sita	Katu	PittaKapha-hara
12.	Shati	<i>Hedychium spicatum</i>	Katu, Tikta Kashaya	Laghu Tikshna	Usna	Katu	Kaphava-tagna
13.	Nagara	<i>Zingiber offic-inale</i>	Katu	Laghu Snigdha	Usna	Madhura	Vatakapha-hara

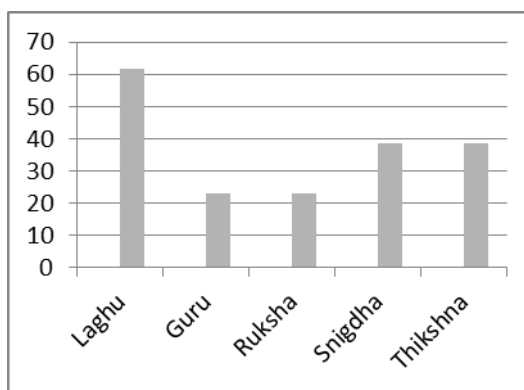
**Table 1.** Pharmacodynamic properties of the ingredients of *Rasna Thrayodasha kashaya* <sup>[2]</sup>

In present study *Tikta rasa* (76.92%) was prominent in Rasna 13 kashaya. *Katu rasa* (46.15 %) and *Kashaya rasa* (38.46%) were respectively prominent. Highlighted Veerya and Vipaka were Ushna veerya (76.92%) and Katu vipaka (61.54%) correspondingly.

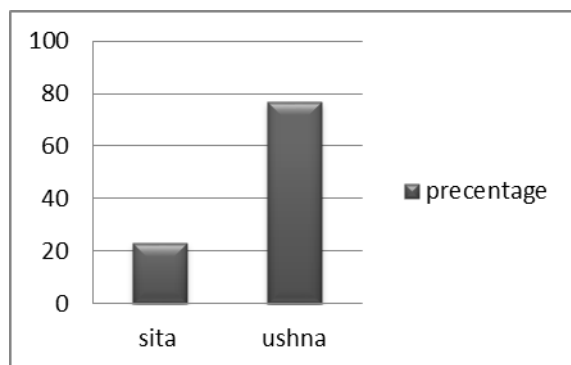
*Rasna Thrayodasha kashaya* has predominantly *Tikta rasa* (Bitter taste) (76.92%). *Tikta rasa* can transfer the medicinal effect through minute channels quickly and avoid the *srotasavarodhana*. It tends to reduce *Kapha* and *Pitta* quality. The prominent veerya is *Ushna veerya* (hot potency) (76.92%). It leads to pacify *Vata dosha*. Thus it leads to relieve the pain which responsible by *Vata Dosha*. Prominent vipaka is *Katu Vipaka* and helps to *agnideepana* and *amapachana*. Thus it removes the *srotasavarodhana* and leads to avoid ama production inside body and prevent from further leads for disease manifestation.



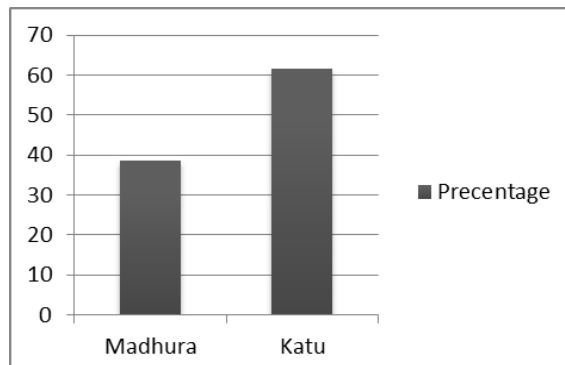
**Figure1.** Rasa of the *Rasna Thrayodasha kashaya*



**Figure2.** Guna of the *Rasna Thrayodasha kashaya*



**Figure3.** Veerya of the *Rasna Thrayodasha kashaya*



**Figure 4.** Vipaka of the *Rasna Thrayodasha kashaya*

Latin name	Biological activity (In Human Being)	References
<i>Alpinia calcarata</i>	Analgesic, anti-inflammatory, anti-arthritis	[3],[4]
<i>Ricinus communis</i>	Analgesic, anti-inflammatory, anti-arthritis	[5],[6]
<i>Asparagus racemosus</i>	Analgesic, anti-inflammatory, anti-arthritis	[7], [8], [9]
<i>Barleria prionitis</i>	Analgesic, anti-inflammatory, anti-arthritis	[10]
<i>Tragia involucrata</i>	Analgesic, anti-inflammatory, anti-arthritis	[11], [12]
<i>Adhatoda vasica</i>	Analgesic, anti-inflammatory, anti-arthritis	[13], [14]
<i>Tinospora cordifolia</i>	Analgesic, anti-inflammatory, anti-arthritis	[15], [16]
<i>Cedrus deodara</i>	Analgesic, anti-inflammatory, anti-arthritis	[17]
<i>Aconitum heterophyllum</i>	Analgesic, anti-inflammatory, anti-arthritis	[18],[19]
<i>Terminalia chebula</i>	Analgesic, anti-inflammatory, anti-arthritis	[20],[21]
<i>Cyperus rotundus</i>	Analgesic, anti-inflammatory, anti-arthritis	[22],[23]
<i>Hedychium spicatum</i>	Analgesic, anti-inflammatory, anti-arthritis	[24]
<i>Zingiber officinale</i>	Analgesic, anti-inflammatory, anti-arthritis	[25], [26]

All the plants listed above are being the ingredients of *Rasna thrayodasha kashaya*, which is highly effective on a different kind of Arthritis. In the last few decades, the pharmacological activities of medicinal plants are carried out globally towards analgesic; anti-inflammatory activities; anti-arthritis according to the research findings.

### Anti-arthritis

In other study was discovered the anti-arthritis effects of *Alpinia calcarata* on Freund's adjuvant induced arthritis in rats [3].

### Anti-inflammatory

In a previous study, the *Adhatoda vasica* extracts were administered orally in dextran-induced inflammation methods in rats [13].

### Analgesic effect

The root extracts of *T.involucrata* also exhibited analgesic activity in rodents and the extracts were found to significantly increase the tail-flick reaction time in rats [11]. In a previous study, the analgesic activity of *Cyperus rotundus* was evaluated by the tail-flick method for mice and the time of reaction to pain stimulus was taken increased [22].

According to the modern sciences, 100% of ingredients have analgesic, anti-inflammatory, and anti-arthritis activities and those have been proved by experiment studies. This *Kashaya* is prominently use in Arthritis cases in clinical practice and anti-inflammatory, analgesic and anti arthritis properties further leads to reduce pain, and further diseases manifestation.

### Conclusion

All ingredients of *Rasna thrayodasha kashaya* have a beneficial effect on analgesic, anti-inflammatory, and anti-arthritis and it can use for arthritis conditions.

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## AN OVERVIEW ON INDIGENOUS FRUITS OF SRI LANKA

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### Background

Sri Lanka is blessed with a huge variety of indigenous fruits which come in different colours, tastes and nutrition. These fruits are loaded with health boosting and disease fighting nutrients. Fruits are most favorable food for mankind and they take part in multifunction of the human body. Regular consumption of fruits, vegetables, whole grains, and other plant foods has been negatively correlated with the risk of the development of some diseases. Day to day intake of fruits may help to improve the health and immunity. Since ancient time people consume fruits as their main meal and get rid of diseases with the fruits. Fruits mean not only the flesh but also its outer covering and seeds. Many fruits contain its main action on its seed and peel.

### Objectives

1. To discover the values of fruits and its relationship between specific diseases
2. To review recent scientific evidences of chemical composition, therapeutic actions and uses of indigenous fruits of Sri Lanka

### Methodology

A literature search was carried out to review articles and to gather the information regarding indigenous fruits of Sri Lanka in the view of chemical composition and recent scientific evidences of therapeutic actions and uses using Google scholar and PubMed databases.



## Results and Discussion

Name of the	Chemical composi-	Therapeutic actions	Therapeutic uses
<b>Wood apple</b> <i>Limonia acidissima</i>	Protein, Fat, Carbohydrate, Dietary fiber, Phosphorus, Magnesium, Calcium, Vitamin C, Riboflavin, Thiamine, Beta-carotene	Anti-inflammatory, Antipyretic, and analgesic activity (Ahamed et al., 2008)  Hypoglycemic activity, Anti-tumor, Larvicidal and Anti-microbial activity, and Hepato-protective activity (Vidhya and Narain, 2011)	Unripe state: halting diarrhea and dysentery and for effective treatment for hiccough, sore throat, and disease of the gums (Mondal et al., 2002).
<b>Passion fruit</b> <i>Passiflora edulis</i>	Carbohydrate, Vitamin A, Vitamin C, minerals, and Fiber (USDA Food Composition Databases, 2019)  Flavanoids (Rotta et al., 2019)  Triterpenoids (Yuan et al., 2017)  Alkaloids (Yuan et al., 2017)	Analgesic Activity, Anti-Inflammatory Activity, Antimicrobial Activity, Anti-Hypertensive Activity, Hepatoprotective and Lung-Protective Activities, Hypolipidemic Activity, Antidiabetic Activity, Antidepressant Activity and Antitumor Activity (He X et al., 2020)	Tonic, Digestive, Sedative, Diuretic, Antidiarrheal, Insecticide in traditional medicine for the treatment of cough, dry throat, constipation, insomnia, Dysmenorrhea, Colic infants, Joint pain, and Dysentery (Dhawan K et al., 2004)  Diabetes (de Araújo et al., 2017)  Hypertension (Zibadia et al., 2007)  Asthma (Watson et al., 2008)
<b>Custard apple</b> <i>Annona squamosa</i>	Phenolic, Flavonoid, Sulfated Polysaccharide, Tannins and Triterpenoids (Shehata MG et., 2021)	Antioxidant, Antimicrobial, and In vitro Anticancer Activity (Shehata MG et., 2021)	Cancer, Diabetes, Hypertension (Ma C et al., 2017)
<b>Mangosteen</b> <i>Garcinia mangostana</i>	Xanthones are $\alpha$ -, $\beta$ -, and $\gamma$ -mangostins, Garcinone E, 8-Deoxygartanin, and Gartanin (Pedraza J et al., 2008)	Antioxidant, Antitumoral, Antiallergic, Anti-Inflammatory, Antibacterial, and Antiviral Activities (Pedraza J et al., 2008)	Abdominal Pain, Diarrhea, Dysentery, Infected Wound, Suppuration, And Chronic Ulcer (Pedraza J et al., 2008)

Name of the fruit	Chemical composition	Therapeutic actions	Therapeutic uses
<b>Rambutan</b> <i>Nephellum lappaceum</i>	Sucrose, Fructose, Glucose, Lactic acid (Chai et al., 2018)	Anticancer activity (Perumal A et al., 2021) Anti-aging property (Sekar M et al., 2017)	Diabetes (Ma Q et al., 2017) Carcinoma Perumal A et al., 2019)
<b>Jackfruit</b> <i>Artocarpus heterophyllus</i>	Protein, Calcium, Iron, And Thiamine (Ranasinghe R et al., 2019)	Antimicrobial, Antioxidant, Anti-Melanin, Antidiabetic, Anti-Inflammatory, Immunomodulatory, Antiviral, Anthelmintic, Wound-Healing, And Antineoplastic Activities (Gupta A et al., 2022)	Hypertension, Heart diseases, Stroke (Ranasinghe R et al., 2019)

## CONCLUSION

Fruits are a good source of vitamins and minerals and they're an excellent source of dietary fibre. Major nutritive components and phytochemical constituents of fruits act as anti-oxidant, anti-aging, anti-cancer, anti-inflammatory, antimicrobial, anti-diabetic, anti-obesity and possesses astringent, wound healing and skin protective properties etc. Scientific researches have clinically proven specific pharmacological actions of fruits with their therapeutic uses. Consuming fruits which are available in Sri Lanka in daily life may prevent many diseases and it will be used for the management of some diseases. This study may help to give an idea to prepare some herbal medicinal preparations using fruits for some diseases. And also, it may lead to do further studies regarding their medicinal properties and therapeutic uses.

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## **A critical review on Ayurveda theoretical basis for therapeutic interventions in Alarka Visha (Rabies)**

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### **Introduction**

Ayurveda discipline describes that Alarka Visha (rabies) is transmitted by a rabid animal bite and is fatal when it is associated with characteristic hydrophobia. The vast literature on Visha Cikitsa are available in Ayurvedic literature to manage the victims. More than 95% of approximately 100 human rabies deaths each year in Sri Lanka are the result of bites by stray dogs.

### **Aims and Objects**

This study was undertaken with an objective of reviewing Ayurveda theoretical basis for therapeutic interventions in Alarka Visha.

### **Material and Method**

The literary data were compiled from Vriddhatraya and Laghutraya.

### **Results**

The results of this study found that Ayurveda texts provide a comprehensive account on Alarka Visha primarily under its animal origin, symptomatology and therapeutic interventions. The doshas among which Kapha get aggravated and invade the samjnavaha srothas and produced serious disorders of the mind and tissue in the body of the vector. Then it runs all over the place with saliva dribbling, blind and deaf with its tails, lower jaw and shoulders drooping, trouble in the head, and with its face bent down. Alarka Visha aggravated all three doshas in the victim, depending upon the location of the poison and constitution of the individual. Alarka Visha-Rakta-Dosha complex gradually vitiates Samjnavahasrotas eventually involving the head thus establishing the full-blown rabies encephalitis. It is manifested stupor, fever, pain in the heart and head, rigidity of the body, thirst and fainting develop gradually in the victim due to Alarka Visha bitten by rabid animals like dog, jakal, horse, mule, wolf, bear, tiger etc. If the bite sites consist of poison, it is indicated itching, constant pain, discolouration, loss of sensation, exudation, fever, dizziness, burning sensation all over the body, red colour, suppuration, swelling, development of tumor and its residing, tearing of the sites of bite, ring like muscular growth and rounded rashes. One who gets terrified suddenly and constantly by seeing or touching water should be known as “Jalathrasa” (hydrophobia), is a sign of imminent death.

Twenty four therapeutic measures were indicated as general Visha Cikitsa, with the introduction of several novel therapies, such as Recitation of Mantras, Arishta ( tying a bandage above the place of bite impregnated with mantras), Utkartana ( excision of the part afflicted with the poisonous bite), Nishpeedana ( squeezing out blood from the place of bite ), Chusana (sucking out the poison from the place of the bite ), Agni ( cauterization), parisheka (affusion), Avagaha ( bath with medicated water ), Rakta mokshana ( blood letting), vamana (emesis), Virecana (purgation), Upadhana ( application of medicine after making an incision over the scalp), Hridayavarana ( giving medicines to protect the heart ), Anjana ( application of collyrium), Nasya ( inhalation of medicated oil etc.), Dhuma ( smorking therapy), Leha ( drugs in the form of linctus given for licking ), Aushadha ( administration of anti -toxic drugs ), prasamana ( sedatives), Pratisarana ( application of alkalies ) , prativisha ( administration of poison as medicine), Sanjna- samsthapana ( administration of medicine for the restoration of consciousness), Lepa ( application of medicine in the form of a paste or ointment) and Mrita- sanjevana ( measures for the revival of life of an apparently dead person).

## **Discussion**

Ayurvedic literature describe that successful treatment procedures according to the pathogenesis pathway of poison in the body and before spreading of the poison from the place of the bitten by rabid animal. However it will be successful if it is done emergency care for critical cases combine with modern techniques. As well as, it should be done further research for types of Agadha ( anti poisonous drugs) in the management of Rabies.

## **Conclusion**

The above facts conclusively pointed out that, Daivavyapashraya ( Chanting mantra etc.) and Yukativyapashraya Cikitsa ( Administration of drugs ) had provided a sound Ayurveda theoretical basis for therapeutic interventions in Alarka Visha.

## Concept of Upanaha Sweda and Clinical Utility: A Review

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### Background

Swedana means sudation therapy, which sweating is induced in the body by providing heat or steam. It can be done as Poorva karma, Pradhana Karma or Paschat Karma. According to Acharya Charaka it is one of Shadvida Upakrama. According to the Authentic, Upanaha is sub type of Swedana. Upanaha (Application of poultice) is a mode of fomentation where in a combination of Churnas (powdered herbs) are made into paste using sneha dravya (unctuous materials-oil/ghee/muscle fat/marrow), kinva (fermented liquid), made hot and applied over the affected part followed by bandaging. It can be classified Sagni & Niragni / Pradeha, Pinda, Bandhana / Salavana Upanaha / Snigdha & Ruksha Upanaha. It helps in reducing Vata dosha, Sheetha (coldness), Shoola (pain), Sthambha (stiffness), and Gowravata (heaviness).

### Objectives

- To analyse the concepts of Upanaha Sweda in different classic.
- To analyse the clinical utility of Upanaha Sweda

### Methodology

- Study Type : Review Study
- Material & Methods: The available literature like Authentic Ayurvedic texts, scientific journals, Research articles and through the Electronic media are searched for the Concept of Upanaha Sweda and its clinical utility. All the relevant content is considered and analysed to get a comprehensive concept of Upanaha Sweda.

### Results & Discussion

#### Upanaha Sweda can be performed in 3 ways

1. Bandhana - Vatahara drugs combined with Amla Dravya (Kanji), Saindava Lavana, Sneha Dravyas and made hot preparation, applied over the affected part and tied with Vatahara Patras or Charma patta.
2. Pinda- Krushara, Payasa, Utkarika, Veshavara are prepared and made into a bolus form and sudation is performed. It can be used as Ekanga or Sarvanga.
3. Pradeha - Vatahara drugs combined with Amla, Lavana and Sneha Dravya should be made hot and applied in the form of a thick paste (Pradeha) without Bandhana.

### Drugs used for Upanaha

Kakolyadi Gana, Surasadi Gana, Eladi Gana, Jivaniya Gana and Viratarvadi Gana



## Indications

- Vata Vyadhi like Janusandhigata Vata, Pakshagata, Twak, Mamsa, Asruk, Sira, Sandhi and As-thigatavata.
- Akshi Rogas like Alaji, Pooyalasa, Abhishyanda and Arbuda.
- Guda Rogas like Arshas, Bhagandara.
- Other conditions like Vrana, Vidradi, Granti, Vataja Mutrakruchra, Shleepada, Kukshishoola, Visarpa (Granti Visarpa), Visha.
- Sushruta opines that Upanaha Sweda is specially indicated in case of Sankuchayamana (Contractures), Rujarta, Stabda Gatrata.
- Indu mentioned Agni Samskara Rahita Upanaha i.e Upanaha prepared without heating to be done in case of vata associated with Pitta.

## Contraindication

- Pittavarana condition

## Thickness of lepa

Sharangadhara	Sushruta	Chakrapani
Doshagna Lepa-1/4 Angula Vishagna Lepa-1/3 Angula Varnya Lepa -1/2 Angula	Pradeha-thickest form of Lepa Alepa- Medium thickness Pralepa- Thinnest form of Lepa	Pradeha- equal to the thickness of Ardra Mahisha Charma Alepathinner than that of Buffalo's skin

## Duration

Charaka & Vagbhata	Kashyapa	Indu
Lepa applied in the night  should be removed next day morning and that applied in day should be removed at night.	Applied lepa to be removed when it becomes cool and  Should be applied again. Sweda will occur after many such applications.	Lepa should be changed twice a day or it should be applied repeatedly with due considera- tion regarding Desha, Kala and Dosha.

## Classically mentioned Choornas which are commonly used has Upanaha Sweda in clinical practice

- Kolakulattadi churna upanaha.
- Jatamayadi churna upanaha.
- Nagaradi churna upanaha.
- Grihadhoomadi churna upanaha.
- Kottamchukadi churna upanaha.
- Marmagulika lepa upanaha.
- Rasnadi churna upanaha.

- Doshagna upanaha.
- Dashanga lepa upanaha.
- Arka patra upanaha.
- Dattura patra upanaha.
- Salvana upanaha.
- Nirgundi patra upanaha.

## Conclusion

- Upanaha is the mode of treatment used for Poorva, Pradhan and Paschat karma.
- Madhura, amla, lavana, snigdha, ushna upanahas are beneficial in kevala vata vyadhis, Ruksha, ushna, gomutrakuta upanaha are useful in Vata kaphaja vyadhis and ama conditions like Amavata. Salvana upanaha in Pakshagata, Ashwagandha with Katu taila lepa in Manyasthambha. Agaradhuma with lavana taila upanaha in Suptivata.
- The action of the Upanaha depends on the materials used for the application, temperature of the paste, duration of retaining on the skin surface and thickness of the paste applied.

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## Pharmacological potentials of *Phalatrikadi Kvatha* on *Yakrut Roga* (Liver Disorders) WSR to Fatty Liver Disease

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### Background

Non-alcoholic fatty liver disease (NAFLD) is the most prevalent liver disease in the world and the incidence around 30-40% among the general population (Genel, 2015). It is caused by fatty infiltration of the liver and it refers to a spectrum of liver damage ranging from simple steatosis to non-alcoholic steatohepatitis (NASH) to advanced liver fibrosis and liver cirrhosis (Chalasani, 2019). Also, the American Association for the Study of Liver Diseases explains that this condition of the liver is accompanying by components of the Metabolic Syndrome (MS) such as abdominal obesity, Insulin resistance, dyslipidemia, glucose intolerance or type II diabetes mellitus (T2DM) and the insulin resistance was identified as a major pathogenic mechanism for NAFLD (Chalasani, 2019). Finally, this was identified as a liver manifestation of MS. The most dangerous incidence is it unnoticed for many years until becoming liver cirrhosis. According to the guidelines of the American Association for the Study of Liver Diseases, mentioned patients who undergoing thoracic and abdominal imaging for reasons other than liver symptoms, signs, or abnormal biochemistry may demonstrate unsuspected HS and also identified through screening in clinics such as primary care, Diabetes, and Obesity.

Ayurveda emphasized the *Yakruth* (liver) and its importance in various authentic texts including *Charaka Samhita*. It considered as a site of origin of *Raktavahasrotas*. *Yakrit* is the seat of *Ranjaka pitta* which transforms *Apya Rasa Dhatu* to *Rakta Dhatu* (Kumarasinghe, 1991). As per Ayurveda concepts heavy fat-rich diet, soft drinks, and a sedentary lifestyle are responsible for the *Dushti* of *Annavaha*, *Udakavaha*, *Rasavaha*, *Raktavaha*, *Medovaha*, and *Pureeshavaha Srotas* (Kumarasinghe, 1991). Remya E., mentioned that *Ajirna* (indigestion), *Sthaulya* (Obesity), and *Prameha* (Diabetes Mellitus) which occurs due to vitiation of *Annavaha*, *Rasavaha*, and *Medovaha Srotas* and those act as *Nidanarthakara rogas* such as diseases which cause another disease like fatty liver (Remya, 2017). Perera KPDC et. el. stated that considering the symptoms of Non-Alcoholic Fatty Liver Disease it is more specific with *kaphaja Udara* (Perera, 2021). Its progression stages, can be correlated with the disease take place in the liver such as *Pandu*, *Kamala*, *Raktapitta* and finally it ends up in *Udara* (one among the *Ashtamahagada*) and *Yakriddalyudara* is being more specific for the liver ailments (Remya, 2017).

Considering the treatments, there is no proper treatment mentioned in Allopathic medicine. Treatment is usually directed towards reducing body weight, introduce dietary modifications to control metabolic conditions such as obesity, diabetes, hyperlipidemia, and hypertension, and improve their physical activity. The

availability of special treatment methods in Ayurveda practitioners is very important when finding an effective treatment modality for this type of disease. Many Ayurveda herbal products have no side effects and that supports liver function can calm and pacify imbalanced *doshas*. So it is very important to find out the properties of this formula.

### Objective of the study

Within this back ground the objective of the study is focused to find out pharmacodynamics and pharmacokinetic potential of *phalatrikadi kwatha* mentioned on *yakrut roga*.

### Methodology

The data was gathered from traditional books, Ayurveda authentic text, research articles, journals and web sources during the period of two months. Found the pharmacological activities of each ingredient separately and selected the actions mainly on liver.

### Results and Discussion

‘*Phalatrikadi kvatha*’ mentioned in Ayurvedic authentic texts such as *Chakradatta* (Sharma, 1993), *Sharangadhara Samhita* (Nagodavithana, 2001), *Saara Sankshepa* (Kumarasinghe, 1984), *Bhaisajya Ratnavali* (Hettiarachchi, 2017), *Bhavaprakasha* (Sitaram, 2010) and *Saarartha Sangraha* (Kumarasinghe, 1987) for context of *pandu* and *kamala*. It contains eight ingredients including *Triphala* (Amalaki (dried peri cap of *Emblicus ribis*), *Haritaki* (dried peri cap of *Terminalia chebula*) and *Vibhitaka* (dried fruit of *Terminalia balarica*), *Amrita* (*Tinospora cordifolia*), *Vasa* (*Adhatoda vasica* L.), *Tikta* (*Katuka - Picrorhiza kurroa*), *Bhunimba* (*Andrographis paniculata*), and *Nimba tvaka* (*Azadirachta indica*). Ingredients of *phalatrikadi kwatha* mostly having *deepana*, *pachana*, *yakrut hita*, *lekhaneeya*, *shotahara*, *yakrut uttejaka* properties and further these ingredients shows anti-oxidant and Hepatoprotective properties 100% with Anti-inflammatory 62.5% and Immunomodulatory property 50%. Also collectively these ingredients having prokinetic, antihyperlipidemic and cholerectic properties. According to the Ayurvedic point of view these properties can pacify *kapha utklesha* state of the liver. Moreover, these ingredients showed the valuable potential of restoration of liver tissues in acute and chronic injuries with inhibited hepatic fibrosis and liver fibro genesis due to regulation of the immune system mechanisms especially in Non- Alcoholic Fatty Liver Disease.

### Conclusion

Based on the above facts the formula of *phalatrikadi kwatha* consisted with effective pharmacodynamics and pharmacokinetic properties which can positively respond to the *kaphaja udara* which caused due to *atisantarpanaja* causes and also support to the functions of the liver. In view of the above it can be concluded that ingredients of *phalatrikadi kwatha* beneficial for the liver disorders.

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## Barriers of Establishing Effective Laboratory Facilities and Their Impact on Organization Performance Study of Ayurvedic Hospitals in Northern Province.

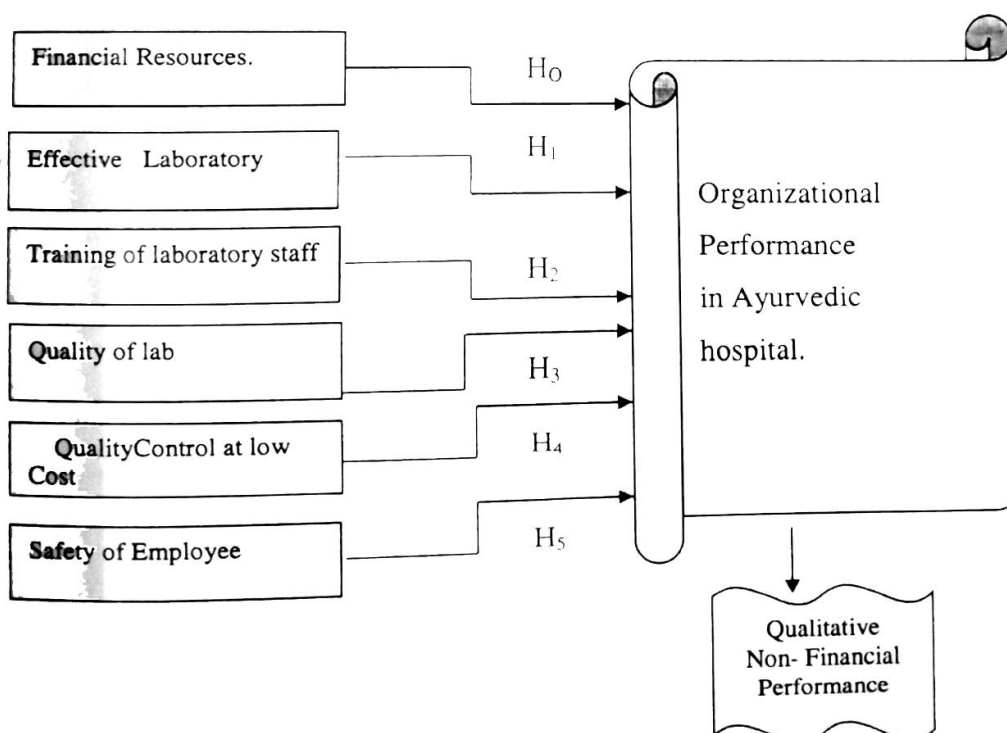
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Previous studies in other countries found that effective laboratory facilities in developed countries. The purpose of this study is all about investigating effective laboratory facilities in Ayurvedic hospitals in Sri Lanka. It is important that the development of clinical laboratories in developing countries is performed by their own staff and in direction that is suitable for their local situation. The objective of finding out the existing laboratory facilities in Ayurvedic hospital in Sri Lanka. Including five main objectives has laboratories been linked with the problem statement of "What are the existing facilities available in Ayurvedic Hospitals in Sri Lanka?" Wit significance of regard to physician technician, patients and Sri Lankan government which are briefly discussed in chapter on. The Study analyzes the effects, based on different variable have been supported by strong authors like Wim de Kieviet, Elizabeth Frank, Herbet stekel in 2007 and many more authors of other countries who investigate similar findings in relation to effective laboratories facilities. The literature is vastly explained in chapter two. The designed methodology intends a survey of laboratories in Ayurvedic hospitals. From 4 districts of Sri Lanka with attaining to the objectives of the appropriate findings. In regard to the findings, the primary data collection will be the survey and after secondary sources of magazines and news paper articles.

### Conceptual Frame Work



Presents a hypothesized relationship between barriers of establishing effective laboratory facilities and organizational performance within a controlled frame work.

### **Selection of the Sample Employees**

A period of two years have been chosen for collecting required secondary and primary data information.

### **Purpose of Selecting Sample**

Initially consulted with provincial Department of Ayurveda & Teaching Hospital of Ayurveda in Kaithady; District & Rural Ayurvedic Hospitals in Jaffna, Vavuniya, Mannar & Mullaitivu; for the purpose of selecting our sample.

Teaching, District & Rural Ayurvedic Hospitals have been considered as the population of the sample. The research covered above covered above Government Ayurvedic Hospital from Northern Province. Samples selected for the study covered mining and quarrying; the sample for research have been selected first by the techniques of judgment random sampling. Each of the above districts was considered six hospitals were selected first randomly. Purposively. data availability and ease of data collection. Thus from the four district the size of sample 50 employees. Care has also been taken to ensure homogeneity of the samples taken for the study.

### **Categories of Sample Respondents**

<b>Types of Employee</b>	<b>No. of Employee</b>
MS	01
HEAD INSTITUTE	02
M.O	22
M.A	01
M.L.T	02
ASSIST	22
<b>Total</b>	<b>50</b>

### **Selection of the Sample Ayurvedic Hospitals**

<b>Employees of Ayurvedic Hospitals</b>	<b>No. of Employee</b>	<b>Percentage of</b>
Jaffna	23	46
Vavuniya	15	30
Mannar	05	10
Mullaitivu	07	14
<b>Total</b>	<b>50</b>	<b>100</b>



## Methods of Data Collection

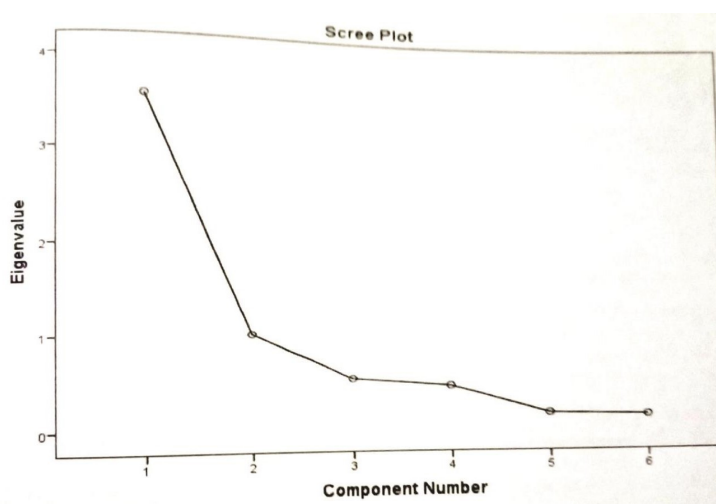
1. Theoretical Study
2. Empirical Survey
3. Direct Personal Interview
4. Observation Method
5. Examination of Official Records
6. Questionnaire Construction

## Reliability and Validity of the Data

Value of KMO for overall mztrix is 0.740 (For Details please seet table - 4.5), there by indicating that the sample taken to process the factor analysis is statistically significant. Bartlett's test of sphericity (Barlett, 1950) is the final statistical test applied in the study for verifying its appropriateness. This test should be significant i.e., having a significance value less than 0.05. In the present study, test value of chi square 162.494 ( $P=0.000$ ) is highly significant (as also given in table - 4.6) indication that the data is appropriate for the factor analysis. This means that the correlation matrix is not an identity matrix.

## Variance Explained After Extraction

Components (Barriers of Laboratory)	Initial Eigen Values	Percent of	Cumulative Percent
	<b>Total</b>	<b>Percent of Vari-</b>	<b>Cumulative Percent</b>
Financial Resource	3.568	59.474	59.474
Effective Laboratory	1.038	17.304	76.778
Quality of Lab	.563	9.390	86.168
Training of Staff	.488	8.129	94.297
Safety of Employees	.185	3.079	97.377
Quality Control of Low Cost	.157	2.623	100.000



Two Components extracted from the analysis with an Eigen value of greater than one (Tabachnick & Fidell, 1996) which explained 76.778 percent of the total variance. One method to reduce the number of factors to something below that found by using the greater than one rule is to apply the screen test.

Regarding market orientations and social responsibility performance, the study reveals the following facts: Market orientations of the sample employees are good representing the range of mean scores from 3.26 to 3.68; and the range of standard deviations from 0.97 to 1.27. The study unveiled that social responsibility performances of sample employees are good indicating the range of mean scores from 3.24 to 3.88; and the range of standard deviations from 1.18 to 1.15. Factors of Laboratories in Ayurvedic hospitals and Organizational performance are found to be negatively correlated with the value of -0.0315 and it becomes highly significant at 5 percent. In addition, Financial Resource is also found to be negatively correlated with Organizational performance.

Multiple regression analysis is performed to identify the predictors of organizational performance as conceptualized in the model. The barriers of Laboratories in Ayurvedic hospitals in the model revealed the ability of employees to predict Organizational performance; (Social responsibility performance) ( $R^2 = 0.099$ ). In this model value of  $R^2$  denotes that 9.9 percent of the observed variability in Organizational performance can be explained by the difference in barriers of laboratories in Ayurvedic hospitals namely Financial Resource and Effective Laboratory. Further, t-value for Financial Resource is found to be highly significant at 5 percent level, meaning that with increasing level of financial Resource, Social performance will increase -2.275 times. Operational hypotheses were formulated and tested which indicate that there is a relationship between factors of Laboratories in Ayurvedic hospitals and organizational performance.

Multiple regression analysis is performed to identify the predictors of organizational performance as conceptualized in the model. the factors of Laboratories in Ayurvedic hospitals in the model revealed the ability of employees to predict Organizational performance; (Market Orientation) ( $R^2 = 0.007$ ). In this model value of  $R^2$  denotes that 0.7 percent of the observed variability in Organizational performance can be explained by the differences in barriers of laboratories in Ayurvedic hospitals namely Financial resource and Effective Laboratory. Further, t-value for Financial Resource is found to be highly significant at 5 percent level, meaning that with increasing level of Financial Resource, Market Orientation will increase 0.582 times. Operational hypotheses were formulated and tested which indicate that there is a relationship between Factors of Laboratories in Ayurvedic hospitals and organizational performance. Further, Characteristics of employees have positive impact on organizational performance. In others remaining demographic characteristics i.e., gender, age, marital statuses were found to have no significant association with organizational performance.

## Conclusion

The Barriers of Laboratory 'Financial Resource', 'Effective Laboratory'; got group - I & group - II of the transformation of matrix respectively and constitute the key Barriers of Laboratory of Laboratory of Ayurvedic Hospitals. Analyses presented in the above sections thus revealed that these two Barriers of Laboratory groups suitable for representing Barriers of Laboratory of Ayurvedic Hospitals Addition, the group are considered for further analyses as independent variables.

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## A selection of literature review articles on external application therapies in Siddha system of medicine

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### Introduction

Siddha system of medicine is an ancient system of medicine. Siddha is practicing in India, Sri Lanka, Malaysia, Singapore and other Tamil speaking south Asian countries. That consist external medicine 32 and internal medicine 32 (Janeni *et al*, 2017) in additionally mentioned *Varma* therapy. In Siddha external application takes prominent part. Same as in research literature review is important and prominent part in research. Literature review follows start to end of research process. Most of the researchers face problems in this portion of research part this paper discusses matrix method of literature review article selection, that introduced by Garrad in 1999 that reprinted at 2004. This method using in different field Psychology, communication, physics, linguistics, informatics and health science (Klopper *et al*, 2007). Normally lot number of articles need for literature review. Purpose wise limited in this paper taken siddha external therapy related research papers 10 for purpose of literature review. Literature review consist four parts such as theoretical review, empirical review, methodological review and research gaps.

### Problem statement:-

Research students are facing the problem in the selection of literature for their literature review

### Objectives:-

1. How to select suitable research articles for literature review
2. To review the external application therapy articles in Siddha medicine

### Scope and limitation:-

In indigenous medicine selected Siddha system of medicine, through the external application therapies. In selected 10 articles for literature review

### Methodology

Literature review articles randomly selected from an online database. First table made author and year against other aspects such as theoretical, empirical and methodological and research gaps first column represented with author, second column represented by year of publication and other columns represented as follows theoretical, empirical, methodological, research gaps. Selected article details tabulated in literature matrix. Other individual four tables will be represented for theoretical, empirical, methodological and research gaps. Finally selected review materials will be interpreted from particular table and citation articles will be selected from tables.

### Significance:-

1. Discuss access for future research students for their literature review in a proper manner

2. Explored external application related valuable articles from online database
3. Presenting a literature review for the selected topic with the help of selected articles
4. Paraphrasing of suitable statements from selected articles in a research thesis
5. Meta-analysis of particular area (external application therapies of Siddha system of medicine) research articles

## Results

Table.1

No	Author	year	Theoretical	Empirical	Methodolo	Research/gaps
01	Dharani <i>et al</i>	2016	+	+	+	+
02	Esaivani <i>et al</i>	2020	+	+	+	+
03	Janani <i>et al</i>	2017	+	+	+	+
04	Krishnaanantham & Sivapalan	2016	+	+	+	+
05	Lalitha <i>et al</i>	2018	+	+	+	+
06	Meena <i>et al</i>	2021	+	+	+	+
07	Periyasamy <i>et al</i>	2018	+	+	+	+
08	Ridhambaradevi <i>et al</i>	2018	+	+	+	+
09	Sridhar & Senthilvel	2018	+	+	+	+
10	Thangaswamy & Balamurugan	2017	+	+	+	+

Data source from primary data

Table 1, Plus (+) indicates all articles consist relationship with theoretical, empirical, methodological review and research gaps. The authors mentioned in alphabetical order and their years of publication mentioned in the second column

## Theoretical review

No	Author	Year	So/theory	CI/theory	Field of study
1	Dharani <i>et al</i>	2016	CT/NPT	P/ <i>Pugai</i>	Various ill
2	Esaivani <i>et al</i>	2020	CT/NPT	P/ <i>Kattu</i>	<i>pennoiyial</i>
3	Janani <i>et al</i>	2017	CT/NPT	<i>puramarunthu</i>	Various ill
4	Krishnaanantham & Sivapalan	2016	CT/NPT	P/ <i>Nasyam</i>	<i>Peenisam</i>
5	Lalitha <i>et al</i>	2018	CT/NPT	P/ <i>Pugai</i>	Various ill
6	Meena <i>et al</i>	2021	CT/NPT	P/ <i>Varmam,thokkanam</i>	Adhesive capsulitis
7	Periyasamy <i>et al</i>	2018	CT/NPT	P/ <i>Addai vidal</i>	Various ill
8	Ridhambaradevi <i>et al</i>	2018	CT/NPT	P/ <i>Podithimirthal</i>	<i>Sirasthamba vatham</i>
9	Sridhar & Senthilvel	2018	CT/NPT	p/ <i>suttigai</i>	<i>Azal keel vatham</i>
10	Thangaswamy & Balamurugan	2017	CT/NPT	p/ <i>pattru</i>	Variuos ill

Table.2

Table 2, Fourth column (So) indicate sociology theory here mentioned comport theory (CT) and normalization process theory (NPT) both theories can apply to all. Fifth column mentioned clinical theory (P) abbreviate for *Puramaruththu*. And sub theories are mentioned follows *Pugai* (Fumigation), *Kattu* (Bandaging), *Nasyam* (Nasal drops), *Varmam* (touch on special point), *Thokkanam* (Massage), *Addaividal* (Leech therapy), *Podithimirththal* (Powder massage), *Suttigai* (Cauterization), *Pattru* (Paste). Other *Puramarunthu* types are mentioned under 3rd article. Sixth column mentioned field of studies such as *Pen-nogiyal* (Gynecology), *Peenism* (Sinusitis), *Sirasthamba vatham* (Parkinsonism), *Azal keel vatham* (Osteo arthritis) and various diseases treated by *Puramarunthu*.

### Empirical review

Table.3

No	Author	Year	Context (L/I)	Variety	Recent/Not
1	Dharani <i>et al</i>	2016	International (I)	Research paper	Not recent
2	Esaivani <i>et al</i>	2020	International (I)	Research paper	Very recent
3	Janani <i>et al</i>	2017	International (I)	Research paper	Not recent
4	Krishnaanantham & Sivapalan	2016	Local	Research paper	Not recent
5	Lalitha <i>et al</i>	2018	International/Local	Research paper	Recent
6	Meena <i>et al</i>	2021	International (I)	Research paper	Very recent
7	Periyasamy <i>et al</i>	2018	International (I)	Research paper	Recent
8	Ridhambaradevi <i>et al</i>	2018	International (I)	Research paper	Recent
9	Sridhar & Senthilvel	2018	International (I)	Research paper	Recent
10	Thangaswamy & Balamurugan	2017	International (I)	Research paper	Not recent

Table 3 mentioned fourth column indicates local and international context of publication. Fifth column mentioned variety of literature, here all are research papers. Sixth column mentioned time duration. According to author's classification 2016/2017 categorized not recent, 2018/2019, recently and 2020/2021 very recently.

### Methodological review

No	Author	Year	Qua/quant	P/A	Explor/expl	Induc/dedu	Sampling	Analysis
1	Dharani <i>et al</i>	2016	Qualita	A	Expla	deductive		literature
2	Esaivani <i>et al</i>	2020	Qualita	A	Expla	deductive		literature
3	Janani <i>et al</i>	2017	Qualita	A	Expla	deductive		literature
4	Krishnaanantham & Sivapalan	2016	Quanti	A	Expla	deductive	Conven- ient	Simple statis- tical
5	Lalitha <i>et al</i>	2018	Qualita	A	Expla	deductive		literature
6	Meena <i>et al</i>	2021	Qualita	A	Expla	deductive		literature
7	Periyasamy <i>et al</i>	2018	Qualitat	A	Expla	deductive		literature
8	Ridhambaradevi <i>et al</i>	2018	Qualita	A	Expla	deductive		literature
9	Sridhar & Senthilvel	2018	mixed	A	Explor	deductive	Conven-	WOMAC/
10	Thangaswamy & Balamurugan	2017	Qualita- tive	A	Expla	deductive		

Table. 4

Table 4, Fourth column indicates analyzed researches are Quality research or quantitative research or mixed research. Fifth column indicates researches are pure or applied. Here all are applied. Sixth column indicates researches are exploratory or explanatory. Here only one article is exploratory. Seventh column indicates researches are inductive or deductive. Here all are deductive. Eighth column indicate sampling type. Here mentioned convenient sample in two articles. Ninth column analysis type here mentioned most of the articles are literature analysis only one article mentioned WOMAC/knee circumference.

## Research gaps

Table.5

No	Author	Year	Formatting r p	Technical	Not mention
1	Dharani <i>et al</i>	2016	Fulfilled		Scientific aspect
2	Esaivani <i>et al</i>	2020	Fulfilled		International context
3	Janani <i>et al</i>	2017	Fulfilled		Medicine reference
4	Krishnaanantham & Sivapalan	2016	Fulfilled		Standard statistical method
5	Lalitha <i>et al</i>	2018	Fulfilled		Statistical data
6	Meena <i>et al</i>	2021	Fulfilled		Postural relationship
7	Periyasamy <i>et al</i>	2018	Fulfilled		Picture of leech
8	Ridhambaradevi <i>et al</i>	2018	Fulfilled		Western comparison
9	Sridhar & Senthilvel	2018	Fulfilled	Not controlled	
10	Thangaswamy & Balamurugan	2017	Fulfilled		Medicine reference

Table 5 fourth column mentioned formatting's, all are fulfilled. technical vise one article not controlled in clinical experimental research. Sixth column indicates, not mentions such as scientific aspect, international



context, medicine reference, botanical names, statistical data, postural relationship, picture of leech and western comparison

## Discussion

1. Table 1 tabulation indicates above mention all articles consist relationship with theoretical, empirical, methodological and research gaps. Articles are randomly selected. These years are varying from 2016 to 2021. Some of the research organizations prefer very recent article. Other hand, some of the field, they consist rare articles at the moment, mean time this condition can't apply.

2. Table 2 indicate, mentioned articles are how to relate to theoretical concepts. Sociological theory or clinical theory or both can apply. Here all the articles related with comport theory (CT) and normalization process theory (NPT). Other some sociological theories also matched with articles, but here mentioned above mentioned two theories. All the articles are related with clinical external application (*Puramarunthu*) theory under sub theories such as *Pugai* (Fumigation), *Varmum* (special touch on certain points of the body surface), *Thokkanam* (Massage), *Podithimirthal* (massage with powder medication), *Pattru* (Poultice), *Ad-dai vidal* (leech therapy), *Suttigai* (Cauterization) and remaining external therapies. Field of studies are *Pennoigial* (Gynecology), *Peenisam* (sinusitis), adhesive capsulitis, *Sirasthamba vatham* (Parkinsonism), *Azal keel vatham* (Osteo arthritis ) and other various diseases.

3. Table 3 indicates mentioned article how to relate to empirical concepts. Most the articles are international context of India. One research published in Sri Lanka. Another one published in Sri Lanka & India. In Sri Lanka, Lot numbers of research studies are going on in Sri Lanka. But related organizations are not upload and knowledge dissemination through the online database. Here selected literatures are research papers. Those studies are in recent category 40%, very recently in 20% not recent in 40%

4. Table 4 indicates analyzed article how to relate to methodological concepts. Methodological wise number 9th article completed all methodological aspects except control experiment. Following research gaps are observed in other articles. Not mention followings in selected research papers, scientific aspect, international context, medicine reference, botanical names, statistical data, postural relationship, picture of leech and western comparison

5. Table 5 indicate how to selected article formulated with research gaps. All over the article are consists research gaps that lead to new researches and adding an example number 3<sup>rd</sup> article mentioned drugs but not mentioned medicine capture of books

6. Garrad mentioned, tabulation and concepts are not strictly limited by column details. According to the researcher's purpose they can built up

7. Analyzed articles should not mention reference list in their main research thesis or dissertation. Here mentioned those in the reference list because of this research paper.

8. Garrad mentioned method is pathway to writing literature review

9. No 9th article selected because this is a mixed research that consist qualitative part and quantitative part. Qualitative part they have done with traditional practitioners Srithar & Senthilvel (2018) mentioned about *Suttigai* (Cauterization) as a siddha external therapy. The present records of indigenous traditions are

boundary to Western Tamilnadu, Puducherry and borders of Kerala. The *vaidyars* (Traditional practitioners) are found all over the area. A pilot study was conducted to point out their distribution and population. Field visited authors with traditional practitioners association, for easy access of data collection. In Siddha described as follows *Suttigai* is a *Veppa chigichai*, which pacifies the *Vaadham* and removes the *Kabha* blockages from the affected region. Mainly it is indicated in the disease caused by *Vaadham* and *kabham* because of its *tikshnam* (speed action), *ushnam* (hot), *sookshmam* (works minutely) properties. They described *suttigai* instruments with pictures and they mentioned the following diseases can relief by *suttigai*. Seizures, Tetany, *Kabha* diseases, *kabha* diseases with oozing, *Andavayu*, Orchitis, *Gunmam* and Anemia are respectively correcting by *suttigai* application on base of nasal bridge, Philtrum, lower lip, above the eye brow, leg lateral part, upper part of penis, below the chest and ankle. Modern science mentioned *suttigai* related theories as follows heat shock protein, pro inflammation and superficial nerve endings theory. *Azal keel vatham* (Osteo arthritis) is taken disease for experimental research. Analytical parameters are WOMAC and knee circumference. Details analyzed by SPSS. Results indicate improvement figures. They proofed *suttigai* is effective external application therapy.

## Conclusions

According to above mentioned fact Garrad mentioned literature matrix method of literature review article selection method is very convenient and suitable method for selection of literature review articles and literature review facts.

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# **SIDDHA LITERATURE & YOGA**

## அரவிந்தரின் ஒருங்கிணைந்த யோகா - ஓர் பகுப்பாய்வு

கோ.தர்சிகா

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### அறிமுகம்

யோகா (Yoga) என்ற சொல்லானது “யுஜ்” (Yuj) என்ற சமஸ்கிருதச் சொல்லில் இருந்து தோற்றம் பெற்றதாகும். இதன் பொருள் “இணைதல்” அல்லது “இணைவு” என்பதாகும். (Ishwar & Basavaraddi.V,2015) இது ஒரு நபரது உடலுக்கும் மனதிற்கும் இடையிலான நல்லிணக்கத்தைக் குறிக்கிறது.

யோகா என்பது “சுய முழுமைக்கான ஒரு முறைப்படுத்தப்பட்ட முயற்சி” ஆகும். அரவிந்தரைப் பொறுத்தவரையில் யோகா என்பது நித்திய சுயத்துடன் (Eternal Consciousness) நம்முள் இருக்கும் தெய்வீகத்தினை இணைப்பது ஆகும். (Kamakhyia Kumar,2010:02)

அரவிந்தரால் முன்வைக்கப்பட்ட யோகாவானது ஒருங்கிணைந்த யோகா அல்லது பூரண யோகா ஆகும் (Integral Yoga). ஒருங்கிணைந்த யோகா ஆனது பாரம்பரிய யோகாவினால் செல்வாக்குச் செலுத்தப்படுவதோடு அவற்றின் வரம்புகளினால் மிகவும் உறுதி வாய்ந்ததாகக் காணப்படுகிறது. பழைய யோகங்களின் சாரம்சம் மற்றும் செயல்முறைகளால் ஒருங்கிணைக்கப்பட்டதாக காணப்படுகிறது. இது புதிய யோகா அல்ல பாரம்பரிய யோகக்கூறுகளின் புதிய விளக்கமாகும். இந்தவகையில் அரவிந்தரால் முன்வைக்கப்பட்ட பூரண யோகா அல்லது ஒருங்கிணைந்த யோகாவினது நோக்கமானது முழு உயிரினத்தின் மாற்றமாகும். (Patrick Beldio,2018:124) நாம் வாழ்கின்ற பௌதீக வாழ்க்கையை தெய்வீக வாழ்வாக மாற்றுவதாகும். இந்த மாற்றமானது உடல் உள ஆன்மீக ரீதியான மாற்றமாகும்.

யோகா மற்றும் ஆன்மீகத்தின் ஊடாக இந்தியாவில் காணப்பட்ட அதிகாரப் போக்கினையும் மேலாதிக்க உணர்வினையும் வீழ்த்த முடியும் என நம்பினார். இதற்காக யோகா மற்றும் ஆன்மீகம் சார்ந்த நூல்களை எழுதினார். அவற்றுள் தெய்வீக வாழ்க்கை (The life divine), யோகாவின் தொகுப்பு (The synthesis of yoga), The ideal of human unity ,மனித சுழற்சி (The human cycle), கீதை பற்றிய கட்டுரைகள் (Essays on Gita) என்பன பிரதானமானவையாகும். (Sachidananda Mohanty,2008:17)

### ஆய்வின் நோக்கம்

- அரவிந்தரது ஒருங்கிணைந்த யோகா பற்றிய எண்ணக்கருவினை பகுப்பாய்வு செய்தல்.
- ஒருங்கிணைந்த யோகாவானது பாரம்பரிய யோக முறைமையில் இருந்து வேறுபடுமாற்றை ஆராய்தல்.

### ஆய்வு முறையியல்

#### தரவு சேகரிப்பு நுட்பம்

இவ் ஆய்விற்கு தேவையான தரவுகள் முதன் நிலை மற்றும் இரண்டாம் நிலைத்தரவுகளாகத் திரட்டப்பட்டு பண்பளவு ரீதியாக ஆராயப்படுகிறது. முதன் நிலைத்தரவுகளாக அரவிந்தரது மூல நூல்களும் இரண்டாம் நிலைத்தரவுகளாக ஒருங்கிணைந்த யோகா தொடர்பான ஆய்வுக்கட்டுரைகள், நூல்கள், இணையத்தள தரவுகள் என்பன காணப்படுகிறது.

## முறையியல்

இங்கு ஆய்வு முறையியல்களாக, பகுப்பாய்வு முறையியல், ஒப்பீட்டு முறையியல், விபரணமுறையியல் என்பன காணப்படுகிறது.

அரவிந்தரது ஒருங்கிணைந்த யோகா பற்றிய எண்ணக்கருவினை பகுப்பாய்வு செய்யும் வகையில் பகுப்பாய்வு முறையியலும் பாரம்பரிய யோகக்கருத்தியல்களுடன் அரவிந்தரது ஒருங்கிணைந்த யோகமுறைமையை ஒப்பிட்டு ஆராயும் வகையில் ஒப்பீட்டு முறையியலும் ஒருங்கிணைந்த யோகாவின் முக்கியத்துவத்தினை விபரிக்கும் வகையில் விபரண முறையியலும் இங்கு ஆய்வு முறையியல்களாகக் காணப்படுகின்றன.

### ஒருங்கிணைந்த யோகா

பாரம்பரிய யோகாவினைப்போலல்லாமல் ஒருங்கிணைந்த யோகாவானது பிறப்பு மற்றும் இறப்பு சுழற்சியில் இருந்து விடுதலையை நாடவில்லை இது தெய்வீகத்தின் மூலம் வாழ்க்கை மற்றும் இருத்தலில் மாற்றத்தை நாடுகிறது. அரவிந்தரின் ஒருங்கிணைந்த யோகாவானது எதனையும் நிராகரிக்கவில்லை. உதாரணமாக எல்லாத்தீமைகளையும் நன்மையின் எதிர்மறை வடிவமாக நோக்குகிறது.

ஏனைய யோகாவில் இருந்து அரவிந்தரது யோகாவினை வேறுபடுத்தும் முக்கிய அம்சமாக அதன் நோக்கம் காணப்படுகிறது. பாரம்பரிய யோகாவானது ஆன்மாவை பொருள் , வாழ்க்கை மற்றும் மனதில் இருந்து விடுவிப்பதன் முழுமையடைகிறது. இவரது ஒருங்கிணைந்த யோகாவானது விடுதலையை நாடவில்லை இந்த உலகியல் வாழ்க்கையை தெய்வீக வாழ்க்கையாக மாற்றுவதே நோக்கமாகும் அதாவது பொருளில் கூட ஒரு தெய்வீக நிறைவினை அடைய வேண்டும் என்கிறார். இவ் யோகாவானது தனிமனித விடுதலையைத் தேடவில்லை. முழுபிரபஞ்சத்தின் விடுதலையை நாடி நிற்கிறது எனலாம். பாரம்பரிய யோகாவானது தனிமனிதனில் கவனம் செலுத்த அதற்கு எதிராக அரவிந்தர் ஒருங்கிணைப்பு என்பதில் கவனம் செலுத்துகிறார். இறுதி இலக்கை அடைய யோகியால் உடல் வாழ்க்கை மற்றும் மனதின் எல்லைகளை நிரந்தரமாக விட்டுவிட முடியாது என்கிறார் . அரவிந்தர் உலகை உறுதிப்படுத்தும் யோக முறையைத் தேர்ந்தெடுத்தார்.

மனிதனது பரிணாமாத்திற்கு அடிப்படையாகக் காணப்படுகின்ற மனித மனதினை (Mind) உயர் மனமாக (Super mind) மாற்றுவதன் மூலம் எதிர் காலத்தினை வழிநடத்தவும் இவ் உலகிலேயே தெய்வீக வாழ்வினை (Divine life) வாழவும் தீர்க்க முடியாத பிரச்சினைகளை தீர்க்கவும் முடியும் என்பதே அரவிந்தரது கருத்தாகக் காணப்படுகிறது.

அரவிந்தரைப் பொறுத்த வரையில் நாம் நம் நனவு நிலையில் நம் உணர்வுகளை வெளிப்புறமாக இயக்குவதன் மூலம் வெளிப்புற விடய அறிவினை நமக்குக் கொடுக்கிறது. அதே போல நம் உணர்வுகளை உள் நோக்கி உயர்தினால் உலகில் உயர்ந்த விடயங்களை நாம் அறிய முடியும். இந்த வகையில் நாம் நம் நனவில் ஒரு முழுத்திருப்பத்தை எடுத்து நமது புலன் உறுப்புக்களினை புலன்களின் வரம்புகளிற்கப்பால் செலுத்தும் போது நாம் இவ் உலகம் மற்றும் இவ் உலகத்திற்கு அப்பால் உண்மையான அறிவினைப்பெற முடியும். இப் பயிற்சியே யோகா என அழைக்கப்படுகிறது.

அரவிந்தரது ஒருங்கிணைந்த யோகாவானது நேரடி அனுபவங்களில் தங்கியுள்ளது. யதார்த்தமானது மனதினால் அல்ல அனுபவத்தால் புரிந்து கொள்ளப்பட வேண்டும். ஒருங்கிணைந்த யோகாவானது பல்வேறு எளிமையான வழி முறைகளை தெய்வீகத்ததை அடைவதற்கான வழிமுறையாக பரிந்துரைக்கின்றது. இவரது அமைப்பு முறையானது இராஜ யோகாவில் காணப்படும் மூச்சுப்பயிற்சிக்கு அதிக அழுத்தம் கொடுக்கப்படவில்லை.

வேத காலத்தில் பதஞ்சலியால் முறைப்படுத்தப்பட்ட யோக முறைமையை அரவிந்தர் புதிய வெளிச்சத்தினூடாக பார்க்கிறார் எனலாம். பதஞ்சலியின் யோகாவின் இறுதி இலக்கு இதில் முடிவடைகிறது. அரவிந்தர் சமாதி நிலையினை ஏற்றுக் கொள்கிறார் இது இவரது ஒருங்கிணைந்த யோகத்தின் தொடக்கமாகக் காணப்படுகிறது. இது சத்திஆனந்தம் என்ற உயர்ந்த உண்மையை அடைவதற்குரிய படிக்கல்லாகும். இவரது யோக நடைமுறையில் மனிதன் சமாதி நிலையில் பரவச நிலையில் நிற்காது தெய்வீக மனிதனாக மாறும் நிலையை அடைய வேண்டும். ஒருங்கிணைந்த யோகப்பயிற்சியின் மூலம் அடையப்படும் மேலாண்மை உணர்வு நிலையில் மட்டுமே இது சாத்தியமாகும். (Pratap kumar. K,2017:211)

அரவிந்தர் தனது பரிணாமக் கோட்பாட்டில் கீழ்நிலை நனவில் இருந்து உயர்நிலை உணர்விற்கு பரிணமித்த மனிதன் முழுமையான மனிதனாக உயர்ந்த உணர்வுள்ள தெய்வீக மனிதனாக (Supramental consciousness) மாற்றப்படுவான். (Madhusudan.V,2006:4) அரவிந்தரின் இலட்சியம் மனிதனின் பரிபூரணமல்ல இது சமாதி நிலையில் அடையப்பட்டது. மனிதனை தெய்வீகமாக மாற்றுவதாகும்.

பதஞ்சலியின் யோகம் சமாதி நிலைக்கு வழிவகுத்தது. அதன் மூலம் மனிதனின் பரிபூரண நிலைக்கு வழிவகுத்தது. அரவிந்தரின் ஒருங்கிணைந்த யோகமானது மனிதனை முன்னோக்கிச் சென்று தெய்வீக அல்லது மேல்நிலை உணர்வைப்பெற்று தன்னை தெய்வீக மனிதனின் நிலைக்கு மாற்றுகிறது.

அரவிந்தரது ஒருங்கிணைந்த யோகாவானது மும்முறை மாற்றத்தை (Triple transformation) உள்ளடக்கியதாகக் காணப்படுகிறது. (Sri Aurobindo,1993:201) இங்கு யதார்த்த நிலையானது தெய்வீக நிலைக்கு மாற்றப்படுகிறது. மும்முறை மாற்றம் என்பது ஆன்மீக மாற்றத்தின் இருமடங்கு இயக்கத்தை குறிக்கிறது. உள் தெய்வீகக் கொள்கை மற்றும் ஆன்மீகமயமாக்கல் ஆகிய இரண்டு நிலைகளும் மூன்றாம் நிலைக்குத்தேவையான முன் நிபந்தனைகளாகச் செயல்படுகின்றன. மும்முறை மாற்றத்தின் மிகவும் கடினமான செயல்முறை யாதெனில் முழு உயிரினத்தையும் மேல் நிலைப்படுத்தலாகும்.

உருமாற்றம் என்பது அரவிந்தரின் ஒருங்கிணைந்த யோகாவின் முக்கிய சொல் ஆகும். இவரைப் பொறுத்தவரை மாற்றம் என்பது இயற்கையின் மாற்றத்தை அவர் அர்த்தப்படுத்தவிரல்லை. இவர் ஒரு சிறப்பு அர்த்தத்தில் உருமாற்றம் என்ற சொல்லை பயன்படுத்துகிறார். ஒருங்கிணைந்த யோகப்பயிற்சிக்கு ஒருவர் முதலில் தன்னை சரணடைய முடிவு செய்ய வேண்டும். அதன் பின்னர் அவர் ஐந்து உளவியல் நற்பண்புகளால் பரிபூரணப்படுத்தப்பட வேண்டும். அவையாவன வெளிப்படைத்தன்மை, நம்பிக்கை, பக்தி, தைரியம், விடாமுயற்சி அல்லது சகிப்புத்தன்மை. (Kamakhya Kumar, 2010:2)

அரவிந்தரின் ஒருங்கிணைந்த யோகாவானது கீதையின் மூன்று பாதைகளை ஒருங்கிணைக்கிறது. தனிநபரின் மூன்று முக்கிய சக்திகளான விருப்பம் (will), அறிவு (knowledge), அன்பு (love) ஆகியன முறையே கர்ம யோகம், ஞான யோகம், பக்தி யோகம் என்பனவற்றில் கர்மயோகி கடவுளை நோக்கி அனைத்துச் செயல்களையும் ஒப்படைக்கிறான். ஞான யோகி தனது நனவுணர்வினை கடவுளை நோக்கி திருப்ப முயல்கின்றான். பக்தி யோகி மனித அன்பினை கடவுளை நோக்கித் திருப்புகின்றான். இந்த யோகங்களின் சாரத்தினை அரவிந்தர் தனது ஒருங்கிணைந்த யோகாவில் எடுத்துக்கொள்கிறார். (Debashish Banerji,2018:39)

## முடிவுரை

இது இவ் உலகத்திலே தெய்வீக ஒன்றிணைவினை ஏற்படுத்தவும் மனித நேயத்தை கட்டியெழுப்பவும் உதவுகின்றது. இவ் யோகாவானது பரம்பொருளுடன் மனித உணர்வினை ஐக்கியமாக்கும் செயற்பாடாக அமைகிறது. இந்த வகையில் பாரம்பரிய யோகங்கள் உலக வாழ்வை முழுவதுமாக கைவிடவேண்டும்



எனக் கோருகையில் அரவிந்தரின் ஒருங்கிணைந்த யோகாவானது உலக வாழ்வினை உறுதிப்படுத்துகிறது. இங்கு மனித ஆன்மாவை தெய்வீக ஆன்மாவாக மாற்றுவதும் இயற்கை வாழ்வியலை தெய்வீக வாழ்வியலாக மாற்றுவதன் மூலம் மனித ஆளுமையின் சாத்தியங்களை உணர்வதோடு மனிதன் தெய்வீகத்துடன் ஒன்றிணைக்கப்படுகிறான்.

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# **FOOD & NUTRIENTS**

## ROLE OF PULSES (*SHAMI DHĀNYA*) IN FULFILLING DAILY PROTEIN REQUIREMENT - A REVIEW

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### Background

Protein is essential for growth, repair, maintenance of good health and body metabolism. Reference Nutrient Intake (RNI) is set at 0.75g of protein per kilogram bodyweight per day for adults. <sup>[1]</sup> There is an extra requirement for growth in infants and children and for pregnant and breast-feeding women. Amount of proteins vary in animal sources like meat, fish, eggs, dairy products and plant sources like pulses and vegetables. Proteins are fundamental structural and functional elements within every cell of the body and are involved in a wide range of metabolic interactions and is one of the 6 essential components of balanced diet needed for a healthy individual. The most severe form of protein deficiency is known as kwashiorkor. <sup>[2]</sup> Amino acids are the building unit of proteins and there are 20 different amino acids. Each amino acid consists of a central carbon that bond to an amine group (NH<sub>2</sub>), a carboxyl group (COOH), a hydrogen atom and R group. Among the 20 Amino acids, 8 of these are defined as ‘essential’ or ‘indispensable’ amino acids. <sup>[1]</sup> Ayurveda is an Indian philosophy that mainly deals with harmonizing the body with nature through diet, herbal medicine, behaviors and habits such as exercises like yoga. <sup>[3]</sup> According to Ayurveda, balanced diet comprises 12 components and *Mānsha varga* (types of meat) and *Shami dhānya* (legumes and pulses) can be named as food categories with highest protein content. <sup>[4]</sup>

### Justification and Objectives

Most of the vegetarian get a doubt in understanding the way of fulfilling their daily protein need without the intake of essential proteins gained from meat. Study focusses to analyze the importance of plant sources like pulses in fulfilling the daily protein need. General Objective was to analyze the role of pulses (*Shami dhānya*) in fulfilling daily protein requirement. Specific objectives include identification of different pulses, analysis of Ayurveda properties and to evaluation of details on *Shami dhānya* category of Ayurveda with modern research findings.

### Methodology

This study was mainly conducted by literature survey of Ayurveda authentic texts like *Charaka Samhithā*, *Susrutha Samhithā*, *Ashtāngahrda Samhithā*, Ayurveda pharmacopoeia, analyzing data on internet and research articles published on websites like Google scholar.

### Results

A pulse is an edible seed that grows in a pod which are a good source of plant protein in most diets. <sup>[5]</sup> Different proteins tend to complement each other in their amino acid pattern, so when two foods providing vegetable protein are eaten at a meal, amino acids of one protein may compensate for the limitations of the other, resulting in a combination of higher biological value. This is known as the complementary action of proteins. <sup>[1]</sup> Most of the pulses store proteins during seed germination. <sup>[6]</sup> Pulses are a low-fat source of protein. These contain high fiber that can help decrease cholesterol and help with regular bowel movement. <sup>[1]</sup> Compared to animal and many other plant-based

Compared to animal and many other plant-based sources of protein, pulses are a more affordable and sustainable protein-rich source. Some examples are beans, peas, chickpeas and lentils. <sup>[7]</sup> Seeds of Pumpkin, Hemp, Sunflower, Sesame, Peanuts, Almonds contain a higher value of proteins. <sup>[8]</sup>

According to Ayurveda, based on taste, food can be classified in to 6 types as *Madhura* (sweet), *Amla* (sour), *Lavana* (salty), *Katu* (pungent), *Thiktha* (bitter) and *Kashāya* (astringent). Based on the nutritional value, food is divided in to 12 types and *Mānsha* category includes meat and *Shami dhānya* which can be correlated with Pulses. <sup>[9]</sup> Pulses are part of the legume family (any plants that grow in pods), but the term “pulse” refers only to the dry edible seed within the pod. Beans, lentils, chickpeas and split peas are the most common types of pulses. There are 16 types of *Shami Dhānya* mentioned in *Charaka Samhithā*. *Vigna radiata* (Green gram/*Mudga/Mun ata*), *Cicer arietinum* (Chickpea/*Chanaka/ Kadala*), *Vigna mungo* (Black gram/*Māsha/ Undu*), *Vigna unguiculate* (Cowpea/ *Rāja māsha/ Kawpi*), *Lens culinaris* (Dahl/ *Masoor/ Parippu*), *Sesamum indicum* (Sesame seeds/ *Thila/ Thala ata*), *Dolichos biflorus* (Horse gram/ *Kulaththa/ Kollu*) and *Phaseolus vulgaris* (Beans/ *Shimbie/ Bonchi*), *Mucuna pruriens* (Velvet beans/ *Āthma guptha/ Wanduru maa*) are some of *Shami Dhānya* mentioned and other materials are unknown. <sup>[9]</sup> Pulses are an excellent source of plant-based protein as one cup of lentils contains about 14-16 grams of protein which is way more than 1 large boiled egg. <sup>[10]</sup> Pulses are important for people who have limited animal protein food as they have higher amounts of essential protein amino acid lysine, while cereals have higher amounts of the essential amino acid methionine and cysteine. <sup>[11]</sup> *Vigna radiata* (*Mudga*) is said to be the best *Shami dhānya* mentioned in Ayurveda. <sup>[8]</sup>

*Vigna radiata* (Green gram) is having *Kapha - piththaghna* (pacify *Kapha & Pitha dōsha*) <sup>[12]</sup> and nutritional value according to modern science is said to be act against heat stroke, aid digestive health, promote weight loss and lower bad LDL cholesterol, blood pressure and blood sugar levels. <sup>[13]</sup> *Vigna unguiculate* (Cowpea) is *Vāthala* (Increase *Vātha*), *Ruchikara* <sup>[12]</sup> (Increase Appetite) and present with abundant dietary fiber helping to diminish bad cholesterol (LDL) levels and triglycerides. <sup>[14]</sup> *Lens culinaris* (Dahl) *Piththa- shleshma shāmaka* (Pacify *Pitha & Kapha*), *sangāhi* (Cause constipation) and a good source of proteins. Anticarcinogenic, blood pressure-lowering, hypo - cholesterolemic and glycemic load-lowering effects are prominent. <sup>[6]</sup> Pulses are present with high calories. These are used in body metabolism and excess is stored as body fat. Average man needs around 2,500kcal (10,500KJ) a day to maintain a healthy body weight. <sup>[15]</sup> While supplying an adequate amount of proteins and fats these are rich with other constituents like Ca, Fe, Mg and Vitamin C which are helpful in growth and development of children. <sup>[16]</sup>

## Discussion and Conclusion

Pulses had many health benefits which can be tallied with nutritional value of proteins in animal sources. By analyzing the Ayurvedic aspect as well as the modern scientific approaches, it's clear that the importance and properties of *Shami dhānya* (Pulses) mentioned in Ayurveda authentic texts are true and similar to the modern findings. *Kapha dōsha* is prominent with *Madhura rasa* (sweet taste), *Sheetha veerya* (cold potency) and *Madhura vipāka* which is helps in increasing body weight. Pulses are rich with micro-nutrients and supply other health benefits like reducing cardiovascular diseases, anti - carcinogenic action

and reducing blood cholesterol levels (specially LDL cholesterol). By this study it was cleared that intake of pulses can give many health benefits for a healthy living for a comparatively lesser cost.

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## A REVIEW OF SCIENTIFICALLY PROVEN FOOD ITEMS FOR OSTEOARTHRITIS

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### Introduction

Osteoarthritis (OA) is a degenerative, age-related joint disease mainly involving the weight bearing joints. OA involves degeneration of the cartilage protecting the ends of the bones. More commonly, it is a result of wear and tear effects of the cartilage due to the aging process, and improper diet and change of lifestyle. Certain food items have been shown to reduce the symptoms, promote cartilage repair, strengthen bones, and slow the progression of OA.

### Objectives

The study was focused to find the scientifically proven diet supplements which aid to control OA by different strategies.

### Methodology

Published, English journal articles were filtered from the data bases PubMed and Google scholar. Laboratory, Animal and Human based studies were considered up to 2020. As per the review following are some of scientifically proved foods and supplement which can improve the effect of the symptoms of OA.

### Results and Discussion

Food articles which possess the potential to OA were selected based to their research results.

#### Omega 3 fatty acid

There are three main types of Omega-3s : Docosahexaenoic acid (DHA) and Eicosapentaenoic acid (EPA) and plant-derived alpha-linoleic acid (ALA). Oily fish / Fish oil supplements contain long chain omega 3 fatty acids. These polyunsaturated fatty acids potential to anti-inflammatory activity and to reduce inflammation in the joints (Marsha, 2018). OA patients those who prefer to eat fish can take at least one portion of oily fish (140 g or 4.9 ounces) per week (Natalie, 2020: Fish & Shellfish, 2018). OA patients who do not prefer to eat oily fish, Omega 3 fatty acid supplementations are available and which are safer and alternative for managing OA associated pain and other linked pathologies. (Kulkarni et al, 2016: Thomas et al, 2018).

#### Avocado /soybean Unsaponifiable (ASU)

Avocado and soybean would be benefitted effect for OA. Avocado /soybean Unsaponifiable is a dietary supplement and is created by isolating specific oils from avocados and soybeans (Gliozine, 2019). Which promotes cartilage repair and human trials revealed that Avocado / soybean reduces pain and stiffness of OA joints (Maheu et al, 2014). Avocado / soybean available as Arthrocen capsule form.

Turmeric As a curry powder, turmeric will not achieve the therapeutic value to cure OA due to very little amount and due to poor absorption in the gut (Tayyem et al, 2006). However, if turmeric consumes with black pepper, the curcumin absorption is accelerated through the gut by 2,000 % (Shoba et al, 1998). In addition, human trials exhibited that turmeric supplementations formulated by turmeric extracts had shown

its potentiality to ameliorate and reverse the pathology of OA and reducing the symptoms of the same (Daily et al, 2016).

#### Broccoli

Frequent consumption of broccoli can prevent cartilage destruction in cells, which researchers have a faith that it could slow the progression of OA as it contains a compound named sulforaphane (Davidson et al, 2017).

#### Garlic

Laboratory studies and OA models used in research exhibited that garlic has potential to prevent severe bone loss and thus garlic shows protective effect on chondrocytes formation by different pathways and thus reverse the OA pathology (Yang et al, 2019: Yang et al, 2017).

#### Spinach

Spinach has evident that it can improve the joint space and its protective effect on OA in animal and in cell-based laboratory studies (Choudhary et al, 2018).

#### Citrus fruits

Citrus fruits contained hesperidin, a vitamin P flavonoid compound which potential to anti-inflammatory activity. In addition, citrus fruit has potential to stimulate human chondrocytes and be a potential agent for the treatment of OA (Fu et al, 2018). Nobiletin found in orange (*Citrus sinensis*) and other peel of citrus fruits inhibits cartilage destruction and synovitis and be a potential agent for the treatment of OA (Lin et al, 2019).

### Conclusion

The study can conclude that the OA patients can include these foods frequently in their daily routine diet to get more benefit and to get minimize effect of OA.

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