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INTRODUCTION

Bronchial asthma is a chronic inflammatory condition of the lungs and is very common allergic disease. Presently the number of people with bronchial asthma has been increasing despite the early diagnosis and contemporary approaches to treatment. Total number of asthmatic patients in the world counts more than 300 million people.

Asthmatic patients have chronic inflammation in their respiratory tract which causes suffocation at exacerbation. The attack may be short or prolonged. With time without treatment and prophylaxis these episodes of suffocation become more severe and frequent.

Bronchial asthma is a hereditary disease, and the diseases in one of the parents doubles the risk of getting bronchial asthma by the child. If both parents have the disease, the chances of development of asthma in the child are quadrupled. In children and aged people the diseases tends to runs in more serious mode.

In siddha the symptoms of Manthara kaasam are correlated with bronchial asthma.

Siddha medicine is widely practiced and more prevalent in Tamil Nadu. In fact siddha medicine is considered as the safest medicine. Siddha medicine is esoteric and a miraculous medicine. In fact a single drug can cure several diseases by varying its adjuvants or adjuncts such as honey, butter, herbal
extract, juices etc.,- Bhogar. The success of the siddha medicine depends on the carrier of the medicine. Siddha medicine not only cures common ailments but also cures many acute and chronic infectious diseases. In fact one of the definitions of siddha medicine is “*that which ensures preventive against mortality*” as described by Thirumular in Thirumantiram.

Plant preparations are used from immemorial time for treating human ailments. The basic concept of siddha is “Food in medicine-Medicine is food”. Three major groups in the siddha medicine namely moola vargam, thaathu vargam and jeeva vargam. Siddha medicine uses three humoral concepts namely wind (vata), bile (pitta) and Phlegm (kapha). This medicine also exerts importance on pulse for determining the humours.

I would like to quote the following lines from the book “Recipes of Immortality”

*“Oh poverty! Praise to you!*

*I am a siddha because of your grace.*

*I see the whole world,*

*but no one sees me”*

- Sanskrit subhasitam Devavanipravesika, quoted in Goldman and Sutherland, 99 (Translated by Weiss)

It means that siddha practioner can see the whole world, but no one in the world sees the siddha practioner. So it clearly shows that there is a lacunae in this
system. My dissertation work is an attempt to improve Manthara kaasam which is clearly explained with symptoms and signs in Yoogi vaidhiya chinthamani -800. My dissertation work is a systematic and scientific attempt to cure Manthara kaasam by Thakkolathi chooranam which had been in use tradionally.
AIMS AND OBJECTIVES

Respiratory disease affects mankind irrespective of age. Manthara kaasam is one among such diseases that affects the vayu (piranan). Siddhars have enumerated many medicine for Manthara kaasam. The disease symptoms correlates with bronchial asthma in modern aspect. The socio economic impact of bronchial asthma is enormous. The prevalence of bronchial asthma is increasing in developing countries like India. According to Siddha system of medicine the symptoms of Manthara kaasam can be controlled by proper medication and diet.

Objectives:

- The objective of this dissertation work includes the study to explore definition, etiology, clinical features, diagnosis, investigations, treatment and diet for Manthara kaasam as per Siddha literature.
- This study also includes the aims at observing the incidence of the disease with regard to age, sex, occupation, socio economic status, family history, food and other habits, nilam and paruvakalam.
- This disease alters the normal conditions in mukkutram, poripulangal, envagai thervugal, naadi, neerkuri and neikuri. These can also be studied and the comparative study of this disease with modern aspect is done in this dissertation.
- The main objective of this study is to do clinical trial with THAKKOLATHI CHOORANAM (AGATHIYAR IRANDAIYIRAM-MOONDRAM PAAGAM Pg. No. 105) for Manthara kaasam and its evaluation in Biochemical, Pharmacological and Microbiological studies.
ABSTRACT

The increasing incidence of the respiratory diseases forced my dissertation work to be Manthara kaasam and to treat with the trail drug THAKKOLATHI CHOORANAM – 3 gm (thrice a day after food with hot water) for the control of the disease.

The trial medicine was subjected to Biochemical, Pharmacological and Microbiological analysis.

Twenty patients of either sex were selected as In-patients and Out-patients. The trial drug was administered to them and the majority of the cases showed good results.
REVIEW OF LITERATURE

MANTHARA KAASAM

SIDDHA ASPECTS

Veru Peyargal (Synonyms)

- Kulir irumal
- Manthara swasam

Eyal (Definition)

Manthara kaasam is characterized by breathlessness, tightness of chest, cough without expectoration, running nose, sneeze, breath sound like hissing of snake and sweating all over the body.

Noi Varum Vazhi (Etiology)

1. Yugi Vaidhya Chinthamani Says,

"திற்புறுத்து சுருக்கம் புதுப்பி அடுத்தப்
முடியுமே மாதிரையால் பிள்ளை காட்டவிற்கிறே நையப்"

“மாதிரையால் பருகக்கூறியில் பிள்ளையால் மாதிரை
பருகையால் பருக்கக்கூறியில் பிள்ளையால்
தூய்ந்து காத்து குளிர்கூறியில் மாதிரை
சித்துப்பை பருக்கக்கூறியில் பிள்ளையால் அடுத்தப்"
Diet and habits:

- Excessive smoking
- Excessive intake of cold water
- Increased body heat
- Excessive intake of non-vegetarian diet
- Lack of exercise
- Intake of improperly cooked food
- Starving on hunger
- Increased stress
Character and Behaviours:

- Excessive coitus
- Increased stress
- Stealing foods which are prepared for God
- Cursing life partner
- Tasting other’s foods
- Forgetting one’s help
- Those who didn’t keep his words

2. Siddha Maruthuvam (Pothu) Says,

- Exposure to cold weather
- Over strain in hot climate
- Taking cold and hot foods
- Singing in high pitched voice
- Intake of spicy food
- Due to irritants like dust, mud, lime etc.,
- Inhalation of pleasant as well as irritable odour
3. Thanvandri Vaidhyam Says,

"அரேவிய குறுந்து பொழுஞ்ஞாய் காரணத்தால்

தன்னிகிய பாலுக் குழுவுக்கு காரணங்கள் அகரிப்பாண் குறை

உற்பதிகர் குறுந்து குழு பயன்படுத்து லக்கை

தூயானது குழுக் காரணங்கள் அகரிய நெய்யா.","

- Over stress
- Excessive coitus
- Inhalation of dusts, pollens etc.,

4. Sushrutha Samhitha says,

- சுற்றுப்பார் பிரித்துக்கு காற்று உற்பதிப்பு மன்னா நூறுந்து
  அரியங்கு, குற்றுக்கு வருத்து உற்பதிப்பு மன்னா குறை
  காற்று உற்பதிப்பு அரியங்கு நூற்று காற்று.

- The disease occurs due to alteration of the vital vayu known
  as Prirana vayu which differs from its normal function and get
  raised and unites with the deranged kaba of the body and
  produces the symptoms such as gasping and labored breathing.

5. Roga Nirmaya Saram Says,

- எலுமணியன் அகரியங்கு ஆரியங்கு உற்பதிப்பு நூற்று
  காற்று உற்பதிப்பு அரியங்கு காற்று மன்னா

Due to vitiation of excessive Agni in the thorax, Vayu vitiates and it gets
accumulated in thorax. This causes breathlessness.
6. T.V. Sambasivam Pillai Dictionary Says,

A disease caused by exposure to cold environment, rainy season, drinking cold water and intake of cooling food.

7. Anubava Vaitheya Deva Ragaseyam says,

- Excessive Vadha and Kaba
- Diarrhoea due to indigestion
- Vomitting
- Toxic anaemia
- Persistance fever
- Excessive cold
- Husks of the grains and pulse
- Trauma of the genital organs
Murkurigal (Preliminary Signs)

1. Siddha Maruthuvam (Pothu) says

- Sore throat
- Pricking sensation in the throat
- Decrease in voice pitch
- Running nose
- Tightness of chest
- Desire towards hot food

2. Therayar Vagadam Says

- Regurgitation
- Sense of sweet taste in tongue
- Occipital Headache, Pain all over the body.
- Soreness of throat
- Sneeze
Noi Enn (Classification) & Manthara kaasam Kurigunangal

I. Yugi Vaidhya Chindamani says,

Mantharakaasam is described as one of the twelve types of Kaasam.
Manthara Kaasam

“தாலரா காசம் மாரி குருவின்

லோகக்கடல் விழாக்கள் கீழ்ப்பழின்டு

மாலைக்கு மாவட்டம் காலூரிய நடுநிலை

காலூரிய பாய்ப்பிளிருந்து கீழ் தோற்றம்

காலூரிய கனவுக்கு பிற்புற காலூரிய

குமாரன் கராளிக்கு பிரமணம் பாடல்

ஊர்ச்ச கராளை கோவில் தோர்ந்து”

- புரி கல்லுறை விஷயநிலை

Manthara kasam is characterized by running nose, sneezing, tightness of chest, breath sound like hissing of snake, excessive sweating all over the body, cough without expectoration, breathlessness.

II. Agasthiyar – 2000 Says

There are eight types.

Manthara Kaasam:

“மாத்தாயாரசை முக்தராம் மாடிக்கும் கலாச்சாரா

முக்தராம் காசன்கால் காட்சியில் காட்சிக்கும் முக்தராம்

சங்க பல்லு காலூரியப்பன் காலூரியகால் முக்தராமப்பட

புரீராமப்பன் சுதைந்தகம் முக்தி மாணிக்கும் பாடல்”
The characteristic features of the disease are breathlessness, fever, frequent cough, emaciation, pain in the chest and face.

III. Danvantri Vaidhyam Says,

There are 5 types of kaasam.

**Manthara Kaasam:**

”thedhuvaniyam thudikuvathin theppalayam thilakam

kumaran thilakum nithi thilakkam adhi adhi amma

ama namkku karaam karup thilak thilakam

maham thilakum nilavum porthmale puthiyum thilakum”

Running nose, sneeze, tightness of chest, breathlessness and cough with expectoration are the characteristic features of this disease.

IV. Sikitcha Rathna Dheepam says,

**Sikitcha Rathna Dheepam says,**

There are twelve types of Kaasam.

**Manthara kaasam:**

- malaripal meyam seemai amukam
- sumam
- adhi adhi thilakkam adhi adhi
- pothim thendrala petha thilakkum nilukum
- karuthu, yamam, kathai thilakkam thilakkam
- adhi adhi thilakkam
- katha amukam
V. Anubava Vaidiya Deva Rgasiyam says,

These are 5 types of kaasam

1. Oorthuva swasam
2. Arppa Swasam
3. Vichinna Swasam
4. Maha Swasam
5. Manthara Swasam or Thamaraga Swasam

Manthara Swasam or Thamaraga Swasam

மன்றரா மாந்தச் சவோவா வியப்பா வாணோகத்தான் காசாமூந் நயன்
காதத் தொன்மயம் நோக்கி, தொன்மயம், பேயல், ஆந்தி, தவன் நோக்க
முறுக்கும் வகையான அறிக்கையின், தமிழ்காலே காரிக்கை 2-குள்ளங்கடும்.
மியருவியான நோக்குகாலே அறிக்கை நோக்கின், காதத் அன்ன் தவன்
வந்தகியான் மியின் தொருகானமூந் காலே, பீழுக்ககள் ருமைக்கின்.
நாயக்க நிலை, மாந்தோவுக் மியின் தொருகானமூந், விரும்பின் நீத்தை
அணை தவன்காலே, நோக்கின் முக்கியம், மாந்தோவுக் மியின் முக்கியம்
மறுகாலே நோக்கின் நோக்குகாலே மதுரா. இதில் மாந்தோவுகளின் மாந்தோ
2-குள்ளங்கடும் காரிக்கை 3-குள்ளங்கடும் காரிக்கையான் காலே, தவன் பீழுக்ககள், தவன் நற்றை
நிற்பவுக் மாந்தோ, மருத்துவம் விதனையான் காரிக்கை அறிக்கையான் மருத்துவம்
காலே மாந்தோவுக் மாந்தோ காலே அறிக்கையான். மருத்துவத்துக் குறிப்பிட்டு
காரிக்கை காலே, மாந்தோ, மாந்தோ வாணோகத்தான் காரிக்கை காலே காலே.
VI. Uyir Kakkum Siddha Maruthuvam @ Aathma Rakshmirtham says,

There are three types of kaasam

1. **Manthara kaasam**

2. Nachu Pitha kaasam

3. Ratha kaasam

**Manthara Kaasam:**

Itching in the face and nose. Sneezing, running nose, accumulation of kabam in the chest, cough and difficulty in breathing, pain in chest & ribs and it occurs during winter and rainy season. Loss of appetite, flatulence, edema of the body and giddiness are seen in Manthara kasam.

VII. Tamilaga Siddha Vaitheya Gurugulam says,

There are twelve types.

The characteristic features are as follows.

**Manthara kaasam:**

- Skin itching and oozing
- Gas and flatulence
- Headache and extreme pain
- Swelling on face due to kabam
- Loss of appetite and body weakness
- Body ache and pain
- Presence of kabam in the organs
VIII Raja Vaidhya Bodhini Part I says

There are 12 types of kasam

1. Vadha Kaasam  7. **Manthara Kaasam**
2. Pitha Kaasam   8. Swasa Kaasam
4. Vadha Pitha Kaasam 10. Sudar Kaasam
5. Pitha Sethuma Kaasam 11. Peenisa Kaasam

IX.T.V.Sambasivam Pillai Dictionary says

There are Twenty types of kasam

1. Swasa kaasam  11. Eelai kaasam
2. **Manthara kaasam**  12. Thontha kaasam
3. Ratha kaasam  13. Pakka kaasam
5. Silethuma kaasam  15. Sudar kaasam
7. Vadha kaasam  17. Naadha kaasam
8. Bala kaasam  18. Vali kaasam
9. Virana kaasam 19. Adaippu kaasam
10. Karppa kaasam 20. Gunma kaasam
Manthara kaasam

- Itching over face and ear
- Rhinitis
- Increased accumulation of kaba in rainy and cold seasons
- Sneezing
- Cough
- Breathlessness
- Pain over the ribs

All these symptoms occur during cloudy seasons only.

XI .Roga Nirnaya saram says

Manthara kasam:

The characteristic features of the disease are vadhā in combination with kaba affecting the nerves and causes rattling sound in throat, unbearable difficulty in breathing, increased breathing with sputum production.
Mukkutra Verupadugal (Pathology)

In siddha system of medicine, the manifestation of all the diseases are the result of derangement of Doshas i.e., Vadham, Pitham, Kabam. The prime factor which is involved in Manthara kaasam is Kaba, which is accompanied with vitiated Vadha or Pitha so and produce clinical symptoms of Manthara kaasam. This is clearly indicated by Theraiyar as,

“கம்நெருக கல்லின் கார் கூடும் காலனித்து”

- சுகசாதீ

1. Excessive Kaba in the respiratory organs affects the Melnokku kal and Uyir kal and so the vayu is not able to reach the terminal points of respiration which produces gasping and laboured breathing.

2. Some authors says that the disease is caused by deranged Vadha. This thought is also acceptable because of the destruction of Vayu in the respiratory tract which is abnormally present.

3. Excessive intake of Pitha prompting diet induces Pitha Kutram. This type of Pitha produces more heat and this heat goes to head resulting in running nose, heaviness of head and neck, sneezing and also induces formation of water vapours in the lungs and causes narrowing of air passage, which leads to the onset of the disease. This is indicated as,

“பிற்பலை முடிமை பலவர் பிற்பலை பலவர் முடிமை
பிற்பலை முடிமை பலவர் 
பிற்பலை முடிமை பலவர் 
பிற்பலை முடிமை பலவர்

- சுகசாதீ
So the changes in the diet and habits which increase Vadha and Kaba produces the clinical symptoms of Manthara kaasam. In Uyir Nilaigal, Anagatham (chest) which is the residence of Udhanan (Melnokku kal) and Pranan (Uyir kal) is deranged. When Pranan, the primary vayu is affected it leads to difficulty in breathing and involvement of Udhanan leads to cough and sneezing.

Involvement of Kirugaran leads to running nose, cough, sneezing. Involvement of Devathathan leads to tiredness. Involvement of Samanan causes inability to control the other Vayus and causes loss of appetite.

In Kaba, the derangement of Avalambagam leads to breathlessness, cough, wheezing. In the seven Udal Thathus - Saaram, Senneer are affected which leads to lethargy and depression. In severe cases Oon and Kozhuppu are also affected which leads to symptoms of emaciation and body pain.

**Piniyari Muraimai (Diagnosis)**

The way of diagnosis is very important by which a physician can deal the disease, then he can rule out the cause of the disease and then treat the disease.

The diagnosis is based on four criterias

1. Poriyal arithal
2. Pulanal arithal
3. Vinathal
4. En Vagai Thervugal
1. **Poriyal Arithal**

Porigal are the five organs of perception. In Manthara kasam, it is as follows:

- **Mei (Skin)** - Sweating all over the body, waxy
- **Vai (Tongue)** - Dry, pale and sometimes coated due to constipation
- **Kann (Eye)** - Sometimes dusky and pale
- **Mookku (Nose)** - Running nose, irritation of nose, visible movement of alar nasi.
- **Sevi (Ear)** - Normal

2. **Pulanal Arithal**

Pulangal are the five objects of senses.

- **Ooru , oosai, ozhi** - Normal
- **Suvai (Taste)** - diminished or normal
- **Naatram (Smell)** - Altered or absent due to running nose and inflammation of nasal mucosa

3. **Vinadhal**

By Vinadhal, the physician enquires about the patient’s Name, age, occupation, native place(Thinai), family history, socio-economic status, diet habits, prone to exposure of any allergens, (ex: dust, smoke, pollens) and his complaints and duration with the history of previous episodes and its frequency in season.
PARUVA KAALAM (Season)

Year is divided into six seasons. They are,

1. Karkaalam - Avani & Purattasi - August & September
2. Koothirkaalam - Iyppasi & Karthigai - October & November
3. Munpanikaalam - Margazhi & Thai - December & January
4. Pinpanikaalam - Masi & Panguni - February & March
5. Elavenilkaalam - Chithirai & Vaigasi - April & May
6. Mudhuvenilkaalam - Aani & Aadi - June & July

Increased incidence of Mantharakasam mainly occurs- Karthigai to Masi (Kabam thannilai sirappurum Kaalam) and also in Karkaalam.

This is described in Siddha literature as,
MUKKUTRA NILAIGAL

VADHAM

“இருந்தால் பிரித்தான் வயுந்துகள் விளை வந்தால்
நாகத்தால் பிரித்தான் வயுந்துகள் விளை வந்தால்
கிருக்கரான் பிரித்தான் வயுந்துகள்
சாமானன் பிரித்தான் வயுந்துகள்”

- படி 800 குண்டாமல் 35

In Manthara kaasam,

Pranan - Vayu is affected leading to difficulty in breathing.

Abanan - Some patients had constipation.

Viyanan - Saaram distribution gets affected.

Samanan - This vayu gets affected since it cannot control other vayus.

Udhanan - It gets affected due to difficulty in breathing.

Nagan, koorman - Normal

Kirugaran - This vayu gets deranged causing running nose, sneeze, cough and loss of appetite.

Devathathan - this vayu is deranged causing emotional stress.

Dhanajeyan - It produces swelling of the body after death and escapes through the scalp after the third day of death.
PITHAM

“இந்தக் காசம் காண்ட பொழியம் மா வருமாறு தொடர்புள்ள நெருங்கியது விள்ளைக்குருக்கும் பின்னணிக்கும் அறுவியாக மாச்சா பாங்கு
bamதி ரோதிக்கும் மாச்சா பாங்கு
வேதம் பொரிம்பிற் மாச்சா பாங்கு”
- முன்னெச்சரம் குறிப்பிட்டு

In Manthara Kaasam,

Anal pitham - It causes loss of appetite in some patients.

Ranjagam, Sadhagam, Aalosagam - Normal

Prasagam - Some patients may have eczema with blackish discolouration of the skin.

KABAM

“இந்தக் காசம் வெப்பகாவல் பாதுகாக்கி
சோதம் வெப்பகாவல் வெப்பகாவல் வெப்பகாவல்
முன்னெச்சரம் பொரிம்பிற் மாச்சா பாங்கு
முன்னெச்சரம் பொரிம்பிற் மாச்சா பாங்கு”
- முன்னெச்சரம் குறிப்பிட்டு

Avalambagam - It is deranged in Manthara Kasam patients due to the presence of tightness of chest, cough, wheezing, and breathlessness.

Kilethagam - Some patients have loss of appetite

Pothagam, Tharpagam, Sandhigam – Normal.
UDAL KATTUGAL

"தான் மூன்று பால் விளக்கம் காணிப்பது
தான் மூக்காட்டும் காணிப்பது என்றுbohydrates were)

- புளி 800

Saaram - It is deranged in Mantharakasam due to loss of appetite
causing tiredness in the body and mind.

Senneer - This is deranged in some patients with weakness.

Oon, Kozhuppu, Moolai, Sukkilam/ Suronitham –Normal.

EN VAGAI THERVUGAL

It is the basic diagnostic principle and the uniqueness of the Siddha
system of Medicine. The following lines reveal this as follows.

"தான் மூன்று பால் விளக்கம் காணிப்பது
மூக்கு மூக்காட்டும் காணிப்பது என்று carbohydratess"

- சினில் துண்ணி சுமாரும் உண்ணல்

And,

"சுமாரும் உண்ணலில் சீழி பெரியங்கள் கொண்டு சீழி
பெரியங்களில் சீழி பெரியங்கள் கொண்டு சீழி
யாரை விளக்கம் சீழினற்று சீழி
சீழி விளக்கம் சீழி பெரியங்கள்
சீழி குறுக்கு குறுக்கு குறுக்கு பெரியங்கள் கொண்டு சீழி
சீழி

- சுமாரும்;
In Manthara kaasam,

a. Naa (Tongue) - patients the sputum is scanty and mucoid.

b. Niram (Colour of the skin) - the colour of the skin, conjunctiva, may be pale.

c. Mozhi (Speech) – Low pitched voice.

d. Vizhi (Eye) – Eyes may be pallor.

"சொந்தத்தில் சில்வாயில் சிர்கித்து கொள்கிறார்களோர்கள்"

e. Malam – Constipation may be present.

"எல்லா மருத்காலாக ஒன்றியை எம்பங்கியது"

"செல்வைத் தவிர்த்து மேல் கிருஷ்ணி

திஂந்த இரு விழும் வடிவமாகவே""

f. Moothiram (Urine) – It may be light yellow.

g. Sparisam (palpation) – It may be cold due to excessive sweating.

"சுருங்கு சொரிகை செஞ்சளுக்கு"

"செல்வைத் தவிர்த்து தேசாய தரியிக்கு"

h. Naadi (Pulse)

Naadi is the very important helpful observation for diagnosis and prognosis.
Naadi Nadai in Mantharakasam

Vatha Kaba Naadi

"பாருந்திருந்தே ஈர்த்து தந்து
பாருந்திருந்தே கிளம்ப திட்டி திட்டி
பாருந்திருந்தே ஈர்த்து தந்து
பாருந்திருந்தே கிளம்ப திட்டி

மாணவக் கணவு உறுதிக்கோள், பிறிக்கிறே
மாணவக் கணவு உறுதிக்கோள்
மாணவக் கணவு உறுதிக்கோள்

- சக்தி ராஜா

Iya Naadi

"தாரணேயில் கீழ் மக்களிடமில் தென்பது,
தாரணேயில் கீழ் மக்களிடமில்
தாரணேயில் கீழ் மக்களிடமில்

மாணவர்கள் கணவாக விளக்க விளக்க
மாணவர்கள் கணவாக விளக்க விளக்க

- சக்தி ராஜா
Kaba Pitha Naadi

"நமது ஓர்க்கும் நேர வருகாயம்

உயர்ந்த கருவிகள் நீரால் ஓர்க்கும்

நீரால் கருவிகள் மக்கள் ஓர்க்கும்

நீரால் செய்தல்லப்படும் மருத்துவம்

நீங்கள் கருவிகள் பல்ளுவியியல்

அம்சங்கள் செய்தல்லும் மருத்துவம்

அதன் காரணம் நீரால் ஓர்க்கும் மருத்துவம்"

- லிங்கம்

Nei Kuri

This urine examination is unique in Siddha system of Medicine. For this examination urine is collected in the early morning in a pure glass vessel. The day before of examination the patient is advised to take a balanced diet and avoid excessive diet, in take of diet during irregular timings.

"மாதிரிகள் தம்பூத் திம்பாக என்பது

மிளக் கைகளின் பெயர் தம்பூத் கைகளின்

தேவனவர் மாகாண்டிகள் பாகத்தகாண்டிகள்

அனைத்தும் கைகள் பசுமையாக பாகத்தகாண்டிகள்

இல்லையால் நீரும் தம்பூதும் பாகத்தகாண்டிகள்"

- குமாரம் தலை சிறு நகரத்தில்
A drop of gingelly oil is dropped on a wide glass vessel containing the urine to be tested which is kept under sunlight in a calm place and the mode of spread of gingelly oil on the urine surface indicates the derangement of the three dhoshas and it can be diagnosed.

- "அவைல் இலையால் அ. இடு தட்டம்"
- "அம்மியங்கு பசுவிக் அ. இடு பிண்மு"  
- "புதுர்நீர்கள் விளையாட்டு ஆர்வியின் ஆண்மு"  

Oil spreading like a snake indicates Vatha.

Oil spreading like a ring indicates Pitha

Oil spreading like a pearl indicates Kaba

- செம்பு திறன் செம்பு  

Oil spreading like snake and ring, ring and snake, snake and pearl, ring and pearl all comes under Dhondha Dhosham.

In Manthara kasam, most of the Nei Kuri findings result pearl like oil floating on the urine.
DIFFERENTIAL DIAGNOSIS

DISEASES SIMILAR TO MANTHARA KASAM are,

Swasa Kaasam:

“இவ்விலக்கிய வேளை குழு குறுக்குச் சிரிப்பே
நெஞ்சல் வெளிப்பு தம்முக்குச் செய்கின்ற
தியாகப்பொருள் வேளையுள்ளுள்ளாக வெறுகுகற்குதே
தியாகப்பொருள் நெஞ்சல் பிரித்துக் கொள்ளும்
தியாகப்பொருள் பாதுகாப்பு கல்ளும் விளக்கும்
தியாகப்பொருள் புதுக்காலாடுக்கு நெஞ்சல் விளக்கும்
தியாகப்பொருள் குருக்குக் குழந்துக் கொள்ளும்
”
- புனித காமர்தா சிகிச்சை

In swasa kaasam these is cough with expectoration, breathing sound like hissing of snake, hoarseness of voice, indigestion, flatulance, rhinitis, emaciation, brashing. Cough with expectoration in swasa kaasam differentiates it from Manthara kaasam where there is no sputum production.

2. Kandakiragam

“இவ்விலக்கிய வேளை புருட்சு சிரித்து
நெஞ்சல் பிரித்துவின் கல்லியும் புருட்சுகள்
தியாகப்பொருள் வேளையுள்ளுள்ளாக புருட்சு
தியாகப்பொருள் நெஞ்சல் சுருக்குகற்குதே
தியாகப்பொருள் பாதுகாப்பு கல்லும் விளக்கும்
(தியாகப்பொருள்) புருட்சுகள் சிறுத்தியும் புருட்சுகள்
(தியாகப்பொருள்) புதுக்காலாடுக்கு புருட்சு விளக்கும்
(பாதுகாப்பு) உறியின் புருட்சு விளக்கும்
”
- புனித காமர்தா சிகிச்சை
In Kandakiragam, there is difficulty in speech, pain in the chest and occipital region, pain all over the body, breathlessness, sweating in face, pain in the ribs, anorexia.

In Mantharakasam, there is no painful conditions like occipital pain, body pain and throat pain.

3. Swasa Pitham

In Swasa Pitham, there is increased respiration (tachypnoea), flatulence, pain all over the body, blurring of vision, cough, loss of consciousness, pain in the chest followed by cough, loss of appetite etc.,

In Mantharakasam there is no loss of consciousness, distension of abdomen and blurring of vision.
4. Swasa Silethumam

“In Swasa Silethumam, there is congestion of lungs, nasal congestion, cough, dyspnea, fever with rigor, syncope, chest tightness, dryness of mouth, running nose, excessive thirst etc.,

In Manthara kasam, there is no fever with rigor.”
TREATMENT

Trial Medicine

Mainly antispasmodic, antihistamine, expectorant, to relieve the spasm and to expel the sputum.

Diet:

To maintain tridhoshas and energy in equilibrium.

Prevention methods:

To strengthen the muscles of respiration (Pranayamam)

Yoga therapy:

To maintain dhasa vayukkal and to improve mental and physical health.

1. Administration of trial medicine:

THAKKOLATHI CHOORANAM – 3 gm thrice a day after meals with hot water

2. Diet:

The diet regiments for Kaba patients according to Siddhars are explained below.

"அப் புரே குருக்கா கத்து நிலையால் பகாக்கான காசேரவி
அன்றிக்க காய்ப்படுத்து காக்ககாய்ப்படுத்து காய்ப்படுத்து விளைவில் பிள்ளையார்
பிள்ளையார் கத்து குருக்கா குருக்கா புரே புரே முக்காய்ப்படுத்து
அன்றிக்க புரே குருக்கா குருக்கா புரே குருக்கா குருக்கா குருக்கா"
Vegetables to be added in diet

- குழுத்து (Solanum melongena)
- மோம்பலு (Trichosanthes cucumerina)
- அலங்கு (Dolichos lab-lab)
- கோண்பாறுகுறுத்து (Solanum xanthocarpum)
- குழு (Ficus glomavata)
- பூல்சுகை (Luffa acutaugula)
- மாகரி (Mangifera indica)
- மாழமைகுறுத்து (Musa paradisica)
- மரகுழுத்து (Moringa tinctoria)
- கீரைக்குறுத்து (Solanum torvum)

Tubers to be added in diet

- பாத்தருச்சுகை (Raphanus sativus)
- கனத்து (Allium sativum, Allium cepa)
- செட்டி (Zingiber officinale)
- சோம்பாறுகுறுத்து (Amorphophallus complanatus)
Greens to be added in diet

- கெலும்புக்கி (Solanum Nigrum)
- குளுவாடை (Eclipta alba)
- பூனை (Aerva lanata)
- பச்சை (Bascella alba)
- கொடும்பானை (Amaranthus gangeticus)
- மஞ்சளை (Gisekia pharmacoides)
- பெருந்தாக்கானை (Justicia madurensis)
- பச்சிமாணமாக்கானை (Oxalis corniculata)

**Diet Restriction:**

Siddhars advice to avoid certain food items during diseased conditions and this includes the following,

"குடும்பில் கூரைலை வெளிப்பொருளை குறுக்குக்குறை கலந்த

குரல் தாவரம் கேழந்தை ஏற்றக்காடு குரல்கம்

மாவு விளைவில் குற்றுக்குறை புண்டக்குறை மூக்காமல்

தட்டு மாணியா கூரைலை குறுக்குறை தம்பற்றும்”

- குரங்கு விளக்கம்

Mustard, Bengal gram, Mango, Garlic, Tobacco, Bitter guard, Asafoetida, Gingelly oil, Coconut, Jack fruit, Horse gram, Alcohol, Sesban,  And also, they are advised to avoid coitus.
These are general diet and habitual restrictions for all diseases.

- Kaba patients should restrict the followings also.
  
  Onion, Jaggery, Curd, Butter, Ghee, Fish, Dry Fish.

3. Prevention

1. Avoid cold weather

2. Avoid working in pollutants as dust, cement, cotton mills and in husks.

3. Avoid smoking

4. To sleep in phoenix mat, prevent Kaba diseases.

"క్విన్స్ కాన్ పాండ్రు దింపందం పిండందం

ట్లాండ్ కర్కు దింపందం పిండందం

మాత్రమే పిడించడం ప్రతి కిందం

మాత్రమే నికాతమకత్వం ఎంగుడ"

- **అధికారిత భావానింగా**

Advice to practice Pranayamam after the treatment prophylaxis.

**PRANAYAMAM (Breathing Exercise)**

"ఆమాయం ప్యాట్మాయం ప్యాట్మాయం

ఆమాయం ప్యాట్మాయం ప్యాట్మాయం

ఆమాయం ప్యాట్మాయం ప్యాట్మాయం

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Pranayamam or breathing exercise mainly consists of

- Pooragam (inhalation of air by deep inspiration).
- Kumbagam (holding the breath as far as possible)
- Resagam (exhalation of air by expiration)

During breathing exercise, the lungs filled with fresh air in its anatomical dead space also and expand well and get proper supply of oxygen by proper expansion of chest. So, Pranayama practice is one of the prevention technique for Manthara Kasam.

This practice also gives good appetite, strength, enthusiasm, rigor and vitality.

4. YOGA THERAPY

Yogasana is one of the most spiritual legacies gifted by our ancient sages. Asanas strengthen the muscles of respiration and diaphragm as well as regulate respiration. So, practising asanas is more helpful in asthmatic patients.
MODERN ASPECTS

ANATOMY & PHYSIOLOGY OF RESPIRATORY SYSTEM

The organs of the respiration are

- Nose
- Pharynx
- Larynx
- Trachea
- Pair of bronchi
- Bronchioles and small air passages
- Muscles of respiration - the inter costal muscles and the diaphragm

The respiratory system brings air in close relationship with the mixed venous blood enabling tissue respiration.

Nose and Nasal cavity

Nose is lined by ciliated columnar epithelium which contains the mucus secreting goblet cells.

Nose is an aerodynamic structure that not only brings the air inside the body but also warms, moistens and filters it. The anterior nares has hairs which effectively filters and cleans the air and traps the dust particles. The underlying epithelium is lined with highly vascularized mucosa which protects it from drying and irritation. Sneezing is a reflex action, in fact it is protective reaction of the body to expel the irritant.
**Pharynx**

Pharynx is the passage extending from the base of skull to the level of 6\(^{th}\) cervical vertebra where it is further continued by esophagus.

Pharynx is divided into three segments namely Naso Pharynx (which extends from the base of skull to the soft palate), Oro Pharynx (which extend from soft palate to the pharyngoepiglottic fold), and Laryngo Pharynx(which extends from the pharyngoepiglottic fold to the upper esophageal sphincter).

The main functions of pharynx include passage of the air and food, to warm and humidify the air, tasting and hearing protection.

**Larynx**

The larynx is the voice box which is located at the level of the upper cervical vertebrae. It extends from the root of the tongue at the inlet of the larynx up to the commencement of the trachea. It functions as an air passage.

**Functions**

Larynx is involved in the production of sound and speech. The production of sound occurs during expiration when the sound produced by the vocal cords is manipulated by the tongue, cheeks, lips.

It protects the lower respiratory tract from the swallowed food from mouth. It acts as a passage for air between pharynx and trachea.

Larynx humidifies and warms the air during its passage. It also filters the air.
**Trachea**

Trachea is commonly called as windpipe. It begins under the larnynx. Tracheal is lined with mucosa. Trachea helps in the passage of air.

**Cough reflex**

Nerve endings in the larynx, trachea and bronchi are sensitive to irritation. When there is any irritation, it stimulates nerve impulse which is induced by the vagus nerve to the respiratory centre located in the brain stem. The reflex motor response is deep inspiration followed by closed glottis. As a result of this, the intra pleural pressures rises.

This is followed by sudden opening of the glottis is with explosive out flow of air at a higher velocity. As a consecutive reaction, the irritant will be repelled out of the respiratory tract.

**Bronchi and Smaller Air Passage**

The trachea divides at the level of 5\(^{th}\) thoracic vertebra to form a pair of bronchi. The right bronchus is wider and shorter when compared to the left bronchus.

Bronchi are composed of the same tissue the trachea. They are lined ciliated columnar epithelial cells. The bronchus progressively subdivides into bronchioles, terminal bronchioles respiratory bronchioles, alveolar duct and finally alveoli.
Functions of air passage not involved in gas exchange

Control of air entry

The respiratory passage may be altered by contraction and relaxation of the involuntary muscles in their walls. This involuntary action regulates the volume of air entering the lungs. These changes under the control of autonomic nervous system. Parasympathetic stimulation causes constriction while sympathetic stimulation causes dilation. The following functions continue as in the upper airways.

- Warming and humidifying
- Supporting and potency
- Removal of particulate matter
- Cough reflex

Respiratory Bronchioles and Alveoli

The terminal bronchus continues as respiratory bronchioles, alveolar duct and alveoli at the distal end. The lobules are the blind ends of the respiratory tract. The exchange of gases during respiration takes place across two membranes - alveolar and capillary membrane.

Functions of respiratory bronchioles and alveoli

1. External respiration
2. Defence against microbes
Lungs

Lungs are paired organs of respiration. They are situated one on each side of the mediastinum with the thoracic cavity. Each lung resembles a half cone. It has an apex, a base, medial surface and costal surface.

Lungs are highly vascularized and the structures that enter and leave at the hilum are 1 bronchus, 1 pulmonary artery, 2 pulmonary veins, 1 bronchial artery, 1 bronchial vein, lymph vessels, parasympathetic and sympathetic nerves. The area between the lungs is the mediastium which is occupied by heart, great vessels, trachea, right and left bronchi, oesophagus, lymph nodes, lymph vessels and nerves. The main function of the lung is to provide gas exchange during the respiratory process.

Pleura and Pleural Cavity

Each lung is covered by the pleural cavity. The pleura is a double layered membrane comprised of inner pulmonary pleura and outer parietal pleura. The pulmonary pleura surrounds the lung whereas the parietal pleura lines over the thoracic cavity. The space between the two membranes is called as pleural space which is filled with a liquid called pleural liquid.
RESPIRATION

Respiration is the process which delivers oxygen to the lungs and removes carbon-dioxide from the lungs. This process is achieved by two mechanisms of the lungs namely inspiration and expiration. Inspiration is the process of breathing in through which oxygen from the atmosphere enters the respiratory system of the body.Expiration is the process through which the carbon–dioxide is released from the body to the atmosphere.

Muscles of Respiration

During the process of inspiration expansion of the chest occurs which is accomplished by voluntary and involuntary muscles. In normal conditions during quiet breathing the inter costal muscles and the diaphragm are involved, whereas during any abnormal conditions when there is difficulty in breathing, muscles of the neck, shoulder and abdomen assists the process.

Cycles of Respiration

This occurs 12-15 times per minute and consists of three phases.

- Inspiration
- Expiration
- Pause

Physiology Variables Affects Respiration

Elasticity

Elasticity is one of the factors that affect the physiology of respiration. Loss of elasticity of the connective tissue in the lungs causes forced expiration with increased effort of inspiration. The elastic recoiling reduces with the increase
in the age. It may be also seen in some pathological conditions such as emphysema.

Compliance

This is the measure of distensibility (stretchiness) of the lungs, i.e., when the compliance is low, the effort required to inflate the alveoli is greater than normal e.g. in some diseases where elasticity is reduced or when surfactant is present insufficiently. Some clinical conditions such as pulmonary fibrosis worsen this condition.

Air flow resistance

Resistance refers to the obstruction of the airflow. When the air flow resistance is increased, it may lead to bronchospasm e.g. in broncho constriction, which needs more respiratory effort to inflate the lungs.

Lung volumes and capacity

In normal quiet breathing there are about 15 complete respiratory cycles per minute. The lungs and air passages are never empty, since the exchange of gases occurs only across the wall of the alveolar ducts and alveolar. The remaining capacity of the respiratory passages is described as anatomical dead space (about 150ml).

Tidal Volume

It is the amount of air which is inhaled and exhaled out of the lungs during each of quite breathing about 500ml.
**Inspiratory Reserve Volume**

It is the additional volume of air that can be inhaled into the lungs during maximal inspiration.

**Inspiratory Capacity**

It is the volume of air inhaled additionally after normal expiration. It is the sum of tidal volume and inspiratory reserve volume.

**Functional Residual Capacity**

It is the volume of air remaining in the air passages and alveoli at the end of quiet respiration. The functional residual volume also prevents the alveolar collapse during expiration.

**Expiratory Reserve Volume**

It is the largest volume of air which can be exhaled from the lungs during maximal expiration.

**Vital Capacity (VC)**

It is the maximum volume of air which can be moved into and out of the lungs.

**Residual Volume**

Residual volume is the volume of air remaining in the lungs after forced expiration. It cannot be measured directly. Residual volume is elevated in certain pathological conditions such as asthma and obstructive emphysema.

\[
VC = \text{Tidal Volume} + \text{IRV} + \text{ERV}.
\]

**Alveolar Ventilation**

Alveolar ventilation = \((\text{TV-anatomical dead space})\times \text{respiratory rate}\)
\[(500-150) \text{ ml} \times 15 \text{ per minute} = 5.25 \text{ liters / minute.}\]

Lungs function tests are carried out as a routine practice for determining the respiratory function and these tests are based on the parameters outlined above.

**External Respiration**

External respiration is the mechanics of breathing and exchanging gases between alveoli and blood. Total area of gas exchange in the lungs is 70-80 square meters. CO\(_2\) diffuses from venous blood along the contraction gradient into the alveoli until it equilibrates with the alveolar air. The oxygen diffuses from the alveoli into the blood by the same mechanism.

**Internal Respiration**

Internal respiration deals with the transport of oxygen from the lungs to the cells as well as transport of the CO\(_2\) from the cells to the lungs. When there is difference in partial pressures, oxygen diffuses outward from the blood to extracellular fluid then into the cell walls. The process involved is diffusion.

**Control of Respiration**

Control of respiration is normally an involuntary action. In certain instances such as speaking and singing, the voluntary control is exerted, but it can be over rided if homeostasis of arterial PO\(_2\) and PCO\(_2\) is threatened. i.e. if this is high arterial PCO\(_2\) or low arterial PO\(_2\).
THE RESPIRATORY CENTRE

This is formed by group of nerve cells that control the rate and depth of respiration. They are situated in

- Brainstem
- Medulla oblongata
- Pons varoli

Chemoreceptor

These are the receptors that respond to the changes in PO$_2$ and PCO$_2$. Chemoreceptors are distributed in the body centrally as well as peripherally. Central receptor are located on the surface of medulla oblongata and they are bathed in CSF whereas the peripheral chemoreceptors are situated in the arch of aorta and in the carotid bodies.

Others factors influencing respiration are,

- Speech, singing
- Emotional displays
- Drugs e.g. - sedatives, alcohol
- Sleep

Temperature has an effect on breathing. During fever, respiratory rate is increased due to increased metabolic rate and hyperthermia. But, during hypothermia, where is decreased metabolic rate it is decreased. Temporary changes in respiration may occur during physical activities such as swallowing, sneezing and coughing.
BRONCHIAL ASTHMA

Asthma:

The word asthma is derived from a Greek word which means ‘breathless’ or ‘to breathe with the open mouth’.

Asthma is a syndrome which is characterized by airflow obstruction that varies markedly, both spontaneously and with treatment. Asthmatics harbor a special type of inflammation in the airway passages that makes responsive than non-asthmatics to a wide range of triggers, leading to excessive narrowing of airway passages with consequently reduced airflow accompanied by symptomatic wheezing and dyspnea. Narrowing of airways is usually reversible, but it can be often irreversible in some patients with chronic asthma.

Prevalance and etiology:

Asthma is one of the common diseases prevailing with immense social impact. Although, bronchial asthma occurs at all ages it is predominantly seen in early life. About one-half of cases develop before 10 years of age and other one third of the cases develop illness before age 40 years of age. Asthma that has its onset in early life tends to have a strong allergic component rather than the asthma that developed in later ages. The asthma developed in latter ages tends to be non-allergic or to have a mixed etiology. In fact, asthma is a heterogenous disease with multiple aetiologies such as genetic (atopic), environmental factors such as viruses, occupational exposures and allergens.
Atopy is the major risk factor for the development of asthma. Allergic asthma is often associated with a personal and/or family history of allergic diseases. It is characterized by elevated levels of IgE in the serum; and/or with a positive response to provocation tests involving the imbalance of specific antigen.

There are several other factors that have been implicated in the etiology of asthma, which includes lower maternal age, breast-feeding, prematurity and low birth weight, and inactivity but these are unlikely to contribute to the recent global increase prevalence of asthma.

**Pathogenesis:**

Asthma is associated with a specific chronic inflammation of the mucosal layer of the lower airways. One of the main aims of treatment is to suppress this inflammation.

Histological lesions that are commonly seen in the asthma patients are hypertrophy of the bronchial smooth muscle, hyperplasia of mucosal and submucosal vessels. Denudation of the surface epithelium due to edema of the mucosal layer is seen. A significant thickening of the basement membrane is more evident. Eosinophilic infiltration is seen in the affected bronchial wall.

**Pathology:**

When a pathogen enters the system both innate and adaptive immune system will be activated to protect the host. The airway mucosa is highly vascularized. In case of asthma patients, the respiratory tract is highly insulted
and it undergoes lot of immunological and pathological changes to save the host. So, in a case of asthma patients, more eosinophil counts will be seen as part of pathological response. Also a part of immunological response active T-cells and mast cells will be seen in the circulation. Also, it has to be noted that the degree of inflammation is now always in correlation with the disease severity and may be found in atopic patients without asthma symptoms. One of the important pathological lesion is the thickening of the basement membrane which is due to the epithelial collagen deposition. This condition is also seen in the patients with eosinophilic bronchitis presenting as cough who do not have asthma. Due to thickening, the epithelium is often shed or friable with increased number of epithelial cells in the lumen. One of the most common findings in fatal asthma is occlusion of the airway lumen by a mucous plug which is accompanied by thickened and edematous airway with vasodilation and angiogenesis.

The pathology of asthma is remarkably uniform and independent of different types of asthma, including atopic, non-atopic, occupational, aspirin-sensitive and pediatric asthma. These pathologic changes are restricted only to the airways and do not extend to the lung parenchyma. Patients suffering from severe asthma have pronounced airway inflammation.

Pathophysiology:

Airflow is obstructed because of bronchoconstriction, edema, vascular congestion and luminal occlusion with exudate. These pathological changes have an impact on the respiratory rate and result in a reduction of forced expiratory
volume in 1s (FEV\textsubscript{1}), FEV\textsubscript{1} / FVC ratio, and peak expiratory flow (PEF), as well as an increase in airway resistance. Ventilatory failure is very uncommon even in severe asthmatic patients, and arterial PaCO\textsubscript{2} tends to be low due to increased ventilation.

**Airway hyperresponsiveness:**

AHR is one of the characteristic physiologic abnormalities noticed in asthmatics. The increase in AHR is linked to the frequency of asthma symptoms, thus the main objective of the therapy is to reduce AHR. Generally, most of the triggers for asthma symptoms appear to act indirectly.

**Mediators of the asthmatic reaction:**

The consequences of asthmatic reaction is associated with the release of mediators from mast cells and other inflammatory cells. These mediators act on the bronchial wall. Mediator response could be triggered by immunological reactions involving IgE and other factors such as exercise, infection and drugs. Mediators act on the target cells located in the bronchial wall and this reaction could be modified by the nerves supplying that structure as well as the liability of cells to produce mediators under humoral, nervous or genetic control. The mediators are histamine, leukotrienes, leucocyte chemotactic factor, platelet activating factor, kinin and prostaglandins.
Simple models of asthmatic mechanisms:

Exercise and hyperventilation:

Scheme for the mechanisms of exercise induced asthma

Exercise

Airway drying

±

Local rise in pH

Histamine release from mast cells

Vagal receptor stimulation

±

Other mediators

Contraction of airway smooth muscle made more sensitive by cyclic AMP response

Antigen challenge:

The scheme for the mechanism of response to inhaled antigen is represented as follow.
Antigen

\[ \rightarrow \text{IgE antibody} \]

Degranulation of mast cell and liberation of arachidonic acid metabolites

Histamine, etc
Leukotrienes, etc

ECF

Bronchial muscle wall

Eosinophilic infiltration

Bronchial wall

constriction (immediate)

inflammation

muscle constriction (late)

Eosinophil proteins

**Challenge with mediators:**

Intake of histamine by inhalation provokes an immediate increase in the airflow obstruction. This can be blocked by prior administration of H\(_1\) and H\(_2\) blockers by inhalation. The inhalation of prostaglandin D\(_2\) and F\(_{2\alpha}\) and leukotriences C\(_4\) and D\(_4\) has shown similar effects, of course even more potent than histamine on the asthmatic airway.

**Immunological mechanisms:**

In an atopic individual who has been predisposed to antigen challenge, react to it by the production of IgE from B lymphocytes. In instances of such challenges IgE-antigen complexes are formed which bind to the surface of
basophils, mast cells and macrophages. Release of pre-formed mediators such as histamine and eosinophil chemotactic factors stimulates the influx of eosinophils which causes bronchoconstriction. Release of other inflammatory mediators leads to oedema due to infiltration of the bronchial wall, with toxic substances such as major basic protein and platelet activating factors which causes disruption of epithelial cells. The macrophages releases certain enzymes which causes the characteristic separation of the epithelium from the basement membrane.

Neural mechanisms:

There are three components of the autonomic nervous system which play a critical role in controlling the airways and their secretions; the parasympathetic system via the vagus, the sympathetic system via its hormonal control of cyclic AMP levels, and the peptidergic or non-adrenergic non-cholinergic system.

Parasympathetic control:

The vagus nerve includes afferent fibres from sensory receptors in the bronchial epithelium. The stimulation of these receptors by inflammatory mediators like bradykinin and histamine stimulates the release of acetylcholine and causes bronchoconstriction. Bronchial glands are also under the control of parasympathetic system and stimulation of the vagus nerves can also lead to mucous secretion.
**Sympathetic control:**

The lung receives sympathetic innervation mainly via the stellate ganglion. Sympathetic system plays a major role in influencing the bronchial tone.

**Peptidergic control:**

The non-adrenergic and non-cholinergic fibres of the nervous system run along with the vagus and supply post-ganglionic fibres to bronchial muscle glands and vessels. They inhibit the innervation to smooth muscle and also stimulate water and ion secretion into the respiratory airway.

**Bronchial muscle:**

The contractile mechanism of bronchial smooth muscle is achieved due to the ability of the proteins actin and myosin to slide over one another and to couple together. Calcium plays a predominant role in the contraction of smooth muscle.

**Genetic factors:**

The risk of having an asthmatic child is greater if both parents suffer from asthma. Many research studies has proved that asthma is inherited as an autosomal dominant character.

**Provoking factors of asthma:**

Exercise, infection, emotional upsets, allergens, seasonal variation, pollen grains or spores can provoke asthma. House dust, animals and pollen rarely can cause asthmatic attacks without other allergic symptoms. Certain foods or drinks
may worsen the condition. It is always important to investigate possible allergic factors and try to eliminate it.

Aspirin, non-steroidal anti-inflammatory drugs, beta blockers, tartrazine in drugs may occasionally cause asthmatic attacks.

**Infection:**

Viral or bacterial infections in childhood may predispose and triggers the development of asthma and bronchial hyper-reactivity in later life. The predisposing pathogenic organisms may be of viruses such as influenza, rhinovirus and respiratory syncytial virus, together with the bacteria such as *Mycoplasma pnemoniae*. Infection with pyogenic bacteria rarely causes acute exacerbations of asthma.

**Air pollution:**

Asthmatic patients may notice exacerbations in response to episodes of pollutants circulating in the atmospheric air. In a high traffic area, there is a risk of photochemical smog. The sunlight and temperature adversely affects the ozone layer and releases oxidants which act as respiratory irritants. Bronchoconstriction may occur due to high concentration of sulphur dioxide present in smogs.

More local sources of pollution, such as gas cookers which contain oxides of nitrogen or side stream tobacco smoke may also act as irritants.
Smoking:

Smokers are at the level of high risk in developing asthma and they are hyper-reactive. In fact smokers are not only affected, but their children were also found to be at a higher risk of developing wheezing and are prone for respiratory problems.

Psychological factors:

There are some studies which revealed that psychological events such as shock, bereavement or excitement can provoke asthma. The autonomic nervous system mediates the reactions responsible for inducing asthma.

Gastro-oesophageal reflux:

Gastro-oesophageal reflux also provokes wheezing and heartburns. But this is not seen in majority of the asthmatics. Drinking of drinks, such as colas, fruit juices and iced water may produce similar effects. Anti-reflux therapy fails to reduce asthma symptoms in most patients.

Hormonal factors:

Some women show premenstrual worsening of asthma, which can occasionally be very severe. In fact, thyrotoxicosis and hypothyroidism can worsen asthma, although the mechanism of action is unclear.
Physical factors:

There are many physical factors which can induce asthma or even worsen the condition. Cold air and hyperventilation may trigger asthma through the similar mechanism of action as that of exercise. Even, laughter may also be a trigger. Weather changes have a negative impact on the asthma patients, in fact many patients report worsening of asthma in hot weather. Sometimes even exposure to perfumes or strong smells may worsen the condition.

Occupational factors:

Work-related factors are important provokes of asthma in a minority of patients. During work some persons were unknowingly exposed to low molecular weight components which acts as a trigger to initiate asthma. In such cases even after the cessation of the exposure, the problem continues.

Some of causes of occupational asthma are mentioned below.

Causes of occupational asthma of animal origin:

<table>
<thead>
<tr>
<th>Agent</th>
<th>Occupation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cats, dogs, horses</td>
<td>Veterinarians</td>
</tr>
<tr>
<td>Rats, mice, guniea-pigs</td>
<td>Laboratory workers</td>
</tr>
<tr>
<td>Cotton</td>
<td>Agricultural industry workers</td>
</tr>
<tr>
<td>Grain mites</td>
<td>Farmers</td>
</tr>
<tr>
<td>Cement</td>
<td>Industry workers</td>
</tr>
</tbody>
</table>
Clinical features:

The common asthmatic symptoms include a triad of dyspnoea, coughing and wheezing. All three symptoms coexist in the typical form of the disease. At the onset of asthmatic attack, patients experience a sense of constriction in the chest region, often accompanied with non-productive cough. Harsh respiration with audible sounds; wheezing in both phases of respiration becomes prominent, prolonged expiration along with tachycardia, tachypnea, and mild systolic hypertension. The lungs rapidly become over inflated as a result of this the anteroposterior diameter of the thorax increases. In cases of severe or prolonges attack, there may be loss of adventitial breath sounds, and very high pitched wheezing occurs. These two signs that are used as indicators for identifying the severity of obstruction. As a result of this, the accessory muscles become visibly active and paradoxical pulse develops. The development of a paradoxical pulse is dependent on the generation of large negative intrathoracic pressure.

The end of an episode is usually marked by a cough with thick and stringy mucous. This takes the forms of casts of the distal airways (Curshmann’s spirals).
On microscopic examination, eosinophils and Charcot-Leyden crystals can be visualized in the mucous. In extreme situations, wheezing may be depressed or even disappear, and cough may become extremely ineffective as a result the patient may begin a gasping respiration. These findings reveals that extensive mucous plugging may impede suffocation. Any mechanical means of ventilatory assistance may facilitate normal respiration. During asthmatic attacks, atelectasis may occur due to inspissated secretions from the respiratory tract. In certain cases, spontaneous pneumothorax and/or pneumomediastinum may occur but it is quite rare.

**Episodic asthma:**

In this form of the disease the patient has no respiratory symptoms or signs between asthmatic episodes. Paroxysms of wheezing and dyspnoea may occur when exposed to allergens, exercise or viral infections. Attacks may be mild or severe and may last for hours, days or even weeks.

**Severe acute asthma:**

This term has replaced ‘Status asthmaticus’. Severe cough may be present which aggravates the respiratory distress, tachycardia, pulsus paradoxus and causes sweating. In very severe cases, central cyanosis, bradycardia, and ‘silent chest’ may occur. During an attack the chest is usually held near the position of full inspiration and the percussion note may be hyper-resonant. During physical examination, numerous high-pitched polyphonic expiratory and inspiratory bronchi which are vesicular in character with prolonged expiration is heard.
**Grading of severity of acute asthma – Adapted from Sherwood Jones:**

**Grade 1 A** - Able to carry out housework or job with moderate difficulty. Sleep is occasionally disturbed.

**Grade 1 A** - Only able to carry out housework or job with great difficulty. Sleep frequently disturbed.

**Grade 2 A** - Confined to chair or bed, but able to get up with moderate difficulty. 
Sleep disturbed, with little or no relief from inhaler.

**Grade 2 B** - Confined to chair or bed and only able to get up with great difficulty. Unable to sleep. Pulse over 120/min.

**Grade 3** - Totally confined to chair or bed. No sleep. No relief from inhaler.
Pulse over 120/min.

**Grade 4** - Immobilized and completely exhausted.

**Chronic asthma:**

Chronic asthma is a condition in the respiratory tract in affected with excessive mucus secretion. This condition is accompanied with inflammatory changes in the system. This causes irritation in the respiratory tract resulting in respiratory distress. Episodes of severe acute asthma can occur with symptoms of chest tightness, wheezing, shortness of breath, breathlessness and productive cough with mucoid sputum along with recurrent respiratory infections. Severe asthma persisting from childhood may cause a ‘pigeon chest’ deformity.
Special considerations:

Aspirin – sensitive Asthma:

For majority of population, taking aspirin does not cause any problems. Perhaps, a small portion of the population are affected on exposure of aspirin. Some persons become worse on exposure to aspirin or any other COX inhibitors. Aspirin – sensitive asthma is a well-defined subtype of asthma that is usually preceded by perennial rhinitis and nasal polyps is non-atopic patients with a late onset of the disease. Asthma is triggered by COX inhibitors but is persistent even in their absence.

Pregnancy:

Approximately one-third of asthmatic patients who are pregnant improve during the course of a pregnancy. Proper control of asthma during pregnancy will protect the mother and fetus from adverse reactions.

Cigarette smoking:

Smoking affects the asthmatics in multiple ways. Smoking interferes with the anti-inflammatory actions of corticosteroids thus it results in higher dose recommendation for asthma control. Smoking cessation improves the normal function of the lungs and reverses the steroid resistance. Some patients report a temporary worsening of asthma when they initially stop smoking, which could be due to the loss of the bronchodilating effect of nitric oxide in cigarette smoke.
**Bronchopulmonary Aspergillosis:**

Bronchopulmonary aspergillosis (BPA) is uncommon and results from an allergic pulmonary reaction to inhaled spores of *Aspergillus* species. *Aspergillus fumigatus* is one of the most common species. In this condition, there are eosinophilic infiltrations seen in the lungs, particularly in the upper lobes. The airway is blocked with mucoid plugs which is rich in eosinophils. So, when the affected patients cough they may show hemoptysis and brown plugs. BPA may result in conditions such as bronchiectasis, particularly affecting the central airway.

**Other complications of asthma:**

Prolonged intake of corticosteroids may cause growth retardation in children and facial changes, dystrophy of the skin, brusing, adrenal suppression and bone problems such as osteoporosis, vertebral collapse. In patients with osteoporosis, the fracture of ribs may occur during coughing. In rare instances, lung collapse may occur which is unrelated to aspergillosis. Acute attacks may rarely be complicated by pneumothorax, or subcutaneous or mediastinal emphysema. Chronic asthmatics may rarely develop pulmonary hypertension, cor pulmonale and chronic hypercapnia. In non-smoking chronic asthmatics right ventricular hypertrophy may occur.

**Physical findings and functional effects:**

The characteristic clinical findings that are common among asthmatics are polyphonic wheezing. The phenomenon by which wheezing is generated is
similar to that of the vibration caused in the wall of an airway on the point of closure of an woodwind instrument. The airway narrowing is caused by the smooth muscle constriction, increased mucosal oedema and mucosal plugging. These are primary alterations caused by asthmatic attack.

The secondary changes occurs in the gas exchange and alters the cardiac functions which are described as follows.

**Changes in lung mechanics:**

The narrowing of airways reduces the air flow rates. When the air flow rates are measured by FEV$_1$, it shows the flow rates of different lung volumes derived from the flow-volume curve. This shows a reduction in the flow rate which is proportional to the severity of the attack. Inspiratory flow rates are reduced. The constriction of airways leads to an increase in (negative) pressure built-up within the thorax and with this the partial and widespread closure of small airways leads to an increased residual volume. Tidal expiratory flow rate approaches the maximal expiratory flow rate. During an acute asthmatic attack, there is an increase in total lung capacity.

**Changes in gas exchange:**

Hypoxaemia is less severe in asthmatics because the local hypoxia with increased local alveolar pressure creates a compensatory mechanism of excessive physiological shunting. During hypoventilation, there is infrequency of segmental or subsegmental collapse which occurs due to collateral ventilation between acini, and maintains the air supply to the distal to the blocked bronchi.
The transfer factor for carbon monoxide is rarely reduced in asthma and in fact it rises during remissions. In asthmatic patients there is a direct relationship between FEV$_1$ and arterial PaO$_2$. Lower the FEV$_1$ the lower is the PaO$_2$. In most severe asthmatic attack, the arterial PaCO$_2$ is below normal.

**Cardiac functions:**

Generally, asthma has no impact on cardiac function. But, in severe acute attack, tachycardia (increased cardiac rate) and pulsus paradoxus may occurs which indicates abnormality in the cardiac function. In addition, the pulmonary arterial pressure would be raised in both hypoxaemia and high intra-alveolar pressures. During severe asthma attacks the the lungs will be overinflated and it will lead to cardiac arrest and death is not uncommon.

**Differential diagnosis:**

The differential diagnosis of bronchial asthma are

- Cardiac asthma
- Tropical eosinophilia
- Pulmonary tuberculosis
- Bronchitis

The factors which differentiates bronchial asthma from these diseases are listed as follows.
<table>
<thead>
<tr>
<th>NO</th>
<th>FACTORS</th>
<th>CARDIAC ASTHMA</th>
<th>BRONCHIAL ASTHMA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Past history</td>
<td>Hypertension, aortic or cardiac disease</td>
<td>Previous attacks of asthma or other allergic conditions In-patients of other members of the family</td>
</tr>
<tr>
<td>2</td>
<td>Age</td>
<td>Onset usually after 50 yrs</td>
<td>Any age</td>
</tr>
<tr>
<td>3</td>
<td>Precipitating factors</td>
<td>May be precipitated by exertion or acute myocardial infarction or hypertension</td>
<td>Trigger factors may be infected by non-specific irritants, external, allergies, exercise or emotional factors</td>
</tr>
<tr>
<td>4</td>
<td>Symptoms:</td>
<td>Cough and dyspnea, cough associated with watery expectoration which increases in intensity towards end of attacks.</td>
<td>Starts with dyspnea, expectoration of small sticky sputum, paroxysm of wheezes when cough becomes profuse</td>
</tr>
<tr>
<td></td>
<td>a. Cough</td>
<td>Rare</td>
<td>Usual</td>
</tr>
<tr>
<td></td>
<td>b. Wheezing</td>
<td>Prominent</td>
<td>Rare, unless status asthmaticus</td>
</tr>
<tr>
<td>5</td>
<td>Signs:</td>
<td>Not active Normal</td>
<td>Active</td>
</tr>
<tr>
<td></td>
<td>a. Inspection</td>
<td>Emphysematous</td>
<td></td>
</tr>
<tr>
<td></td>
<td>i. Accessory muscles of respiration</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>b. Palpation</td>
<td>Heart offers enlarged having palpable apex beat</td>
<td>Heart not enlarged, if long standing disease, right ventricular enlargement</td>
</tr>
<tr>
<td>---</td>
<td>-------------</td>
<td>-----------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>c. Auscultation</td>
<td>$S_2$ may be loud. Left ventricular gallop. Expiration not unduly prolonged, rales more than bronchitis, signs in early stage at base of the lungs, gradually ascending up with progress of the attack</td>
<td>Normal A$_2$ sound, right ventricular gallop is later feature of severe bronchial asthma. Expiration markedly prolonged rhonchi more than rales. Signs diffuse all over the lungs.</td>
<td></td>
</tr>
<tr>
<td>d. Pulse</td>
<td>Full and bounding</td>
<td>Feeble and rapid</td>
<td></td>
</tr>
<tr>
<td>e. B.P</td>
<td>Usually elevated</td>
<td>Normal or low</td>
<td></td>
</tr>
<tr>
<td>f. Signs of underlying disease</td>
<td>Hypertension or coronary Disease</td>
<td>No evident of cardio vascular Disease</td>
<td></td>
</tr>
<tr>
<td>h. Urine</td>
<td>Generally clear, then may be mild albuminuria.</td>
<td>Clear</td>
<td></td>
</tr>
<tr>
<td>6. <strong>Investigation:</strong></td>
<td>None</td>
<td>Common</td>
<td></td>
</tr>
<tr>
<td>NO</td>
<td>FACTORS</td>
<td>BRONCHITIS</td>
<td>BRONCHIAL ASTHMA</td>
</tr>
<tr>
<td>----</td>
<td>------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>---------------------------------------------</td>
</tr>
<tr>
<td>1</td>
<td>Age</td>
<td>Children less than 5 years and old people</td>
<td>Usually starts before 3 yrs of age</td>
</tr>
<tr>
<td>2</td>
<td>Duration of</td>
<td>Variable</td>
<td>Long duration</td>
</tr>
<tr>
<td></td>
<td>symptoms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Fever</td>
<td>Common</td>
<td>Rare</td>
</tr>
<tr>
<td>4</td>
<td>Loss of weight</td>
<td>Rare</td>
<td>Seldom</td>
</tr>
<tr>
<td>5</td>
<td>Cough and</td>
<td>Complicated by spasmodic dyspnoea, prolonged cough is in change of</td>
<td>Paroxysmal cough more than dyspnoea</td>
</tr>
<tr>
<td></td>
<td>dyspnoea</td>
<td>weather. More persistant dyspnoea.</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Signs</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. Inspection</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>i. Accessary</td>
<td>Active</td>
<td>Active</td>
</tr>
<tr>
<td></td>
<td>muscles of</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>respiration</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ii. Shape of</td>
<td>Barrel shaped</td>
<td>Emphysematous</td>
</tr>
<tr>
<td></td>
<td>chest</td>
<td></td>
<td>Rapid with prolonged expiration</td>
</tr>
<tr>
<td></td>
<td>iii. Respiration</td>
<td>Expiration is prolonged</td>
<td></td>
</tr>
<tr>
<td></td>
<td>b. Palpation</td>
<td></td>
<td>Movement of the chest wall is symetrically</td>
</tr>
<tr>
<td></td>
<td>c. Percussion</td>
<td>Hyper resonance , normal</td>
<td>Normal</td>
</tr>
<tr>
<td></td>
<td>Ascultation</td>
<td>Chest</td>
<td>Vesicular breath sounds and prolonged wheezing sounds.</td>
</tr>
<tr>
<td>---</td>
<td>-------------</td>
<td>-------</td>
<td>-------------------------------------------------------</td>
</tr>
<tr>
<td>e.</td>
<td>Pulse</td>
<td>Normal or low</td>
<td>Normal or low</td>
</tr>
<tr>
<td>f.</td>
<td>B.P</td>
<td>Normal or low</td>
<td>Normal or low</td>
</tr>
<tr>
<td>h.</td>
<td>Sputum</td>
<td>Little sticky mucoid in nature</td>
<td>Sticky pellets in nature</td>
</tr>
<tr>
<td>i.</td>
<td>Urine</td>
<td>Clear</td>
<td>Clear</td>
</tr>
</tbody>
</table>

**Diagnosis and investigations:**

Diagnosis of asthma is commonly made based on the compatible clinical history in association with the variable airflow obstruction in ‘morning dipping’ of the peak expiratory flow.

In case if the above tests are negative, an exercise test, histamine or methacholine bronchial provocation test, occupational exposure test or trail of oral corticosteroids are required to confirm the case. An elevated sputum or peripheral blood eosinophil count or increased serum level of total or allergen specific IgE are clinical predictors in asthmatics.

**Pulmonary function test:**
Measurement of the FEV₁ and VC or PEF provides a fairly reliable indication about the degree of airflow obstruction. Serial recordings of PEF are useful in differentiating the patients with chronic asthma from those with COPD. In asthma, a diurnal variation in PEF is marked, the lowest values being recorded in the morning (‘morning dipping’).

Spirometry is the most common pulmonary function test performed to evaluate the lung functions of the lung based on the volume and speed of air inhaled and exhaled. The readings are obtained by a deep inspiration followed by the fastest possible and maximal expiration. Spirometer is the instrument to study the pulmonary function test.

The normal forced vital capacity (FVC) is fully exhaled in less than 3 seconds more than three quarter is exhaled in the first second. The first expiratory volume FEV₁ can be measured and the ratio FEV₁/FVC varies among age, height and ethnic group and is normally found to be greater than 75%.

In an obstructive pattern of chronic bronchitis and emphysema the length of expiration is prolonged and FEV₁ is much reduced. In asthmatics this obstruction may be relieved by effective treatment with bronchodilators or corticosteroids.

In restrictive pattern, FEV₁ is normal since there is no obstruction to airflow.
Lung volumes:

Measurements of total lung capacity and residual volume can be measured by helium dilution method using a whole body plethysmograph. Helium dilution methods measures the functional residual capacity whereas, plethysmograph is an instrument used to measure the changes in the volume of an organ or the body. In general, obstructive defects lead to elevated higher values and restrictive defects to decreased and lower values.

Measurement of diffusing capacity:

Lung diffusion testing measures the exchange of gases in the lungs. The diffusing capacity (DLCO) is a measure of the lung’s ability to transfer gas from alveoli to blood. The diffusing capacity is reduced in diseases such as fibrosing alveolitis or emphysema and elevated in conditions such as alveolar hemorrhage.

Arterial blood gases and oximetry:

The degree as well as type of respiratory failure and measuring overall acid-base status can be assessed by measuring hydrogen ion concentration $\text{PaO}_2$ and $\text{PaCO}_2$. Use of a pulse oximeter in assessing oxygen saturation of hypoxaemic patient plays a vital role for inpatients who require continuous monitoring.

Skin-prick test:

Skin-prick test is used to identify the cause of allergies. This test can be used as a diagnostic tool may be useful for tracking down suspected clinical cases provoking factors of asthma. This test can be performed based on the case history
and should include a control solution and the most common allergens such as house dust and grass pollen. The skin-prick test is performed by placing a drop of allergen on the skin, usually the front surface of the forearm and lifting the skin slightly through the drop with the point of an intradermal needle without drawing the blood. After 15-20 minutes, if the skin develops wheal (a red, raised itchy area), it is considered as positive result when compared to the size obtained with the control solution. Bronchial sensitivity may sometimes be present in the absence of skin sensitivity and in such case RAST testing may be useful.

**Challenging test:**

In this test, the patient is exposed to factors that provoke asthma for a period of four to eight times on daily basis. The effect of the challenges is most conveniently monitored by peak flow rate. The measurement should be carried out at regular intervals such as 5-10 minutes, 30 minutes, 3-4 hours and lasting about 24 hours after challenge. Sometimes, it may require corticosteroids. Challenge tests are of course affected by drugs like chromoglycate and corticosteroids. In this situation, two types of challenge test may be occasionally be necessary. They are drug related asthma and other is the challenge test related to investigation of food allergy.

**Sputum Examination:**

Sputum eosinophilia is a very important diagnostic indicator of an asthmatic type of airway reaction. Eosinophils are a prominent type of cells seen in the inflammatory exudates. The lumen within the airway is lined with a thick
tenacious mucus. When this mucus is visualized under a microscope it has strips of desquamated epithelial cells (Curschman's spirals) eosinophils, isolated metaplastic epithelial cells (Creola bodies) & crystalline materials consisting largely of major basic protein derived from eosinophilic granules (Charcot-leydon crystals).

**Radiological features:**

In most asthma patients the chest radiograph is normal with thickened bronchial wall. Slight overinflation, accompanied with depressed diaphragm, along with laterally spreaded ribs and enlarged retrosternal air space may be seen in some patients during an attack and in some cases of chronic severe asthma. In contrast to emphysema, the diaphragm normally retains its upwardly convex curvature and the pulmonary vessels do not show the same degree of attenuation.

**Prognosis**

In general, the prognosis of the individual attack is good, except in severe acute asthma. In severe acute asthma cases, there is occasionally a fatal outcome, in case of inadequate or delayed treatments. Seasonal fluctuations also has an impact on the intensity of disease outcome in the both types of asthma. Atomic subject with episodic asthma are usually worse in the summer, when they are more heavily exposed to antigens, while chronic asthmatics are usually worse in winter months, because of the increased frequency of viral infections.
Prevention

Avoidance of allergens

There are few instances, in which a single agent is identified as the ultimate cause for asthmatic attack. These allergens include grass pollens, mites, animal dander, drugs, industrial chemicals such as isocyanates and certain ingredients in the normal diet. The majority of patients are hypersensitive to a wide range of allergens and attempts to avoid all of them are impracticable.
MATERIALS AND METHODS

Clinical Study:

The study of Manthara kasam was undertaken in Post Graduate department of Pothumaruthuvam, Govt Siddha Medical College, Palayamkottai.

Twenty patients were admitted for study period and treated with the trail drug. Based on their severity they were admitted as In-patients and followed up as out patients.

The medicine was also subjected to trial with 20 out patients.

Selection of Patients:

The criteria for case selection was unproductive cough, breathlessness, tightness of chest, wheezing and expectoration of scanty, mucoid sputum.

Detailed history of the patient contains past, personal and family histories, diet habits, socio-economic status, smoke, dust, cold and occupational history.

Diagnosis:

Siddha methods of diagnosis were employed with following methods:

- Mukkutra nilaigal
- Envagai thervugal
- Nilam
- Kaalam
- Udal kattugal
- Poriyal Arithal
- Pulanal Arithal
- Vinathal

**Investigations:**

- Blood test (TC, DC, ESR, Hb, Sugar, Urea, and Cholesterol)
- Urine Analysis (Albumin, Sugar, Deposits)
- Sputum for AFB
- X ray chest PA view
- Pulmonary Function Tests.

Biochemical Analysis, Bronchodilator Activity and Microbiological Activities were done to establish the efficacy of the trial medicine.

**Treatment**

The trial medicine used in the present clinical study is

**Thakkolathi chooranam** – 3 gm thrice a day after meals with hot water

All the patients were advised strictly to follow the pathiyam (Dietary regimen), pranayamam and mild yogic exercises. So that the disease does not recur.
RESULTS AND OBSERVATIONS

Results were observed with respect to the following criteria

1. Sex distribution
2. Age distribution
3. Kaalam distribution
4. Constitution of body
5. Religion distribution
6. Gunam distribution
7. Thinai distribution
8. Paruvakaalam distribution
9. Occupation distribution
10. Aetiological factors
11. Socio-economic status
12. Food habits
13. Family history
14. Habits
15. Clinical manifestation
16. Other system involvement

17. Mode of onset

18. Duration of illness

19. Gnanendhiriym

20. Kanmenthiriym

21. Mukkutram a)Vadham  b)Pitham  c) Kabam

22. Ezhu Udal Kattugal

23. Envagai Thervugal

24. Neerkuri

25. Neikuri

26. Laboratory analysis

27. Pulmonary function test report before and after treatment

28. Respiratory rate

29. Gradation of results

For this study 20 In-patients and 20 Out-patients were selected.
1. SEX DISTRIBUTION.

Table 1 illustrates the distribution of sex

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Sex</th>
<th>No. of Cases</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>OP</td>
<td>IP</td>
</tr>
<tr>
<td>1.</td>
<td>Male</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>2.</td>
<td>Female</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

From the table it is observed that Swasakasam occurred more among male population.

2. AGE DISTRIBUTION.

Table 2 illustrates the distribution of age.

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Age groups in years</th>
<th>No. of .cases</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>OP</td>
<td>IP</td>
</tr>
<tr>
<td>1.</td>
<td>13 to 20</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>2.</td>
<td>21 to 30</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>3.</td>
<td>31 to 40</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>4.</td>
<td>41 to 50</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>5.</td>
<td>51 to 60</td>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td>6.</td>
<td>61 to 70</td>
<td>2</td>
<td>5</td>
</tr>
</tbody>
</table>

From the table it is observed that the highest incidence of Manthara kaasam was among the age group of 51-60.
3. KAALAM

Table 3 illustrates the distribution of Kaalam

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Kaalam</th>
<th>No. of cases</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>OP</td>
<td>IP</td>
</tr>
<tr>
<td>1.</td>
<td>Vatham</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>1-33 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Pitham</td>
<td>17</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>34-66 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Kabam</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>67-100 years</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The table showed that the highest incidence of Manthara kaasam in pitha Kaalam.

4. CONSTITUTION OF BODY

Table 4 illustrates the distribution of Thegi

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Constitution of body</th>
<th>No. of cases</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>OP</td>
<td>IP</td>
</tr>
<tr>
<td>1.</td>
<td>Vatha thegi</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>2.</td>
<td>Pitha thegi</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>3.</td>
<td>Kaba thegi</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>4.</td>
<td>Thontha thegi</td>
<td>5</td>
<td>1</td>
</tr>
</tbody>
</table>

From the table & it is observed that Kaba thegis registered high incidence of Manthara kaasam.
5. RELIGION

Table 5 illustrates the distribution of Religion

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Religion</th>
<th>No. of Cases</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>OP</td>
<td>IP</td>
</tr>
<tr>
<td>1.</td>
<td>Hindu</td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td>2.</td>
<td>Christian</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3.</td>
<td>Muslim</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

From the table it is observed that Manthara kaasam occurred more among Hindus.

6. GUNAM

Table 6 illustrates the distribution of gunam

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Gunam</th>
<th>No. of cases</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>OP</td>
<td>IP</td>
</tr>
<tr>
<td>1.</td>
<td>Sathuva Gunam</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2.</td>
<td>Rajo Gunam</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>3.</td>
<td>Thamo Gunam</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

In both OP and IP study cent percentage belongs to Rajo Gunam.

7. THINAI.

Table 7 illustrates the distribution of the disease among the Thinai

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Thinai</th>
<th>No. of Cases</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>OP</td>
<td>IP</td>
</tr>
<tr>
<td>1.</td>
<td>Kurinji</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>2.</td>
<td>Mullai</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>3.</td>
<td>Marutham</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4.</td>
<td>Neithal</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>5.</td>
<td>Paalai</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
The table indicated that kurinji, mullai and neithal were the places of incidence of the disease.

8. PARUVAKAALAM

Table 8 illustrates the distribution of the disease among the Paruvakaalam.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Paruvakaalam</th>
<th>No. of Cases</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>OP</td>
<td>IP</td>
</tr>
<tr>
<td>1</td>
<td>Elavenil Kaalam</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>Muthuvenil kaalam</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>Kaar Kaalam</td>
<td>14</td>
<td>12</td>
</tr>
<tr>
<td>4</td>
<td>Koothir Kaalam</td>
<td>-</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>Munpani Kaalam</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>6</td>
<td>Pinpani Kaalam</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

The table showed the prevalence of disease under Kaar kaalam.

9. OCCUPATION

Table 9 illustrates the distribution of occupation among the patients.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Occupation</th>
<th>No. of cases</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>OP</td>
<td>IP</td>
</tr>
<tr>
<td>1</td>
<td>Agri Labour</td>
<td>5</td>
<td>11</td>
</tr>
<tr>
<td>2</td>
<td>Students</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>Beedi Maker</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>House Wife</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>Mechical engineer</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Sl. No.</td>
<td>Aetiological Factors</td>
<td>No. of cases</td>
<td>Percentage (%)</td>
</tr>
<tr>
<td>--------</td>
<td>--------------------------------------</td>
<td>--------------</td>
<td>----------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OP</td>
<td>IP</td>
</tr>
<tr>
<td>1.</td>
<td>Smoking</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>2.</td>
<td>Dust &amp; Cold exposure</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>3.</td>
<td>Husk of grains &amp; Air pollution</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

The above table showed Smoking was the main aetiological factors among the Patients.
11. SOCIO-ECONOMIC STATUS.

Table 11 illustrates the socio economic status of the patients.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Socio- Economic Status</th>
<th>No. of cases</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>OP</td>
<td>IP</td>
</tr>
<tr>
<td>1.</td>
<td>Low class</td>
<td>11</td>
<td>16</td>
</tr>
<tr>
<td>2.</td>
<td>Middle class</td>
<td>9</td>
<td>4</td>
</tr>
<tr>
<td>3.</td>
<td>High class</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

From the table it is observed that the disease occured more among low class.

12. FOOD HABITS.

Table 12 illustrates the distribution of diet among the patients.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Food habits</th>
<th>No. of cases</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>OP</td>
<td>IP</td>
</tr>
<tr>
<td>1.</td>
<td>Vegetarian diet</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>2.</td>
<td>Mixed diet</td>
<td>16</td>
<td>17</td>
</tr>
</tbody>
</table>

The table showed that highest incidence of the disease for the patients with mixed diet.

13. FAMILY HISTORY

Table 13 illustrates the distribution of family history.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Family History</th>
<th>No. of cases</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>OP</td>
<td>IP</td>
</tr>
<tr>
<td>1.</td>
<td>Positive</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>2.</td>
<td>Negative</td>
<td>18</td>
<td>19</td>
</tr>
</tbody>
</table>

In Op 90% have no family history and in Ip 95% have no family history.
14. HABITS:

Table 14 illustrates the distribution of Habits

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Habit</th>
<th>No. of cases</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>OP</td>
<td>IP</td>
</tr>
<tr>
<td>1.</td>
<td>Smoker</td>
<td>10</td>
<td>13</td>
</tr>
<tr>
<td>2.</td>
<td>Tobacco chewer</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>3.</td>
<td>Betel nut chewer</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>4.</td>
<td>Alcoholic</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>5.</td>
<td>No such habits</td>
<td>6</td>
<td>3</td>
</tr>
</tbody>
</table>

The table showed that highest incidence of the disease in the smokers.

15. CLINICAL MANIFESTATION:

Table 15 illustrates the distribution of clinical manifestation

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Symptoms</th>
<th>No. of cases</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>OP</td>
<td>IP</td>
</tr>
<tr>
<td>1.</td>
<td>Running nose</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>2.</td>
<td>Sneezing</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>3.</td>
<td>Difficulty in Breathing</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>4.</td>
<td>Cough without expectoration</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>5.</td>
<td>Tightness of chest</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>6.</td>
<td>Cyanosis</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>7.</td>
<td>Sweating</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>8.</td>
<td>Tachycardia</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>9.</td>
<td>Fever</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>10.</td>
<td>Eosinophil</td>
<td>9</td>
<td>6</td>
</tr>
</tbody>
</table>
The table shows that most of the patients had Difficulty in breathing, cough without expectoration.

16. OTHER SYSTEM INVOLVEMENT

Table 16 illustrates the distribution of co existing symptoms involving other systems.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Other system involvement</th>
<th>No. of cases</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>OP</td>
<td>IP</td>
</tr>
<tr>
<td>1.</td>
<td>Cardiovascular System</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2.</td>
<td>Gastro Intestinal System</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>3.</td>
<td>Musculo Skeletal System</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>4.</td>
<td>Central Nervous System</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

The table showed that Musculo skeletal system & Gastro skeletal system were affected more than other system.

17. MODE OF ONSET

Table 17 illustrates the distribution of Mode of onset of the disease.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Mode of onset</th>
<th>No. of cases</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>OP</td>
<td>IP</td>
</tr>
<tr>
<td>1.</td>
<td>Acute</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>2.</td>
<td>Chronic</td>
<td>16</td>
<td>20</td>
</tr>
</tbody>
</table>
The table showed that the mode of onset was chronic in most of both In patients and Out patients.

18. DURATION OF ILLNESS

Table 18 illustrates the distribution of duration of illness.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Duration of illness</th>
<th>No. of cases</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>OP</td>
<td>IP</td>
</tr>
<tr>
<td>1.</td>
<td>Upto 6 months</td>
<td>13</td>
<td>12</td>
</tr>
<tr>
<td>2.</td>
<td>6 months – 2 years</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>3.</td>
<td>2 years – 6 years</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>4.</td>
<td>6 years – 10 years</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>5.</td>
<td>10 years – 15 years</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>6.</td>
<td>15 years – 25 years</td>
<td>1</td>
<td>-</td>
</tr>
</tbody>
</table>

Among the patients the highest incidence for the duration of illness is up to 6 months.

19. IMPORIGAL (GNANENDHIRIYAM)

Table 19 illustrates the distribution of disease with Imporigal.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Imporigal (Gnanendhiriyan)</th>
<th>No. of cases</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>OP</td>
<td>IP</td>
</tr>
<tr>
<td>1.</td>
<td>Mei</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2.</td>
<td>Vai</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>3.</td>
<td>Kann</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4.</td>
<td>Mookku</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>5.</td>
<td>Sevi</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

The table showed that Mookku was affected in most of the patient.
20. KANMENTHIRIYAM

Table 20 illustrates the distribution of disease with Kanmenthiriyam.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Kanmenthiriyam</th>
<th>No. of cases</th>
<th>Percentage%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OP</td>
<td>IP</td>
<td>OP</td>
</tr>
<tr>
<td>1.</td>
<td>Kai</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>2.</td>
<td>Kaal</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>3.</td>
<td>Vai</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>4.</td>
<td>Eruvai</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>5.</td>
<td>Karuvai</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

The table showed that Eruvai was affected in most of the patients.

21. MUKKUTRAM

21.a Derangement of vatham.

Table 21.a illustrates the distribution of vatham.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Vatham</th>
<th>No. of cases</th>
<th>Percentage%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OP</td>
<td>IP</td>
<td>OP</td>
</tr>
<tr>
<td>1.</td>
<td>Piraanan</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>2.</td>
<td>Abaanann</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>3.</td>
<td>Viyaanan</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>4.</td>
<td>Uthaanan</td>
<td>15</td>
<td>16</td>
</tr>
<tr>
<td>5.</td>
<td>Samaanan</td>
<td>12</td>
<td>14</td>
</tr>
<tr>
<td>6.</td>
<td>Naagan</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>7.</td>
<td>Koorman</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>8.</td>
<td>Kirukaran</td>
<td>14</td>
<td>11</td>
</tr>
<tr>
<td>9.</td>
<td>Devaththan</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>10.</td>
<td>Dhananjayan</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

In all the In patients & Out patients Piraanan was affected.

Table 21. b illustrates the distribution of pitham.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Pitham</th>
<th>No. of cases</th>
<th>Percentage%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>OP</td>
<td>IP</td>
</tr>
<tr>
<td>1.</td>
<td>Anarpitham</td>
<td>12</td>
<td>14</td>
</tr>
<tr>
<td>2.</td>
<td>Ranjagam</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3.</td>
<td>Sathagam</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4.</td>
<td>Prasagam</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5.</td>
<td>Aalosagam</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

The table shows most of the patients affected with Anarpitham.


Table 21.c. illustrates the distribution of Kabam.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Kabam</th>
<th>No. of cases</th>
<th>Percentage%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>OP</td>
<td>IP</td>
</tr>
<tr>
<td>1.</td>
<td>Avalambagam</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>2.</td>
<td>Kiletham</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>3.</td>
<td>Pothagam</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4.</td>
<td>Tharpagam</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5.</td>
<td>Santhigam</td>
<td>3</td>
<td>11</td>
</tr>
</tbody>
</table>

The table showed that the Avalambagam was affected in all the patients in this disease.
22. Ezhu udal kattugal

Table 22. illustrates the distribution of derangement of ezhu udal kattugal.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Udal kattugal</th>
<th>No. of cases</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OP</td>
<td>IP</td>
<td>OP</td>
</tr>
<tr>
<td>1.</td>
<td>Saaram</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>2.</td>
<td>Senneer</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3.</td>
<td>Oon</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4.</td>
<td>Kozhuppu</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>5.</td>
<td>Enbu</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>6.</td>
<td>Moolai</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>7.</td>
<td>Sukkilam/suronitham</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

The table showed that Saaram was affected in all the patients in this disease.

23. ENVAGAI THERVUAL

Table 23 illustrates the distribution of envagai thervugal.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Envagai thervugal</th>
<th>No. of cases</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OP</td>
<td>IP</td>
<td>OP</td>
</tr>
<tr>
<td>1.</td>
<td>Naadi (Thontha Naadi)</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>1. Vadha pitham</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Vadha kabam</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>3. Pitha vadham</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Sl. No.</td>
<td>Nei Kuri</td>
<td>No. of cases</td>
<td>Percentage%</td>
</tr>
<tr>
<td>--------</td>
<td>------------</td>
<td>--------------</td>
<td>-------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OP   IP</td>
<td>OP   IP</td>
</tr>
<tr>
<td>1.</td>
<td>Vatha Neer</td>
<td>1    4</td>
<td>5%   20%</td>
</tr>
<tr>
<td>2.</td>
<td>Pitha Neer</td>
<td>3     -</td>
<td>15%  -</td>
</tr>
<tr>
<td>3.</td>
<td>Kaba Neer</td>
<td>16    14</td>
<td>80%  70%</td>
</tr>
<tr>
<td>4.</td>
<td>Thontha Neer</td>
<td>-   2</td>
<td>-  10%</td>
</tr>
</tbody>
</table>

The table showed that Kaba Neer was found in most of the cases.
26. Laboratory Analysis

Table 26 illustrates the distribution of Laboratory Analysis

Sputum for AFB and Mantoux test were found to be negative in all the
100% of In-patients and Out-patients.

The In-patients were made to follow up the medicine and treated in Op for
10 days after their discharge.

27. PULMONERY FUNCTION TEST

<table>
<thead>
<tr>
<th>S.No</th>
<th>Patients Name</th>
<th>PFT</th>
</tr>
</thead>
</table>
| 1.   | Mr. Ramadoss 57/ M     | • Early small airway obstruction as FEF 25-75 % pred or PEFR % pred <70
      | Ht : 165 cm Wt : 55 kg.| • Severe restriction as [FEV₁/FVC]% pred >99 and FVC% pred < 80       |
| 2.   | Mrs. Muthulakshmi 51/ F| • Early small airway obstruction as FEF 25-75% pred or PEFR % pred <70
      | Ht : 172 cm Wt : 50 kg.| • Severe restriction as [FEV₁/FVC]% pred >99 and FVC% pred <44        |
| 3.   | Mrs. Gandhimathi 60/ F | • Early small airway obstruction as FEF 25-75%, pred or PEFR % pred <70
      | Ht : 172 cm Wt :60 kg. | • Severe restriction as (FEV₁/FVC)% Pred >99 and FVC% pred <44        |

28. PULMONARY FUNCTION TEST REPORT, BEFORE TREATMENT, AFTER TREATMENT

Table 28 illustrates the Pulmonary Function Test Report, Before Treatment, After Treatment.

<table>
<thead>
<tr>
<th>S.No</th>
<th>Patient History</th>
<th>Parameter</th>
<th>Predicted</th>
<th>BT</th>
<th>AT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Mr. Prabakar 26/ M</td>
<td>FVC(L)</td>
<td>3.80</td>
<td>57%</td>
<td>86%</td>
</tr>
</tbody>
</table>
<pre><code>  | 173cm Wt : 62 kg | FEV₁(L)  | 3.24      | 67% | 101%|
  |                  | FEV₁/FVC(%) | 85.26   | 117%| 96% |
  |                  | PEFR (L/S) | 9.55     | 63% | 77% |
  |                  | FEF 25-75 L/S | 4.63   | 30% | 18% |
</code></pre>
<p>| 2.   | Mr. Chellaiah 60/ M | FVC(L)   | 3.17      | 20% | 20% |
| 170cm            | FEV₁(L)  | 2.41      | 26% | 20% |
|                   | FEV₁/FVC(%) | 76.03  | 129%| 98% |</p>
### 29. PULMONARY FUNCTION TEST REPORT AFTER TREATMENT

<table>
<thead>
<tr>
<th>S.No</th>
<th>Patient History</th>
<th>PFT</th>
</tr>
</thead>
</table>
| 1.   | Mr. Chelladurai 59/ M | • Early small airway obstruction as FEF 25-75 % pred or PEFR % pred <70  
      | Ht: 152 cm        | • Spirometry within normal limits as (FEV1/FVC) %Pred >99 and FVC %Pred >80. |
| 2.   | 53 kg           |                                                                      |

### 30. RESPIRATORY RATE

<table>
<thead>
<tr>
<th>S.No</th>
<th>IP. No</th>
<th>Respiratory Rate</th>
<th>OP.No</th>
<th>Respiratory Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>BT</td>
<td>AT</td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>1916</td>
<td>25</td>
<td>20</td>
<td>43406</td>
</tr>
<tr>
<td>2.</td>
<td>1962</td>
<td>23</td>
<td>21</td>
<td>44399</td>
</tr>
<tr>
<td>3.</td>
<td>2295</td>
<td>24</td>
<td>21</td>
<td>46389</td>
</tr>
<tr>
<td>4.</td>
<td>2331</td>
<td>23</td>
<td>19</td>
<td>46406</td>
</tr>
<tr>
<td>5.</td>
<td>2416</td>
<td>22</td>
<td>19</td>
<td>48463</td>
</tr>
<tr>
<td>6.</td>
<td>2421</td>
<td>22</td>
<td>19</td>
<td>48876</td>
</tr>
<tr>
<td>7.</td>
<td>2627</td>
<td>22</td>
<td>19</td>
<td>49461</td>
</tr>
<tr>
<td>8.</td>
<td>2741</td>
<td>24</td>
<td>20</td>
<td>50506</td>
</tr>
<tr>
<td>9.</td>
<td>2790</td>
<td>23</td>
<td>19</td>
<td>50754</td>
</tr>
<tr>
<td>10.</td>
<td>2851</td>
<td>25</td>
<td>20</td>
<td>51847</td>
</tr>
<tr>
<td>11.</td>
<td>2909</td>
<td>23</td>
<td>20</td>
<td>51928</td>
</tr>
<tr>
<td>12.</td>
<td>2913</td>
<td>24</td>
<td>21</td>
<td>52317</td>
</tr>
</tbody>
</table>
From the table it is observed that the trial drugs increased the oxygenation of the blood thereby reduced the respiratory rate to the normal level.

**31. GRADATION OF RESULTS**

Table 31 illustrates the Gradation of results

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Gradation of Results</th>
<th>No. of cases</th>
<th>Percentage %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>OP</td>
<td>IP</td>
</tr>
<tr>
<td>1.</td>
<td>Good</td>
<td>16</td>
<td>15</td>
</tr>
<tr>
<td>2.</td>
<td>Moderate</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>3.</td>
<td>Poor</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

**In Op study**

80% of cases showed Good response. 15% of cases showed Moderate response and 5% of cases showed Poor response.

**In Ip study**

75% of cases showed Good response. 15% of cases showed Moderate response and 10% of cases showed Poor response.
DISCUSSION

The present global respiratory disease is Manthara kaasam (Bronchial asthma) which affects millions of people in the world which occurs due to pollution of environment and changes in life style.

The efficacy of Siddha system in controlling this respiratory disease prompted me to carry out clinical and scientific study in this subject.

For the clinical study 20 selected patients were admitted as In-patients in post Graduate Department of Pothu Maruthvam and were treated with the trial medicine. After discharge all the twenty patients were followed as the out-patients.

The medicine was also trialed with 20 out patients in the out-patients Department of Pothu Maruthuvam.

The results were clearly observed and recorded under the supervision of Professor, Reader and Assistant lecturer. The observed results were discussed here.

1. Sex Distribution

Among the both In-patients and Out-patients 70% each of the males and females 30% were affected.

This indicated that males were mostly affected by the disease than females and this may be due to increased exposure of males to smoking.
2. Age Distribution:

Among the In-patients 70% of the patients were affected in the age groups of 51-60 years, 5% of the patients were affected in the age group of 61-70 years, 25% of the patients were affected in the age group of 61-70 years.

Among the Out-patients 65% of the patients were affected in the age group of 51-60 years, 10% of the patients were affected in the age group of 13-20 years and 61-70 years, 5% of the patients were affected in the age group 21-30 years, 31-40 years and 41-50 years.

It showed that increased incidence of the patients the age group of 51-60 years.

It indicated that the increased incidence of the disease during the old age was due to decreasing lung capacity, lung function and immunity.

3. Kaalam (age)

Among In-patients 100% belonged to pithakaalam (33-66 years).
Among the Out-patients 85% belonged to pithakaalam (33-66 years) and 15% belonged to vathakaalam (1-33 years).

The maximum no of cases were treated in the pithakaalam.

4. Constitution of Body:

Among In-patients 70% were kaba thegi.
20% were vatha thegi.
10% were thontha thegi.

Among Out-patients 60% were kaba thegi
30% were vatha thegi.
10% were vatha thegi.
10% were belonged to pitha thegi.

The maximum no of cases were treated in the kaba thegi.
5. Religion:

Among In-patients 85% were Hindus.

10% were Christians.

5% were Muslims.

Among Out-patients 85% were Hindus.

10% were Christians.

5% were Muslims.

6. Gunam:

Among In & Out patients 100% had Rajogunam.

7. Thinai:

Among In-patients 40% belonged to Mullai (ie. Forest and its surroundings), 40% belonged to Neithal (ie. Sea and its surroundings) and 20% belonged to Kurunji (ie. Hill and its surroundings).

Among Out-patients 40% belonged to Kurunji (ie. Hill and its surroundings), 35% belonged to Mullai (ie. Forest and its surroundings) and 25% belonged to Neithal (ie. Sea and its surroundings)

According to the literature Marutha Nilam is free from disease.

According to Noi illa Neri text,

“சதுரையி காண்டிரி மூலிகாவ்கள் நிறைந்தில்

சாண்டுகில் மாரியம் இனந்து கொள்ளும்”

“திவிகு தியாவிழியாம் மயங்கிய தவறாவாம்

செரும செருமிய்”

- சிற்றாசியம் கோவில் (பகுதி 3)
8. Paruvakaalam :

Among In-patients 60% were affected during Kaarkaalam.

25% were affected during Koothir kaalam.

15% were affected during Muthuvenil kaalam.

Among Out-patients 70% were affected during Kaarkaalam.

30% were affected during Muthuvenil kaalam.

This shows that most of the patients gets affected in Kaarkaalam.

9. Occupational Distribution:

Among the In-patients 55% belongs to agricultural labours, 15% were housewife, 10% were cement factory workers, 5% were beedi makers, 5% were policemen, 5% were grocery store workers, 5% were mechanical engineer.

Among the Out-patients 25% were agricultural labours, 15% were housewife, 15% were grocery stores workers, 10% were students, 10% were manson, 10% were cement factory workers, 5% were beedi maker, 5% were chemical workers and 5% were policemen.

This shows Manthara kaasam occurs predominantly in people exposed to dust or husks of grain in case of agri labours.

10. Aetiological factor of the patients:

Among the In-patients 60% of the patients had smoking, 30% of the patients had dust & cold exposure 10% of the patients had husk of grains & air pollution collectively as their aetiological factor.
Among the Out-patients 55% of the patients had smoking, 35% of the patients had husk of grains & air pollution, 10% of the patients had smoking collectively as their aetiological factor.

Above data illustrated smoking, dust & cold exposure and husk of grains & air pollution were the aetiological factors among the patients.

According to literature, the aetiological factor are excessive inhalation of smoke, cold climate, noisy wind, husk of grains, inhalation of irritant fragrance.

Thus the above data coincided with the literature.

11. Distribution of Socio-Economic status:

Among the In-patients 80% belonged to the low class Socio-Economic status.

20% belonged to middle class.

Among the Out-patients 55% belonged to the low class Socio-Economic status and 45% belonged to middle class.

This Observation indicated the increased incidence of the disease in low class Socio-economic status.

12. Food Habits:

Among the In patients, 85% of them had mixed diet and 15% of them had vegetarian diet.

Among the Out patients, 80% of them had mixed diet and 20% of them had vegetarian diet.

The observations illustrates that the disease was predominant in the mixed diet habitats.
According Yugi Vaidhya Chinthamani, the dietary factors that cause the disease are taking non-vegetarian diet and taking improperly cooked food.

13. Family History:

Among the In patients, 95% of the patients had negative family history and 5% of the patients had positive family history.

Among the out patients 90% of the patients had negative family history and 10% of the patients had positive family history.

It is showed that most of the patients had negative family history.

14. Habits:

Among the In patients 65% of the patients were smokers, 10% of the patients were betel nut chewers, 5% of the patients were tobacco chewers, 5% of the patients were alcoholic and 15% of the patients had no such habits.

Among the out patients 50% were smokers, 10% of the patients were tobacco chewer and alcoholic and 30% of the patients had no such habits.

This disease was predominant in smokers.

15. Clinical manifestations

The data from the observation showed that 100% of incidence of difficulty in breathing in both In-Patients and out-patients.

Among In-patients and Out-patients cough without expectoration was seen in 100%.

Tightness of chest was present in 30% of In-patients and 20% of Out-patients, Eosinophil count is raised in 30% of In-patients and 45% of Out-patients, running nose was present in 30% of the In-patients and 20% of the out-
patients, sneeze was present in 20% of the In-patients and 25% of the Out-patients, sweating was present in 10% of Op-patients and expectoration was present in 10% of Ip-patients and 20% of Op-Patients.

16. Involvement of other systems:

Both In-patients, Out-Patients Gastro intestinal system and musculo skeletal were affected more than any other system with the disease.

17. Mode of onset

The observation illustrated the mode of onset in all the 100% of the In-Patients were chronic.

In Out-patients the mode of onset is chronic in 80% of patients and acute in 4% of the patients.

18. Duration of disease

Among the In-patients, 60% incidence for the duration of upto 6 months 35% incidence for the duration of 6months – 2 years and 5% incidence for the duration of 6-10 years.

Among the Out-patients, 65% incidence for the duration of upto 6months, 10% incidence for the duration of 6 months - 2 years, 15% incidence for the duration of 2-6 years. 5% incidence for the duration of 6-10 years, and 5% incidence for the duration of 15-25 years.

The data illustrated the highest incidence of duration of disease among the In-patients and Out-patients were upto 6months.

19. Imporigal (Gnaendhriyam):
Among the In-patients Mookku was affected in 35% of the patients.

Among the Out-patients, Mookku (Nose) was affected in 50% of the patients. i.e. anosmia due to running nose. Vai was affected in 5% of the patients due to altered in taste.

20. Kanmenthiriyam

It was illustrated that among the In-patients, Kai was affected in 5% of the patients, kaal was affected in 15% of the Patients. They had Knee joint pain may be due to aging. Eruvai was affected in 35% of the patients. They had constipation. Kariuvai were not affected.

Among the Out-patients, Kaal was affected in 15% of the patients & eruvai was affected in 5% of the patients vai was affected 40% of due to altered in taste. Kai and Karuvai were not affected.

21. Mukkutram

a. Vatham

Pranan was affected in all the 100% of the In-patients and Out-patients. Uthanan was affected in 80% of the In-patients and 75% of the Out-patients. Viyaanan was affected in 40% of the In-patients and 15% of the Out-patients. Samanan was affected in 70% of the In-patients and 60% of the Out-patients. Abanan was affected in 35% of the In-patients and 40% of the Out-patients. Kirukaran was affected in 55% of the In-patients and 70% of the Out-patients. Devaththan was affected in 60% of the In-patients and 55% of the Out-patients.

Pranan is responsible for respiration in mantharakasam, this vayu was affected leading to difficulty in breathing, cough is also caused by pranan.
b. Pitham

Anar pitham was affected in 70% of the In-patients and 60% of the Out-patients.

Anarpitham is responsible for appetite. Since there was loss of appetite in the clinical trial the anarpitham was affected.

Ranjagam, Sathgam, Prasagam, Aalosagam were not affected in this disease.

c. Kabam

Avalambagam was affected in all the 100% of both In-patients and Out-patients kiletham was affected in 35% of the In-patients and 40% of the Out-patients santhigam was affected in 55% of the In-patients and 15% of the Out-patients.

Avalambagam is residing in lungs and helps other four types of kaba to function. It was deranged due to the presence of breathlessness and cough without expectoration.

Kiletham is present in the stomach and gives moisture to the food materials and also helps in digestion. It was deranged due to loss of appetite.

Santhigam resides in the joints and helps for moment. Since there was joint pain, it was affected. It was may be due to their aging.

Pothagam is living in the tongue and responsible for taste sensation. It was deranged in some patients.
22. Ezhu udal Kattugal

In ezhu udal Kattugal, Saaram was affected in all the 100% of the In-patients and Out-patients. Enbu was affected in 35% of the In-patients and 5% of the Out-patients. Kozhuppu was affected in 30% of the In-patients and 10% of the out patients, senner was affected in 20% of the In-patients and 15% of the out-patients.

Saaram strengthens the body and mind, since, there is loss of appetite and strengthless causing body tiredness due to breathlessness and cough with expectoration.

Enbu and Kozhuppu are responsible for the movements of the body and gives lubrication to the joint cavities, since, there was joint pain, these two were affected may be due to aging.

23. Envagai Theruvugal

Mozhi was affected in all the 100% of both In-patients and Out-patients due to low pitched voice and difficulty in speech. Naa was affected in 10% of the In-patients and 5% of the Out-patients due to coated tongue, pallor tongue.

Maalam was affected in 15% of the In-patients and 20% of the Out-patients due to constipation. Niram was affected in 20% of the In-patients and 25% of the Out-patients due to pallor.

Sparisam, Vizhi and moothiram were not affected in this disease.

In Naadi 20% of the In-patients and 5% of the Out-patients had vatha pitham naadi. 5% of the In-patients and 10% of the Out-patients had Vatha kaba naadi. 5% of the In-patients and 15% of the Out-patients had pitha kaba naadi.
10% of the In-patients and 5% of the Out-patients had kaba Vatha naadi. 60% of the In-patients and 65% of the Out-patients had Kaba pitha naadi.

24. Neerkuri

Niram, Manam, Edai, Nurai and Enjal were not affected in all patients

25. Neikuri

In Neikuri, 100% of the In-patients and Out-patients had Kaba neer.

26. Laboratory analysis

Routine investigation of blood and urine were done during the admission and at the end of the treatment for every case.

Blood urea and serum cholesterol were found to be in normal range before and after treatment.

X-ray chest PA view – normal.

Pulmonary function test are done for 4 patients from In-patients and 3 patients from Out-patients. The results showed obstructive airway disease.

Blood investigation of In-patients showed total count of WBC in normal range. Eosinophils count was increased and ranged from 4-15 cells before treatment and after treatment it ranged 1% to 5%. ESR (Erythroyte Sedimentation Rate) was raised in before treatment and the after treatment was reduced. Hemoglobin content was decreased in before treatment and the after treatment was normal.

Blood investigation of Out-patients showed TC within the normal range. Eosinophils count was raised and showed the range of 3% to 8% cells before treatment, and after treatment it ranged 1% to 3%.
Haemoglobin content was increased slightly before treatment and the after treatment.

Sputum examination was found to be negative for all the 100% of both the In-patients and Out-patients.

Mantoux test was found to be negative for all 100% of both the In-patients and Out-patients.

According to modern medicine, the aetiological factors for the disease are smoking, dust and cold exposure, husk of grains & airs pollution, stress and food habits.

Bio chemical analysis showed the presence of starch, ferrous iron, phosphate and unsaturated compound. The trial medicine **Thakkolathi chooranam** had significant antispasmodic, acute anti-inflammatory and anti-histamine activities.

Anti microbial study showed the trial drug medicine is highly sensitized to E.Coli.

Symptoms of the disease bronchial asthma are closely matched with Manthara kaasam as explained in Yugi vaithya chinhamani-800.

**Treatment**

Thakkolathi chooranam 3gm thrice daily with hot water after meals was prescribed and was give till the end of their treatment.

**Gradation of results**

Good results were found it 75% of both In-patients and 80% Out-patients. Fair results were found it 15% of In-patients and 15% of Out-patients. Poor results were found in 10% of In-patients and 5% of Out-patients.
SUMMARY

Manthara kasam is the common respiratory disease seen in day to day clinical practice.

In this clinical study 20 patients of both sexes of varying age groups were selected as In-patients 20 patients as out-patients.

The entire course of treatment regime as follows.

**Thakkolathi chooranam** – 3 gm thrice a day after meals with hot water.

- Manthara kasam is an episodic disease which prolongs for year and occurs episodically. So Thakkolathi chooranam is orally administered for a course of treatment.
- The drug has significant antihistamine property. This help to get rid of the symptoms like cough, running nose, sneezing, which in turn relieve the broncho spasm, tightness of the chest.
- The results of this clinical trial were found to be very encouraging in almost every cases. There was marked improvement within few days of treatment. All the In-patients and Out-patiets were instructed to follow up the treatment.
- No recurrence of the disease was seen the treatment schedule . There were no clinical side effects, toxic effects during the coarse of treatment.
- The trial drugs were found to play the major role to correct the deranged three humours, thereby correcting Pranan, Abanan, Udhanan, Kirugaran,
Devathathan Vayus, Pitham such as Anal Pitham and the vitiated kabam is restored to the normal.

- All the patients were advised to follow strict diet restrictions and advised to practice Pranayamam and Yoga therapy.
- Clinically 82.5% of the patients showed good results.
- Pharmacological analysis showed that the trial drugs.

  **Thakkolathi chooranam** has **significant Antispasmodic action**, **Antihistaminic effect** and **Anti-inflammatory effect**.

- Anti-microbial study showed the trial drugs **Thakkolathi chooranam** are sensitive to E.coli.
CONCLUSION

- 77.5% of the patients good results 15% showed moderate results and 7.5% showed poor results.
- The identification of suvaigal are on the basis of the individual ingredients of these preparations.

These drugs which are under the trials as got the thanmai veppam.

Thakkolathi chooranam has got the Karppu pirivu according to the basic principles of Siddha Medicines.

In this trial drug has got Inippu, Karppu Suvaigal.

The Karppu suvai which has potent to act as antagonist the excessive kabam.

“All these drugs has got the Thanmai Veppam. The veppam has got to action to decrease the vitiated kabam.

After ingestion while the trial medicine reaches the gastric juice, it will change into the vibagam Karppu. At this stage also, the medicine will acts as anti Kaba Medicine due to the Vibagam Karppu.

“இருறுத்து தம்பு திளகம் - தற்காலிகம்

கர்ப்பு லேட் தம்பு கர்ப்பு கர்ப்பு கல்லால் பலனை

கர்ப்பு பிரிகாட்டு கர்ப்பு”.

“இன்று தம்பு திளகம் உடனை கொலை

கர்ப்பு லேட் தம்பு கர்ப்பு கர்ப்பு கல்லால் பலனை பிரிகாட்டு கர்ப்பு”.
Thakkolathi Chooranam has got significant efficacy to treat Manthara kaasam on the basis of their anti-kaba principle.

Further follow up these patients showed sense of well being and reduce these signs and symptoms.

So, Manthara kaasam is controllable with Thakkolathi Chooranam.
ANNEXURE - I

PREPARATION OF THE TRIAL MEDICINE

திருதிவுக்கு காணும்

“தயாரிக்கப்பட்ட கைதியால் நடிக்கப்பட்ட

தனித்தனியான நடுநிலையில் பிறந்தையும்

தற்கால திறன்களும் பயன்படுத்த கூட்டு

தொன்வை நடுநிலையில் பிரித்துறையும் அப்புறம்

துற்கோளுக்கு காணும் காலத்தில் காணப்பட்டு கூடு

வாசிக்கு முன்னாள்வரிசையில் (பலவுகின்றவால்

சிற்றுறை அதியரியது என்பது வரையறுக்கப்பட்ட

முன்னாள்வரிசை அதியரியது வரையறுக்கப்பட்ட.

- (நாட்களில் திறந்துபறுப்பு – நாள்வார் பார்வை)

முக்கிய - 105.

வருடையர்:

தினமுதல் கடவுளோயிலியும் உடந்தியர்கள் இரும்பு சிற்றுறை

தாக்கு நெறியனறு கூட மகராமும் பிரித்துறைமுதல் இரும பார்வை

செய்வதுண்டு புரோட்சனங்கள் நடுநிலைகள்.

உணவு : 3 கிலோ, மேலும் 3 கிலோ மாதிரியைப் பிட்ட வைக்கும் 20 நாள்கள்

அடையும் : கொல்லப்படுகின்ற.

சிற்றுறை நடுநிலை : சீட்டாட்சி, முடி, முடி, சீட்டாட்சி. கொல்ல, பிடித்து

(புரோட்சனங்கள்) கொல்ல.
Synonym  : Star Anise, Anasphal

Botanical name  : *Illicium verum*

Common name  : Star Anise

Family  : Illiciaceae

Parts used  : Fruit

Siddha properties  :

Siddha name  : Annasippu

Suvai  : Inippu, viruviruppu

Thanmai  : Veppam (Hot)

Vipakam  : Kaarppu (Pungent)


Phytochemical constituents: Fruit contains essential oil which has limonene, linalool, eugenol, estragole, methyl eugenol, *p*-Anisaldehyde, etc.,
“அதிகாரின் புலன் மாற்றுக்கேற்ற குறிப்பிட்டு

என்றால் பல்லவர்களின் துணைக்குறிப்பிட்டு - பிண்டிகுரிய

அர்த்தமாக நிகரையில் எடுத்து பிட்டுக்கோள்

ஒன்றுள்ளே குடமுடிக்கோள்”

- (பங்கைத்து வள்ள திசைகளை)

அதிகாரின் புலன் குறிப்பிட்டு கூறுத் தலைப்புக் குறிப்பிட்டு வருகிறது நோய்கல்வையும்,

இப்பொழுது பிட்டுக்கோள் துணைக்குறிப்பிட்டு எடுத்து குறிப்பிட்டு பிரித்து அதிகாரின் செயல்முறை.
**Siddhārtha – Syzygium aromaticum** (Linn) Merrill & Perry

**Botanical name** : Syzygium aromaticum

**Common name** : Clove

**Family** : Myrtaceae

**Parts used** : Flower, bud, leaf.

**Siddha properties** :

**Siddha name** : Elavangam, kirambu, anjugam, urkadam, sosam, thirali.

**Suvai** : Kaarppu, viruviruppu

**Thanmai** : Veppam (Hot)

**Vipakam** : Kaarppu

**Pharmacological actions** : Rubefacient, antispasmodic, carminative, stomachic, aromatic.

**Phytochemical constituents**: Buds contain ellagitannin-eugeniin, caryophyllene, eugenol and nephthlane. Volatile oil consists of hydroxy-4, 6-dimethoxy-5-methylacetophenone, benzyl salicylate, methyl palmitate, γ-muurolene, β-selinene and α-thajene.
"பிறகு இயற்கை விளையாடை மன்னன் மறுக்கிவிட்டான்
குறுக்குட்டு குழுவின் விளையாடை ஒன்று
நூற்றாண்டு வருகையற்றது இயற்கை
வலருள்ள குழுவின் பதிலானே." 

- (அக்கிரம் குமாரசாமி).

இளவசம்பவமாக பிறகுவிட்டான், அறிவுகு, மருத்துவத்தில், அதிகப்பிசும் குறுக்குட்டிகழை, குறுக்குட்டிகழை, முனிவரும், நூற்றாண்டு வருகையாக குழு
வாழ்வதூ, காஞ்சனின் புரட்சியாக இயற்கைவியல் நிறைவே.

115
Synonym : A momum repens Sonnt

A.cardamomum White non L

Alpine cardamomum Roxb

Botanical name : *Elettaria cardamomum*

Common name : Cardamom

Family : Zingiberaceae

Parts used : Seed

Siddha properties :

Siddha name : Yaelakkai, aanji, dhudi, korangam

Suvaí : Kaarppu (Pungent)

Thanmai : Veppam (Hot)

Vipakam : Kaarppu (Pungent)

**Phytochemical constituents:** Seeds contain essential oil which constitute eucalyptol, sabinene, d- terpineol and acetate, borneol, limonene, terpinene etc. It also contains crude protein, starch, minerals, Vit A, B and C.

**Pharmacological activities** : Hepatoprotective, **anti-inflammatory**, analgesic, **antispasmodic**, **antimicrobial**, antifungal.
"ஒருவர் காயத்தினர் நோயனுக்கு நன்களில்

ஒருவர் முயற்சியின் இந்து தவறிக்கு

2. பொங்கல் பொருளினர் ஆல் கிருத்தம்

3. முகல் ஆவத்தின் கிளைக்கு விளைக்கு

பணியை இன்று விளைக்கும் காலம்

பணியை எழும் பணிவிளையம் நடந்து

அவ்வின் பணியை பின்வாதம் இல்லாதுங்காலம்

நண்பன் பணியை நான் மக்கானிடே…..

- (குறுகியப் பாடலின்)

தியலவில், குறிப்பிட்டு, நிறைந்தது, சிந்தனை நிலைந்தது, தின்படி பதில்

ஒருவர் காயத்தினர் நோயனுக்கு; அவனை அதுக்கு; மொழிகரும் பொருள்.
### Botanical name

: *Piper longum*

### Common name

: Long pepper

### Family

: Piperaceae

### Parts used

: Root, fruit.

### Siddha properties

: 

#### Siddha name

: Thippili

#### Suvaai

: Inippu

#### Thanmai

: Veppam (Hot)

#### Vipakam

: Inippu

### Phytochemical constituents:

Fruit yield essential oil which consists of monocyclic sesquiterpenes, piperidine alkaloids pipernonaline, piperundecalidine, isobutyl amide longamide, guiniensine, lignans pluviatilol, methyl pluviatilol (fargesil), sesamine, asaridine and pipataline.

### Pharmacological activities:

Antispasmodic, analgesic, carminative, sedative, emmenagogue, abortifacient, haematinic, diuretic, aphrodisiac and stomachic.
“இருவர் கண்டு திகான் கம்பிவிடி

வகையில் மனித அதிகாரம்

மாணவர் அல்மா கல்லூரியில் பத்தாண்டு

பதின் குறிப்பிட்டு விளக்கம்

அனைத்து விளகல் ஆராய்க்குறிப்பிட்டு

பின்னர் அதிகார விளகல் குறிப்பிட்டு

மறுமதிகளை விளக்கம்

மாணவர் குறிப்பிட்டு விளக்கம்

- (தெய்வ கருணைக்கன்).

“வகையில் பிள்ளையரும் பால்பெளி கோள்

மாணவர் பல்கலைக்கழக மன்றத்தில் - மாணவரே

பல்கலைக்கழக மன்றத்தில் பல்கலைக்கழக மன்றத்தில்

சீரமைப்பாட்டை பல்கலைக்கழகம்.

- (தெய்வ கருணைக்கன்)

திறமம், குடம்பம், கல்லூரியம், கட்டமை, பண்டையம், அதிகாரம், மாணவர், உலகச் சிறுமி, பார்வைய விளக, கல்வியாளர், பெண், பெண், எளம்பெளி, பெண், தொண்டுதள், எளம்பெளி, கால் விளக, பெண் விளக, வெள்ளூருக்கு பரந்தார்.
Synonym : Beetle killer

Botanical name : *Clerodendrum serratum*

Common name : Bhargi

Family : Verbenaceae

Parts used : Leaf, root.

Siddha properties :

Siddha name : Kandupaarangi, angaravalli

Suvai : Kaippu, thuvarppu

Thanmai : Veppam (Hot)

Vipakam : Kaarppu (pungent)

Pharmacological actions : Stimulant, sedative, febrifuge.

**Phytochemical constituents:** The leaves contain alkaloid and bitter substance.

The root contains sapogenin and triterpene, starch and resin. Root bark contains glucose and D- (-)mannitol; hydrolysis of crude saponin from bark yielded oleanolic acid, queretaroic acid and serratagenic acid.
"கோள்வழியான பூமிவழியான திமுகிக்குறுகியான்

காலமுனிக்கு பாசக்குறுகிய தாண்டவகாசத்

தூரநாயகாணி என்பானக்காக காலமுனிக்கு

காலமுனிக்கு பாசர்க்குறுகிய நூற்றாண்டாணிக்கு

பிறந்தது பிறராக போதத்து

நூற்றாணி மறுருகிய காணாந்த பானே

அரசியல் சிறுகுரு பெரு பஞ்சிக்கு

புதியவாக பிறந்தமிக மட்டுத்தந்து.

- (புதுங்கிழா தலை சிகார்களில்)

முப்பு, பிறந்த, குமார, குரு, பைரி, தூருக்கல் போன்றன. பிறந்த, பிறராக, நூற்றாண்டாணி,

தூரநாயகாணி, என்னெனை, சிறுகுரு, பெரு, பெண், அப்பாள், செவ்வாய்ப்பான் பிறந்து.
**Sg – Zingiber officinale** Rose

**Synonym**: Shunti, Nagara, Mahaushadha, Vishwabhesha, Shringabera, Katubhadra, Ardrika, Ardraka

**Botanical name**: *Zingiber officinale*

**Common name**: Ginger

**Family**: Zingiberaceae

**Parts used**: Fresh rhizome and dried rhizome.

**Siddha properties**: 

**Siddha name**: Inji, allam, aarthram, narumaruppumathil, ilakottai, chukku, sundi, sigaram, sangai, vaer kombu, vidamoodia amirtham.

**Suvai**: Kaarppu (pungent)

**Thanmai**: Veppam (Hot)

**Vipakam**: Kaarppu (pungent)

**Pharmacological activities**: Anti-inflammatory, antiemetic, antiulcer, antiplatelet, antipyretic, cardiovascular, antioxidant, antibacterial, antifungal, antitumoural, antirhinoviral, hepatoprotective, inhibition of prostraglandin release.

**Phytochemical constituents**: Rhizome contain diarylheptanoids, essential oil, ginger diol and related compounds. Predominant sesquiterpene is zingiberene; others present are: cis-sesquisabinene hydrate, zingiberneol, ar-curcumine, β-bisalolene, α-selinene, β-elemente.
“சுலா மகிழ்ந்த ஒன்றியாக விளக்கின் மூலம் மூழ்கல்

வல்ல நிற்பைவுகளின் முக்கியம் - அல்லது

விளக்குத் தரை ஒன்றிக் குறுந்தது

விளக்கம் மூழ்கல்கள் குச்சி.”

- (பகார்ந்த தமிழ் சிரிக்கலை)

“அன்று பிரிவில் வரும் வேளியும்

நைக்காக அன்றியால் மூழ்கு விளை

எழுந்து நைக்காக விளைப்படா

சிறுமை முகக்கு புதியும் காயத்

சுருக்கு பிரிவில் வரும் அவர்கள்

விளையும் அன்றியால் தமாழும் கோசிக

நைக்காக எழுந்து எழுந்து தக்தா

சிறுமையில் பிள்ளையார் குச்சி பனியிய.”

- (பகார்ந்த தமிழ் சிரிக்கலை)

கோடை, சுவை, முதலியரின், கண்டி, நம்பிய, அருணா, கோடை, வெள்ளை,

தீர்மான, சுப்பிரமணியால், வாழ்க்கையால்,வணிகார், வாழ்க்கையால், தொற்றுண்டலை,

நூலையுடன், வாழ்க்கையால், வாழ்க்கை, தீர்மான, வாழ்க்கை, நம்பிய, தீர்மான,

நூலை, தீர்மான, வாழ்க்கை, வாழ்க்கையால், வாழ்க்கையால், வாழ்க்கையால்

கோடை, போட்டி, முதலியரின் குச்சி பனியிய.
Synonym: Maricha, Vellaja, Krishna, Dharmapattana

Botanical name: *Piper nigrum*

Common name: Black pepper

Family: Piperaceae

Parts used: Fruit, root.

Siddha properties:

Siddha name: Milagu, kallinai, kariyam, malayin munivan, marisam, malayali, thirangal, vellai milagu, aagutam.

Suvai: Kaippu (Bitter)

Thanmai: Veppam (Hot)

Vipakam: Kaarppu (pungent)

Phytochemical constituents: Fruit contains amide-pipericide, oleoresin, alkaloid piperine, volatile oil.

Pharmacological activities: Antioxidant, anticonvulsant, sedative, analgesic, CNS depressant, muscle relaxant, antipyretic, anti inflammatory, antifungal, antimicrobial, antiulcer, antibacterial, cyclooxygenase inhibitory activity.
“என்றும் பார்வை திருச்செல்வடி கிருட்பநாயக நம்பிய அறிவித்து பார்த்து - ஒரு கற்று

மற்றவர் மார்ச் ஆல் விளக்கம் கருதிலும்

நரசிம்மா அப்படித்தான்.”

- (நரசிம்மா கோவாலனா)

திருநெல்வேலி, பாலம்பூர், விளக்குமான், திருச்செல்வடிக்கு கற்று, இடமும், கல்லூரியிலும்,

நிலக்குத்துவம், பச்சைக்குத்துவம், கல்லூரியில், கல்லூரியில்,

இருந்தும், திருமுண்டியம், காப்பாளர், குனி,

புதுங்கிளை விளக்கம் கருதிலும்.

- (இருந்து கோவாலனா)

பார்வையில், குனி, விளக்குமான், இடமும், இடமும், இடமும்,

திருமுண்டியம், திருமுண்டியம், திருமுண்டியம்.

பிரித்தின் பயந்து

“திருமுண்டியம் திருமுண்டியம் பார்வையில்

என்றும் கோவாலனா திருமுண்டியம் பார்வையில்

பார்வையில் கோவாலனா திருமுண்டியம் பார்வையில்

பார்வையில் கோவாலனா திருமுண்டியம் பார்வையில்

காணும் பார்வை காணும் பார்வையில் காணும்.”

- (இருந்து கோவாலனா)

பிரித்தின் பயந்து, என்றும் கோவாலனா பயந்து காணும் பார்வையில் பார்வையில் காணும்,

திருமுண்டியம், திருமுண்டியம், திருமுண்டியம், திருமுண்டியம் பார்வையில்.
Botanical name : *Saccharum officinarum*

Common name : Sugarcane

Family : Poaceae

Parts used : Stem (Juice from sugarcane and a crystallized sugar obtained from the juice)

Siddha properties :

Siddha name : Karumbu, punarpoosam, ikku, vaei

Suvai : Inippu

Thanmai : Seetham (Cold)

Vipakam : Inippu

Pharmacological actions : Demulcent, antiseptic, cooling, laxative, diuretic, nutrient, preservative.

Phytochemical constituents: Sugarcane contains cellulose, hemicellulose and lignin. Juice contains saccharine matter (cane sugar), water, mucilage, resin, fat, albumin, etc; guanine in small quantities is found in sugarcane; it is a white crystalline powder insoluble in water and very sparingly soluble in ammonia and calcium oxalate.
"அழகு மகரணி கம்பாரச பாலம்

நாயக்கரன் கணையில் தூவும் - ஆத்மாயியும்

நீதியால் பெரும்பக்தம் பெருமனிக்குமுன்

பாதுகாக்க நோய்."
ANNEXURE - II

BIO-CHEMICAL ANALYSIS OF THAKKOLATHI CHOORANAM

PREPARATION OF THE EXTRACT

The trial drug Thakkolathi chooranam is directly used as the extract.

QUALITATIVE ANALYSIS

<table>
<thead>
<tr>
<th>S.NO.</th>
<th>EXPERIMENT</th>
<th>OBSERVATION</th>
<th>INFERENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>TEST FOR CALCIUM</td>
<td>No white precipitate is formed.</td>
<td>Absence of calcium.</td>
</tr>
<tr>
<td></td>
<td>2ml of the above prepared extract is taken in a clean test tube. To this add 2ml of 4% Ammonium oxalate solution.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>TEST FOR SULPHATE:</td>
<td>No white precipitate is formed.</td>
<td>Absence of Sulphate.</td>
</tr>
<tr>
<td></td>
<td>2ml of the extract is added to 5% Barium chloride solution.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>TEST FOR CHLORIDE</td>
<td>No white precipitate is formed.</td>
<td>Absence of chloride.</td>
</tr>
<tr>
<td></td>
<td>The extract is treated with Silver nitrate solution.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>TEST FOR CARBONATE</td>
<td>No brisk effervescence is formed.</td>
<td>Absence of Carbonate.</td>
</tr>
<tr>
<td></td>
<td>The substance is treated with concentrated Hcl.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>TEST FOR STARCH</td>
<td>Blue colour is formed.</td>
<td>Indicates the presence of Starch.</td>
</tr>
<tr>
<td></td>
<td>The extract is added with weak Iodine solution.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>TEST</td>
<td>Description</td>
<td>Result</td>
</tr>
<tr>
<td>-----</td>
<td>-------------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>6</td>
<td><strong>TEST FOR IRON FERRIC</strong></td>
<td>The extract is acidified with Glacial acetic acid and Potassium ferro cyanide.</td>
<td>No blue colour is formed.</td>
</tr>
<tr>
<td>7</td>
<td><strong>TEST OF IRON FERROUS</strong></td>
<td>The extract is treated with concentrated Nitric acid and Ammonium thio cyanate solution.</td>
<td>Blood red colour is formed.</td>
</tr>
<tr>
<td>8</td>
<td><strong>TEST FOR PHOSPHATE</strong></td>
<td>The extract is treated with Ammonium molybdate and concentrated Nitric acid.</td>
<td>Yellow precipitate is formed.</td>
</tr>
<tr>
<td>9</td>
<td><strong>TEST FOR ALBUMIN</strong></td>
<td>The extract is treated with Esbach’s reagent.</td>
<td>No yellow precipitate is formed.</td>
</tr>
<tr>
<td>10</td>
<td><strong>TEST FOR TANNIC ACID</strong></td>
<td>The extract is treated with Ferric chloride.</td>
<td>No blue black precipitate is formed</td>
</tr>
<tr>
<td>11</td>
<td><strong>TEST FOR UNSATURATION</strong></td>
<td>Potassium permanganate solution is added to the extract.</td>
<td>It gets decolourised.</td>
</tr>
<tr>
<td>12</td>
<td><strong>TEST FOR THE REDUCING SUGAR</strong></td>
<td>5ml of Benedict’s qualitative solution is taken in a test tube and allowed to boil for 2 mts and added 8-10 drops of the extract</td>
<td>No colour change occurs.</td>
</tr>
</tbody>
</table>
and again boil it for 2 mts.

<table>
<thead>
<tr>
<th>13.</th>
<th><strong>TEST FOR AMINO ACID</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>One or two drops of the extract is placed on a filter paper and dried it well. After drying, 1% Ninnydrin is sprayed over the same and dried it well.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>14.</th>
<th><strong>TEST FOR ZINC:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The extract is treated with Potassium ferrocyanide.</td>
</tr>
</tbody>
</table>

**Inference:**

The trial drug of *Thakkolathi chooranam* contains starch, ferrous iron, phosphate and unsaturated compound.
ANNEXURE - III

PHARMACOLOGICAL ANALYSIS

1. ANTI - SPASMODIC EFFECT ON THAKKOLATHI CHOORANAM

AIM

To study the anti - spasmodic effect on "Thakkolathi chooranam".

PREPARATION OF THE TRIAL MEDICINE

1gm of "Thakkolathi chooranam" was taken and mixed with 10ml of water and filtered.

PROCEDURE

A rabbit weighing about 350 gm was starved for 48 hours and only water was allowed.

It was killed by stunning with a sharp blow on the head and cutting its throat to bleed to death. The abdomen was quickly opened and the viscera inspected and loops of intestine identified using the patch as a landmark. Then, the ileum was removed and placed in a shallow dish containing warm tyrode solution (37°C) and continuously aerated. The contents of the lumen of the ileum were washed and utmost care was taken to avoid any damage. It was cut into segments of 4 cm in a fully relaxed state and sutures were make with needle and tied on either side and the segment was suspended in an isolated organ bath. It was aerated by an oxygen tube immersed in tyrode solution. Drugs were given to study the inhibitory effect of Acetyl Choline.

INFERENCE

The test drug "Thakkolathi chooranam" had significant anti-spasmodic effect.
2. ANTI - HISTAMINIC EFFECT ON

THAKKOLATHI CHOORANAM

AIM

To study the anti - histaminic effect of "Thakkolathi chooranam".

PREPARATION OF THE TRIAL MEDICINE

1gm of "Thakkolathi chooranam" was taken and mixed with 10ml of water and filtered.

PROCEDURE

A guinea pig weighing about 350gm was starved for 48 hours and only water was allowed.

It was killed by stunning with a sharp blow on the head and cutting its throat to bleed to death. The abdomen was quickly opened and the viscera inspected and loops of intestine identified using the patch as a landmark. Then, the ileum was removed and placed in a shallow dish containing warm tyrode solution (37°C) and continuously aerated. The contents of the lumen of the ileum were washed and utmost care was taken to avoid any damage. It was cut into segments of 4 cm in a fully relaxed state and sutures were make with needle and tied on either side and the segment was suspended in an isolated organ bath. It was aerated by an oxygen tube immersed in tyrode solution. Drugs were given to study the inhibitory effect of histamine, induced contractions.

INFEERENCE

The test drug "Thakkolathi chooranam" had significant Anti-histaminic effect.
3. ACUTE ANTI-INFLAMMATORY ACTION OF THAKKOLATHI CHOORANAM

AIM

To study the anti-inflammatory effect of “THAKKOLATHI CHOORANAM”.

PREPARATION OF TRIAL MEDICINE

1gm of the Thakkolathithi chooranam was taken and dissolved in 100ml of hot water. A dose of 1ml was given to each rat. This 1ml contains 100mg of the trial medicine.

PROCEDURE

The anti-inflammatory activity of Thakkolathithi chooranam was studied in healthy albino rats weighing 100-150gm. Nine rats were collected and divided into three groups each containing three rats.

First group was kept controlled by giving distilled water of 2ml/100gm of body weight. The second group was given Ibuprofen as dose of 20mg/100gm of body weight. The third group received the trial medicine Thakkolathithi chooranam of 200mg/100gm of body weight.

Before administration of trial medicine, the hindpaw volume of all rats were measured. This was done by dipping the hindpaw upto tibiotarsal junction, into mercury plethysmography. While dipping the hindpaw, by pulling the syringe piston, the level of mercury in the centre small tube was made to coincide with red marking and reading was noted from the plethysmograph.
Soon after the measurement, the medicines were administered orally. Once hour later, a subcutaneous injection of 0.1ml of 1% (W/V) carrageen in water was made into plantar surface of both hind paw of each rat.

Three hours after carrageenin injection, hindpaw volume was measured once again. The difference between the initial and final volume was calculated and compared.

This method is more suitable for suitable the anti-inflammatory activity in acute inflammation. The values are given in the table.

**EFFECT OF THAKKOLATHI CHOORANAM**

<table>
<thead>
<tr>
<th>Group</th>
<th>Dose/100mg Body weight</th>
<th>Initial reading In secs</th>
<th>Final readings</th>
<th>Mean difference</th>
<th>% of inflammation</th>
<th>% of inhibition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control water</td>
<td>2 ml</td>
<td>0.55</td>
<td>1.4</td>
<td>0.85</td>
<td>100</td>
<td>-</td>
</tr>
<tr>
<td>Standard Ibuprofen</td>
<td>20 mg</td>
<td>0.55</td>
<td>0.75</td>
<td>0.20</td>
<td>23.5</td>
<td>76.5</td>
</tr>
<tr>
<td>Thakkolathi chooranam</td>
<td>100 mg</td>
<td>0.7</td>
<td>1.0</td>
<td>0.3</td>
<td>35.2</td>
<td>64.8</td>
</tr>
</tbody>
</table>

**RESULT**

From the above experiment it was concluded that the “Thakkolathi chooranam” has significant acute anti-inflammatory action.
ANNEXURE – IV

ANTI-MICROBIAL STUDY OF THAKKOLATHI CHOORANAM

BY KIRBY – BAUER METHOD

AIM

To determine the Antimicrobial activity of “Thakkolathi chooranam”

COMPONENTS OF MULLER HINTON AGAR MEDIUM:

Beef Extract : 300 gms /lit
Agar : 17 gms /lit
Starch : 1.5 gms / lit
Casein Hydroxylate : 17.5 gms/lit
Distilled water : 1000 ml.
PH : 7.6

PROCEDURE

The method of antimicrobial activity study is ups Diffusion Method.

Antibiotic discs are prepared with known concentration of antibiotic are placed on agar plates that has been inoculated with the known pathogenic Micro organism. The antibiotic diffuses through the agar producing an antibiotic concentration; Gradient antimicrobial susceptibility is proportional to the diameter
of the inhibitory zone around the disc. If the Micro organism which grows upto the edge of the disc are resistant to the antimicrobial agent.

The recommended medium in this method is Muller Hinton Agar, its PH should be between 7.2 - 7.6 and should be poured to uniform thickness of 4mm in the petri plate (25ml)

**Methodology:**

Muller Hinton Agar plates are prepared and Pseudomonas, Vibrio cholera, Escherichia coli, Bacillus, Klebsiella, Streptococcus are inoculated separately.

❖ The prepared discs of Thakkolathi chooranam are placed over the incubated plate using sterile forceps and incubated for 24 hours at 37° celcius. The plates after 24hours incubation are observed for the zone of inhibition.
### RESULT

<table>
<thead>
<tr>
<th>S.No</th>
<th>Test Drug</th>
<th>Organisms (Culture)</th>
<th>Susceptibility</th>
<th>Zone size (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Thakkolathi chooranam</td>
<td>Escherichia coli</td>
<td>Sensitised</td>
<td>16mm</td>
</tr>
<tr>
<td>2.</td>
<td>Klebsiella</td>
<td></td>
<td>Resistant</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Proteus</td>
<td></td>
<td>Moderately resistant</td>
<td>15mm</td>
</tr>
<tr>
<td>4.</td>
<td>Thakkolathi chooranam</td>
<td>Staphylococcus aureus</td>
<td>Moderately resistant</td>
<td>15mm</td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td>Streptococcus pneumoniae</td>
<td>Resistant</td>
<td>15mm</td>
</tr>
<tr>
<td>6.</td>
<td></td>
<td>Pseudomonas aeruginosa</td>
<td>Moderately resistant</td>
<td>15mm</td>
</tr>
</tbody>
</table>

### REPORT

*Thakkolathi chooranam is sensitive to* Escherichia coli, resistant to Klebsiella and Pseudomonas aeruginosa and moderately resistant to Proteus, Streptococcus pneumoniae and Staphylococcus aureus.*
ANNUXURE- V

CASE SHEET PROFORMA

GOVERNMENT SIDDHA MEDICAL COLLEGE & HOSPITAL,
PALAYAMKOTTAI, TIRUNELVELI DISTRICT
DEPARTMENT OF POTHU MARUTHUVAM

PRECLINICAL AND PHASE-II RANDOMIZED OPEN CLINICAL STUDY ON
MANThARA KAASAM (BRONCHIAL ASTHMA) WITH
THAKKOLATHI CHOORANAM

FORM-I

(SCREEnING AND SELECTION PROFORMA)

1.Name___________ 2.Age_____ 3.Gender________

4. OP No. ______________ 5. IP No. ______________ 6. S.No. __________

INCLUSION CRITERIA:

❖ Age : 13 – 65 Yrs

❖ Sex : Both male and female

❖ Patients having symptoms of difficulty in breathing, chest tightness, wheeze, cough without expectoration.

❖ Patients who are willing to undergo radiological investigation and give blood for laboratory investigations.
Patient willing to sign the informed consent stating that he/she will consciously stick to the treatment during 20 - 30 days but can opt out of the trial of his/her own conscious discretion.

EXCLUSION CRITERIA:

- Evening rise of temperature
- Sudden onset of severe dyspnoea
- Patients of sputum positive for AFB
- Patients with diabetes mellitus, post pulmonary tuberculosis including alveolitis.
- Patients with cardiac asthma and renal asthma.
- Paediatric patient less than 13 years
- Symptoms accompanied by bradycardia, pulsus paradoxus, exhaustion, confusion, reduced conscious level, central cyanosis and silent chest
- Patient with any other serious illness

Date :
Station :
Signature of Investigator Signature of HOD
Signature of Reader / Lecturer
HISTORY PROFORMA ON ENROLLMENT

1. S.No: ______________   2. OP/IP No: ______________

3. Name: ______________   4. Gender: Male [ ] Female [ ]

5. Age (years): _______   DOB [ ] [ ] [ ]
   Date   Month   Year

6. Address: ____________________________
            ____________________________
            ____________________________

7. A. Occupation: ____________________________   B. Nature of work ______________

8. Educational Status: A) Illiterate [ ] B) Literate [ ]

9. Height: ________ cms   10. Weight: ________ kg

11. Complaints and Duration:
12. History of past illness:

13. Habit of

A) Smoking : 1. Yes [ ] duration ________ years; Number - _____ 2. No [ ]

Past H/O chronic smoking:

B) Alcoholism: 1. Yes [ ] duration ________ years; Quantity- ____ ml 2. No [ ]

C) Tobacco chewing: 1. Yes [ ] duration ________ years 2. No [ ]

D) Betel chewing : 1. Yes [ ] duration ________ years 2. No [ ]

14. Diet :  A.Pure vegetarian [ ] B.Non-vegetarian [ ]

15. Drug history: Had the patient been treated before with allopathy drug?

A) Yes [ ] B) No [ ]

16. Marital status : 1. Married [ ] 2. Unmarried [ ]

17. Family history :

Whether this problem runs in family? 1. Yes [ ] 2. No [ ]

If yes, mention the relationship of affected person(s) - ___________________________

18. Menstrual history:

19. Bowel habits & micturition: Normal [ ] Abnormal [ ]

20. Psychological state: Normal [ ] Anxiety [ ] Depression [ ]

Date : 

Station : 

Signature of Investigator

Signature of Reader/Lecturer  Signature of HOD
GOVERNMENT SIDDHA MEDICAL COLLEGE & HOSPITAL,
PALAYAMKOTTAI, TIRUNELVELI DISTRICT
DEPARTMENT OF POTHU MARUTHUVAM
PRECLINICAL AND PHASE-II RANDOMIZED OPEN CLINICAL STUDY ON
MANTHARA KAASAM (BRONCHIAL ASTHMA) WITH
THAKKOLATHI CHOORANAM

FORM II & II-A

CLINICAL ASSESSMENT ON ENROLLMENT AND ON VISITS

1. S.NO: ________  2. OP/IP NO : ________
6. Date of assessment : ____________

SIDDHA SYSTEM OF EXAMINATION

1. ENVAGAI THERVU: [EIGHT-FOLD EXAMINATION]

I. NAADI: [PULSE PERCEPTION]

<table>
<thead>
<tr>
<th></th>
<th>0th Day</th>
<th>7th Day</th>
<th>14th Day</th>
<th>21st Day</th>
<th>28th Day</th>
<th>30th Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vali</td>
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<tr>
<td>Iyyam</td>
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<td>Thondham</td>
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## II. NAA: [TONGUE]

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</tr>
</tbody>
</table>

### III. NIRMAM: [COLOUR COMPLEXION]

- Dark -
- Yellow tinted -
- Pale -

### IV. MOZHI: [VOICE]

- Vali - Medium pitched -
- Azhal - High pitched -
- Iyyam - Low pitched -
V. VIZHI: [EYES] (Lower palpabrel conjunctiva)

- Dark - [ ]
- Yellow - [ ]
- Red - [ ]
- Pale - [ ]

VI. MALAM: [BOWEL HABITS / STOOLS]

<table>
<thead>
<tr>
<th></th>
<th>0th Day</th>
<th>07th Day</th>
<th>14th Day</th>
<th>21st Day</th>
<th>28th Day</th>
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<tbody>
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<td><strong>Colour</strong></td>
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VII. URINE EXAMINATION:

<table>
<thead>
<tr>
<th>NEERKURI</th>
<th>0th Day</th>
<th>07th Day</th>
<th>14th Day</th>
<th>21st Day</th>
<th>28th Day</th>
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<tbody>
<tr>
<td><strong>Niram</strong></td>
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<td>[Frothy]</td>
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<td>Absent</td>
<td>Absent</td>
<td>Absent</td>
</tr>
</tbody>
</table>
NEIKURI | 0th Day | 7th day | 14th Day | 21st Day | 28th Day | 30th Day
---|---|---|---|---|---|---
Vali –  
(Serpentine fashion) | | | | | | 
Azhal-  
(Annular/Ringed fashion) | | | | | | 
Iyyam-  
(Pearl beaded fashion) | | | | | | 
Thondham-  
(Mixed fashion) | | | | | | 

VIII. SPARISAM: [PALPATORY PERCEPTION]

<table>
<thead>
<tr>
<th>0th Day</th>
<th>7th day</th>
<th>14th Day</th>
<th>21st Day</th>
<th>28th Day</th>
<th>30th Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warmth/ Cold/ Sweat</td>
<td>Warmth/ Cold/ Sweat</td>
<td>Warmth/ Cold/ Sweat</td>
<td>Warmth/ Cold/ Sweat</td>
<td>Warmth/ Cold/ Sweat</td>
<td>Warmth/ Cold/ Sweat</td>
</tr>
</tbody>
</table>

2. THEGI: [TYPE OF BODY CONSTITUTION]

Vali -  
Azhal-  
Iyyam -  
Thondha udal –  

3. NILAM: [LAND WHERE PATIENT LIVED MOST]

Kurinji  
(Marutham  
Neithal  
(Hilly terrain)  
(Plains)  
(Arid regions)  

4. KAALAM:

Kaarkalam -  
Koothirkalam -  
Munpanikalam -  
Pinpanikalam -  
Ilavenil -  
Muthuvenil -  

145
5. MUKGUNAM:

- Sathuvam - 
- Rasatham -
- Thamasam -

6. IMPORIGAL (SENSORY ORGANS)

<table>
<thead>
<tr>
<th></th>
<th>0&lt;sup&gt;th&lt;/sup&gt; Day</th>
<th>7th day</th>
<th>14th Day</th>
<th>21st Day</th>
<th>28th Day</th>
<th>30th Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mei (Skin)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vai (Buccal Cavity)</td>
<td></td>
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<tr>
<td>Kann (Eye)</td>
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<tr>
<td>Sevi (Ear)</td>
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<tr>
<td>Mooku (Nose)</td>
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7. KANMENDRIYAM (MOTOR SYSTEM)

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<th>0&lt;sup&gt;th&lt;/sup&gt; Day</th>
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<tbody>
<tr>
<td>Kai (upper limb)</td>
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<tr>
<td>Kaal (lower limbs)</td>
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<tr>
<td>Vai (buccal cavity)</td>
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<tr>
<td>Eruvaai (excretory organs)</td>
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<tr>
<td>Karuvaai (reproductive organs)</td>
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</table>
8. KOSANGAL (Sheath)

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</thead>
<tbody>
<tr>
<td>Annamaya Kosam</td>
<td></td>
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<tr>
<td>Pranamaya kosam</td>
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<tr>
<td>Manomaya kosam</td>
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<tr>
<td>Vignanamaya kosam</td>
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<tr>
<td>Ananthamaya kosam</td>
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</table>

9. MUKKUTRAM: [THREE HUMORS]

A) VALI:

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<th>7th day</th>
<th>14th Day</th>
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</thead>
<tbody>
<tr>
<td>Praanan</td>
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<tr>
<td>Abaanan</td>
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<tr>
<td>Viyaanan</td>
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<tr>
<td>Udhaanan</td>
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<tr>
<td>Samanan</td>
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<tr>
<td>Naagan</td>
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<tr>
<td>Koorman</td>
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<tr>
<td>Kirukaran</td>
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<tr>
<td>Devatha-than</td>
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<tr>
<td>Dhanan-jeyan</td>
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</tbody>
</table>
B) AZHAL:

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<th>0th Day</th>
<th>7th day</th>
<th>14th Day</th>
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<th>30th Day</th>
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<tbody>
<tr>
<td>Analpitham</td>
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<tr>
<td>Ranjagam</td>
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<tr>
<td>Saathagam</td>
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<tr>
<td>Praasagam</td>
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<tr>
<td>Aalosagam</td>
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</table>

C) IYYAM:

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<th>21st Day</th>
<th>28th Day</th>
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</thead>
<tbody>
<tr>
<td>Avalambagam</td>
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<tr>
<td>Kilaethagam</td>
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<tr>
<td>Pothagam</td>
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<tr>
<td>Tharpagam</td>
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<tr>
<td>Santhigam</td>
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</tbody>
</table>
### 11. SEVEN DHATHUS: (7 SOMATIC COMPONENTS)

<table>
<thead>
<tr>
<th></th>
<th>0th Day</th>
<th>7th day</th>
<th>14th Day</th>
<th>21st Day</th>
<th>28th Day</th>
<th>30th Day</th>
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</thead>
<tbody>
<tr>
<td>Saaram [Chyme]</td>
<td></td>
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<tr>
<td>Senneer [Blood]</td>
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<tr>
<td>Oon [Muscle]</td>
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<tr>
<td>Kozhuppu [Fat]</td>
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<tr>
<td>Enbu [Bones]</td>
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<tr>
<td>Moolai [Bone marrow]</td>
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<tr>
<td>Sukkilam/ Suronitham [Genital discharges]</td>
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</tbody>
</table>

### 11. SYSTEMIC EXAMINATION:

<table>
<thead>
<tr>
<th></th>
<th>0th Day</th>
<th>7th day</th>
<th>14th Day</th>
<th>21st Day</th>
<th>28th Day</th>
<th>30th Day</th>
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</thead>
<tbody>
<tr>
<td>Locomotor system</td>
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<tr>
<td>Cardiovascular system</td>
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<tr>
<td>Respiratory system</td>
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<tr>
<td>Gastro intestinal system</td>
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<tr>
<td>Central nervous system</td>
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<tr>
<td>Urogenital system</td>
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<tr>
<td>Endocrine system</td>
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</table>
12. GENERAL EXAMINATION:

<table>
<thead>
<tr>
<th></th>
<th>0&lt;sup&gt;th&lt;/sup&gt; Day</th>
<th>7th Day</th>
<th>14th Day</th>
<th>21st Day</th>
<th>28th Day</th>
<th>30th Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height (cms)</td>
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<tr>
<td>Weight (kg)</td>
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<tr>
<td>Temperature (°F)</td>
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<tr>
<td>Pulse rate (per min)</td>
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<tr>
<td>Heart rate (per min)</td>
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<tr>
<td>Respiratory rate (per min)</td>
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<tr>
<td>Blood pressure (mm/Hg)</td>
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<tr>
<td>Anaemia</td>
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<tr>
<td>Jaundice</td>
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<tr>
<td>Cyanosis</td>
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<tr>
<td>Lymphadenopathy</td>
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<tr>
<td>Pedal edema</td>
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<tr>
<td>Clubbing</td>
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<tr>
<td>Jugular vein pulsation</td>
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</tbody>
</table>

13. CLINICAL SYMPTOMS

<table>
<thead>
<tr>
<th>S.No</th>
<th>Clinical symptoms</th>
<th>0&lt;sup&gt;th&lt;/sup&gt; Day</th>
<th>7th Day</th>
<th>14th Day</th>
<th>21st Day</th>
<th>28th Day</th>
<th>30th Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Running nose</td>
<td></td>
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<tr>
<td>2.</td>
<td>Sneezing</td>
<td></td>
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<tr>
<td>S.No</td>
<td>Clinical symptoms</td>
<td>0\textsuperscript{th} day</td>
<td>7\textsuperscript{th} day</td>
<td>14\textsuperscript{th} day</td>
<td>21\textsuperscript{st} day</td>
<td>28\textsuperscript{th} day</td>
<td>30\textsuperscript{th} day</td>
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<tr>
<td>3.</td>
<td>Difficulty in breathing (Grade)</td>
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<tr>
<td>4.</td>
<td>Cough with mild expectoration</td>
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<tr>
<td>5.</td>
<td>Tightness of chest</td>
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<tr>
<td>6.</td>
<td>Clubbing</td>
<td></td>
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<tr>
<td>7.</td>
<td>Cyanosis</td>
<td></td>
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<tr>
<td>8.</td>
<td>Sweating</td>
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<tr>
<td>9.</td>
<td>Tachycardia</td>
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<tr>
<td>10.</td>
<td>Seasonal variation</td>
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</table>

**GRADE OF SEVERITY OF ASTHMA:**

**Grade I** : Able to carry out housework or job with difficulty. Sleep occasionally disturbed.

**Grade II** : Confined to chair or bed, but able to get up with difficulty. Sleep disturbed frequently.

**Grade III** : Totally confined to chair or bed. No sleep.

**Grade IV** : Immobilized and completely exhausted.

Date :

Station :

Signature of Investigator

Signature of Reader/Lecturer  Signature of HOD
GOVERNMENT SIDDHA MEDICAL COLLEGE & HOSPITAL,
PALAYAMKOTTAI, TIRUNELVELI DISTRICT.

DEPARTMENT OF POTHU MARUTHUVAM

PRECLINICAL AND PHASE - II RANDOMIZED OPEN CLINICAL TRIAL ON
MANTHARA KAASAM (BRONCHIAL ASTHMA) WITH
THAKKOLATHI CHOORANAM

FORM III

LABORATORY PARAMETERS - CHART

1. S.No : ____________________ 2. OPD/ IPD No : ____________________
5. Age : __________ Years 5. Gender : Male - [ ] Female – [ ]

INVESTIGATIONS:

1. BLOOD

<table>
<thead>
<tr>
<th>S.No</th>
<th>NORMAL VALUES</th>
<th>BEFORE TREATMENT</th>
<th>AFTER TREATMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. TC (million/ cu.mm)</td>
<td>Male - 4.30 – 5.60</td>
<td>Female - 4.00 – 5.20</td>
<td></td>
</tr>
<tr>
<td>2. DC</td>
<td>3.54 – 9.06 ×10³ /mm³</td>
<td>Neutrophils 40 – 70%</td>
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<td></td>
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<td>Lymphocytes 20 – 50%</td>
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<td>Monocytes 4 – 8 %</td>
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<td></td>
<td></td>
<td>Eosinophils 0 – 6 %</td>
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<td></td>
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<td>Basophils 0 – 2%</td>
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</tr>
<tr>
<td>3. ESR</td>
<td>Male – 0 – 15 mm/hr</td>
<td>Female – 0 – 20 mm/hr</td>
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<tr>
<td></td>
<td>½ hr</td>
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<td></td>
<td>1 hr</td>
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<tr>
<td>4. Haemoglobin</td>
<td>Male - 13.3 – 16.2 g/dL</td>
<td>Female – 12.0 – 15.8 g/dL</td>
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</tr>
<tr>
<td>5. Blood sugar</td>
<td>Fasting – 75 – 110mg/dL</td>
<td></td>
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</tr>
</tbody>
</table>
(F/R/PP)  Random – 80 – 170mg/dL

6. Blood urea  20 – 40 mg/dL

7. Serum creatinine
   Male  - 0.6 – 1.2 ng/mL
   Female – 0.5 – 0.9 ng/mL

8. Serum cholesterol
   < 200  Desirable
   200 – 239  Borderline high
   ≥ 240  High

II. URINE:

   Albumin  -
   Sugar  -
   Deposits  -

III. RADIOLOGICAL INVESTIGATION:

   Chest X – ray – PA view

IV. PULMONARY FUNCTION TEST(SPIROMETRY STUDY) :

Date  :
Station  :
Signature of Investigator  Signature of HOD
Signature of Reader/ Lecturer
GOVERNMENT SIDDHA MEDICAL COLLEGE & HOSPITAL,
PALAYAMKOTTAI, TIRUNELVELI DISTRICT.

DEPARTMENT OF POTHU MARUTHUVAM

PRECLINICAL AND PHASE - II RANDOMIZED OPEN CLINICAL TRIAL ON MANTHARA KAASAM (BRONCHIAL ASTHMA) WITH THAKKOLATHI CHOORANAM

FORM IV

PATIENT INFORMATION SHEET

- Bronchial asthma is an airway inflammation which occurs due to bronchial constriction.
- It may be a hereditary disease.
- It may be due to exposure to cold air, tobacco smoke, dust, acrid fumes.
- It may get aggravated in emotional stress.
- Exposure to organic material such as pollen, mite containing house dust, feathers, animal danger and fungal spores are also the allergens responsible for asthma.
- Many herbal and mineral siddha preparations are available to treat Bronchial asthma.
- The trial drug is prepared at the P.G Gunapadam lab of government siddha medical college & hospital, Palayamkottai, under the direct supervision of teaching faculties of P.G Pothu Maruthuvam and Gunapadam.

DETAILS OF THE TRIAL DRUG:

1. THAKKOLATHI CHOORANAM

DOSAGE : Three grams, three times after food
ADJUVANT : Hot water
DURATION : 30 days.

- Patients are advised to avoid betel chewing, tobacco and smoking.
- Patients are advised to avoid exposure to allergens and cold climate.
- Patients are recommended to avoid stress and practice yoga including pranayama.
பாம்பானியார்க்காள், சிட்டிக்கினிக்கும் மேம்பாடு

பஞ்சாரி பாம்பானியார்

குறிப்பிட்டுதான் பின்னில் பிரித்தான் கட்டுப்பாடும் மத்திய அறிரிக்க.

குறிப்பிட்டு பல்வேறு

❖ முதலாம் வருடம் குறிப்பிட்டுதான் அவர்களின் கொடுக்கு வருடம் வெளிவாய்ச்சு முழுக்கக்கான அமாவாசாய்.
❖ இணைந்து பெருமாளும் அவர்கள்.
❖ ன்னது மூன்றாம் ஆண்டு ஆண்டு புனையத்தான் வரும் காதல் ப்ளாரஸ்கின் இணைந்து முழுக்கக்கான பெருமாளும்.
❖ ஒண்டோவா நிலவாய்க்கது நிலை நிற்பார்க்கின் வரும் விளைவு பெருமாளும் உருவான மாற்றங்கள் அமாபாலியாண்.
❖ ன்னது முதலாம் குழுவைத் தொடர்ந்து ஆண்டு முழுக்க அமாபாலியாண் தருமான பண்பாட்டியாண் நிலை நிற்பார்க்கின்.
❖ ன்னது முதலாம் குழுவைத் தொடர்ந்து ஆண்டு முழுக்க அமாபாலியாண் தருமான பண்பாட்டியாண் நிலை நிற்பார்க்கின்.
❖ ன்னது முதலாம் குழுவைத் தொடர்ந்து ஆண்டு முழுக்க அமாபாலியாண் தருமான பண்பாட்டியாண் நிலை நிற்பார்க்கின்.
❖ ன்னது முதலாம் குழுவைத் தொடர்ந்து ஆண்டு முழுக்க அமாபாலியாண் தருமான பண்பாட்டியாண் நிலை நிற்பார்க்கின்.
❖ ன்னது முதலாம் குழுவைத் தொடர்ந்து ஆண்டு முழுக்க அமாபாலியாண் தருமான பண்பாட்டியாண் நிலை நிற்பார்க்கின்.
❖ ன்னது முதலாம் குழுவைத் தொடர்ந்து ஆண்டு முழுக்க அமாபாலியாண் தருமான பண்பாட்டியாண் நிலை நிற்பார்க்கின்.
FORM IV A

வேறுபட்டு பத்து

அம்பப்படி குறிப்பிட்டுச் சொல்லப்பட்டுள்ள இளம்படுத்தப்பட்டுள்ள பத்துக்கு வழங்கப்பட்டுள்ள பத்துக்கு வழங்கப்பட்டுள்ள பத்துக்கு வழங்கப்பட்டுள்ள பத்துக்கு வழங்கப்பட்டுள்ள பத்துக்கு வழங்கப்பட்டுள்ள பத்துக்கு வழங்கப்பட்டுள்ள பத்துக்கு வழங்கப்பட்டுள்ள பத்து 

சமையலில் சிறு முதல் அட்சம் வாழ்க்கையின் பத்துக்கு வழங்கப்பட்டுள்ள பத்து 

வேறுபட்டு பத்து வழங்கப்பட்டுள்ள பத்து வழங்கப்பட்டுள்ள பத்து 

சமையலில் சிறு முதல் அட்சம் வாழ்க்கையின் பத்து 

வேறுபட்டு பத்து வழங்கப்பட்டுள்ள பத்து வழங்கப்பட்டுள்ள பத்து 

சமையலில் சிறு முதல் அட்சம் வாழ்க்கையின் பத்து 

வேறுபட்டு பத்து வழங்கப்பட்டுள்ள பத்து வழங்கப்பட்டுள்ள பத்து 

சமையலில் சிறு முதல் அட்சம் வாழ்க்கையின் பத்து 

வேறுபட்டு பத்து வழங்கப்பட்டுள்ள பத்து 

சமையலில் சிறு முதல் அட்சம் வாழ்க்கையின் பத்து 

வேறுபட்டு பத்து வழங்கப்பட்டுள்ள பத்து 

சமையலில் சிறு முதல் அட்சம் வாழ்க்கையின் பத்து 

வேறுபட்டு பத்து வழங்கப்பட்டுள்ள பத்து 

சமையலில் சிறு முதல் அட்சம் வாழ்க்கையின் பத்து 

வேறுபட்டு பத்து வழங்கப்பட்டுள்ள பத்து 

சமையலில் சிறு முதல் அட்சம் வாழ்க்கையின் பத்து
GOVERNMENT SIDDHA MEDICAL COLLEGE & HOSPITAL,
PALAYAMKOTTAI, TIRUNELVELI DISTRICT.

DEPARTMENT OF POTHU MARUTHUVAM

PRECLINICAL AND PHASE - II RANDOMIZED OPEN CLINICAL TRIAL ON
MANTHARA KAASAM (BRONCHIAL ASTHMA) WITH
THAKKOLATHI CHOORANAM

FORM IV B

DIETARY ADVICE FORM

➢ குருக்கு க்கு, குருக்கு விபரம், குருக்கு விபரம் பயன்பட்டு சுட்டக்கு நூற்றாண்டு முதல் வருடம் நூற்றாண்டு வருடாக குருக்கு நிற்கும்.
➢ தும்மை பயன்படுத்து, முது அளிக்கும், முது அளிக்கும் குருக்கு நூற்றாண்டு.
➢ முடிவு செய்யவுடன் குருக்கு குட்டத்து முதல் நூற்றாண்டு நிற்கும்.
➢ புத்தாண்டியாள் (துண்ணு பயிர்) சுழற்கு புது குருக்கு நூற்றாண்டு.
➢ சில பயிர்கள் செய்யும் (புருநிறத்தைக், கொற்றைக், பூதைக், பூதைக், பூதைக், பூதைக், பூதைக், பூதைக், பூதைக்) ஞும்பல் உண்ணு.

➢ வினங்க விளைவு முன் இலைகள்:

குழு: குறுக்குகள், புருநிறத், புருநிறத், கொற்றைகள், கொற்றைகள், கொற்றைகள், கொற்றைகள், கொற்றைகள், கொற்றைகள், கொற்றைகள், கொற்றைகள், கொற்றைகள்.

சுற்றுலா முக்கியர்: புருநிறத்தைகள், புருநிறத்தைகள், புருநிறத்தைகள், புருநிறத்தைகள், புருநிறத்தைகள், புருநிறத்தைகள், புருநிறத்தைகள், புருநிறத்தைகள்.

➢ வினங்க விளைவு தேதிக்கோள் தோற்றங்கள்:

குழு: புருநிறத், புருநிறத், புருநிறத், புருநிறத், புருநிறத், புருநிறத், புருநிறத், புருநிறத், புருநிறத், புருநிறத், புருநிறத், புருநிறத், புருநிறத், புருநிறத், புருநிறத், புருநிறத், புருநிறத், புருநிறத், புருநிறத், புருநிறத், புருநிறத், புருநிறத், புருநிறத், புருநிறத், புருநிறத், புருநிறத், புருநிறத், புருநிறат்தைகள், புருநிறத்தைகள், புருநிறத்தைகள், புருநிறத்தைகள், புருநிறத்தைகள், புருநிறத்தைகள், புருநிறத்தைகள், புருநிறத்தைகள், புருநிறத்தைகள், புருநிறத்தைகள், புருநிறத்தைகள், புருநிறத்தைகள், புருநிறத்தைகள், புருநிறத்தைகள், புருநிறத்தைகள், புருநிறத்தைகள், புருநிறத்தைகள், புருநிறத்தைகள், புருநிறத்தைகள், புருநிறத்தைகள், புருநிறத்தைகள், புருநிறத்தைкள், புருநிறத்தைகள், புருநிறத்தைகள், புருநிறத்தையை, புருநிறத்தையை, புருநிறத்தையை, புருநிறத்தையை, புருநிறத்தையை, புருநிறத்தையை, புருநிறத்தையை, புருநிறத்தையை, புருநிறத்தையை, புருநிறத்தையை, புருநிறத்தையை, புருநிறத்தையை, புருநிறத்தையை, புருநிறத்தையை, புருநிறத்தையை, புருநிறத்தையை, புருநிறத்தையை, புருநிறத்தையை, புருநிறத்தையை, புருநிறத்தையை, புருநிறத்தையை, புருநிறத்தையை, புருநிறத்தையை, புருநிறத்தையை.
Name: ________________________       OPD/ IPD number: __________

Age   : ________                                       Sex : ______________

Date of trial commencement: ___________

Date of withdrawal from trial: ___________

Reasons for withdrawal:

- Long absence at reporting : Yes [ ] No [ ]
- Irregular treatment       : Yes [ ] No [ ]
- Shift of locality         : Yes [ ] No [ ]
- Increase in severity of symptoms : Yes [ ] No [ ]
- Development of severe adverse drug reactions : Yes [ ] No [ ]

Date    :

Station :

Signature of Investigator                   Signature of HOD

Signature of Reader/ Lecturer
GOVERNMENT SIDDHA MEDICAL COLLEGE & HOSPITAL,
PALAYAMKOTTAI, TIRUNELVELI DISTRICT
DEPARTMENT OF POTHU MARUTHUVAM
PRECLINICAL AND PHASE-II RANDOMIZED OPEN CLINICAL STUDY ON
MANTHARA KAASAM (BRONCHIAL ASTHMA) WITH
THAKKOLATHI CHOORANAM
FORM IV D
ADVERSE DRUG REACTION FORM

Name: ________________________       OPD/ IPD No : __________
Age: ________               Sex: ___________
Date of trial commencement: ___________
Date of withdrawal from trial: ___________

Drug, dosage, route of administration: THAKKOLATHI CHOORANAM – 3 gm
(Internal) Three times a day after food with hot water.

Laboratory findings: _______________________________________________________
Concomitant drug   : _______________________________________________________
Description of adverse reaction: ___________________________________________
Management of adverse drug reaction : _______________________________________
Adjustment of dose of drug if any : __________________________________________
Patient outcome : _________________________________________________________
Date    :

Station :

Signature of Investigator                                                Signature of HOD
Signature of Reader/ Lecturer

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GOVERNMENT SIDDHA MEDICAL COLLEGE & HOSPITAL,
PALAYAMKOTTAI, TIRUNELVELI DISTRICT

DEPARTMENT OF POTHU MARUTHUVAM

PRECLINICAL AND PHASE-II RANDOMIZED OPEN CLINICAL STUDY ON
MANTHARA KAASAM (BRONCHIAL ASTHMA) WITH

THAKKOLATHI CHOORANAM

FORM IV –E

(DRUG COMPLIANCE FORM)

Name : ___________________ Age/ Sex : ___________ S. No : ______
OPD/ IPD No : ___________ Date : ___________ Bed No : _______

Name Of The Drug : THAKKOLATHI CHOORANAM

Drugs issued date :
Drugs returned date :

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Date :              Signature of Reader/ Lecturer:

Station:

Signature of Investigator :              Signature of HOD :
BIBLIOGRAPHY


2. Yagobu vaidhya chinthamani 700

3. Siddha Maruthuvam. - K.M. Kuppuswamy Mudhaliar. HPIM.

   - I & II volume. - Dr. M. Shanmugavelu. HPIM

5. Tamilaga Siddha vaitheya gurugulam.
   - A.P. Selvarajan. RIMP, RHMP.

   - S.P. Ramachandran.

7. Anubava Vaitheya Deva Ragaseyam.
   - J. Seetharam prasad.

8. Anuboga Vaitheya NavaNetham. – Volume III
   - Huggium P.M. Abdula Saiebu.

9. Uyir Kakkum siddha maruthuvam @ Athma Ratchamirtham.
   - S.P. Ramachandran.


11. Siddha maruthuvanga churukkam. - Dr. C.S. Uthamarayan.

12. Thottrakirama Araichium Siddha Maruthuva varalarum.
   - Dr. C.S. Uthamarayan.

   a. Dr. S. Murugesu Mudhaliyar.
   - Dr. R. Thiyagarajan C.I.M.

15. Siddha Maruthuvam sirappu.  
   - Dr. R. Thiyagarajan C.I.M.

   - Dr. Somasundaram.

17. Sikicha Rathna Dheepam @ vaidhya chinthamani – I & II volume.  
   - C. Kannusamy pillai.

   - Dr. S. Venkataraman.

   - Angamuthu Mudhaliar.

20. Roga Nirmaya Saaram.  
   - T.R. Mahadeva Pandidhar.

   - C. Kannusamy Pillai.

22. Indian Materia Medica-Vol I & II  
   - Dr. K.M. Natkarni.

23. Quality standard Indian Medicinal Plants ICMR 2003

24. Wealth of India.

25. Materia Medica of India and their therapeutics.

26. Indian Medicinal Plants.  
   - Vol I & II

27. Ross and Wilson’s Anatomy and Physiology.

28. B.D. Chaurasia’s Human Anatomy -  
   - Vol I – 4

29. Gray’s Anatomy.

30. Essential of Medical Physiology.  
   - Dr. K. Sembulingam and Prema Sembulingam. Ph.D.,


32. Davidson’s Principle and Practice of Medicine.
33. Hutchison’s Clinical Methods.

34. Pharmacology and Pharmacotherapeutics.


36. www.openmed.nic.in

37. www.wikipedia.org
Sex Distribution

Age Distribution

[Graph showing sex distribution with percentage bars for OP and IP, and age distribution with percentage bars for different age groups in years.]
Kaalam Distribution

Constitutions of body
Religion Distribution

OP

IP

1 Hindu
2 Christian
3 Muslim
Aetiological factors

Occupation

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NAD - No Abnormality Detected
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# REPORT OF MICROBIOLOGICAL ANALYSIS OF

## THAKKOLATHI CHOORANAM

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<th>S.No</th>
<th>Test Drug</th>
<th>Organism (Culture)</th>
<th>Susceptibility</th>
<th>Test zone size</th>
<th>Control zone size</th>
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<td>Streptococcus pneumonia</td>
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Dr. R. NAPOLEON  
B.Sc. M.D  
CONSULTANT MICROBIOLOGIST  
TIRUNELVELI

Dear Doctor,

Thank you for your reference. If the result is not correlating with the clinical impression, please inform us to repeat the test with a fresh sample.
THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY
69, Anna Salai, Guindy, Chennai - 32.
DEPARTMENT OF SIDDHA

CERTIFICATE OF PARTICIPATION

This is to certify that Dr. D. KALAISELVI has participated as Resource-Person/Delegate in the Workshop on "Research Methodology & Biostatistics" for AYUSH Post Graduates & Researchers organized by the Dept. of Siddha from 05.07.2011 to 08.07.2011

Dr. N. Kabilan
Prof. & Head

Dr. Sudha Deshayyan
Registrar I/c

Dr. Mayil Vahanan Natarajan
Vice-Chancellor
GOVT. SIDDHA MEDICAL COLLEGE,
PALAYAMKOTTAI,
TIRUNELVELI – 627002.
SCREENING COMMITTEE

Candidate Reg No: 32101003

This is to certify that the dissertation topic MANTHARA KAASAM (BRONCHIAL ASTHMA) and the drug THAKKOLATHI CHOORANAM have been approved by the screening committee.

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<td>Prof. Dr. N. CHANDRAMOHAN DOSS, M.D.(S) Principal &amp; Chairman</td>
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<td>Prof. Dr. R. THANGAMONEY, M.D (S)</td>
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<td>3</td>
<td>Dr. A. SUBRAMANIAN, M.D (S)</td>
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(Kindly make sure that the minutes of the meeting duly signed by all the participation are maintained by the college office)
தக்காலம்

சிளையம்

சோலாலம்
ANTI-SPASMODIC ACTION OF THAKKOLATHI CHOORANAM

ANTI-HISTAMINIC ACTION OF THAKKOLATHI CHOORANAM
SENSITIVE TO ESCHERICHIA COLI

MODERATELY SENSITIVE