A PROSPECTIVE OPEN LABELLED PHASE-II

NON- RANDOMIZED CLINICAL TRIAL ON

"JAATHIPALATHI CHOORANAM"

FOR THE TREATMENT OF

"SWASAKASAM"

(BRONCHIAL ASTHMA)

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This is to certify that the dissertation entitled **"A PROSPECTIVE OPEN LABELLED PHASE-II NON RANDOMIZED CLINICAL TRIAL ON JAATHIPALATHI CHOORANAM FOR THE TREATMENT OF SWASAKASAM (BRONCHIAL ASTHMA)"** is a bonafide work done by **Dr.R.SUBASHINI (Reg.No.321611009)** Govt. Siddha Medical College, Palayamkottai in partial fulfilment of the University rules and regulations for award for **MD (S), BRANCH-I POTHU MARUTHUVAM** under my guidance and supervision during the academic **year OCTOBER 2016-2019.**

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DECLARATION

I declare that the dissertation entitled **"A PROSPECTIVE OPEN LABELLED PHASE-II NON RANDOMIZED CLINICAL TRIAL ON JAATHIPALATHI CHOORANAM FOR THE TREATMENT OF SWASAKASAM (BRONCHIAL ASTHMA)"** submitted for the degree of MD in Siddha Medicine of Government Siddha Medical College, Palayamkottai, Tirunelveli, Tamil Nadu (The Tamil Nadu Dr. M.G.R. Medical University, Chennai) the record of work carried out by me under the supervision of **Prof.Dr.A.Manoharan,MD (S) (Ph.D.)** Head of the Department of Pothu Maruthuvam, and guidance by **Dr.G.Subash Chandran , MD (S), Ph.D.,** Lecturer, Govt. Siddha Medical College, Palayamkottai. This work has not formed the basis of award of any degree, diploma, associateship, fellowship or other titles in the university or any other university or institution of higher learning.

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ABBREVIATIONS

GBD	-	Global Burden Disease
WHO	-	World Health Organization
Ig E	-	Immunoglobulin E
BA	-	Bronchial Asthma
Th 2	-	T helper type 2 cells
IL 4	-	Interleukin 4
IL 13	-	Interleukin 13
PAF	-	Platelet Activating Factor
ADAM 33	-	A Disintegrin and Metalloprotease 33
%	-	Percentage
GERD	-	Gastro esophageal reflux disease
PFT	-	Pulmonary Function Test
IC	-	Inspiratory Capacity
TV	-	Tidal Volume
IRV	-	Inspiratory Reserve Volume
ERV	-	Expiratory Reserve Volume
FRC	-	Functional Residual Capacity
TLC	-	Total Lung Capacity
FVC	-	Forced Vital Capacity
FEV1	-	Forced Expiratory Volume in 1 second
COPD	-	Chronic Obstructive Pulmonary Disease
JPC	-	Jaathipalathi chooranam
DLCO	-	Diffusing capacity of the Lung for Carbonmonoxide
KCO	-	Carbon monoxide transfer coefficient
Pa O_2	-	Partial Pressure of Oxygen
Pa CO_2	-	Partial Pressure of Carbon dioxide
PEFR	-	Peak Expiratory Flow Rate
Hb	-	Hemoglobin
WBC	-	White Blood Cell count
DC	-	Differential Count
RBC	-	Red Blood Cells
ESR	-	Erythrocyte Sedimentation Rate

AEC	-	Absolute Eosinophil Count
AFB	-	Acid –Fast Bacilli
ECG	-	Electrocardiogram
TG	-	Triglycerides
LDL	-	Low-density lipoprotein
ALT	-	Alanine aminotransferase
AST	-	Aspartate Aminotransferase
ALP	-	Alkaline phosphatase

ABSTRACT

Increasing prevalence of the respiratory diseases are reporting both in developed and developing countries. On comparing the symptoms of "***Swasakasam"*** it can be correlated to "Bronchial asthma" in modern science.40 patients (20-out patients and 20-in patients) were selected for the study conducted in GSMC& H, Palayamkottai.Trial medicine *Jaathipalathi Chooranam* 30 mg/ kg /BW thrice a day, after food along with honey for 30 days was administrated for entire study period. *Jaathipalathi Chooranam* has the reference from *Sarabendhra Vaithiya Muraikal-Kasa Swasa Roga Sikicha, Vasudevasasthri, and Venkadarajan,2006.*

Trial medicine was subjected to various pre-clinical studies like bio- chemical, phytochemical, pharmacological and microbiological analysis. Safety profile of the trial drug was evaluated and no morbidity and mortality was noted in experimental analysis. The biochemistry analysis showed, the presence of Calcium, Starch, Ferrous iron, Tannic acid Unsaturated compound, Reducing sugar and aminoacid. The alkaloids, Carbohydrates, Glycosides, Phytosterols, Flavonoids, Tannin, Protien and Lignin were observed in Phytochemical analysis. *Invivo and Invitro* studies are showed the better results in Antihistaminic and Anti anaphylactic, Antiinflammotary and Bronchodilator activity. The trial medicine was found to have high sensitivity in *Staphylococcus aureus, Streptococcus mutans, Bacillus subtilis, Klebsiella pneumoniae and E.coli organism.* At the end of the study majority of the cases were analysed with fixed clinical criterias and showed good clinical improvement. All the relevant reports were statistically analysed and found to be significant.

CHAPTER-1
INTRODUCTION

1.1.BACKGROUND:

Siddha system is one among the traditional medical systems which evolved along Dravidian culture .It possess strong fundamentals based on *'vatham'*(Alchemy), '*vaithiyam'*(Medicines), '*yogam*'(Steps for attaining perfection) & '*gnanam*(Arivu or Universal truth).So it can be understood that Siddha system not only gives importance to mere physical body but also to the psychological , social , and spiritual well-being from the works complied by Spiritual scientist called *Siddhars*. They have mentioned all the essentialities for a man's carrier in life viz. According to Siddha system there is a close relation and intimate connection between the universe and the internal man. Man is the miniature of the world. Therefore his soul and mind are as much parts of his true constitution, as are the terrestrial elements of which his elementary body is made up.

Only through a healthy body, ultimate aim of external bliss *(perinbam*) can be attained with the aid of *vatham, vaithiyam,* and yogam. One of the major obstacles in the path of salvation is manifestation of various diseases. Therefore *Siddhars* gave predominant consideration for curative and preventive aspects of disease. *Siddhar Agathiyar* had classified total diseases as 4448 in number and *Siddhar Yugimuni* had categorized diseases based on signs and symptoms.

Siddha treatment principle is aimed at restoring balance between *mukkutram* (three vital humours), *ezhu udal kattukal* (Seven physical constituents), and *panchabootham* (Five elements). *Envagai thervu* is the specific set of diagnostic tools in Siddha for arriving apt diagnosis. While treating patient, special concern will be paid to 96 *thathuvams* especially to criterias as *Yakkai,Thinai, Paruvakaalam ,Naadi, Neerkuri* and *Neikuri* for the analysis of prognosis. Swasakasam is a chronic inflammatory disorder of the airways associated with airway hyper-responsiveness that leads to recurrent episodes of wheezing ,breathlessness, chest tightness, and coughing particularly at night or in the early morning.

Bronchial asthma is the most common chronic respiratory disease with an case burden of approximately 358.2 million in 2015. In 2015, about 0.40 million people died from asthma , a decrease of 26.7% from 1990, and the age- standardized

prevalence decreased by 17.7%.(GBD 2015). It has a higher prevalence in boys than in girls before puberty and a higher prevalence in women than in men in adulthood.(Postma DS. 2007).

My dissertation work is an attempt to provide relief for *SWASAKASAM* and keep the severity of the disease under control . *Swasakasam* was clearly explained with symptoms and signs in *NOI NAADAL; NOI MUTHAL NAADAL* part II book.This dissertation work is a systemic and scientific attempt to treat with a classical and bio-safe drug *"JAATHIPALATHI CHOORANAM''* mentioned in the siddha text book (*SarabendhraVaithiyaMuraikal- KasaSwasaRogaSikicha, Vasudevasasthri, and Venkadarajan,2006).*The ingredients of this trial drug were found to possess bronchodilator, anti-inflammatory, anti-histamine actions, expectorant, anti-spasmodic**,** immunomodulatary actions.

1.2. AIM AND OBJECTIVES

AIM

To document the therapeutic efficacy of ***JAATHIPALATHI CHOORANAM*** (Internal) in the treatment of ***SWASAKASAM (BRONCHIAL ASTHMA).***

OBJECTIVES

Primary Objective:-

- To evaluate the clinical efficacy of ***JAATHIPALATHI CHOORANAM*** (Internal) in the treatment of ***SWASA KASAM.***

Secondary objectives:-

- To collect various literary evidence about *swasakasam* disease.
- To evaluate bio – chemical and phytochemical analysis.
- To evaluate anti-microbial analysis.
- To evaluate pharmacological parameters such as anti-histamine, bronchodilator, anti –inflammatory, actions.
- To evaluate acute and sub-acute toxicity activities of the trial medicine.
- To collect the details about *swasakasam* with deep observation of etiology, clinical features, diagnosis and prognosis.
- To confirm the diagnosis in Siddha system with the help of modern parameters.
- To evaluate addition effects and Siddha parameters (Envagai Thervugal) changes in *swasakasam*.
- To perform statistical analysis.

JUSTIFICATION OF RESEARCH

WHO estimates that about 235 million people currently suffer from asthma. 338000 deaths were reported in 2015 & most death occurs in older adults.Asthma deaths will increase in the next 10 years if urgent action is not taken. Asthma cannot be cured, but proper diagnosis ,treatment and patient education can result in good asthma control and management.Asthma occurs in all countries regardless of level of development. Over 80% of asthma deaths occur in low and lower- middle income countries. For effective control, it is essential to make good quality medications affordable and available.Respiratory diseases are one among the four non-

communicable diseases globally.For some people the symptoms become worse during physical activity or at night. Failure to recognize and avoid triggers that lead to a tightened airway can be life threating and may result in an asthma attack, respiratory distress and even death**.** Through appropriate treatment,the number of asthma exacerbation and asthma –related deaths can be reduced.It can be controlled through different prevention and treatment plans according to individual symptoms, leading to increased quality of life**.**

The strongest risk factors for developing asthma are exposure to indoor allergens and outdoor allergens.Asthma triggers can include cold air, extreme emotional arousal such as anger or fear, and physical exercise.Asthma creates a substantial burden to individuals and families and possibly restricts individual's activities for a lifetime.

Considering the above facts I have selected the Siddha classical drug *Jaathipalathi chooranam* for the management of *swasakasam*.

CHAPTER.II

REVIEW LITERATURE

2.1 DRUG REVIEW- IN JOURNALS:

The poly herbal formulation *Jaathipalathi chooranam* (JPC) is composed of nine drugs individually viz. ***Myristica fragrans Houtt, Syzygium aromaticum Linn., Piper nigrum Linn., Mesua naggesarium Linn., Symplocos racemosa Roxb., Illicium verum Hook, Piper nigum Linn.,[Rt], Cinnamomum camphor Linn., Sacharum officinarum Linn.***

TAXONOMY

Myristica fragrans Houtt:

Figure 2.1.1 ***Myristica fragrans***

Kingdom	**:**	Plantae
Subkingdom	**:**	Tracheobionta
Superdivision:		Spermatophyta
Division	**:**	Magnoliophyta
Class	**:**	Dicotyledons
Subclass	**:**	Magnoliidae
Order	**:**	Magnoliales
Family	**:**	Myristicaceae
Genus	**:**	*Myristica* Gronov.
Species	**:**	*Myristica fragrans* Houtt.

Chemical constituents:

The essential oil isolated from the seeds of *Myristica fragrans* Houtt. (Nutmeg) was found to contain sabinene (49.09%), α-pinene (13.19%), α-phellandrene (6.72%), and terpinen-4-ol (6.43%) as major constituents on analysis by GC and GC-MS. (I.A. Ogunwande et al. 2013).

Pharmacological actions:

Myristica fragrans Houtt. is known to exhibit strong antimicrobial activity against animal and plant pathogens , food poisoning , and spoilage bacteria including *Bacillus subtilis, Escherichia coli, Saccharomyces cerevisiae, multi- drug resistant Salmonella typhi and Helicobacter pylori* (Orabi et al.1991). It has antidepressant, aphrodisiac, antioxidant and hepatoprotective activities.

Syzygium aromaticum Linn.,

Kingdom : Plantae
Subkingdom : Tracheobionta
Superdivision: Spermatophyta
Division : Magnoliophyta
Class : Dicotyledons
Subclass : Rosidae
Order : Myrtales
Family : Myrtaceae
Genus : Syzygium
Species : ***Syzygium aromaticum*** (L.)

Figure 2.1.2*Syzygium aromaticum*

Chemical constituents:

Approximately 72-90% of the essential oil extracted from cloves contains Euginol. Other compounds are Acetyl euginol, Beta-caryhyllene ,Crategolic acid, tannins , gallotannic acid, methyl salicylate, Flavonoids- eugenin, kaempferol, rhamnetin, and eugenitin.

Pharmacological actions:

Clove is a natural antiviral, antimicrobial, antiseptic, and anti-fungal agent. It also holds aphrodisiac and circulation –stimulating capacities. The oil of cloves has been used in a variety of health conditions including indigestion, generalized stress, parasitic infestations, cough, toothache, and blood impurities. Clove oil clears the respiratory passages , acting as an expectorant, for treating many upper- respiratory related diseases.(Debjit Bhowmik et al. 2012)

***Piper nigrum Linn*(Seed and Root)**

Kingdom : Plantae
Subkingdom : Tracheobionta
Superdivision : Spermatophyta
Division : Magnoliophyta
Class : Dicotyledons
Subclass : Magnoliidae
Order : Piperales
Family : Piperaceae
Genus : *Piper* L.
Species : *Piper nigrum* L.

Figure 2.1.3 *Piper nigrum (seed)*

Figure 2.1.4
Piper nigrum (root)

Chemical constituents:

Piperine is the active principle of black pepper . Piperine has anti- inflammatory and antioxidant properties.

Pharmacological actions:

Pepper have been used in the treatment of asthma and chronic bronchitis. They are also recommended for neurological , broncho-pulmonary and gastrointestinal disorders. (Chopra et al.1959).

Mesua naggesarium Linn.,

Figure 2.1.5 ***Mesua naggesarium***

Kingdom	**:**	Plantae
Subkingdom	**:**	Tracheobionta
Superdivision	**:**	Spermatophyta
Division	**:**	Magnoliophyta
Class	**:**	Dicotyledons
Subclass	**:**	Polypetalae
Order	:	Guttiferales
Family	**:**	Clusiaceae
Genus	**:**	Mesua
Species	**:**	*Mesua naggesarium*

Chemical constituents:

Flower parts of the plant have shown the presence of various constituents such as glycosides, coumarins, flavonoids**,** xanthones, triglycerides and resins.

Specifically it contains alpha-copaene and germacrene D, Mesuaferrone B, Mesuol etc.(Sahu Alakh et al.2014).

Pharmacological actions:

The crude extract of Mesua naggesarium showed a strong cytotoxic activity towards T-lymphocyte leukemia cells. (Nordin K et al. 2004).

Symplocos racemosa Roxb.

Figure 2.1.6 ***Symplocos racemosa***

Kingdom	**:**	Plantae
Subkingdom	**:**	Tracheobionta
Superdivision	**:**	Spermatophyta
Division	**:**	Magnoliophyta
Class	**:**	Dicotyledons
Subclass	**:**	Dilleniidae
Order	:	Ebenales
Family	**:**	Symplocaceae
Genus	**:**	Symplocos
Species	**:**	*Symplocos racemosa*

Chemical constituents:

Symplocos racemosa was pure source of phytochemicals which include flavonoids, phenols, tannins, saponins and glycosides. It contains several flavonoid glucosides like symplocoside, symposide, leucopelargonidine-3 glucoside, ellagic acid, rhamnetin 3-digalactoside, triterpenoids like 19 α-hydroxy acetic acid3, 28-O-bis- β-glucopyranosides, betulin, lino-leic acid, β-sitosterol .

Pharmacological actions:

The ethanolic extract of bark was used for the treatment of female disorders. Ethanolic bark which help in the treatment of female reproductive disorder induced by cold resistant stress.(Thimmy Johnson et al.2018).

Illicium verum Hook

Figure 2.1.7*Illicium verum*

Kingdom	**:**	Plantae
Subkingdom	**:**	Tracheobionta
Superdivision	**:**	Spermatophyta
Division	**:**	Magnoliophyta
Class	**:**	Dicotyledons
Order	:	Austrobaileyales
Family	**:**	Illiciaceae
Genus	**:**	Illicium
Species	**:**	*Illicium verumHook*

Chemical constituents:

The fruit contain higher bitter principle, tannins and essential oil (9-10%), consisting of anethole (85-90%), α-pinene, limone, β-phellandrene, α-terpineol, farnesol and safrol.

Pharmacological actions:

Swine flu is a respiratory disease caused by influenza viruses that infects the respiratory tract of pigs, results in nasal secretion, a barking like cough, decreased appetite, and listless behavior. Swine influenza is an infection of any of several types of swine influenza viruses. Shikmic acid is used for synthesis for potent antiflu drug tamiflu.

Antioxidant Activity :

The antioxygenic activity of star anise and their extracts were evaluated and found to have greater potential as natural oxidant (Divya Chouksey et al.2010).

Cinnamomum camphora. Linn

Kingdom : Plantae
Subkingdom : Tracheobionta
Superdivision : Spermatophyta
Division : Magnoliophyta
Class : Dicotyledons
Subclass : Magnoliidae
Order : Laurales
Family : Lauraceae
Genus : Cinnamomum
Species : *Cinnamomum camphora. Linn*

Figure 2.1.8*Cinnamomum camphora*

Chemical constituents:

The oil's high eugenol content also makes it valuable as a source of this chemical for subsequent conversion into isoeugenol, another flavouring agent. Major oil constituent of C. camphora are camphor, linalool, borneol, camphene, dipentene, terpeneol, safrole and cineole**.**

Pharmacological actions:

Immunoglobulin E-suppressing Activity

Identification of Dimethylmatairesinol as an Immunoglobulin E-suppressing component of the leaves of Cinnamomum camphora. Immunoglobulin E (IgE) plays

an important role in allergic diseases. The study shows that a methanol extract of leaves of the camphor tree Cinnamomum camphora reduced the amount of IgE secreted by human myeloma U266 cells.(Hiroki T et al. 2011).

Sacharum officinarum Linn

Figure 2.1.9*Sacharum officinarum*

Kingdom **:** Plantae

Subkingdom **:** Tracheobionta

Superdivision **:** Spermatophyta

Division **:** Magnoliophyta

Class **:** Monocotyledons

Subclass : Commelinidae

Order : Cyperales

Family **:** Poaceae – Grass family

Genus **:** *Saccharum*

Species **:** *Saccharum officinarum*

***C*hemical constituents:**

Flavanoids : Naringenin, Tricin, Apigenin and Luteolin

Flavonoid glucosides **:** Tricin Glucoside and Orientin from cane juice.

Fatty acid : Palmittic, Linoleic, Policosanol.

Pharmacological actions:

Tricin glucoside : Antioxidant

Anthocyanin extract from peel : Anticancer

Polyphenol rich fraction of plant : Immunomodulative

Fatty acids : Anti-inflammatory

2.2. SIDDHA LITERATURE

According toWHO's report around 65-85% of world population relies on traditional medicines of plant origin for their primary health care needs (Sahu Alakh N et al. 2014).

The ***Jaathipalathi chooranam*** is an internal medicine comes under the chooranam types of medicine. It is mentioned in ***Sarabendhra Vaithiya Muraikal-Kasa Swasa Roga Sikicha, Vasudevasasthri, and Venkadarajan,2006*** indicated for ***Agni mantham, kasa swasam, varatchi, gunmam, ullerivu (thegathin anathal) eral kulai erivu, peeliga katti, kabathinal undana vigarangal, kaluthu noigal***

2.2.1. GUNAPADAM ASPECT OF JPC:

Table.2.2.1. Ingredients and therapeutic uses:

S.NO	INGREDIENTS	PHARMACOLOGICAL ACTIONS	THERAPEUTIC USES IN SIDDHA
1	***Myristica fragrans Houtt.,***	Anti oxidant Antimicrobial Expectorant Anti inflammatory	Headache,**Bronchial Asthma, Cough,**Oligospermia
2	***Syzygium aromaticum Linn.,***	Antibacterial Antispasmodic	Diarrhoea ,Otalgia Hemorrhoids
3	***Piper nigrum Linn.,***	Antidote, Anti oxidant Antispasmodic	Fever with rigor, Anaemia ,Diarrhoea Acid Peptic Disease, Ageusia,**Cough** , Otalgia
4	***Mesua naggesarium Linn.,***	Antiseptic Anti-inflammatory Expectorant	Leucorrhoea **Cough** Diarrhoea
5	***Symplocos racemosa Roxb.,***	Antidote Refrigerant Mild astringent	Poisoning, Tuberculosis, Ascites, **Hoarseness of voice**
6	***Illicium verum Hook,***	Nutritive	Fever , Anaemia Rheumatic diseases
7	***Piper nigum Linn.,[Rt]***	Antidote	Fever with rigor, Anaemia ,Diarrhoea Acid Peptic Disease, Ageusia**,Cough** , Otalgia
8	***Cinnamomum camphor Linn.,***	Analgesic, Antiseptic Expectorant Antidepressant Antiinflammatory	**Bronchial Asthma** Myocardial Infarction Carbuncles, Diptheria Rheumatic diseases
9	***Sacharum officinarum Linn.***	Analgesic Expectorant Antidepressant Antiinflammatory Antiseptic	**Common cold** **Chronic sinusitis**

.

2.3.SIDDHA ASPECTS OF SWASAKASAM

2.3.1. VERU PEYARGAL (SYNONYMS)

- Ezhuppu erumal
- Swasa erumal

2.3.2. EYAL (DEFINITION)

Swasakasam is characterized by paroxysmal dyspnoea associated with discomfort in the chest. There is difficulty in the process of respiration. Usually the respiration is associated with musical sounds. The patient may find it difficult to expel the sputum.***(Siddha maruthuvam ,Noi naadal noi mudhal naadal thiratu- 2nd part)***

2.3.3. NOI VARUM VAZHI (AETIOLOGY)

In Siddha system various causes of the disease were mentioned. The following Siddha texts have described them in various aspects.

1.ACCORDING TO (a)YOGI *VAIDHYA CHINTHAMANI* AND(b)*NOI NAADAL NOI MUDHAL NAADAL THIRATU*- 2ND PART

"வேகின்ற வதிகமாம் புகையினாலும்
மீறுகின்ற பாணத்தால் மிக்குந்தானே"
"பாணத்தால் பரமாக்கினி மிகுக்கையாலும்
பாரமா மாமிசங்கள் புசிக்கையாலும்
தாணத்தாற் சஞ்சாரந் தவிர்க்கையாலும்
சரிபடாப் பதார்த்தங்கள் புசித்தலாலும்
தீணத்தாற் புசியாமலிருக்கையாலும்
சேயிழையார் மேலின்பஞ் சிதைவதாலும்
மானத்தால் மாதுக்க மடைவதாலும்
மதத்தாலும் சுவாசமது மருவும் காணே"

(யூகி வைத்திய சிந்தாமணி)

- Chronic smoking
- Excessive intake of cool drinks
- More exposure to cold air
- Starvation
- Intake of unhygienic diet
- Excessive non vegetarian diet
- Anger and Sadness
- Food allergy

2. **ACCORDING TO *SIDDHA MARUTHUVAM POTHU***

- ❖ Highly irregular, unsuitable diet.
- ❖ Excessive intake of kaba promoting diets.
- ❖ Various fumes, dust
- ❖ Inhaling irritable smelling substances.

3 .ACCORDING TO T.*V.SAMBASIVAM PILLAI* DICTIONARY

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

4. ACCORDING TO *ANUBAVA VAITHIYA DEVA RAGASIYAM*

- Excessive vatha and kapha
- Pollution
- Toxic anaemia
- Persistent fever
- Excessive cold

5.ACCORDING TO *SARABENDHRA VAITHYA MURAIGAL:*

- Smoke exposure
- Regurgitation of food
- Increased exercise
- Suppression of sneezing
- Eating fastly causes swasakasam

2.3.4. *MURKURIKAL* (PRELIMINARY SIGNS AND SYMPTOMS)

1.*NOI NAADAL NOI MUDHAL NAADAL THIRATU*- 2ND PART

“இருமலோடு கண்டத்தினுட் புறம் பற்றி
ஈளைவீழ்ந்தழல் மூச்சதாய்
இயல்பான தொனிமாறித் தொண்டைக் கட்டாகியே
ஏழிலகல நொந்துலர்ந்து
வருமற்ப வாந்தியுடன் வென்விலா வலி கொண்டு
வாயுணவு வேண்டாத்தாய்
மானவுடல் வற்றிக் கருத்தே குளிர்ந்து
மிக வலி கொண்டு துயரமெய்தி
மருவுறா வெப்பமோடு திமிரி களைப்போடுகண்
மஞ்சளித்திட்டு முகமும்
வாடாது வீக்கமதாய் வெளிரியே யாண்மையது

மாறி மிகு நெடு நாற்றமாய்
பொருவு மைன்னிறமுற்ற குருதி மேனோக்கிப்
பொருந்துவது காசமென்னப்
புகலுரு மிருமல் நோய் முற்குறி எனப்
புகல்வர் புமிமீ தறிந்துணர்வையே''

The premonitory symptoms of Swasakasam mentioned as per Siddha Literature ***Noi Naadal Noi Mudhal Naadal Thiratu*** cough with mild expectoration , hoarseness of voice , nausea and vomiting, intercostal pain , reduction in weight, tiredness.

2. *SIDDHA MARUTHUVAM POTHU*

Swasakasam Patient will develop aura(Peculiar sensation) and that he may undergo an attack of Swasakasam on that day and to some extent he can assess the Severity of the attack.

The prominent feature are dyspnea, discomfort in the chest, flatulence, sweating in the forehead, wheezing which may gradually develop in severity of the disease.

2.3.5. *NOI ENN* (CLASSIFICATION)

The types of *Swasakasam* is clearly described by the following texts books they are,

1.(a)*NOI NAADAL NOI MUDHAL NAADAL THIRATU*- 2ND PART &

(b)YUGI VAITHYA CHINTHAMANI

Swasakasam is described as one of the twelve types of Kasam. The twelve types are,

1. Mandhara kasam
2. Pakka Mandharakasam
3. Sudar kasam
4. Vadha Kasam
5. Pitha Kasam
6. Swasa Kasam
7. Ratha Kasam
8. Silethuma Kasam
9. Peenisa Kasam
10. Vathapitha Kasam

11. Pitha silethuma Kasam
12. Thontha Kasam

2. *SARABENTHIRAR VAIDHYA MURAIGAL*

Types -5

1. Maha swasam
2. Oothuva swasam
3. Chinna swasam
4. Thamakka swasam
5. Soothira swasam

3. *ANUBAVA VAIDHYA DEVA RAGASYAM*

There are five types.

Those are,

1. Arpa swasam
2. Thamaraka swasam
3. Vichchina swasam
4. Maha swasam
5. Orthuva swasam

4.*T.V. SAMBHASIVAM PILLAI DICTIONARY*

There are 20 types.

Those are,

1. Swasakasam
2. Manthara kasam
3. Ratha kasam
4. Neela kasam
5. Silaethuma kasam
6. Pitha kasam
7. Vatha kasam
8. Bala kasam
9. Virana kasam
10. Karpa kasam
11. Elai kasam
12. Thontha kasam
13. Pakka kasam
14. Pakka manthara kasam

15. Sudar kasam
16. Peenisa kasam
17. Naatha kasam
18. Vali kasam
19. Adaippu kasam
20. Gunma kasam

2.3.6. *KURI GUNANGAL* (SIGNS AND SYMPTOMS)

The signs and Symptoms of SWASAKASAM were described elaborately in various Siddha literatures. They are described here as follows

1.(a)*YUGI VAITHYA CHINTHAMANI AND (b) NOI NAADAL NOI MUDHAL NAADAL THIRATTU* –PART-2

"வண்மையாய்க் கோழைகட்டி இருமி வீழும்
மாநாகம் போலவே வாங்குஞ் சுவாசம்
திண்மையாய்ச் செருமலுண்டா மடிக்க டிக்குச்
சீரண மிலாமலே வயிறு மூதும்
நன்மையாய் நாசியது தணல்போ லாகும்
நலிந்துடம்பு வற்றி வருங் குரலும் கம்மும்
உண்மையா யுண்ணாக் கிலுாறுங் கேணி
யுழந்துமே சுவாசகா சத்தினொப்பே"
(யூகி வைத்திய சிந்தாமணி-)

Characteristics of Swasakasam according to *Yugi Vaithya Chinthamani And Noi Naadal Noi Mudhal Naadal Thirattu –Part-2* were severe cough with or without expectoration, expiration sound similar to hiss of a serpent ,frequent humming, sense of heat in both nostrils,emaciation,hoarseness of voice, indigestion and flatulence. The patient feels difficulty in breathing even in sleep.

2.ACCORDING TO *T.V.SAMBHASIVAMPILLAI DICTIONARY*

It is only an attack attended with great difficulty in breathing,and is of a spasmodic disorder ,occurring in paroxysms. This disease is said to be of two kinds viz. humid and dry according to the presence or absence of expectoration. Although the origin of this is traced to results of Karmic actions ,the medical science explains it as due to deranged condition of vital air (prana) combining with the other three humours, thereby giving rise to the following exciting causes viz. emotions such as anger or fright ,costive bowels, heavy supper, flatulence, and other forms of dyspepsia, gouty nature,emphysema of the lungs etc. More over, the disease is ascribed to the sudden spasmodic contraction of the wind-pipe or shock to the nervous system often ushering in attacks.

2.3.7. *MUKKUTRA VERUPADUGAL* :

According to Siddha system, the manifestation of all diseases are the result of derangement of three dhoshas i.e., vatha, pitha and Kaba. The prime factor which involved in Swasakasam is Kabam, which is accompanied with vitiated vatham (or) Pitham and produces the clinical symptoms of Swasakasam. This is clearly indicated by Theriyar as,

"கபத்தினையன்றி காச சுவாசம் காணாது" - **தேரையர்**

1. Excess of Kabam in the respiratory organs affect the Melnokkumkal and Uyirkal and so, the air is not able to reach the terminal point of respiration, which produces gasping and labored breathing.
2. Some authors says that Swasakasam is caused by deranged vatham. This thought is also acceptable, because the obstruction of air in the respiratory tract is abnormally present.
3. Excessive intake of vatha promoting diet which induces the pitha kutram. This type of pitham produces more heat and this heat goes upwards to head resulting in running nose, heaviness of head , sneezing and causes narrowing of air passage which leads to the onset of the disease. This is indicates

"பித்தமே மிகுந்தால் ஈளை இருமலும் பலத்து நிற்கும்"

- குணவாகட நாடி

So, the changes of diet and results increased vatha or kaba and produces the clinical symptoms of Swasakasam.In Swasakasam, Piranan is the primary vayu affected, leadings to difficulty in breathing and involvement of uthanan leads to cough

and sneezing. Involvement of devathathan leads to tiredness and the involvement of sathaga pitham leads to Sluggishness. In Kabam derangement of avalambagam leads to dyspnoea ,cough and wheezing.

In seven udal thathus, Saram and Senneer are affected which leads to lethargy and depression. When the Oon and Kozhuppu are affected and it produces the symptoms of emaciations and body pain.

2.3.8. *PINIYARI MURAIMAI* (DIAGNOSIS)

The diagnosis is based on.

1. Poriyalarithal (Inspection)
2. Pulanalarithal (Palpation)
3. Vinathal (interrogatioin) and
4. Ennvagai Thervugal (Diagnostic Tools).

1. *PORIYALARITHAL* (INSPECTION)

Poriyalarithal are perception of the five sense organs. They are nose, tongue, eyes, skin and ears. Poriyalarithal is examining the pori of the patient by pori of the physician. In Swasakasam ,it is as follows.

Nose - Visible movements of alar nasi, irritation of the nose, running Nose.

Eyes - Redness, sometimes dusky and pale

Tongue - Dry, pale and Coated

Ear - normal

Skin - Sweating all over the body, waxy

2. *PULANALARITHAL* (PALPATION)

Pulangal are the five object of senses namely smell, taste, sight, sensation and sound.

- Smell - Altered or absent due to running nose and inflammation of the nasal mucosa.
- Taste - Diminished or normal
- Vision - Normal
- Sensation - Normal or cold due to sweating
- Sound - Diminished

3. *VINATHAL* (INTERROGATION)

By Vinathal, the physician knows about the patients name, age, occupation, native place (Thinai), Family History, Socio Economic status, diet habits prone to any allergens (e.g. Dust, Smoke).History of previous episode, frequency of attacks by change of season, relevant history of treatment and habits etc.

1. *KALAM* (AGE DISTRIBUTION)

The period of human life is totally said to be 100 years. This is divided into three stages according to the domination of three humours as per this

1. The first stage - 1 to 33 years - Vatha period
2. Second stage -34 to 66 years - Pitha period
3. Third stage -67 to 100 years - Kaba period

In each of the stage the other humours were also involved. But a particular humor would be dominating more. According to this, Swasakasam comes under the types of Kaba disease.

2. *IVAGAI NILAM* (LAND OR PLACE)

Study of five places is very important and useful, because there may be possibilities of respiratory disease in some areas.

Five lands are :

a. *Kurinchi* - Mountain and its surroundings
b. *Mullai* - Forest and its surroundins
c. *Marutham* - Fields and its surroundings
d. *Neithal* - Sea and sea shore
e. *Palai* - Desert and its surroundings

a. *KURINCHI*

“குறிஞ்சி வருநிலத்தில் கொற்றமுண்டி ரத்தம்
உறிஞ்சி வரு சுரமுண்டாம் - அறிஞரைக்
கையமே தங்கு தரத்தாமை வல்லையுங் கதிக்கும்
ஐயமே தங்கு மறி” (பதார்த்த குண சிந்தாமணி)-

Person who live in *Kurunchi Nilam* are usually liable as developing fever that results in blood dyscariasis, disease of the spleen and liver and **prevalence of kaba disease is more in *Kurinchi nilam*.**

b.*MULLAI:*

“ முல்லை நிலத்தயமே மூரிநிரைமேனினுமவ்
வெல்லை நிலைத்தபித்த மெங்குறுங்காண் -வல்லையெனின்
வாதமொழி யாதத னுண் மன்னு மவை வழிநோய்ப்
பேதமொழி யாதறைய ப்பின்பு”

(பதார்த்த குண சிந்தாமணி)-

In *Mullai Nilam*, is the place of cattles, it is the place of increasing Pitha, Vatha also joined to that Pitha due to these Kutrams many diseases occur.

c.*MARUTHAM*

Marutham the agricultural land is fertile with very good water which will drive out the diseases of all the three humors, so cures all the three Vatha, Pitha and Kaba diseases.

d.*NEITHAL:*

‘நெய்தனில மேலுப்பை நீங்கா துறினுமது
வெய்தனில மேதங்கு வீடாகும் - நெய்தல்
மருங்குடலை மிக்காக்கும் வல்லுறுப்பை வீக்கும்
கருங்குடலைக் கீழிறக்குங் காண்” -- (பதார்த்த குண சிந்தாமணி)-

Through *Neithal nilam* dominant taste of uvarppu (salt) , it is the place of pitha vayu.The people who dwell here are susceptible to odema due to Kaba, *Silipatha Rogam* (Filariasis), *Kudalanda Viruthi* (Hernia).

e. *PALAI*

“பாலை நிலம்போல் படரை பிறப்பிக்க
மேலை நிலமீயாது விரித்தற்கு - வேலை நில
முப்பிணிக்கு மில்லாம் முறையே யவற்றாலாம்
எப்பிணிக்கு மில்லாம.்தென்” (பதார்த்த குண சிந்தாமணி)

Persons who live in *palai* are liable to develop the disease of three dhoshas.

- From *Ivagai Nilangal* we understood that kabha disease is predominant in *kurinchi thinai.*

3. *PARUVAKALAM* (SEASON)

“காரே கூதிர் முன்பனி பின்பனி
சீரிள வேனில் வேனில் என்றாங்கு
இருமூன்று திறத்தது தெரிபெரும் பொழுதே”

(சித்த மருத்துவாங்கச் சுருக்கம்) -

With reference to the position of sun the year is divided into 6 seasons they are

1. *Karkalam (Avani and Purattasi)* - August and September
2. *Koothirkalam (Iyppasi and Karthigai)* - October and November
3. *Munpani Kalam (Markazhi and Thai)* - December and January
4. *Pinpani Kalam (Masi and Panguni)* - February and March
5. *Elavenil Kalam (Chittirai and Vaigasi)* - April and May
6. *Mudhuvenil Kalam (Aani and Aadi)* - June and July

Swasakasam mainly occurs due to the vititation of kaba. *Thannilai valarchi of kabam* occurs in *pinpanikalam* and *vertunilai valarchi* occurs is *elavenilkalam* and comes to *thanilai in mudhuvenil kalam*. So the pinpani and *elavenil kalam* are more precipitate of the *Swasakasam.*

4. *MUKKUTRA NILAIGAL*

A. *VATHAM*

‘முறைமையாம் பிராணனோடபானன் வியானன்
மூர்க்கமா முதானனோடு சமான னாகன்
திறைமையாங் கூர்மனோடு கிருக ரன்றன்
தேவதத்த னொடுதனஞ் சயனு மாகும்’

- யூகி வைத்திய சிந்தாமணி 800

1. *Piranan*

It is responsible for respiration.

In Swasakasam difficulty in breathing is due to the affection of this vayu.

2. *Abanan*

It helps to excrete the urine and motion.

In Swasakasam some patients had constipation.

3. *Viyanan*

Since it has the qualities of *Akayam* it spreads through out the body.

In Swasakasam this distribution is affected.

4. *Udhanan*

It appears from *Udarakkini*.Udhana Vayu is called in tamil *as Mel Nokku Kaal*. In Swasakasam sneezing and cough may present due to the derangement of this vayu.

5. ***Samanan***

It helps *Sadarakkini* in assimilating the food and liquids.

It helps in separating the essence and excretion.

In Swasakasam signs of dyspepsia may present. So this is also affect

6. ***Nagan***

This vayu maintains the opening and closure of eye lids.

In Swasakasam this vayu may be deranged.

7. ***Koorman***

This vayu is responsible for vision and yawning and is not affected in Swasakasam.

8. ***Kirukaran***

It controls salivation, running nose, sneezing, cough.

In Swasakasam this vayu may deranged with loss of appetite.

9. ***Devathathan***

It is responsible for tiredness and anger. It is affected in Swasakasam.

10. ***Dhananjeyan***

It produces swelling of the body after death and escapes,

due to the separating of sutures of the skull after the third day.

B. ***PITHAM***

"ஆக்கனல் வண்ணவெரி யாற்றலங்கி யொள்ளொளித்தீ
நோக்கழலாம் பித்தமைந்த நூதனமா - யாக்குமொழி
பூசசமி ரஞ்சகஞ் சாதகம் ராசகமா
லோசக மென்றிடுமோ லோ" (மருத்துவ தனிப்பாடல்)

According to its site and function, it is divided into five kinds.

1. ***Anala Pitham***

This is residing in the stomach, and helps in digestion.

In Swasakasam loss of appetite may be present.

2. ***Ranjaga Pitham***

This is residing in stomach and regulates the quality of blood.

In Swasakasam anemia may be present.

3. ***Sathaga Pitham***

It resides in heart and makes correct activities with the help of minds and brain. In this disease restlessness is present.

4. ***Aalosaga Pitham***

It resides in both eyes and gives correct vision.

5. ***Pirasaga Pitham***

It resides in skin and gives complexion.

C. ***KABHAM***

‘ஆதர வாம்மெய்க கவலம் பதமாங்கி
லேதக மாஞ்சுவைப் பேதமுணர்ப் - போதகமாம்
தற்பகமாஞ் சந்திகளிற் றங்குஞ் சிலேடகமா
மற்பமிலாச் சேத்தும மைந்து”. (- மருத்துவ தனிப்பாடல்)

1. ***Avalambagam***

This is considered to be support for other ayyams. It occupies the lungs and the heart and helps the other four by its natural quality of its spreading. Cough, Wheezing, dyspnoea are present in Swasakasam.

2. ***Kilethagam***

It is present in the stomach and gives moisture to the food materials and also helps in digestion. In this disease loss of appetite is present.

3. ***Pothagam***

It is present in the tongue and reveals the taste.

4. ***Tharpagam***

It resides in the head and helps the eye to close.

5. ***Santhigam***

It resides in joints and helps for free movements.

5. SEVEN ***UDAL KATTUKAL***

“தன்னமாம ரசமிரத்தமா ங்கிசமு மேதை
தசை மச்சையொடு சுக்லந்தா தேழாகி” –(யூகி வைத்திய சிந்தாமணி 800)

They are the seven basic principles which constitute the entire body. These are otherwise called as udal thathukkal. They are,

1. S*aram* (Chyle-essence of food):

This is the end product of the digestive process. It strengthens the body and mind. This is deranged due to loss of appetite in Swasakasam

2*. Senneer* (Blood):

The rasam after absorption is converted into senneer. It is responsible for intelligence, skill, and healthy complexion. So, this is deranged is Swasakasam..

3. *Oon* (Muscles):

It helps in growing of bones and establishes the parts of the body according to their functions.

4. *Kozhuppu* (Fat):

When the organs of the body do their works this thathu helps for lubrication and facilitates their functions.

5. *Enbu* (Bones):

It gives shape to the body and is responsible for protection of vital organs. It is the basis for the movementof the body.

6. *Moolai* (Marrow):

It is present in the core of the bone which strengthens and maintains the normal conditions of the bones.

7. *Sukkilam/ Suronitha* (Semen):

It is responsible for the reproduction. When the seven udal thathukkal may increases or decreases from the normal level, normal functioning of the body is affected.

6. *ENN VAGAI THERVUGAL*

It is the basic diagnostic principle and the unique specialty of the siddha system of medicine. The following verses reveals this as followis,

"நாடி பரிசம் நா நிறம் மொழி விழி
மலம் மூத்திரமிவை மருத்துவராயுதம்"

- நோய்நாடல் நோய்முதனாடல் திரட்டு முதல் பாகம்

"மெய்க்குறி நிறந்தொனி விழி நாவிருமலம் கைக்குறி"

- தேரர்

The diagnostic value of Enn vagai Thervugal is important one in siddha system and presumes the vitiated dhoshas in the patient. They are described in siddha maruthuvam as an essential one for the siddha physician. Enn vagai thervugal are,

1. *Naadi* (Pulse)
2. *Sparisam* (Palpation)
3. *Naa* (Tongue)
4. *Niram* (Colour of the Skin)
5. *Mozhi* (Speech)
6. *Vizhi* (Eyes)
7. *Malam* (Motion)
8. *Moothiram* (Urine)

Enn Vagai Thervugal gives a definite idea to diagnose the Swasakasam. This is explaines as follows.

1. ***NAADI***

Naadi otherwise known as pulse is the very important helpful observation for diagnosis and prognosis. The Naadi which indicates the states of the Uyir thathukkal are whether they are normal or abnormal. The importance of naadi is clearly mentioned by Saint Thiruvalluvar by the following verse

"நோய்நாடி நோய் முதனாடியது தணிக்கும்
வாய்நாடி வாய்ப்பச் செயல்".**- திருவள்ளுவர்**

In Noi Nadal text is defined as,

"உடலில் உயிர் தரித்திருப்பதற்குக் காரணமான ஜீவ சக்தி எதுவோ அதுவே தாது அல்லது நாடி எனப்படும்".

Genesis of Naadi

The three thathus are formed by the combination of three naadies with three vayus.

Idakalai + Abanan = Vatham

Pinkalai + Piranan = Pitham

Suzhumunai + Samanan = Kabam

"இருப்பான நாடி எழுபதோடீரா
யிரமான தேகத்தில் ஏலப்பெருநாடி
ஒக்க தசமத் தொழிலை ஊக்க தசவாயுக்கள்
தக்கபடி என்றே சாரும்.
சாருந்தசநாடி தன்னில் மூலம் மூன்று
சேருமிடம் பிங்கலையும் பின்னலுடன் மாறும்
உரைக்கவிரற் காற்றொட்டுணர்த்துமே நாசி
வரை சுழியோ மையத்தில் வந்து'
வந்தகலை மூன்றில் வாயுவாம பானனுடன்
தந்த பிராணன் சமானனுக்குஞ் சந்தமறக்
கூட்டுறவு ரேகித்தல் உறும் வாதம் பித்தம்
நாட்டுங் பமேயாம் நாடு"**- (கண்ணுச்சாமியம்) -**

These naadies can be felt one inch below the wrist on the radial side by means of palpation with the tips of index, middle and ring finger corresponding to vatha, pitha and kaba respectively.

"கரிமுகனடியை வாழ்த்திக் கைதனில் நாடி பார்க்கில்
பெருவிரலங்குலத்தில் பிடித்தபடி நடுவேதொட்டால்
ஒரு விரலோடில் வாதமுயர் நடுவிரலிற்பித்தம்
திருவிரல் மூன்றிலோடில் சேத்தும நாடிதானே". **–(அகத்தியர் நாடி)**

NAADI IN IYA SWASAKASAM

1. KABA NAADI

"கபமல்லாது காச சுவாசம் வராது"
உற்றிடும் ஐயநாடி ஓங்கியே துடித்து நின்றால்
பற்றிடும் ஈளை பதறியே இரைப்புண்டாக்கி
மெத்தவே கோழை வாய் மிகுதிப்படும்"

- (**அகத்தியர் குணவாகடம்)**

"தானமுள்ள சேத்துமந் தானிளகில் வெப்பு
சயமீளையிருமல் மந்தார காசம்
ஈனமுறுஞ்சந்நி விடதோடம் விக்கல்
யிருத்ரோகங் கரப்பான் விரணதோடம்
மானனையீர் சூலை திரள் வியாதி வீக்கம்
வருஞ்சத்தி சுவாசம் நெஞ்சடைப்பு, தூக்கம்
ஏனமுறுங் காமாலை பாண்டு சோபை
ஏழுசுரங்கள் பலதுக்கம் விடமுண்டாமே" **(சதக நாடி)**

2. VATHA KABAM

The level of vatha Naadi increased to two times of its normal level, i.e..2 mathirai and the level of kaba increased to two times, i.e. ½ mathirai. But it never goes beyond twice its normal level.

"பாங்கான வாதத்தில் சேத்தும நாடிப்
பரிசித்தால் திமிர் மேவு முளைச்சலாகும்
தீங்கான இருமலுடன் சன்னி தோடம்
சேர்ந்த விடம் வெடிசூலை இருத்ரோகம்
வாங்காத ஈளை மந்தாரகாசம்
வலியுடனே புறவீச்சுயுள் வீச்சு வீக்கம்
ஓங்கானுஞ் சுரமுடனே சுவாசகாசம்
உண்டாகும் வெகு நோய்க்கும் உறுதிதானே" **(சதக நாடி)**

3. KABA PITHAM

When the Naadi rhythm varies from normal to kaba pitham, it causes Swasakasam. The level of Vatha Naadi increased to two times of tis normal level i.e 2 Mathirai and the level of pitham increased to two times i.e. 1 mathirai. But it never goes beyond twice its normal level.

"இடமான சேத்துமத்தில் பித்தநாடி
எழுந்தணுகில் விடமுடனே வீக்க முண்டாம்
திடமான குளிர்காய்ச்சல் மஞ்சள் நோவுந்
தேகத்திலுளைச்சலிளைப் பிருமல் வாந்தி
விடமான நெஞ்சடைப்பு சுவாசம் விக்கல்
வெகு சுரமும் நாவறட்சி பாண்டு ரோகம்
அடமான குவளை ரத்தமதி சாரந்தான்
அனுகி வெகுபல நோய்க்குந் தடங்கண்டாயே". **(சதக நாடி)**

4. IYA VAYU

When Iyam combined with vayu then it leads to Swasakasam.

"தொந்தித்த சேத்துமத்தில் வாயுகூடித் தொடர்ந்த
குன்மம் நெஞ்சடைப்பு சுவாசகாசம்
வந்தித்த குரல்தனிலே யுறுத்த லீளை
வழுவழுப்பு நீருறல் மலத்தில் சீதம்
வெந்தித்தல் கொழுத்தல் குத்துந் திமிர் வியாதி
வீச்சுடனெ வலியெட்டுந் திரட்சி பாண்டு
அந்தித்த கிறுகிறுப்பு மயக்கம் விக்கல்
ஆன பல பிணிகளுமே வந்தடருந் தானே". **(சதக நாடி)**

5. IYA USHNAM

When Iyam and ushnam are combined then leads to Swasakasam.

"கதிப்பான சேத்துமத்தில் உட்டிணங் கூடில்
கலந்த குளிர் சயமிருமல் சுவாசகாசம்
மதிப்பான கோழை ரத்தம் விப்புருதியுடனே
வளர்நாசிகா பீடமிருத் ரோகங்
கொதிப்பான சிங்குவை யாக்கிராண வாயு
கொட்டாவி விக்கல் மந்தாரகாசம்
துதிப்பான வீரலத்திக் காய்வு ரத்தம்
தோன்றமிகு பிணி பலவுந் தொந்திப்பாமே". **(சதக நாடி)**

6. IYA SEETHAM

When Iyam combined with seetham then it leads to Swasakasam.

"அடமான சேத்துமத்தில் சீதளம் பற்றில்
அணுகினால் சுவாசமடைப்பு யிளைப்பு மூர்ச்சை
திடமான வாயாச மயக்கம் வியர்வை
சேர்ந்த விக்கல் சந்நி விடதோடம் வீச்சு
இடமான வயிறு பொருமல் குளிர் நடுக்கல்

யிரத்த சுரமோங் காரம் பெருத்த வீக்கம்
கடவான அவகுறி வந்தணுகு மென்றே
சார்ந்த பெரியோ ருரைத்த தயவுதானே''. **(சதக நாடி)**

2. *SPARISAM* (PALAPTION)

By sparisam, the temperature of skin, (hot or cold) smoothness, sweet, dryness, hard patches, swelling, abnormal growth, tenderness, ulcers, enlargements, nourishment can be noted. In Swasakasam patient's body is cold.

'சேட்ம சடம் வியர்வை கொண்டேயிருக்கும்' **(திரட்டு நாடி)**

'சேட்மத்தின் தேகந்தானும் சிக்கென்று குளிர்ந்திருக்கும்'**(நாடி நிதானம் செ.30)**

3. *NAA* (TONGUE)

In the examination of tongue, it's colour, it's coating, it's dryness, it's deviatioin and movement, variations in taste and the conditions of teeth and gums can be noted. During this examination if there are any ulceration, inflammations and malignant growth, they should also be carefully noted. most of the case Swasakasam tongue is white in colour.

4. *NIRAM* (COLOUR OF SKIN)

By examining the niram the type of udal (body) whether vatha (black), pitha (red or yellow) and kaba (white) or mixed, cyanosis and pallor of the body can be noted. In Swasakasam niram, conjunctiva and tongue is pale in nature.

'மன்னிய சேத்தும மீறில் மாகாயம் வெளுக்கு மேனி'**(அகத்தியர்)**

5. *MOZHI* (SPEECH OR VOICE)

In the examination of mozhi the pitch of the voice, (whether it is high or low) actions of laughing, crying, slurring, speech in hallucination, sadness, argument, breathlessness, wheezing and incompletences while talking may be noted. Speech will not usually affected in this disease. In severe condition (severe dyspnoea) the patient will not able to speak well.

6. *VIZHI* (EYES)

In the examination of vizhi the change of colour of the eye for vatha, pitha and kaba or mixed condition and other colours such as redness, yellowishness, pallor etc., may be noted. With these dryness, lacrimation, sharpness of vision, response of the pupil, falling of hair in eye lashes, inflammations and ulcerations may also be noted.

In the case of Swasakasam, the colour of the conjunctiva pale in colour.

'கோதுற்ற சிலேற்பனத்தார்க்குக் கூர்விழி வெளுத்திருக்கும்'

- (சித்த மருத்துவாங்க சுருக்கம்)

7. *MALAM* (STOOLS)

In the examination of malam its nature, (whether it is solid, semisolid or liquid), it's colour, its quantity (increased or decreased) can be noted. other examinations like diarrohea, presence of blood, mucus, rice and indigested matter in the stools and odour should be studied. In Kabha disease it is white in colour.

'மன்னுஞ் சேத்துமத்தோர் மலம் வீழ்குழி
இன்னல் தீர வீழும் வெறுப்பன்னவே' - **(தேரையர்)**
'மலமற சிக்கலாக வெறுத்திடு மையத்திற்கு' - **(புலிப்பாணி)**

8. *MOOTHIRAM* (URINE)

In the examination of urine the colour, odour, quantity of urine, the presence of froth, deposits, blood, pus, small stones, abnormal constituents such as sugar, proteins etc. and the frequency of urination can be noted.

Neerkuri and Neikuri are the two methods also used to diagnose the disease. They are explained below,

NEERKURI

'வந்த நீர் கரியடை மணம் நுரை எஞ்சலென்
றைந்திய லுளவை யறைகுது முறையே''

- சித்த மருத்துவ நோய்நாடல்
நோய்முதனாடல் திரட்டு முதல் பாகம்

According to this verse, the general features of urine, niram, edai, manam, nurai and enjal were analyzed.

- Niram indicates the colour of the urine voided
- Edai indicates the specific gravity of the urine
- Manam indicates the smell of the urine voided
- Nurai indicates the frothy nature of urine voided.
- Enjal indicates the quantity (increased or Decreased)

NEERKURI IN KABAM

''வீழுமே சேத்து மத்தோர் நீர்க்குணம் விளம்பக் கேளாய்
நாளுமே வெளுத்து றைந்து நலம் பெற வீழுங் கண்டாய்''

-(சித்த மருத்துவாங்க சுருக்கம்)

NEIKURI

Before urine testing, the patient was the patient was asked to take regular and quality diet without any derangements in amount in correct time. The urine was collected in next day early morning in a glass vessel. The same method was

employed for Neerkuri. A drop of gingelly oil was dropped and the urine was kept without any movements . The spread of nei is noted, this is most diagnostic evidence for deranged humour.

"அருந்துமாறிரதமும் அவிரோதமதாய்
அ.்.கல் அலர்தல் அகாலவூன் தவிந்தழற்
குற்றளவருந்தி உறங்கி வைகறை
ஆடிக்கலசத் தாவியே காது பெய்
தொரு முகூர்த்தக் கலைக்குட்படு நீரின்
நிறக்குறி நெய்க்குறி நிருமித்தல் கடனே"
"அரவேன நீண்டிடின் அ.்.தே வாதம்
ஆழிபோற் பரவின் அ.்.தே பித்தம்
முத்தொத்து நிற்கின் மொழிவதென் கபமே"

- சித்த மருத்துவ நோய்நாடல்
நோய் முதனாடல் திரட்டு முதல் பாகம்

The oil spreading like a snake indicates vatha
The oil spreading like a ring indicates pitha
The oil remaining floating as a pearl means kaba

So, in Swasakasam oil spreading like a pearl in the urine.

"முத்தொத்து நிற்கின் மொழிவதென் கபமே"

- சித்த மருத்தவாங்க சுருக்கம்

PROGNOSIS

Swasakasam was relieved by taking regular as well as proper treatment.

2.3.9.LINE OF TREATMENT

The line of treatment of Swasakasam consists of

- Kazhichal Maruthuvam - To bring the kabha dhosha and udhanan to equilibrium
- Internal Medicines - Mainly expectorant drugs to expel the increased kabha
- Diet - To maintain tridhoshas and energy
- Prevention methods - To strength the muscles of respiration

1. ***KAZHICHAL MARUTHUVAM*** **(LAXATIVE)**

Each patients were given **Nilavagai Chooranam 5 gms** with **hot water before the bed time** on the first day before starting the main treatment.

2. **ADMINISTRATION OF INTERNAL MEDICINE**

For treatment the disease Swasakasam several remedies are suggested in ancient siddha literature. The ***Jaathipalathi Chooranam*** **30mg/kg/Bw three times a day with honey after meals for 30 days.**

The identification of *Suvaigal* were based on individual ingredients of these preparations.The trial medicine *Jaathipalathi chooranam* has the tastes of *Kaippu, Kaarppu*, *Thuvarppu*. *Jaathipalathi chooranam* has got the *Kaarppu pirivu*. The *Karppu suvai* which has potent to act as antagonist the excessive *Kabam* .

"ஐய விகாரம் அழித்திடும்"

-சித்த மருத்துவாங்கச் சுருக்கம்

All these drugs has got the *thanmai veppam (*presence of *karppu* taste). The *thanmai veppam* has go to action to decrease the vitiated *Kabam* . After ingestion while the trial medicine reaches the gastric juice ,it will change into *vibagam karpu.* At this stage also, the medicine will acts as *anti kaba medicine* due to the *vibagam karppu.*

"சேதமுறச் செய்யுஞ் சிறையம்- ஓதக்கேள்
காரம் துவர் கசப்பு காட்டுஞ் சுவை எல்லாம்
சாரப் பரிகாரஞ் சாற்று"

-நோய் நாடல் நோய் முதல் நாடல் திரட்டு

கார்ப்பு, கைப்பு, துவர்ப்பு சுவைகள் ஐய மிகுதியை சமன் செய்யும்.

The method of preparation and properties of this medicine is given in the Annexure I.

4.DIET

Vegeables to be added

- மணத்தக்காளி- *Solanum nigrum*
- பொன்னாங்காணி–*Alternantherasessilis*
- முசுமுசுக்கை - *Mukia scavrilla*
- குப்பைமேனி - *Acalypha indica*
- தூதுவளை - *Solanum trilobatumn*
- அரைக்கீரை - *Amaranthus tristis*
- சிறுகீரை - *Amaranthus gangeticus*
- வல்லாரை - *Centella asiatica*
- முருங்கை கீரை - *Moringa olefera*
- கத்தரி - *Solanum melongena*
- கண்டங்கத்திரி-*Solanum xanthocarpum*
- பீக்கம்பிஞ்சு - *Luffa ocutaugula*
- அத்தி - *Ficus glomavata*
- ஈருள்ளி - *Allium cepa*
- முருங்கைப் பிஞ்சு- *Moringa olefera*

Diet Restritction

Siddhars advice to avoid some certain food items in Swasakasam. They are

- Ghee
- Buttermilk
- Chillies
- Ice creams
- Sweets
- Cool drinks
- Watery vegetables
- Watery fruits
- Sugar
- Curd
- Strong tea,Coffee
- Alcoholic beverages
- Pickles

PREVENTION MEHTODS

- ❖ Intake of hot water and hot foods
- ❖ Avoidance of chill weather
- ❖ Avoidance of factors which cases digestive disturbances.
- ❖ Avoidance of allergic factors.
- ❖ Avoidance of smoking and snuff.
- ❖ Taking bath strictly in hot water
- ❖ Advised to take dinner before 8 p.m.
- ❖ Avoidance of stress.
- ❖ Avoid work in dust, cement and cotton mills.
- ❖ Advice to practice pranayamam and yogasanam.
- ❖ Advice to sleep in the phoenix mat.

***PIRANAYAMAM* (BREATHING PRACTICE)**

Piranayamam (or) breathing mainly consists of inhalation of air by deep inspiration (Poorakam), holding of breath as it possible (Kumabakam) and exhalation of air by a expiration (Rasakkam). By this exercise, the duration of Kumbagam (retention of air in the lungs) is increased. So, that results in proper gaseous exchange which produces increased oxygen supply to all cells.

By the regular practice of pranayama, one can get a feeling of clamnes of mind and as a result of excess supply of oxygen to the brain cells. This state of mind ultimately helps in good concentration and mediation.This practice also given good appetite, great strength, enthusiasm, a high standard health, vigour and vitality. During breathing exercise, the lungs expand well and get proper supply of oxygen by proper expansion of chest. So, pranayama practice is one of the preventive methods for asthma.

2.3.10.*NOI KANIPPU VIVATHAM* (Differential diagnosis):

மந்தார காசம்:

"தானான தூயதோர் நாசி தன்னில்
சலநோய்நீர் தான் விழுந்து தும்மலுண்டாம்
மானான மார்புநெஞ் சடைத்துமூச்சு
வலுவாகப் பாம்புபோற் சீறலாகும்
கானான கண்டமொடு முகமும் காதுங்
காயமதுங் கசிவாகி வியர்வையாகும்
ஏனான இருமலோடு கோழை கம்மல்
இரைப்பாகும் மந்தாரகாச மாமே" **(யூகி வைத்திய சிந்தாமணி)**

Mandara kasam there is running nose, sneezing, tightness of chest, breath sound like hissing of snake, sweating all over the body, cough, expectoration, dyspnea, etc., **In Swasa kasam there is no sweating all over the body.**

கண்ட கிராக வாதம்

"வகையான குரல்தனைப் பற்றி நொந்து
மார்போடு பிடரியினில் வலியுண் டாகி
நுகரான சரீரமெல்லாம் நொந்தழ லாற்றி
நுணுக்கமாய் சுவாசமது புறப்ப டாமல்
முகையான நாவாலே மூச்சு மாறி
முகத்திலே வியர்வாகி விலாநோ வுண்டாம்
புகையான வன்னத்தை பருக்கொட்டாது
பரியகண்ட கிராகத்தின் பண்பு தானே"**(-யூகி வைத்திய சிந்தாமணி)**

Kandakiragam, there is difficulty in speech, pain in the chest and occipit region, pain all over the body, breathlessness, mouth respiration, sweating in face, pain in the ribs, anorexia. **In Swasa kasam, there is no pain in the occipital region**.

சுவாச பித்தம்:

"கருத்தாகச் சுவாசமது மிகவுண் டாகுங்
கனமாக வயிறுமே ஊதிக் காணும்
உருத்தாக உடலதுதான் மிக வலிக்கு
மூறுமே கேணிபோல் வாய்நீர் தானும்
மருத்தாக மயங்கியே கண்ம றைக்கும்
மார்பிலே வலியோடு இரும லுண்டாந்
துருத்தாக வயிறதனிற் பசியோ யில்லை
சுவாசமாம் பித்தத்தின் சூட்சந் தானே"

(யூகி வைத்திய சிந்தாமணி)

In Swasa Pitham, there is increased respiration, flatulence, pain all over the body, brashing, loss of consciousness, pain in the chest followed by cough, loss of appetite etc.,**In Swasa kasam there is no loss of consciousness.**

மூக்கடைப்பு இருமல்:

"செப்பவே யிருமலொடு கோழை வீழும்
சேத்துமமாமிளைப் போடு இரைப்புண்டாகும்,
உப்பமாய் வயிறதுவு மூதிக்கொள்ளும்,
ஊணுறக்கமில்லாமலுலருந்தேகம்,
குப்பமாய் மலசலமுங் கறுகி வீழும்
கோழையிடகுணந்தான் மீன் கவிச்சடிக்குந்
துப்பமாய்ச் சுருண்டு வயிறு வலியுமாகும்
சுவாசபீனசமென்றே சூட்டிடாயே" **(- யூகி வைத்திய சிந்தாமணி -)**

Cough with expectorant, dyspnoea, wheezing, abdominal distention, anorexia, insomnia, oliguria, constipation, abdominal pain and sputum has fish like is odour.

அழல் ஐயம்

"பண்பாகக் கண்மயங்கிக் கிறுகிறுக்கும்
பத்தியந்தான் மிகுதியா யசதி யாகும்
உண்பாக வசனமிகத்தானுஞ் செல்லா
ஊறியேவாய் நீர்தான் மிகவுண்டாகும்
கண்பாகக் கண்டத்திற்கோழைகட்டுங்
கனக்கவேயிருமலோடு மூச்சுமாகு
மிண்பாகமேனியுமோமஞ்சளிக்கு
மிக்க பித்தசிலேட்டுமத்தின் விவரந்தானே"

- யூகி வைத்திய சிந்தாமணி

Fainting,giddiness, tiredness, anorexia, excessive salivation, accumulation of phlegm in the throat, cough with severe dyspnoea, yellowish discoloration of the body.

2.4.MODERN ASPECTS - BRONCHIAL ASTHMA

2.4.1.DEFINITION

Bronchial Asthma (BA) is a bronchial hypersensitivity disorder characterized by reversible airway obstruction,produced by a combination of mucosal edema,constriction of the bronchial musculature and excessive secretion of viscid mucus,causing mucous plugs. Asthma is characterized by recurrent attacks of Dyspnea, cough with expectoration of tenacious mucoid sputum and usually wheezing. Symptoms may be mild and may occur only in association with respiratory infection or they may occur in various degrees of severity to the point of being life – threatening.

2.4.2.EPIDEMIOLOGY

Bronchial asthma is the most common chronic respiratory disease with a case burden of approximately 358.2 million in 2015. In 2015, about 0.40 million people died from asthma, a decrease of 26.7% from 1990, and the age- standardized prevalence decreased by 17.7 %.(GBD 2015). It has a higher prevalence in boys than in girls before puberty and a higher prevalence in women than in men in adultwood(Postma DS. 2007). According to the latest WHO estimates, released in December 2016, there were 3,83,000 deaths due to asthma in 2015. World wide about 400 million people will be affected by asthma in 2025.

2.4.3.ETIOLOGY

Etiologicaly asthma is heterogeneous disease. It is useful for epidemiological and clinical purposes to classify asthma by the principle stimuli. There are two types of asthma and Rackemann first introduced the terms “extrinsic” and “intrinsic” asthma in 1947

- Early onset asthma (atopic, allergic, extrinsic)
- Late onset asthma(Non-atopic, Idiosyncratic, Intrinsic)

ATOPIC ASTHMA

Atopic asthma is the most common type of asthma usually begins in childhood. This disease has been thought to be result from sensitization of the bronchial mucosa by tissue specific antibodies .The antibodies produces a specific immunoglobulin IgE (type 1) class and the total Serum IgE levels are usually.Exposure to the environmental antigens, such as dust, pollens, animal’s dander, fungal spores and food result in an antigen antibody reaction. A positive

family history of atopy is common, and asthmatic attacks are often preceded by allergic rhinitis, utricaria or eczema. A skin test with antigen results in an immediate wheal and flare reaction, a classic example of type I – IgE mediated hypersensitivity reaction.

NON – ATOPIC ASTHMA (Idiosyncratic asthma)

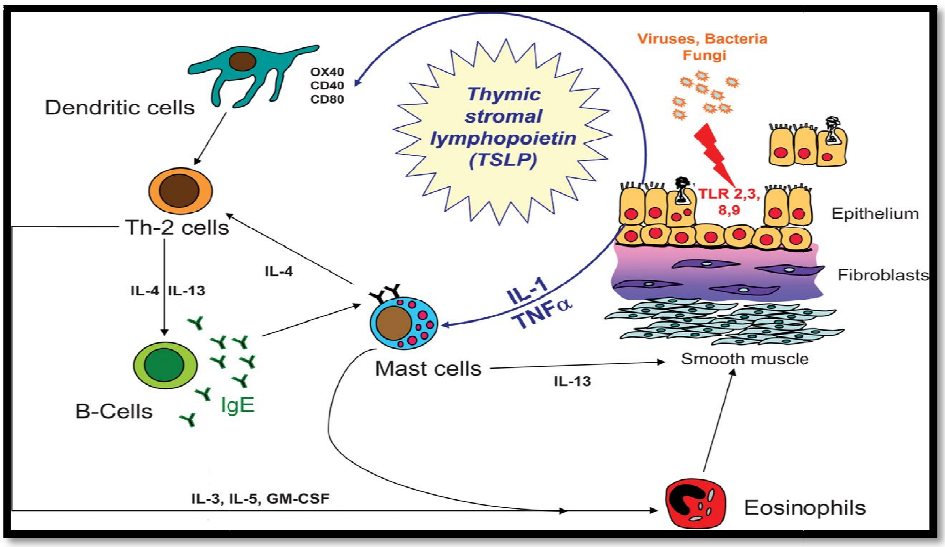
A significant fraction of asthmatic patients present with no personal or family history of allergy, with negative skin tests, and with normal serum levels of IgE, and therefore have disease that cannot be classified on the basis of defined immunologic mechanisms. These patients are said to have idiosyncratic asthma. Many develop a typical symptom complex upon contracting an upper respiratory illness. The initial insult may be little more than a common cold, but after several days the patients begins to develop paroxysms of wheezing and dyspnea that can last for days to months.

2.4.4.PATHOGENESIS

Atopic asthma is caused by aTh2 and IgE response to environmental allergens in genetically predisposed individuals. As the disease becomes more severe there is increased local secretion of growth factors which induce mucous gland hypertrophy, smooth muscle proliferation, angiogenesis, fibrosis and nerve proliferation. The contributions of the immune response genetics, and environment are discussed separately below although they are closely intertwined.

T_H2 Responses, IgE and inflammation :

Figure 2.4.3Pathogenesis of Bronchial Asthma



Courtesy: Clinical science (2009)

A fundamental abnormality in asthma is an exaggerated the Th2 responses to normally harmless environmental antigens.Th2 cells secrete cytokines that promote inflammation and stimulate B cells to produce IgE and other antibodies. These cytokines include IL4 which is stimulates the production of IgE.Interleukin 5 which activates locally recruited eosinophils; and IL13 which stimulates mucous secretion from bronchial sub mucous glands and also promotes Ig E production by B cells. The T cells and epithelial cells secrete chemokines that recruit more T cells and eosinophil that exacerbating the reaction.As in other allergic reaction IgE binds to the FC receptors on sub mucosal mast cells and repeat exposure to the allergen triggers the mast cells to release granule contents and produce cytokines and other mediators which collectively induce the early phase (immediate hypersensitivity)reaction and the late phase reaction.The early reaction is dominated by bronchoconstriction, increased mucous production, variable degrees of vasodilation, and vascular permeability.

Bronchoconstriction is triggered by direct stimulation of sub epithelial vagal (parasympathetic) receptors through both central and local reflexes triggered by mediators produced by mast cells and other cells in the reaction. The late phase reaction is dominated by recruitment of leucocytes, notably eosinophils, neutrophils and more T cells. Although Th2 cells are the dominant T cell type involved in the disease, other T cells that contribute to the inflammation include TH17 (interleukin 17 produce) cells which recruit neutrophils.Many mediators produced by leucocytes and epithelial cells have been implicated in the asthmatic response.Mediators whose role in bronchospasm is clearly supported by efficacy of pharmacologic intervention are:

(1)Leukotriene's C4, D4 and E4 which cause prolong bronchoconstriction, vascular permeability and mucous secretion (2) Acetylcholine - released from intrapulmonary parasympathetic nerves, which can cause airway smooth muscle constriction by directly stimulating muscarinic receptors.A second group includes (1) Histamine, a potent bronchoconstrictor (2) prostaglandin D2, which elicits bronchoconstriction and vasodilation (3) Platelet Activating Factor (PAF), which causes aggregation platelets and release of serotonin from their granules. These mediators might yet prove important in certain types of chronic or non allergic asthma.

Genetic susceptibility:

One susceptibility focus for asthma is located on chromosome 5q,near the gene cluster encoding the cytokines IL-3,IL-4,IL-5,IL-9 and IL -13 and the IL-4 receptor. Among the genes in this cluster,polymorphisms in the interleukin 13 gene have the strongest and most consistent associations with asthma are allergic disease.

Particular class II HLA alleles are linked to production of IgE antibodies against some antigens such as ragweed pollen.Polymorphisms in the gene encoding ADAM33,a metalloproteinase may be linked to increased proliferation of bronchial smooth muscle cells and fibroblasts, thus contributing to bronchial hyper reactivity and sub epithelial fibrosis.Beta 2-adrenergic receptor gene variants are associated with differential in vivo airway hyper-responsiveness and in vitro response to Beta agonists stimulation.IL-4 receptor gene variants are associated with atopy, elevated total serum IgE, and asthma.

Environmental factors:

Over time, repeated bouts of allergen exposure and immune reactions result in structural changes in the bronchial wall, refered towards "airway remodelling" include hypertrophy and hyperplasia of bronchial smooth muscle, epithelial injury, increased airway vascularity, increased sub epithelial mucus gland hypertrophy, and deposition of sub epithelial collagen.

Allergens

Allergies with asthma are a common problem. Eighty percent of people with asthma have allergies to airborne substances such as tree, grass, and weed pollens, mold, animal dander, dust mites, and cockroach particles.Allergic asthma is dependent on IgE response controlled by T and B lymphocytes and activated by the interaction of antigen with mast cells-bound IgE molecule.

Pharmacological stimuli

The drugs most commonly associated with the induction of acute episodes of asthma are aspirin, coloring agents – tartazine, b- adregenic antagonists, sulfating agent.Aspirin – sensitive syndrome affects adults through seen in childhood. The problem usually begins with perennial vasomotor rhinitis that is followed by a hyper plastic rhino sinusitis with nasal polyps, progressing to asthma. Indomethacin, fenoprofen, naprocen, zonepirae sodium, ibuprofen, mefanamic acid and

phenylbutazone are particularly important.B-Adrenergic antagonist regularly obstructs the airway in asthmatics. In fact, the local use of b- blockers in the eye for the treatment of glaucoma has been associated with worsening asthma.

Environment and air pollution

Environmental caused of asthma are usually related to climate conditions that promote the concentration of atmospheric pollutants and antigens. The air pollutants known to have this effect are ozone, nitrogen dioxide & sulphur dioxide.

Occupational factors

Occupation related asthma is significant health problem and acute and chronic airway obstructions have been reported to follow exposure to a large number of compounds used in many types of industrial process.Broncho constriction can result from working with or being exposed to metal salts, wood and vegetable dust, husk of grains, flour, castor bean, gum acacia, karay gum, tragacanth, pharmaceutical agents e.g. antibiotics, piperazine and cimetidine, industrial chemicals and plastics, biological enzymes, laundry detergents and pancreatic enzymes, animal & insect dusts, serum and secretions.

There seems to be three underlying mechanisms

1. In some cases, the offending agent results in formation of significant IgE.
2. Substances cause direct liberations of broncho constrictor substances.
3. Substances cause direct or reflex stimulation of the airway of latent of frank asthmatics.

Infections

Cold, flu, bronchitis, and sinus infections can cause an asthma attack. These respiratory infections that trigger asthma can be viral or bacterial .This airway sensitivity that causes the airways to more easily narrow can last as long as two months after an upper respiratory infection. It's thought that anywhere from 20% to 70% of asthmatic adults have coexisting sinus diseases. Conversely, 15% to 56% of those with allergic rhinitis (hay fever) or sinusitis have evidence of asthma.

Exercise

In people, exercise is the main trigger for their asthma symptoms. In exercise-induced asthma, some patient feels chest tightness, coughing, and difficulty breathing within the first five to eight minutes of an aerobic workout. These symptoms usually subside in the next 20 to 30 minutes of exercise, but up to 50% of those with exercise-induced asthma may have another asthma attack six to 10 hours

later. It is important to warm up slowly and adequately prior to rigorous exercise. This may prevent an attack.

Emotional stress

Psychological factors can interact with the asthmatic diasthesis to worsen or ameliorate disease process. Changes in airways caliber seem to be mediated through modification of nasal efferent activity, but endorphins also may play a role.

Foods and drinks

Food allergies can cause mild to severe life-threatening reactions. Atopic asthmatics may occasionally notice that their symptoms are provoked by certain foods or drinks.The most common foods associated with allergic symptoms are:

- Eggs
- Cow's milk
- Peanuts
- Soya
- Wheat
- Fish
- Shrimp and other shellfish
- Salads & fresh fruits

Food preservatives can also trigger asthma. Sulfite additives, such as sodium bisulfite, potassium bisulfite, sodium metabisulfite, potassium metabisulfite, and sodium sulfite, are commonly used in food processing or preparation and may trigger asthma in those people who are sensitive.

Smoking

Smokers appear to be at greater risk of developing asthma and have a higher prevalence of hyper-reactivity.

Heartburn

Severe heartburn and asthma often go hand-in-hand. Recent studies show that up to 89% of asthma patient also suffer from severe heartburn, known as gastroesophageal reflux disease (GERD). GERD generally occurs at night when the sufferer is lying down. Normally a sphincter between the esophagus and stomach prevents stomach acids from backing up into the esophagus. In GERD, the sphincter does not function properly. The stomach acids reflux, or back up, into the esophagus;

if the acid reaches into the throat or airways the irritation and inflammation can trigger an asthma attack.

Certain clues that suggest reflux as the cause of asthma include the onset of asthma in adulthood, no family history of asthma, no history of allergies or bronchitis, difficult-to-control asthma, or coughing while lying down.

2.4.5.CLINICAL FEATURES

Typical symptoms include recurrent episodes of wheeze,chest tightness,breathlessness cough.Not uncommonly asthma is mistaken for a cold or chest infection that is failing to resolve.

1. Acute Severe Asthma (Status Asthmaticus)

1. It is a medical emergency;
2. Patient is hypoxic and cyanosed due to severe bronchospasm.
3. Severe dysphoea, unproductive cought, patient adopts an upright position fixing the shoulder gridle to assist the accessory muscles of respiration
4. It is characterized by tachycardia (Pulse rate> 120) Tachyphoea (respiratory rate> 30/minute) sweating, pulsus paradoxus, altered level of consciousness and an inspiration, expiration ratio of 1:3 or 1:4.
5. The presence of a silent chest and bradycardia in such patients is an ominous sign.

Acute Severe Asthma-Grade

$Grade_1A$: Able to carry out house work or job with moderate difficulty. Sleep occasionally disturbed.

$Grade_1B$: Only able to carry out house work or job with great difficulty. Sleep frequently disturbed.

$Grade_2A$: Continued to chair (or) bed, but also to get up with moderate difficulty. Sleep disturbed, with little or no relief from inhaler.

$Grade_2B$: 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.

2.4.6.DIAGNOSIS AND INVESTIGATION

An account of episode wheeze, breathlessness interpreted with period of normality is sufficient evidence to suspect asthma and further evidence comes from a history or marked variability, attacks in small hours of the night, provocation by strong exercise and allergens and paroxysmal cough, productive small amount of sticky sputum.

CONFIRMATION OF THE DIAGNOSIS

PULMONARY FUNCTION TESTS

Pulmonary function tests are a broad range of tests that measure how well the lungs take in and exhale air and how efficiently they transfer oxygen into the blood.Pulmonary function tests (PFTs) are non invasive diagnostic tests that provide measurable feedback about the function of the lungs. By assessing lung volumes, capacities, rates of flow, and gas exchange, PFTs provide information that help to evaluated and diagnosis certain lung disorders. They may not be able to detect early stages of the diseases in which function has not been appreciably reduced.

TESTING FOR VENTILATOR CAPACITY:

The simplest test of dynamic ventilatory function is the tests of forced expiration. A spirometer is used for this test, and the procedure is called spirometery. Nowadays, computerized spirometery is available which gives a print out of the data, as well as the predicted value.

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 and as the exchange of gases take place only across the wall of the alveolar ducts and alveolar. The remaining capacity of the respiratory passages is called the anatomical dead space (about 150ml).

TIDAL VOLUME

The volume of air breathed in and out of lungs in a single normal quite respiration.It signifies the normal depth of breathing .Normally it is about 500ml.

INSPIRATORY RESERVE VOLUME

It is an additional amout of air that can be inhaled into the lungs after the end of normal inspiration beyond the tidal volume.Normal value is 3300ml.

EXPIRATORY RESERVE VOLUME

Maximal volume of air which can be expired out forcefully after the expiration of a tidal volume or normal breath. It is about 1000ml .

RESIDUAL VOLUME

The volume of air remaining in the lung seven after forced expiration.Itcannot be measured by spirometry.It is significant because it help to aerate the blood in between breathing and expiration.It is about 1200ml.

LUNG CAPACITIES:

Four lung capacities are recognized and each includes two or more lung volume.

INSPIRATORY CAPACITY (IC):

It is the maximum volume of air that can be inspired by forced inspiration after a normal expiration.

IC = TV+IRV (500+3300=3800ml)

VITAL CAPACITY (VC):

It is the maximum amout of air that can be expelled by a forced expiration after a maximum inspiration.

VC= IRV + TV + ERV (3300+500+1000=4800ml)

FUNCTIONAL RESIDUAL CAPACITY (FRC):

It is the volume of air remaining in lung at the end of a normal expiration. The FRC is physiologically very important. If there is no FRC and the lung is completely emptied during each respiratory cycle, the alveolar PO2& PCO2 will vary widely during breathing and will interfere with diffusion of respiratory gases.

FRC = ERV + RV (1000+1200=2200ml)

TOTAL LUNG CAPACITY (TLC):

The amount of air present in the lungs after a maximal(deep) inspiration.

TLC=IRV+TV+ERV+RV (3300+500+1000+1200 = 6000 ml)

ALVEOLAR VENTILATION

This is the volume of air that moves into and out of the alveoli per minute. It is the tidal volume minus the anatomical dead space, multiplied by the respiratory rate.

Alveolar ventilation = (TV-anatomical dead space) respiratory rate

= (500-150) ml x 15 per minute = 5.25liters / minute.

Lungs function tests are carried out to determine respiratory function and are based on the parameters out lined above.

Spirometry :

There are many types of spirometry available and all record similar information. A spirometry test measures the volume of air that you are able to expel

from the lungs after taking a full breath in.The normal forced vital capacity (FVC) is fully exhaled in less than 3 seconds more than three quarter is exhaled in the first second. In addition to measuring the vital capacity in liters, volume expired in first second of the first second or first expiratory volume at 1 second (FEV_1) can be measured and the ratio of FEV_1 : FVC can be calculated. The results are compared with predicated values based on age height and ethnic group. FEV_1/FVC ratio is normally greater than 70%.

If diffuse airflow obstruction is present, the rate at which the air can be exhaled is diminished throughout expiration. The length of expiration is prolonged and FEV_1 is much reduced. This is an obstruction pattern and is seen in as time, chronic bronchitis and emphysema. In patients with asthma this obstruction may be reversible with bronchodilators or even corticosteroids.In a restrictive pattern, there is a reduced lung volume, perhaps as a result of pulmonary fibrosis or that wall deformity but there is no obstruction to airflow and FEV_1 in normal.

Peak Expiratory Flow Meter

It is a popular instrument for assessing airflow obstruction there is a cheap, simpler version called the mini peak flow meter which is suitable for use at home by individual patients. Those machines measure the maximal rate of flow which is achieved during a forced expiration and most healthy people will achieve values of greater than 400 liters/min.

Patients with lung fibrosis and restriction changes on the spirogram may also have normal expiratory flow rates so the meter is not suitable for assessment of their disability. Patients with airflow obstruction will have reduced flow rates, which values below 200 liters/min being very significant and those below 100 liters/min extremely severe.

Flow Volume Curves :

The plotting of flow versus volume during both maximal expiratory and inspiratory maneuvers is of major help in differentiating central airflow obstruction (leading to stridor) from diffuse airflow obstruction as seen in COPD and Asthma.

Lung Volumes :

Measurement of total lung capacity and residual volume is best performed using a whole body plethysmograph, but can be measured by a helium dilution method. In general, restrictive lead to reduced values, and obstructive defects to increased values.

Measurement Of Diffusing Capacity:

The diffusing capacity (DLCO) is a measure of lung's ability to transfer gas from alveoli to blood. The test utilized of carbon monoxide from a single breath of 0.3 % mixture in air, this gas is chosen because it combines rapidly with hemoglobin and provides a true estimate of diffusion across the alveolar capillary membrane. The diffusing capacity is reduced in patients with disease principally affecting alveoli such as fibrosing alveoli is or emphysema. The Transfer Coefficient (KCO) is a measure of diffusing capacity expressed per volume of ventilated lung during the single breath test and is useful to confirm that low DLCO is due to alveolar disease rather than misdistribution of ventilation. High values of DLCO may be seen in alveolar hemorrhage.

Arterial Blood Gases and Oximetry:

Measurement of hydrogen ion concentration PaO_2 and $PaCO_2$, derived bicarbonate of arterial blood are essential in assessing the degree and type of respiratory failure and for measuring overall acid-base status. Use of a pulse oximeter allows a non-invasive continuous method of assessing oxygen saturation in patients who require continuous method of assessing oxygen saturation in patients who required continuous monitoring in order to assess hypoxemia and its response to therapy, including supplemental oxygen.

Exercise Tests:

Formal exercise testing with measurement of metabolic gas exchange and respiratory and cardiac response using cycle aerometry or treadmill exercise is useful in providing a detailed analysis of both pulmonary and cardiac function in the breathless patients. Exercise challenge with measurement of spirometry before and after can also be helpful in demonstrating exercise – include asthma. Finally, the 6 minute walk test or'shuttle' test can provide a simple but adjective assessment of disability and response to treatment.

Skin Hypersensitivity Test

A prick is made in the skin with a fine needle through a drop of an aqueous extract of the substance to be tested. A positive reaction is indicated by the development of a wheal and flare, which begins to appear within few minutes. Tests are usually performed with a group of common allergens knows to cause bronchial asthma. It is seldom possible with these tests to identify the one particular allergens as

the causes of asthma are an individual patient and their chief value is to distinguish atopic from non-atopic subjects.

Physical signs of the chest :

During an attack of asthma, the following signs are detectable. Respiratory rate is increased with the use of accessory muscles of respiration. Hyper – resonant percussion note over the lungs. Breath sounds are vesicular in character with prolonged respiration. Numerous high pitched polyphonic expiratory and inspiratory rhonchi are audible.During very severe attacks the airflow may be insufficient to produce rhonchi. This results in a 'Silent Chest' which is an ominous sign. In between attacks the chest is clear and no abnormal physical signs may be detectable. Chronic asthmatics usually have some scattered rhonchi persisting always in their chest.

Radiology Examination

In an acute attack of asthma, the lungs appear hyper inflate. Between episodes the chest x-ray is usually normal. In long standing case, the appearance may be indistinguishable from hyper-inflation caused by emphysema and a lateral view may demonstrate a 'pigeon chest' deformity. Occasionally when a large bronchus is obstructed by tenacious mucus, there is opacity caused by lobar of segmental collapse.A chest x-ray should be performed if possible in all patients with severe acute asthma to exclude pneumothorax a rate but potentially fatal complication of the pulmonary hyper – inflation produced by severe airflow obstruction in asthma. The chest x-ray show meditational and subcutaneous emphysema in very severe disease.

Sputum Examination

Sputum eosinophilia is useful indication of an asthmatic type of airway reaction. Stained section of sputum fixed in alcohol or formalin is probably severe indication of asthma than a sputum eosinophil count. This is useful for the demonstration of aspergillums fumigates. Eosinohhils are a prominent feature of the inflammatory exudates within the airway lumen lies a thick tenacious mucus which under the microscope is seen to contain strips of desquamated epithelial cells **(Curschman's spirals)** eosinophils, isolated metaplastic epithelial cels **(Creola bodies)** & crystalline materials consisting largely of major basic protein derived from eosinophilic granules**. (charcot – leydon crystals).**

2.4.7. COMPLICATIONS

Mortality is uncommon in asthma but a severe attack may result in respiratory failure and death.This is more in 'status asthmaticus'. Other complications include frequent respiratory infection, pulmonary collapse due to obstruction by viscid secretions, pneumothorax, and emphysema and cough fracture (fracture of ribs due to violent coughing), children with asthma may show retardation of growth, especially if toiled with corticosteroid on a long term basic. Long standing bronchial asthma, punctured with frequent expiratory infections may lead to emphysema and chronic corpulmonale.

2.4.8.DIFFERENTIAL DIAGNOSIS

1.Vocal Cord Dysfunction :

Vocal cord dysfunction may exist alone or with asthma, it is caused by paradoxical adduction of the vocal cords during inspiration, and may disappear with panting, speech, or laughing. Patients with chronic symptoms suggestive of asthma, normal spirometry, poor response to asthma medications, and frequent evaluations should be evaluated for vocal cord dysfunction. Usually, the diagnosis can be made using direct laryngoscopy, but only during symptomatic periods or after exercise. The presence of flattening of the inspiratory limb of the flow-volume loop may also suggest vocal cord dysfunction, but this is only seen in 28% of patients at baseline.

2.Tracheal and Bronchial Lesions

A variety of airway tumors are reported to manifest with symptoms similar to those of asthma. These tumors include endobronchial carcinoid and mucoepidermoid tumors and other tracheal lesions can include bronchocentric granulomatosis, subglottic stenosis, subglottic web, tracheal hamartoma, bronchogenic cysts, leiomyoma, and tracheobronchopathia osteoplastica. All these types of tracheal lesions have been reported with symptoms similar to asthma.

Persistent wheeze localized to one area on the chest in associated with paroxysms of coughing indicates the bronchial diseases, such as foreign body aspiration

3. Congestive Heart Failure

Congestive heart failure causes engorged pulmonary vessels and interstitial pulmonary edema, which reduce lung compliance and contribute to the sensation of dyspnea and wheezing. Cardiac asthma is characterized by wheezing secondary to

bronchospasm in congestive heart failure, and it is related to paroxysmal nocturnal dyspnea and nocturnal coughing.

4. Pulmonary Migraine

Pulmonary migraine consists of combined recurrent asthma; cough with thick mucoid sputum; lower back pain radiating to the shoulder; subtotal or total atelectasis of a segment or lobe; and, occasionally, nausea with vomitingThe symptoms are often accompanied closely in time by focal headache. Spastic narrowing of the bronchi is postulated—along with retained mucous secretions, smooth muscle hypertrophy, and thickened bronchial walls—to cause expiratory collapse of selected airways. Cerebral and abdominal vascular migraine episodes are believed to accompany pulmonary migraine.

5. Chronic Bronchitis

In chronic bronchitis, there are no true symptom –free periods and one can usually obtain a history of chronic cough and sputum production as a background upon which acute attack wheezing are superimposed. Frequently patients with this condition will present the episode of breathlessness particularly on exertion and they sometimes wheeze.

6. Pulmonary Tuberculosis

Pulmonary tuberculosis affects generally all age group.It may be precipated by infection of Mycobacterium tuberculosis.Symptoms of tuberculosis coughing that lasts three or more weeks, haemoptysis,hard, thick, tenacious sputum, chest pain or pain with breathing, loss of weight, fatigue ,fever(evening rise of temperature),night sweats and chills.On inspection affected side of the chest flattened and displaced, apical impulse deviated in the side of lesion, clubbing of fingers also present. On palpation movement of chest is diminished in affected side, vocal fermitus is diminished but increased in consolidation, lymphadenopathy is also noted. On percussion dull note is noted in the apex, other areas may have impaired note. On auscultation breath sounds are bronchial in nature with early wheezing, late crackling rales, diminished vocal resonance in early stage and it is increased in later conditions.

7. COPD:

Chronic Obstructive Pulmonary Disease affects the most of the older people Patients with known history of smoking, exposure to pollution and no history of allergy and corpulmonale. Symptoms of COPD - Cough can be dry or with phlegm,

shortness of breath or wheezing present.Patients may be fatigue or inability to exercise.

2.4.9.PROGNOSIS

The prognosis of the individual attack is good, except in severe acute asthma, when there is occasionally a fatal outcome, especially if treatment is inadequate of delayed. Spontaneous remission is fairly common in episodic asthma, particularly in children, but rare in chronic asthma, which can lead to irreversible airflow obstruction. Seasonal fluctuation can occur in 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.

2.4.10. PREVENTION

Avoidance of allergens

There are few instances, in which a single agent can be identified as the cause for attacks of asthma. These allergens include grass pollens, mites, animal dander, drugs, industrial chemicals such as isocyanates and certain articles of diet. The majority of patients are hypersensitive to a wide range of allergens and attempts to avoid all of them are impracticable.

CHAPTER-III

MATERIALS AND METHODS

3.1 STUDY AREA AND SETTING

The study period was covered from June 2017 to July 2019 at the Govt. Siddha Medical College and Hospital, Palayamkottai- 627 002, Tirunelveli, Tamil Nadu. All procedures were carried out after getting the permission from Institutional Ethical Committee(**GSMC-IV-IEC/2017/Br.-I/09/29.05.2017**).

3.2 STUDY DESIGN

The study design is a prospective open labelled Phase-II non- randomized clinical trial . The selected subjects were newly diagnosed or already diagnosed as bronchial asthma patients with or without taking treatment. A written informed consent form was recruited in the study. The purpose of the study was explained to the patients before administration of trial drug. The patients information, life style, anthropometric measurements and siddha parameters were recorded before starting the treatment.

The total number 40 patients of either sex and aged between 20 to 60 were taken for this study. The selected patients were treated with the trial drug for the entire study period (30 days).

3.3 SELECTION OF PATIENTS

Patients who reported with symptoms of inclusion criteria in P.G Dept of Pothu Maruthuvam, GSMC, Palayamkottai was subjected to screening test and documented using screening proforma. Details like personal history, family history, occupation, habits, clinical symptoms, medical history, and the duration of illness were recorded in all patients (Proforma annexed).

3.3.1 Inclusion Criteria

1) Age 20 to 60 yrs.
2) Sex: Both male and female .
3) Patient with the symptoms of
    - Difficulty in breathing,
    - Tightness of chest,
    - Wheeze - Added sound (Rhonchi),
    - Cough with or without expectoration.
4) H/o allergy, sneezing.

5) Patients who are willing to take radiological investigation and provide blood for lab investigation.

6) Patients who are willing to estimate volume of air forcibly expired after a deep inspiration by using Mini-Peak flow meter and PEFR below normal range from 250L/min to 150 l/min for men, from 200L/min to 100 L/min for women,for those patients are included.

[Normal range of PEFR:

Male: young adult: 400-650 L/min; Above 40 yr: 300-500L/min

Female: young adult: 250-450L/min; Above 40 yr: 200-400L/min]

7) Patients who are willing to take spirometer study to estimate Lung Function Test (LFT) to confirm the major airway diseases.

3.3.2.Exclusion Criteria

01. Cardiac disease
02. Renal disease
03. Tuberculosis
04. COPD
05. Status asthmaticus
06. Diabetes mellitus
07. Hypertension
08. Pregnancy
09. Lactating Mothers
10. Autoimmunediseases

WITHDRAWAL CRITERIA

- Intolerance to the drug & development of adverse reactions during drug trial
- Poor patient compliance & defaulters
- Patient turned unwilling to continue in thecourse of clinical trial
- Occurrence of any serious illness

3.3.3 DIAGNOSIS

The Siddha diagnostic procedures included in this study were,

- Poriyalarithal
- Pulanalarithal
- Vinathal
- Mukkutra nilaigal

- Envagai thervugal
- Nilam
- Kaalam & Udal kattugal

TESTS AND ASSESSMENT

A. Clinical assessment
B. Routine investigations
C. Specific investigations
D. Siddha investigations

A. CLINICAL ASSESSMENT

- Dry or protective Cough
- Dyspnoea
- Wheezing
- Tightness of chest
- Sneezing ,Rhinorrhoea
- Hoarseness of voice

Evaluation visits made at baseline and 1st, 10th, 15th, 20th and 30thdays. Effect of treatment was evaluated on the basis of changes in the signs and symptoms after the treatment.

3.3.4.INVESTIGATION

Following investigations was carried out before treatment and on 30th day after commencement of treatment.

BLOOD

- Hb (gm/dl)
- Total WBC Count (Cells/cumm)
- DC- Polymorphs(%)
- Lymphocytes(%)
- Eosinophils(%)
- Monocytes(%)
- Basophils (%)
- Total RBC count(Million cells / cumm)
- ESR(mm/hr)
- Blood glucose(mg/dl): (Fasting)&(Post – prandial)
- Blood urea(mg/dl)
- AEC (Absolute Eosinophil Count)

URINE

- Urine sugar (F)&(PP)
- Albumin
- Deposits

MOTION

- Ova
- Cyst
- Occult blood

SPUTUM - AFB

OTHER INVESTIGATION

- X Ray Chest (PA view)
- ECG

SPECIFIC INVESTGATIONS

- PEFR (Peak Expiratory Flow Rate) [L/min]
- Spirometry Study

3.4. Preparation of Trial Medicine (Annexure-I)

All the patients were treated with the following medicine,

- **Jaathipalathi chooranam – 30mg/kg/bw thrice day** with **honey after food (internally)** was given for 30 days till the end of the course.
- Reference book -*Sarabendhra Vaithiya Muraikal- Kasa Swasa Roga Sikicha, Vasudevasasthri, and Venkadarajan,2006.page no:131,132.*
- All the patients were adviced to follow dietary regimen.

3.5. Collection and authentication of TrialMedicine Annexure-VI (A) & VI (B)

The raw drugs for *Jaathipalathi Chooranam* were purchased from Nagercoil based Siddha medical shop and the herbal drugs were authenticated by medicinal botanist & *Gunapadam* experts at Govt. Siddha Medical College, Palayamkottai-627002. Mineral drug was authenticated by head and professor, Dept. of Chemistry, Sadakathullah Appa College, Rahmath nager, Tirunelveli-627011.

3.6. Preclinical Analysis of Trial Medicine

All the preclinical studies of the trial drug including bio-chemical,phytochemical, anti-microbial, pharmacological and toxicological studies were done and results were cross checked before starting the treatment. The biochemical analysis was carried out in Dept. of Biochemistry, GSMCH, Palyamkottai.

Relevant pharmacological activities (anti-histamine, bronchodilator, anti-inflammatory actions) phytochemical and toxicological analysis were studied in this study. Studies were executed in K.M. College of Pharmacy, Madurai -625107.

3.7. Ethical Review

The study was conducted in accordance with the ethical principles that are consistent with Good Clinical Practice guidelines and prior approval was obtained from the Institutional Ethics Committee of GSMCH, Palayamkottai (**GSMC-IV-IEC/2017/Br.-I/09/29.05.2017**) (Annexure- IV) and Institutional animal ethical committee (IEAC) of K.M. College of Pharmacy, Madurai (**TNMGRMU/KMCP/IEAC/28/2018**) (Annexure- V) before starting the trial. The trial was submitted and got enrolled in Clinical Trial Registry of India with the allotment number as **CTRI/2018/03/012772** registered on: 22/03/2018 (Annexure- VII). Trial was registered prospectively as per the norms.

3.8. Study Enrollment

Participants were informed in Tamil language, regarding the trial, the expected benefits and their right to opt-out of trial at any time without prejudice. Informed written consent was obtained from each participant, prior to his/her inclusion into the trial. In this clinical trial, patients who reported at the Pothu Maruthuvam, Govt siddha medical college and Hospital, Palayamkottai with clinical symptoms of rhinitis for short period, difficulty in breathing due to chest tightness, cough, sneezing was examined clinically for enrolling in the study based on the inclusion and exclusion criteria.

The subjects with history of serious adverse effects or hypersensitivity reactions to the medication such as rashes, diarrhoea, vomiting etc., and history of treatment with other anti-hyperglycaemic drugs, active liver disease or hepatic dysfunctions, higher serum creatinine (> 2.5 mg/dl) and serious or unstable medical or psychological condition were excluded from the study.

During the visit body weight, blood pressure, cardiovascular, neurological and respiratory system were clinically recorded. In case of any adverse reaction or side effects of patients, it would be informed to pharmacovigilence committee immediately. At the end of the study period, all the patients were instructed to follow diet control, regular exercise, meditation and to monitor relevant parameters.They were also advised to pursue the further treatment in the PG, Pothu Maruthuvam OP for the follow up study.

3.9. Statistical Analysis

All data were analysed using the SPSS 20.0 (IBM). Data were expressed as means and standard deviation. The significance of the difference between the means of the baseline and the final examinations was tested using the paired “t” test. A probability value of <0.05 was considered to be statistically significant.

CHAPTER - IV

OBSERVATION AND RESULTS

4.1.PRECLINICAL STUDY :

4.1.1.BIO-CHEMICAL ANALYSIS OF "JAATHIPALATHI CHOORANAM"

Preparation of the extract:

5gm of the drug was weighed accurately and placed in a 250ml clean beaker then 50ml of distilled water was added and dissolved well followed by boiling for about 10 minutes. It was cooled and filtered in a 100ml volumetric flask and made into 100ml with distilled water. This fluid was taken for analysis.

Table.4.1.1.BIO-CHEMICAL ANALYSIS OF *"JAATHIPALATHI CHOORANAM"*

S.No	EXPERIMENT	OBSERVATION	INFERENCE
01	**TEST FOR CALCIUM** 2ml of the above prepared extract is taken in a clean test tube. To this add 2ml of 4% Ammonium oxalate solution	A white precipitate was formed	presence of Calcium
02	**TEST FOR SULPHATE** 2ml of the extract is added to 5% Barium chloride solution.	No white precipitate was formed	Absence of Sulphate
03	**TEST FOR CHLORIDE** The extract is treated with silver nitrate solution	No white precipitate was formed	Absence of Chloride
04	**TEST FOR CARBONATE** The substance is treated with concentrated Hcl.	No brisk effervescence was formed	Absence of Carbanate
05	**TEST FOR STARCH** The extract is added with weak iodine solution	Blue colour was formed	presence of Starch
06	**TEST FOR FERRIC IRON** The extract is acidified with Glacial acetic acid and potassium ferro cyanide.	No blue colour was formed	Absence of ferric Iron

07	**TEST FOR FERROUS IRON** The extract is treated with concentrated Nitric acid and Ammonium thiocyanate solution	Blood red colour was formed	presence of ferrous Iron
08	**TEST FOR PHOSPHATE** The extract is treated with Ammonium Molybdate and concentrated nitric acid	No yellow precipitate was formed	Absence of Phosphate
09	**TEST FOR ALBUMIN** The extract is treated with Esbach's reagent	No yellow precipitate was formed	Absence of Albumin
10	**TEST FOR TANNIC ACID** The extract is treated with ferric chloride.	Blue black precipitate was formed	presence of Tannic acid
11	**TEST FOR UNSATURATION** Potassium permanganate solution is added to the extract	It gets decolourised	presence of unsaturated compound
12	**TEST FOR THE REDUCING SUGAR** 5ml of Benedict's qualitative solution is taken in a test tube and allowed to boil for 2 minutes and add 8-10 drops of the extract and again boil it for 2 minutes.	Colour change occurs	presence of Reducing Sugar
13	**TEST FOR AMINO ACID** One or two drops of the extract is placed on a filter paper and dried well. After drying, 1% Ninhydrin is sprayed over the same and dried it well.	Violet colour was formed	presence of Amino acid
14	**TEST FOR ZINC** The extract is treated with Potassium Ferro cyanide.	No white precipitate was formed	Absence of Zinc

Inference:

Biochemical analysis of *Jaathipalathi Chooranam* revealed the presence of Calcium, Starch, Ferrous Iron, Tannic acid, Unsaturated compounds, Reducing sugar and amino acids, No toxic chemicals was found in this analysis.

4.1.2PHYTOCHEMICAL ANALYSIS FOR *JAATHIPALATHI CHOORANAM(Tab.4.1.2)*			
S.No	**PHYTO CHEMICALS**	**TESTS**	**INFERENCE**
I	**ALKALOIDS**		
		1.Mayer's test	Positive
		2.Dragendroff's test	Positive
		3.Hager's test	Positive
II	**CARBOHYDRATES & GLYCOSIDES**		
		1.Molisch test	Positive
		2.Legal's test	Positive
		3.Borntrager's test	Positive
III	**PHYTOSTEROLS**		
		1.Liebermann-Burchard test	Positive
		2.Salkowski test	Positive
IV	**FLAVANOIDS**		
		1.Shinoda test	Positive
		2.Magnesium turnings &HCL	Positive
		3.Fluorescence test	Positive
V	**TANNINS**		
		1.Ferric chloride test	Positive
		2.Potassium dichromate test	Positive
		3.Lead acetate test	Positive
VI	**PROTEINS**		
		1.Millon's test	Positive
		2.Biuret test	Positive
		3.Ninhydrin test	Positive
VII	**FIXED OILS AND FATS**		
		1.Spot test	Positive
		2.Saponification test	Positive
VIII	**LIGNIN**		
		1. Phloroglucinol test	Positive
IX	**SAPONINS**		
		1.Frothing test	Negative

The phytochemical screening of poly herbal formulation JPC showed the presence of *alkaloids, carbohydrates, glycosides, phytosterols, flavonoids ,tannins, protein, fixed oil & fat and lignin,* which has medicinal value and can be used for various diseases.

4.1.3.ANTI –MICROBIAL ANALYSIS OF JAATHIPALATHI CHOORANAM

Table.4.1.3. Anti –Microbial Analysis of Jaathipalathi Chooranam

Sample Code	**Bacteria Strains Name**				
	***Staphylococcus aureus* (G+)**	***Streptococcus mutans* (G+)**	***Bacillus subtilis*(G+)**	***Klebsillae pneumonia***	**E – coli (G-)**
AC	7	11	8	10	10
PC	27	17	14	28	18
NC	-	-	-	-	-

Keys

PC - Positive Control (Streptomycin)

NC - Negative Control

- - No Zone

Mm - Millimetre

G+ - Gram Positive Organism

G- - Gram Negative Organism

Trial drug showed the anti microbial activity against both Gram positive(*Staphylococcus aureus , Streptococcus mutans, Bacillus subtilis)* and Gram negative bacteria *(Klebsiella pneumonia, and E.coli)*

4.1.4. ANTIHISTAMINIC AND ANTIANAPHYLACTIC ACTIVITY:

1.Mast cell stabilizing activity

Inbred Wistar rats (175–200 g) and guinea pigs (400–600g) of either sex housed in standard conditions (temperature22 ± 2° C, relative humidity 60 ± 5% and 12 h light/dark cycle) were used. They were fed with standard pellet diet and water ad libitum. The Institutional Animal Ethics Committee approved the experimental protocol.

FIGURES :4.1.3. ANTI –MICROBIAL ANALYSIS OF

JAATHIPALATHI CHOORANAM

Figure 4.1.3.a.

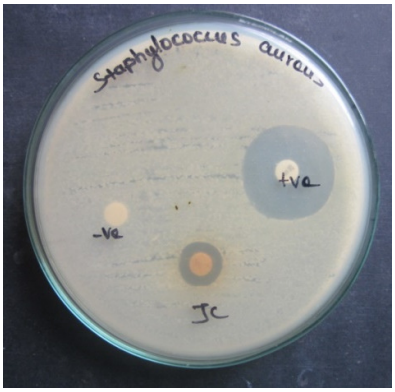


Figure 4.1.3.b

Figure 4.1.3.c

Figure 4.1.3.d

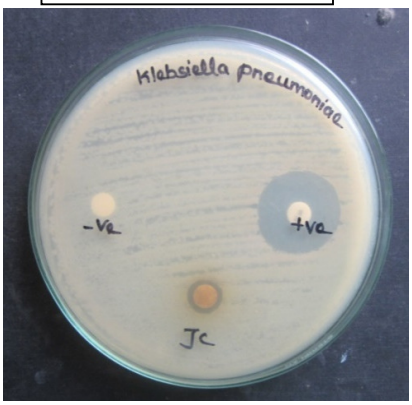


Figure 4.1.3.e

Figure 4.1.3.a. ***Staphylococcus aureus***

Figure 4.1.3.b. ***Streptococcus mutans***

Figure 4.1.3.c. ***Bacillus subtilis***

Figure 4.1.3.d. ***Klebsiella pneumoniae***

Figure 4.1.3.e. ***E.coli***

Treatment protocol

Twenty-four rats were divided into four groups of six animals in each group.

Group I served as **control** and received vehicle (water).

Group II **sensitized control group**

GroupIII served as the **treatment control**, which was treated with Jaathipalathi chooranam at a dose of 100mg/kg body weight, in oral route.

Group IV served as the **treatment control**, which was treated with Jaathipalathi chooranam at a dose of 200 mg/kg body weight, in oral route.

In group II to group 1V were sensitized by injecting 0.5 ml of horse serum subcutaneously along with 0.5 ml of triple antigen containing 20,000 million Bordetella pertussis organisms (Serum Institute of India Ltd.,Pune), Once a day for 14 days.

On day 14, the rats were sacrificed 2 h after the treatment and the intestinal mesentry was taken out for the study on mast cells. Mesentries along with intestinal pieces were excised and kept in Ringer Locke solution (NaCl 154, KCl 5.6, $CaCl_2$ .2, $NaHCO_3$ 6.0, Glucose 5.55 mM/L of distilled water) at 37^0C. The mesenteric pieces were challenged with 5% horse serum for 10 min after which the mast cells were stained with 1.0% toluidine blue and examined microscopically for the number of intact and degranulated mast cells.

TABLE NO:4.1.4.1.EFFECT OF JAATHIPALATHI CHOORANAM ON MAST CELL STABILIZATION IN SENSITIZED RATS

- Values are expressed as Mean±S.E.M

GROUPS	MAST CELLS	
	INTACT	**DISRUPTED**
Normal control	84.65±3.52	14.10±0.85
Sensitized rats	13.10±0.90	86.58±2.66
Jaathipalathi chooranam 100mg/kg	66.15±2.90*a	35.22±1.38*a
Jaathipalathi chooranam 200mg/kg	63.60±2.55*a	35.90±1.45*a

*a significantly different from sensitized control at $p<0.01$

Statistical analysis

The results of various studies were expressed as mean ± SEM and analyzed statistically using one-way ANOVA, followed by Newmann keul's multiple range tests. $P<0.05$ was considered statistically significant.The analysis was performed using Graphpad Prism software package (Version 4.0).

RESULTS

Mast cell stabilizing potential of antigen challenge resulted in significant degranulation of the mesentric mast cells. Pretreatment of sensitized animals with *Jaathipalathi chooranam* at a dose of 100mg/kg and 200mg/kg, p.o., for 2 weeks resulted in a significant reduction in the number of disrupted mast cells ($P <0.001$) when challenged with horse serum.

2.Histamine-induced bronchospasm in guinea pigs

Bronchospasm was induced in guinea pigs by exposing them to 1% histamine aerosol under constant pressure (1 kg/cm2) in an aerosol chamber (24 × 14 × 24 cm) made of perplex Glass,of the three groups of six animals each.

Group I - served as **control.**

GroupII - served as the **treatment control**, which was treated with Jaathipalathi chooranam at a dose of 100 mg/kg body weight, in oral route.

Group III - served as the **treatment control**, which was treated with Jaathipalathi chooranam at a dose of 200 mg/kg body weight, in oral route.

The animals were exposed to 1% histamine aerosol under constant pressure (1 kg/cm2) in an aerosol chamber on day 0 without any treatment. The end point, Pre Convulsive Dyspnea (PCD) was determined from the time of aerosol exposure to the onset of dyspnoea leading to the appearance of convulsions .As soon as PCD commenced, the animals were removed from the chamber and exposed to fresh air. This PCD was taken as day 0 value. On days 1 and 5,2 h after the administration of the drug, the time for the onset of PCD was recorded as on day 0.

Table 4.1.4.2.Effect of Jaathipalathi chooranam on histamine induced bronchospasm in guinea pigs.

GROUPS	PRE-CONVULSION DYSPNEA (PCD)(SEC)		
	DAY 0	DAY 1	DAY 5
GP 1	176.45±7.35	263.20±9.4	220.38±9.4
GP 2 (JPC -100mg/kg)	183.22±6.38	220.35±6.2	415.28±13.2*a
GP3 (JPC- 200mg/kg)	184.15±6.46	223.28±8.0	410.20±12.8*a

Values are expressed as Mean ±S.E.M

*a significantly different from control on day 5 at p<0.001

Effect on histamine-induced bronchospasm

Jaathipalathi chooranam at a dose of 100mg/kg and 200mg/kg p.o., significantly prolonged the latent period of PCD (P <0.001) as compared to control, following exposure to histamine aerosols on day 5 [Table no.4.1.4. 2].

This antianaphylactic and antihistaminic effect may be caused by the stabilization of the mast cell membrane, suppression of IgE, and inhibition of pathological effects induced by the release of inflammatory mediators in Jaathipalathi chooranam treated animals. All the above findings lend credence to the beneficial use of Jaathipalathi chooranam in the treatment of asthma and related conditions.

4.1.5.BRONCHODILATOR ACTIVITY

1.Egg albumin induced anaphylaxis in guinea pigs

Guinea pigs were sensitized by two intraperitoneal injections of 0.5 ml and 10% w/v solution of egg albumin at a 48-h interval. After sensitization, the animals were divided into two groups. Animals of group I received 0.5% CMC and served as control group. Animals of Group II received jathipalathi chooranam (200 mg/kg, p.o, once daily) dissolved in distilled water for 14 days. On day 14, two hours after treatment, the animals were challenged with 0.5 ml of 2% w/v solution of egg albumin into the saphenous vein. Guinea pigs were observed for the onset of symptoms such as dyspnoea and cyanosis, duration of persistence of symptoms (min.) and mortality.

Table No 4.1.5.1 : Effect of *Jathipalathi chooranam* on egg albumin induced anaphylaxis in rats.

GROUPS	PRE CONVULSION TIMEONSET (MIN)	DURATION (MIN)	SEVERITY (SCORE)	PERCENT PROTECTION MORTALITY
GROUP-1 Normal Control	1.212 ± 0.048	9.4 ± 0.306	22.15± 0.322	70%
GROUP-2 Treatment Control JPC -200mg/Kg P.O	2.905±0.090*	7.048±0.118*	2.9 ± 0.608*	0%

Values are expressed as Mean± S.E.M.

Values are significantly different from normal control at P<0.05

2.Bronchodilator effect

Guinea pigs of either sex weighing 350 - 500 g were selected and randomly divided into four groups each containing four animals. The drugs were dissolved in distilled water and administered orally through intubation canula. The single dose treatments were given one and half an hour before the study. Group I was administered 0.5% CMC (control), Group II: Mepyramine melate (10 mg/kg= 0.1% Soln.) (standard),Group III: Jaathipalathi chooranam (100 mg/kg), Group IV: Jaathipalathi chooranam (200 mg/kg).

One and half hour later the animals were exposed to 0.2% histamine aerosol and time for Pre Convulsion Dyspnoea state(PCD) was noted for each animal. The end point for PCD was determined from the time of aerosol exposure to the onset of dyspnea leading to the appearance of convulsions. As soon as PCD commenced, the animals were removed from chamber and placed in fresh air to recover. This time for PCD was taken as day 0 value. After 15 days of wash out period, the animal of group III,& IV, were again given same schedule of drug and exposed to histamine aerosol and the time for PCD was noted. The % increase in time of PCD was calculated using the following formula. Percentage increase in time of PCD = 1 – T1/T2 X 100 Where: T1= time for PCD onset on day 0, T2 = time for PCD onset on day 15.

Table No 4.1.5.2 : Effect of Jaathipalathi chooranam on histamine-aerosol in guinea pigs

TREATMENT	DOSE (mg/kg BW)	ONSET OF CONVULSION IN SEC.	PROTECTION (%)	INCREASE IN PRE CONVULSION TIME (%)
Control	Saline,10 ml/kg	91.52+0.098	**0**	**0**
Mepyramine	10mg/Kg	1030.0 + 4.525	90***	33.90+ 3.15
JPC	100mg/kg	805 + 0.390	80**	27.80+ 3.92***
JPC	100mg/kg	855 +0.670	86***	36.20+ 3.75***

n=6 in each group; $^{**}P < 0.01$, $^{***}P < 0.001$ vs. control

3.Assessment of Anti-histaminic activity of Jaathipalathi chooranam on Isolated Guinea Pig ileum

Overnight fasted guinea pigs of either sex weighing 400 - 600 g were sacrificed using cervical dislocation method. The lower most 10cm of ileum was removed from the abdomen and placed in a shallow dish containing warm Tyrode solution. Ileum lumen was cleaned by passing through warm 0.9% saline and then segments about one inch in length, were made. The mesentric attachment and blood etc. were carefully cleaned and the tissues was mounted in a thermostatically controlled Dale's organ bath (temp. 37+ 0.50 C) containing 20 ml Tyrode's solution under basal tension of 500mg.

The composition of solution in mm was NaCl, 137; $CaCl_2$, 1.8; KCl, 2.7; glucose, 5.55; $NaHCO_3$, 11.9; MgCl2, 1; NaH_2PO4, 0.4. The solution was continuously bubbled with air. The responses to drug were recorded on a Student physiograph (Bio Devices) using isotonic transducer, which exerted a basal tension equivalent to 500 mg load on tissue. The issue was allowed to equilibrate for 30 min, during which, the bathing solution was changed at every 10 min. Increasing concentration of histamine were added to the bath and the control cumulative concentration- response curve was constructed.

Table No 4.1.5.3 :Assessment of Anti-histaminic activity of Jaathipalathi chooranam on Isolated Guinea Pig ileum.

Dose of Histamine (10 µg/ml)	Log molar concentration of Histamine	Control % Max. response	Standard % Max. response	Conc. of JPC (mg/ml) + 1.6ml ofHistamine (10µg/ml)	Inhibition of Max. Histamine concentration %
0.1ml	7.10	32.59 + 1.020	12.60 + 1.562	0.5mg	20.92+ 2.30
0.2ml	6.80	51.90±1.480	24.18 + 2.058	1.0mg	31.40±2.05
0.4ml	6.50	78.30±2.028	36.25 + 1.022	10mg	43.10±1.28
0.8ml	6.20	92.95±2.545	43.64 + 1.650	20mg	65.80±1.22
1.6ml	5.90	99.60±1.048	52.30 + 1.240	50mg	83.80±1.45

Values are expressed as mean±SEM (n=6). *p<0.05 when compared to control group, **p<0.05 when compared to standard group.

Disscussion

Pharmacodynamic Screening of Drug

Screening the activity of drug on antiasthmatic parameters such as anti-histaminic, bronchodilator, effect to assess probable mode of action of drug shows that the drug possess anti-histaminic property. Brochodilation produced against histamine induced bronchoconstriction confirm the anti-histaminic activity of drugs.

Egg induced anaphylactic response was significantly prohibited by the polyherbal drug and there is 0.00% mortality in group treated with siddha formulation Jaathipalathi chooranam drug against 70% mortality in control group (untreated group). The findings reveal protection against egg albumin induced anaphylactic shock characterized by decrease in intensity and delay in the development of symptoms of dyspnoea, asphyxia and collapse. In line with this notion, anti-anaphylactic effect of Jaathipalathi chooranam may be due to inhibition of phenomenon of sensitization or non-availability of antibodies on the mast cell surface.

Conclusion:

It can be concluded that siddha formulation ***Jaathipalathi Chooranam*** has potent antiasthmatic activity. It can be further concluded that these siddha formulation Jaathipalathi chooranam can be used as 'Therapeutic Agent' in the management of acute attack of Asthma as well as chronic persistent Asthma.

4.1.6.Anti-inflammatory activity:

1. Carrageenan induced paw edema assay

Paw swelling or footpad edema, is a convenient method for assessing inflammatory responses to antigenic challenges and irritants.The Albino Wister rats (180 + 5g) were used. The rats were divided into 5 groups of 5 animals each.

- Rats of group I were given normal saline and treated as negative control.
- Rats of group II were treated with carrageenan (1%w/v) in saline in the sub-plantar region of the right hind paw.
- Rats in group III were administered Indomethacin(10 mg/kg, bw) and considered as standard.
- Rats from group IV and V were given two doses siddha formulation (100 and 200 mg/kg bw) respectively.

Method:

Acute paw edema was induced by injecting 0.1 ml of 1% (w/ Carrageenan solution, prepared in normal saline. After 1 h, 0.1 ml, 1 % Carrageenan suspension in 0.9% NaCl solution was injected into the sub-plantar tissue of the right hind paw.The linear paw circumference will be measured at hourly interval for 4h.The perimeter of paw was measured by using vernier callipers.Measurements were taken at 0-4 h after the administration ofcarrageenan.

The anti-inflammatory activity was calculated by using the relation

$$\% \text{ inhibition of edema} = \frac{T\text{-}T_0 \times 100}{T}$$

T= Thickness of paw in control group

T_0= Thickness of paw edema inthe test compound treated group.

Table 4.1.6.1.

Effect of siddha formulation Jaathipalathi chooranamon Carrageenan Induced Rat Paw Edema.

Treatment	Dose (mg/kg, p.o.)	Mean increase in paw volume (ml)	% Decrease in Paw volume
Normal control	10ml/kg saline	1.18 ± 0.14	
Toxic control	0.1 ml, 1% Carrageenan	3.62 ± 0.34*a	
Standard control	10mg/kg Indomethacin	1.24 ± 0.16*b	65.74%
Treatment control	100mg/kg Jaathipalathi chooranam	1.38 ± 0.20*b	61.87%
Treatment control	200mg/kg Jaathipalathi chooranam	1.29 ± 0.18*b	64.36%

- Values are expressed as mean **±** SEM.
- Values were compared by using analysis of variance (ANOVA) followed by Newman-Keul's multiple range tests.
- * (a) Values are significantly different from normal control G1 at P<0.01.
  * (b) Values are significantly different from Toxic control G2 at P<0.01.

Results

The results obtained indicate that the Jaathipalathi chooranam had significant anti-inflammatory activity in rats. The chooranam reduced carrageenan induced edema by 61.87% and 64.36% on oral administration of 100 and 200 mg/kg, as compared to the untreated control group.Indomethacin at 10 mg/kg inhibited the edema volume by 65.74%.

2. Carrageenan Induced Pleurisy In Rats

The animals were divided into five groups of five rats each as described in the carrageenan induced paw edema model and each were pretreated with siddha formulation (100 and 200 mg/kg. p.o.), Indomethacin (10 mg/kg, p.o.) or normal saline (0.1 ml).One hour laterall the animals were received 0.25 ml of an intra-pleural injection of carrageenan on the right side of the thorax.

The animals were sacrificed 3 h after carrageenan injection by ether inhalation. One ml of heparinized Hank's solution was injected into the pleural cavity and gently massaged to mix its contents. The fluid was aspirated out of the cavity and the exudates were collected. The number of migrating leukocytes in the exudates was

determined with Neubauer chamber . The values of each experimental group were expressed as mean SEM and compared with the control group.

Table 4.1.6.2. Effect of siddha formulation Jaathipalathi chooranam on Carrageenan Induced Pleurisy in Rats.

Treatment	**Dose (mg/kg, p.o.)**	**Pleural Exudates (ml)**	**Leukocytes ($\times 10^3$ cells/ml)**
Normal control	10ml/kg saline	0.11±0.06	0.42±0.07
Toxic control	0.1 ml, 1% carrageenan	0.50±0.21*a	4.26±0.40*a
Standard control	10mg/kg Indomethacin	0.17±0.11*b	0.46±0.09*b
Treatment control	100mg/kg Jaathipalathi chooranam	0.23±0.14*b	0.57±0.12*b
Treatment control	200mg/kg Jaathipalathi chooranam	0.19±0.12*b	0.51±0.10*b

- Values are expressed as mean **±** SEM.
- Values were compared by using analysis of variance (ANOVA) followed by Newman-Keul's multiple range tests.
- * (a) Values are significantly different from normal control G1 at P<0.01.

  * (b) Values are significantly different from Toxic control G2 at P<0.01.

Results

The volume of pleural exudates in the toxic control group was 0.50+0.21 ml. Animals treated with the Jaathipalathi chooranam (100 and 200 mg/kg, p.o.) decreased the pleural exudates to 0.23 ±0.10 ml and 0.19 ±0.12ml.Treatment with Indomethacin(10 mg/kg,p.o.) produced the exudates of 0.17+0.11 ml. The leukocyte count for the control group was found to be $4.26+0.40x10^3$ cells/ml. Animals treated with the Jaathipalathi chooranam and standard produced a leukocyte migration of $0.57+0.12x10^3$,$0.51+0.10X10^3$and $0.46+0.09X10^3$cells/ml, respectively.

4.1.7.TOXICITY STUDY OF JAATHIPALATHI CHOORANAM

Acute toxicity

Female Wister albino rats weighing 180 ± 20 g were used in acute toxicity study. The total no of 18 animals were divided into three groups of six animals in this study.

- The Group I animals were administered with a single daily dose of 0.5 ml of Tween 80 orally for 15 days.
- In Group II are administered with (300 mg.kg-1b.w. JPC) a day for 15 days.
- The Group III are fed 2000 mg.kg-1b.w. once daily for 15 days for acute toxicity studies.

HPE revealed no acute toxic symptoms were observed after 15 th day All test animals were subjected to gross necropsy.

Table.4.1.7.1. Acute toxicity study of Jaathipalathi chooranam:

Treatment	Dose (mg.kg-1)	Sign of Toxicity (ST.NB-1)	Mortality (D.S-1)
Group I	0	0/3	0/3
Group II	300	0/3	0/3
Group III	2000	0/3	0/3

From the above table of Jaathipalathi chooranam on experimental rats were tested using OECD -423 guidelines, where ST-sign of toxicity ,NB- normal behaviour, D-died, S-survive. Values are expressed as number of animals (n=3).

RESULTS

- The acute toxicity of Jaathipalathi Chooranam has showed no mortality and morbidity in animals through the 15-days period following single oral administration at all selected dose levels of the JPC (Table- 1).
- The morphological characteristics and physical appearance of all animals seems to normal. The physical appearance and motor nervous system was normal.
- On comparison, Group I ,II and III showed no toxic effects for the doses upto 2000/kg/bw.

Sub-acute toxicity

The sub acute toxicity were performed in Male and female Wistar rats weighing 180 ± 10 g. The animals were divided into five groups of six animals each. The administration of dose is calculated based on the body weight of the animal.

- The animals in Group I were administered with a single daily dose of 0.5 ml of Tween 80 orally for 20 days.
- The animals in Group II were administered with 50 mg.kg-1 b.w. of the JPC once in daily for 20 days.
- The animals in Group III were administered with 100 mg.kg-1 b.w. of the JPC orally once daily for 20 days.
- The animals in Group IV and V were administered 200 and 400 mg.kg-1 b.w. once in daily for 20 days.

The animals were weighed during every five days starting from commencement of the study to record the weight variations. At the end of the treatment, blood samples were taken for biochemical analysis. The serum plasma was analyzed for

- Total cholesterol
- Total triglyceride
- HDL-cholesterol levels
- LDL-cholesterol
- Plasma glucose
- Alanine aminotransferase (ALT)
- Aspartate aminotransferase (AST)
- Creatinine and urea level.

Effect of Jaathipalathi chooranam (JPC) on internal organs

According table no 4.1.7.2.no toxic effects found in kidney, heart, liver and brain of the rats were observed. From the study it was clear that, significant ($p<0.01$) changes in the weights of various organs of the animals with higher doses of JPC (400 mg.kg-1 bwt). The group I was compared with other group II, III, IV, and V.

Table: 4.1.7.2. The effects of JPC on kidney, heart, liver and brain of the rats

Treatment	Heart (gms)	Kidney (gms)	Liver (gms)	Brain (gms)
Control	0.340± 0.05	0.60± 0.03	3.32± 0.05	0.67± 0.05
JPC 50 mg.kg^{-1}	0.31± 0.02	0.74± 0.03	3.44± 0.03	0.70± 0.3
JPC 100 mg.kg^{-1}	0.32± 0.06	0.82± 0.04	3.36±0.02	0.68± 0.2
JPC 200 mg.kg^{-1}	0.31± 0.04	0.77± 0.02	3.34± 0.02	0.75± 0.05
JPC 400 mg.kg^{-1}	0.30± 0.03	0.78± 0.03	3.37± 0.03	0.77± 0.05

The values are expressed as mean ± S.E.M. n=6. The results of group I were compared with other groups such as II, III, IV, and V. The statistical analysis was carried out using one way ANOVA method, where **P<0.01.

Effect of biochemical profiles of rats

Table no 4.1.7.3.. Shows that Jaathipalathi chooranam has significantly decreased (p<0.05) the plasma glucose level in treated rats especially at higher dose (400 mg.kg-1) compared with control groups. **P<0.01 *P<0.05. Significant decrease (p<0.05) in the plasma total cholesterol (TC), triglyceride (TG) and LDL-cholesterol levels were also noted. There was no evidence of severe toxicity associated with the administration of higher concentration of JPC .

Table no 4.1.7.3.The effect of Jaathipalathi chooranam (JPC) on biochemical parameters

Treatment	Glucose ($mg.dl^{-1}$)	Cholesterol ($mg.dl^{-1}$)	Triglyceride ($mg.dl^{-1}$)	HDL ($mg.dl^{-1}$)	LDL ($mg.dl^{-1}$)
Control	94.65± 0.62	40.62± 0.56	25.25± 0.45	135.25± 0.55	84.15±1.72
JPC 50 $mg.kg^{-1}$	92.50± 0.56	26.85± 0.25*	10.22± 0.23*	175.28± 0.65*	71.59±1.28
JPC 100 $mg.kg^{-1}$	89.45± 0.47	27.74± 0.26*	12.42± 0.28*	165.18±0.78*	69.84±1.10
JPC 200 $mg.kg^{-1}$	90.25± 0.55**	34.18± 0.30	14.84± 0.38*	184.30± 0.84*	48.60±1.30
JPC 400 $mg.kg^{-1}$	86.25± 0.45**	33.78± 0.28	16.28± 0.34*	182.2± 0.85*	46.50±0.84

Change noted in the hepatic enzymes.

In table.4.comparison of AST, ALT, ALP, TP and Albuminvalues between Group I and groups II, III, IV, and V were demonstrated.

Table.4.1.7.4.The effect of Jaathipalathi chooranam on hepatic enzymes in rats.

Treatment	AST ($IU.l^{-1}$)	ALT ($IU.l^{-1}$)	ALP ($IU.l^{-1}$)	TP ($g.l^{-1}$)	ALBUMIN ($g.l^{-1}$)
Control	331.5±12.40	67.5± 3.18	246.58± 8.80	69.85± 3.32	39.15±2.35
JPC 50 $mg.kg^{-1}$	320.0±9.50**	65.5± 2.20**	259.10± 2.75**	70.30± 2.32	36.30±2.65
JPC 100 $mg.kg^{-1}$	321.3±7.20**	63.1± 3.15**	253.18± 6.70**	80.15± 2.82	38.30±3.05
JPC 200 $mg.kg^{-1}$	316.4±7.95	58.4± 2.90	258.00± 5.20	69.25± 3.32	40.20±2.75
JPC 400 $mg.kg^{-1}$	326.2± 8.20	60.3± 3.52	262.40± 4.40	74.05± 2.58	39.48±2.70

Effect of Jaathipalathi chooranam on haematological parameters in rats

From the study it was evident that, a significant increase ($p<0.01$) were observed in the hemoglobin contents and RBC count in the group treated with 200 mg.kg-1 / body weight. There was no significant change in the calcium level in all the treated animals compared to the control.

Table.4.1.7.5.The effect of Jaathipalathi chooranam on haematological parameters&Calcium in rats

Treatment	Hb($mg.dl^{-1}$)	RBC(10^6 /mm^3)	WBC(10^6 /mm^3)	Calcium($mg.dl^{-1}$)
Control	11.3± 0.25	9.15± 0.02	11.45± 0.05	9.45 ±0.02
JPC 50 $mg.kg^{-1}$	12.5± 0.26*	9.45± 0.04*	10.01± 0.01*	9.16 ±0.02
JPC 100 $mg.kg^{-1}$	12.3± 0.15*	9.55± 0.02*	8.35± 0.32*	9.27 ±0.20
JPC 200 $mg.kg^{-1}$	10.7± 0.20*	8.33± 0.12*	11.45± 0.03*	9.61 ±0.13
JPC 400 $mg.kg^{-1}$	11.5± 0.35*	8.51± 0.45*	10.55±0.13	9.75±0.02

Effect of Jaathipalathi chooranam on body weight in rats

The effect of JPC was observed for their effect on the body weight changes was observed ,significant increased ($p<0.05$) in body weight. The results are described in **Table.6.** The values are expressed as Mean ± S.E.M. n=6. The results of group I were compared with other group II, III, IV, and V (**P<0.01 *P<0.05).

Table.4.1.7.6.The effects of Jaathipalathi chooranam on body weight changes in rats

Treatment	Day 1	Day 5	Day 10	Day 20
Control	184.15±6.8	184.45 ±6.20	196.15 ±6.35	197.7±6.58
JPC 50 mg.kg^{-1}	191.30 ±6.4	190.30 ±6.30	198.25 ±6.70	199.30±6.72*
JPC 100 mg.kg^{-1}	183.35 ±5.7	186.30 ±6.40	196.55 ±7.10	198.36±6.30*
JPC 200 mg.kg^{-1}	192.30 ±7.2	195.15±6.50	198.90 ±7.20**	207.45±7.26**
JPC 400 mg.kg^{-1}	184.65 ±6.05	189.15 ±5.60	195.60 ±6.35**	208.66±7.38**

DISCUSSION :

In **acute toxicity**, the limit dose of 2000 mg/ kg (JPC) did not result in mortality or any clinical sign of acute toxicity in animals in the short-term (48 hours) and long term (14 days) observatory periods, suggesting that no toxic effects upto 2000 mg/kg in rats.

Sub acute toxicity study showed that the extract did not affect the normal growth of the animals as evidenced by comparing the body weight gain in both control and treated animals over the 28-day treatment periods. There were no significant changes in liver enzymes (ALT,AST,ALP and TP) .The significantly increased in the level of RBC,WBC and hemoglobin was found in treatment with Jaathipalathi chooranam (400 mg.kg-1).. The extract caused no undesirable effect on the all organ of the animals making it safe for consumption by human health and it was non hemotoxic.

4.2.CLINICAL STUDY :

For the clinical study 20 In patients and 20 Out patients were selected, treated in PG-I Department of PothuMaruthuvam G.S.M.C Palayamkottai. Results were observed with respect to following criteria.

01. Age Distribution
02. Sex Distribution
03. Religion
04. Educational status
05. Occupational Status
06. Socio- Economical Status
07. Diet
08. Personal habit
09. Type of the Patient
10. Triggering factors
11. Distribution of family history
12. Clinical Manifestation
13. Kaalam
14. Thegi
15. Gunam
16. Thinai
17. Paruva kaalam
18. Gnanendrium
19. Kanmendrium
20. Conditions of Mukkutram (Vatham,Piththam,Kabham)
21. Udal Kattukal
22. Envagai Thervugal
23. Neikuri
24. Case summary Out Patients
25. PFT report
26. Laboratory investigation in OP patients
27. Respiratory rate – OP patient
28. PEFR in OP patients
29. Case summary IP

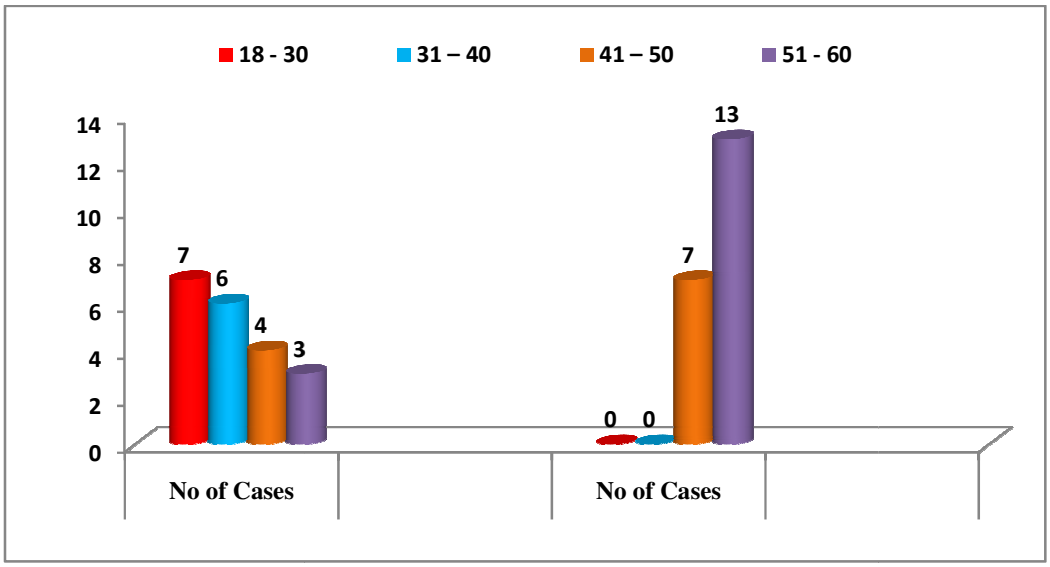
30. Laboratory investigation IP patients
31. Respiratory rate – IP patients
32. PEFR in IP patients
33. Clinical manifestation after treatment
34. Grading of Asthma
35. Assessment of Outcome

4.2.1. AGE DISTRIBUTION

TABLE – 4.2.1 - Illustrates the age distributions and its relative Percentage.

S.No	Age Group in Year	Out Patients		In Patients	
		No of Cases	Percentage %	No of Cases	Percentage %
01	18 – 30	07	35	0	0
02	31 – 40	06	30	0	0
03	41 – 50	04	20	07	35
04	51 – 60	03	15	13	65

Figure 4.2.1. Age Distribution



Among the 20 Outpatients:

35% were in the age group between 18 - 30 yrs. 30% were in the age group between 31 - 40yrs, 20% were in the age group between 41- 50yrs, 15% were in the age group between 51-60 yrs.

Among the 20 Inpatients:

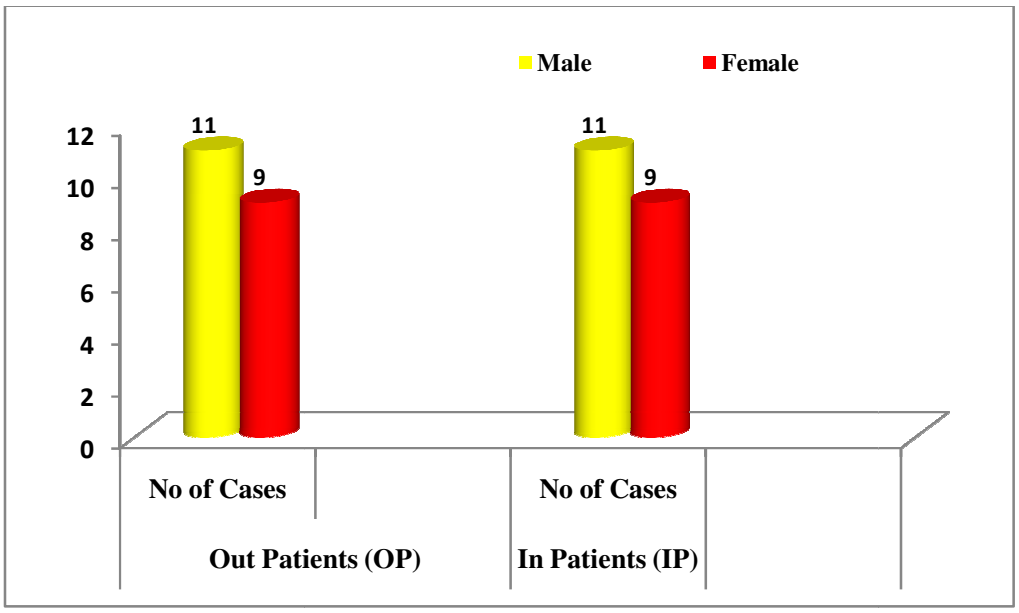
35% were in the age group between 41- 50yrs, 65% were in the age group between 51-60 yrs.

4.2.2. SEX DISTRIBUTION

TABLE -4.2.2. SEX DISTRIBUTION

S.No	Sex	Out Patients		In Patients	
		No of Cases	Percentage %	No of Cases	Percentage %
01	Male	11	55	11	55
02	Female	09	45	09	45

Figure –4.2.2. Sex Distribution



Among 20 Outpatients

11 Patients were males – 55% and 09 Patients were females -45%.

Among 20 Inpatients

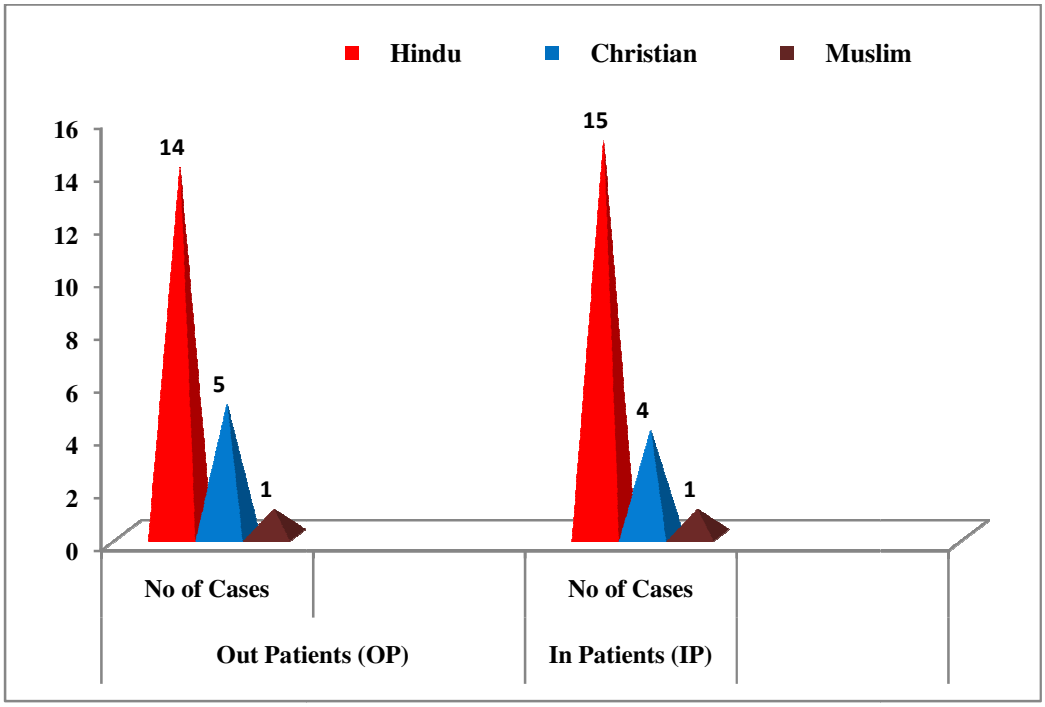
11 Patients were males – 55% and 09 Patients were females -45%.

4.2.3. RELIGION DISTRIBUTION

TABLE 4.2.3. Religion Distribution

S.No	Religion	Out Patients		In Patients	
		No of Cases	%	No of Cases	%
01	Hindu	14	70	15	75
02	Christian	05	25	04	20
03	Muslim	01	05	01	05

Figure -4.2.3. Religion Distribution



Among 20 Outpatients:

70% of cases were Hindus, 25% are Christians,5% were Muslims.

Among 20 Inpatients:

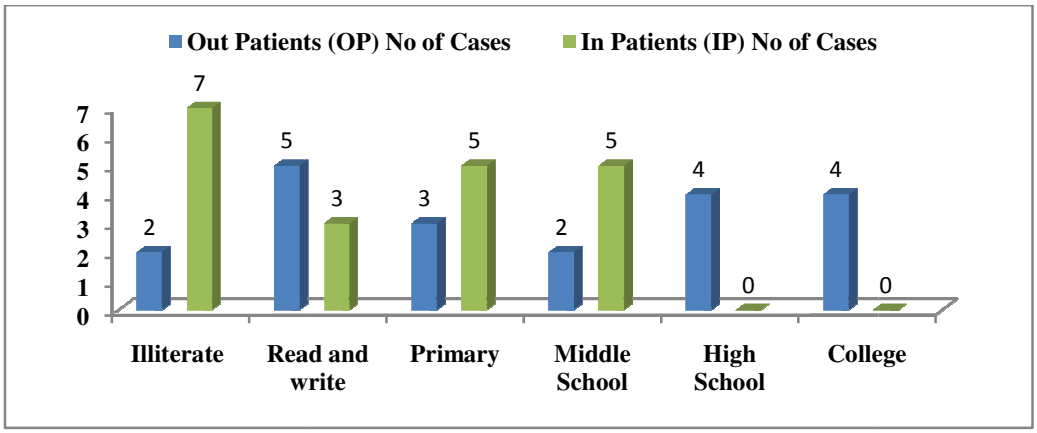
75% of cases were Hindus, 20% are Christians, 5% were Muslims.

4.2.4.DISTRIBUTION OFEDUCATIONAL STATUS

TABLE – 4.2.4. Distribution of Educational Status

S.No	Educational status	Out Patients		In Patients	
		No of Cases	%	No of Cases	%
01	Illiterate	02	10	07	35
02	Read and write	05	25	03	15
03	Primary	03	15	05	25
04	Middle School	02	10	05	25
05	High School	04	20	0	0
06	College	04	20	0	0

Figure - 4.2.4.Distribution of Educational Status



Among 20 Outpatients:

10% Illiterate, Read and write 25%, Primary school 15%, Middle School 10% High School 20%, 20% College cases were observed.

Among 20 In patients:

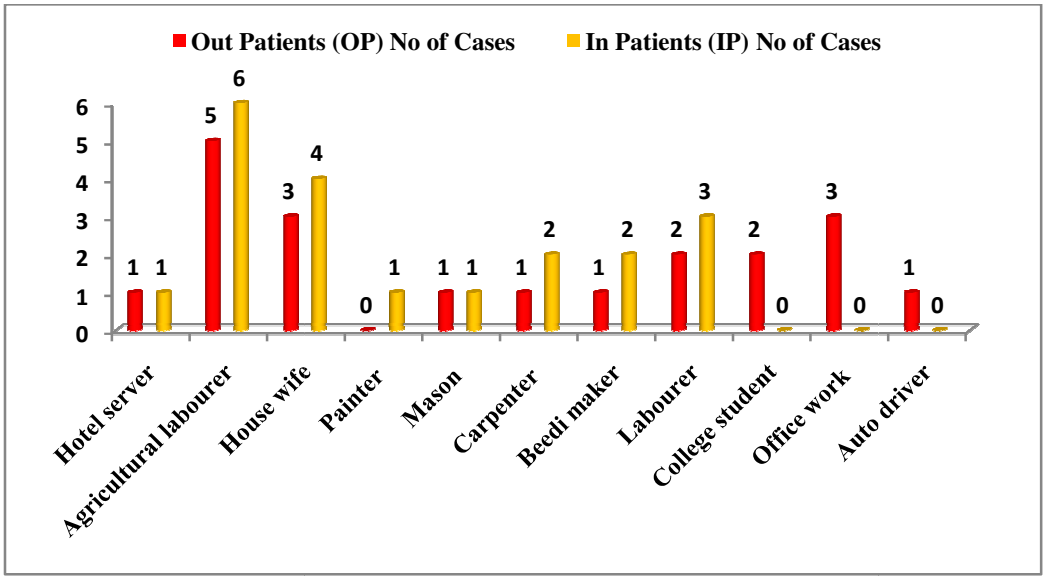
35% Illiterate, Read and write 15%, Primary school 25%, Middle School 25% cases were observed..

4.2.5. OCCUPATION

TABLE - 4.2.5. Occupation

S.No	Occupation	Out Patients		In Patients	
		No of Cases	%	No of Cases	%
01	Hotel server	1	5	1	5
02	Agricultural labourer	5	25	6	30
03	House wife	3	15	4	20
04	Painter	0	0	1	5
05	Mason	1	5	1	5
06	Carpenter	1	5	2	10
07	Beedi maker	1	5	2	10
08	Labourer	2	10	3	15
09	College student	2	10	0	0
10	Office work	3	15	0	0
11	Auto driver	1	5	0	0

Figure –4.2.5. Occupation



Among 20 Outpatients:

Among 20 patients, 1 case was hotel server, (5%). 5 cases were agricultural labourer (25%), 3 cases were housewife (15%), 1 case was mason (5%), 1 cases was carpenter (5%), 1 case was beedi maker (5%), 2 cases were labourer (10%), 2 cases were college student (10%), 3 cases were office work (15%), 1 case was auto driver (5%).

Among 20 In patients:

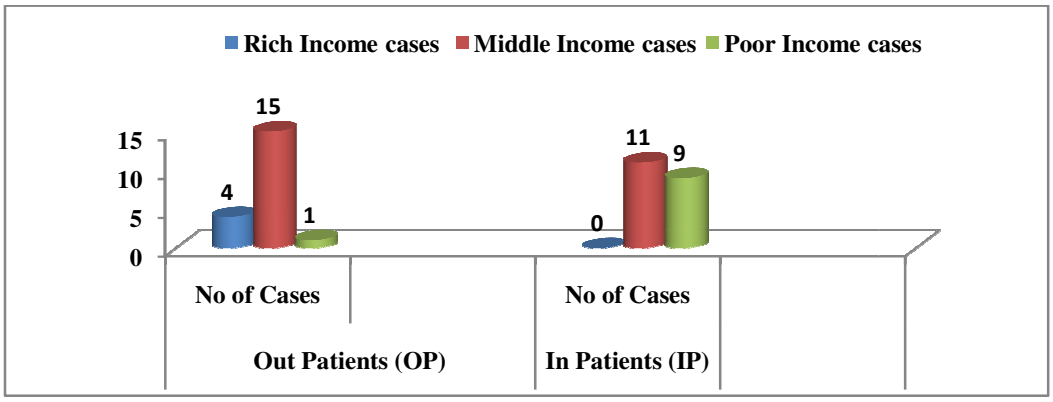
Among 20 patients, 1 case was hotel server, (5%). 6 cases were agricultural labourer (30%), 4 cases were housewife (20%), 1 case was painter (5%), 1 case was mason(5%), 2 cases were carpenter (10%), 2 cases were beedi maker (10%), 3 cases were labourer (15%).

4.2.6. DISTRIBUTION OF SOCIO-ECONOMIC STATUS:

TABLE – 4.2.6 .Distribution of socio-economic status

S.No	Socio Economic Status	Out Patients		In Patients	
		No of Cases	%	No of Cases	%
01	Rich Income cases	04	20	0	0
02	Middle Income cases	15	75	11	55
03	Poor Income cases	01	5	09	45

Figure –4.2.6 .Distribution of socio-economic status



Among 20 Outpatients:

20% Rich Income cases, 75% Middle Income cases, 5% Poor Income cases were observed.

Among 20 In patients:

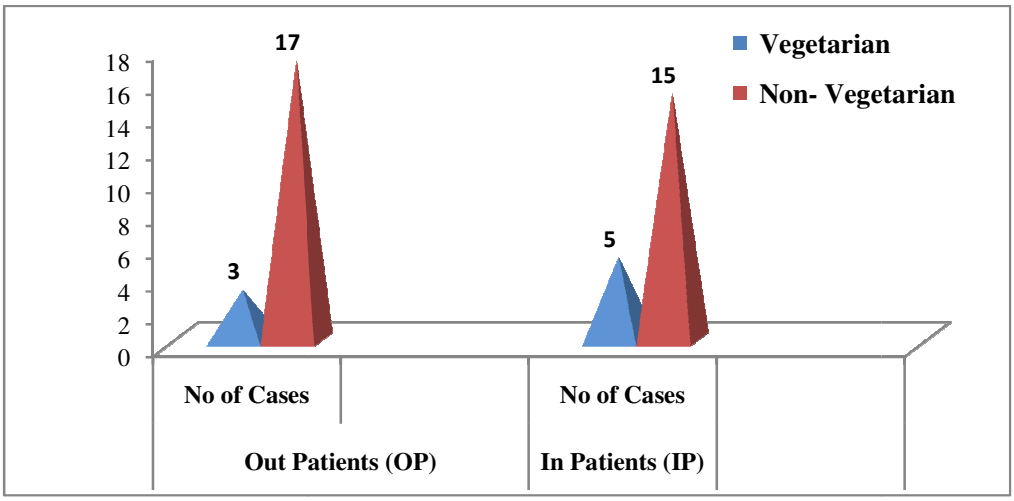
55% Middle Income cases, 45% Poor Income cases were observed.

4.2.7. DIET

TABLE -4.2.7 - Illustrates the Diet and relative percentage.

S.No	Diet	Out Patients		In Patients	
		No of Cases	%	No of Cases	%
01	Vegetarian	03	15	05	25
02	Non- Vegetarian	17	85	15	75

Figure –4.2.7 - Illustrates the Diet of patients



Among 20 Outpatients:

15% vegetarian and 85% Non-vegetarian were observed.

Among 20 In patients:

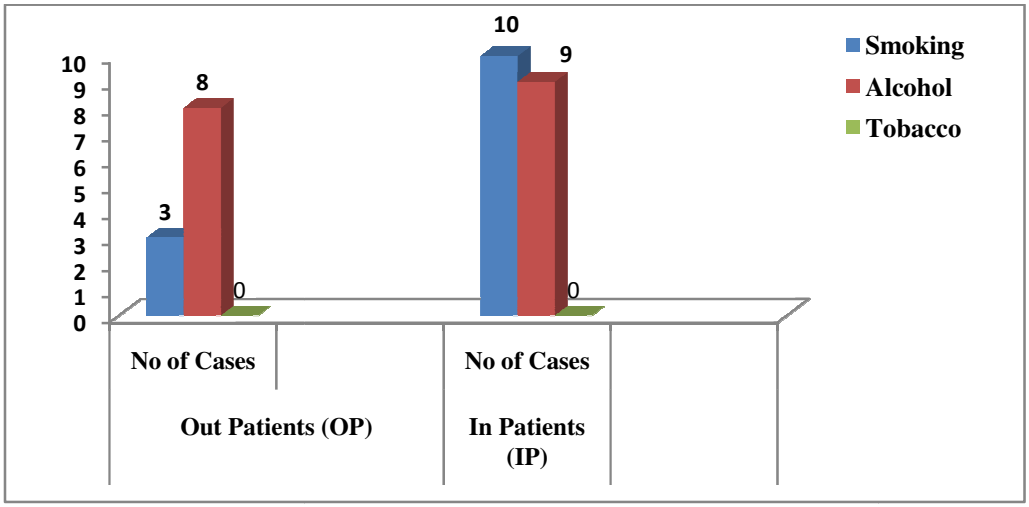
25% vegetarian and 75% Non-Vegetarian were observed

4.2.8. PERSONAL HABIT

TABLE – 4.2.8– Illustrates the Personal habits of patients and relative percentage.

S.No	Habit	Out Patients		In Patients	
		No of Cases	%	No of Cases	%
01	Smoking	03	15	10	50
02	Alcohol	08	40	09	45
03	Tobacco	0	0	0	0

Figure –4.2.8.Illustrates the Personal habit of patients



Among 20 Outpatients:

15% of cases were Smokers, 40% of cases were Alcoholics.

Among 20 In patients:

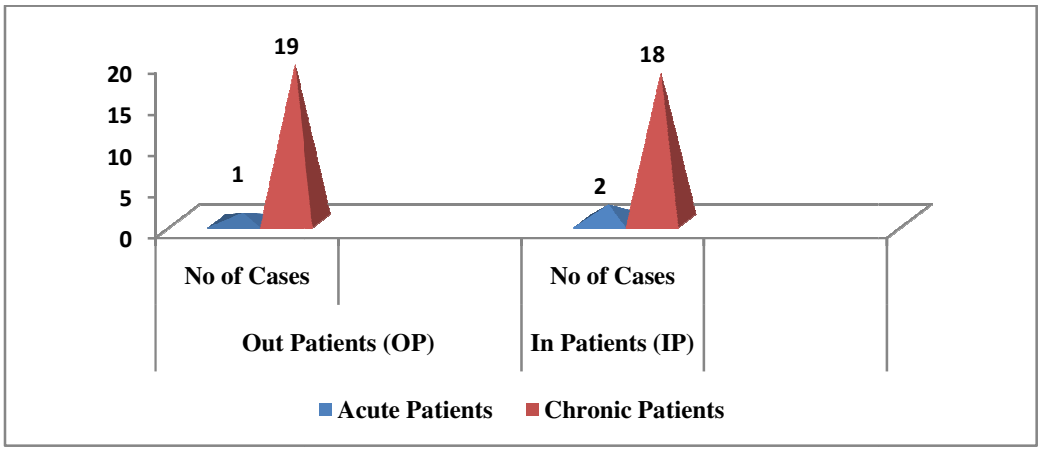
50% of cases were Smokers, 45% of cases were Alcoholics.

4.2.9. TYPE OF THE PATIENT

TABLE – 4.2.9 - Illustrates the type of the patients and relative percentage.

S.No	Occupation	Out Patients		In Patients	
		No of Cases	%	No of Cases	%
01	Acute Patients	01	05	02	10
02	Chronic Patients	19	95	18	90

Figure –4.2.9 - Illustrates the type of the patients.



Among 20 Outpatients:

05% Acute and 95% Chronic cases were observed.

Among 20 In patients:

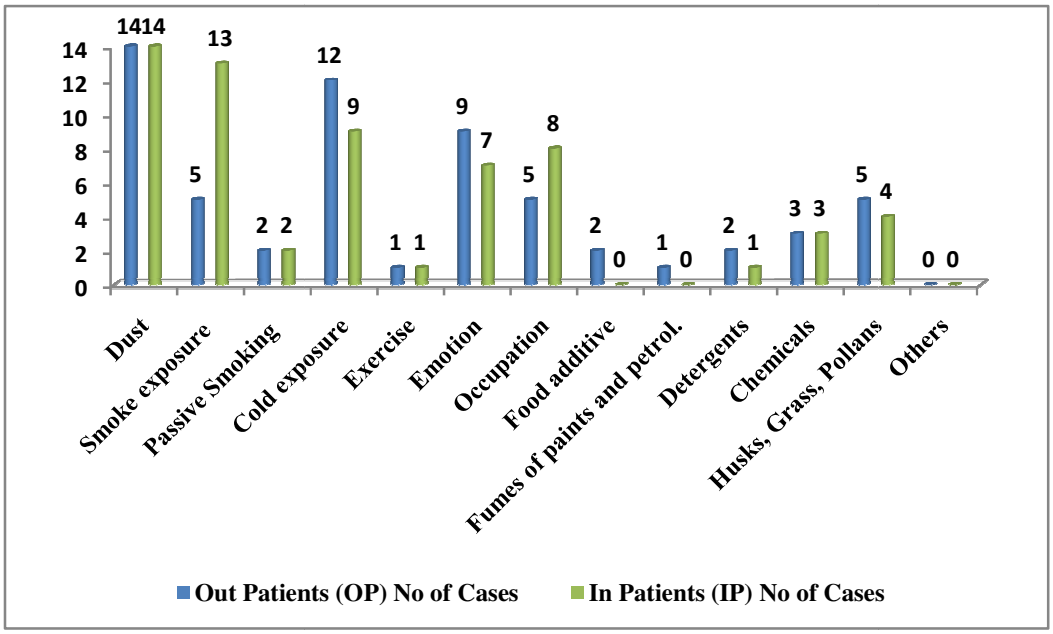
10% Acute and 90% Chronic cases were observed.

4.2.10. TRIGGERING FACTORS

TABLE – 4.2.10. Illustrates the triggering factors and relative percentage.

S.No	Clinical manifestation	Out Patients		In Patients	
		No of Cases	%	No of Cases	%
01	Dust	14	70	14	70
02	Smoke exposure	05	25	13	65
03	Passive Smoking	02	10	02	10
04	Cold exposure	12	60	09	45
05	Exercise	01	05	01	05
06	Emotion	09	45	07	35
07	Occupation	05	25	08	40
08	Food additive	02	10	0	0
09	Fumes of paints and petrol.	01	05	0	0
10	Detergents	02	10	01	05
11	Chemicals	03	15	03	15
12	Husks, Grass, Pollans	05	25	04	20
13	Others	0	0	0	0

Figure –4.2.10.Illustrates the triggering factorsof patients.



Among 20 Out cpatients:

70% of cases Dust, 25% of cases Smoke exposure, 10% of cases Passive Smoking,60% of cases Cold exposure, 05% of Exercise, 45% of cases Emotion, 25% of casesOccupation, 10% of cases Food additive, 05% of cases Fumes of paints and petrol, 10% of cases Detergents, 15% of cases Chemicals, 25% of cases Husks, Grass, Pollans.

Among 20 Inpatients:

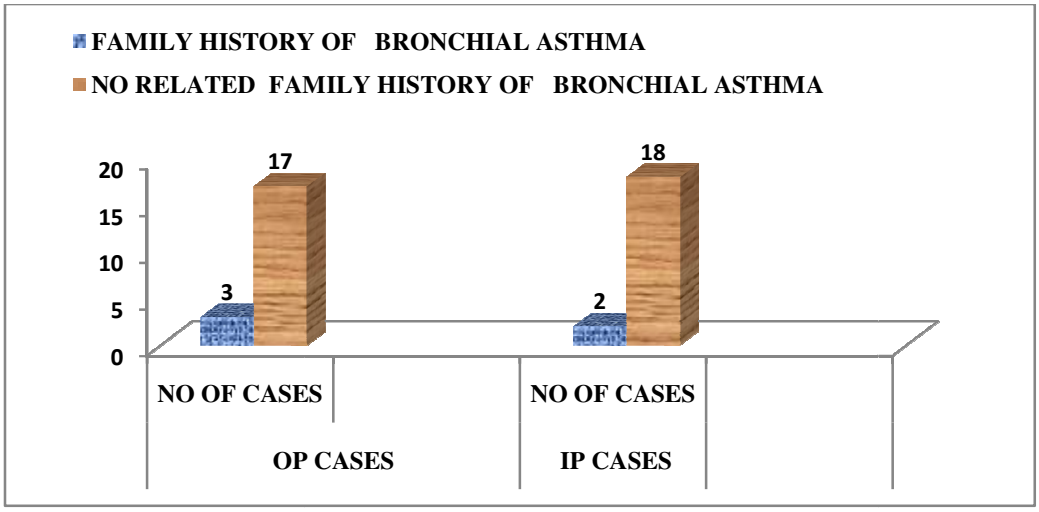
70% of cases Dust, 60% of cases Smoke exposure, 10% of cases Passive Smoking,45% of cases Cold exposure, 05% of Exercise, 35% of cases Emotion, 40% of casesOccupation, 05% of cases Detergents, 20% of cases Chemicals, 15% of cases Husks, Grass, Pollans.

4.2.11. DISTRIBUTION OF FAMILY HISTORY

Table-4.2.11, Illustrates the distribution of family history

S.No	Family History	OP Cases		IP Cases	
		No Of Cases	Percentage (%)	No Of Cases	Percentage (%)
1	YES	3	15	2	10%
2	NO	17	85	18	90%

Figure 4.2.11, Illustrates the distribution of family history



Among 20 out patients

3 cases had positive family history and 17 cases didn't have.

Among 20 In patients

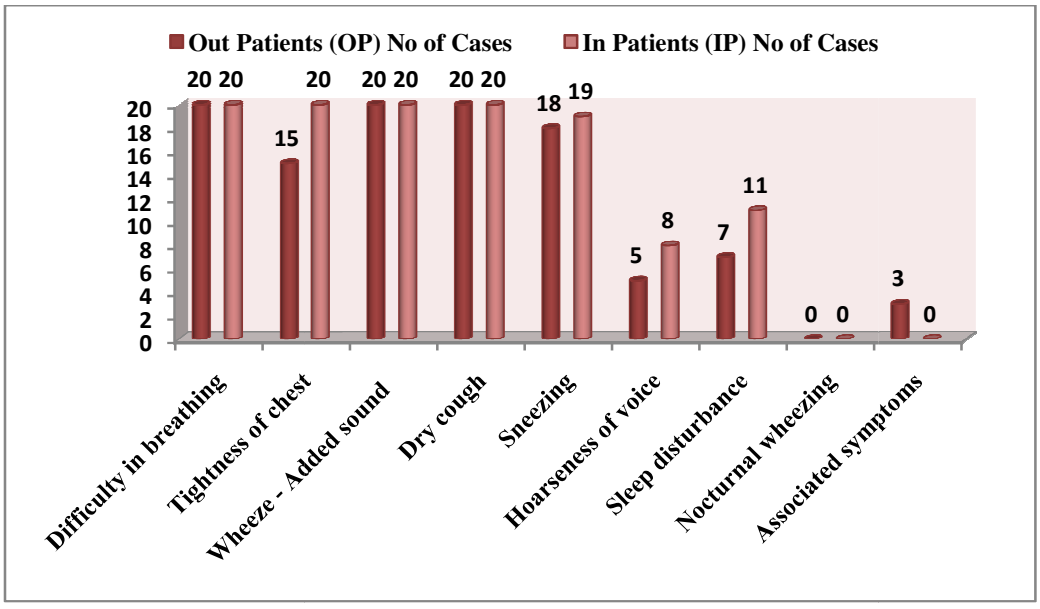
2 cases had positive family history and 18 cases did n't have.

4.2.12. CLINICAL MANIFESTATION

TABLE – 4.2.12 Illustrates the Clinical Manifestation and relative percentage.

S.No	Clinical manifestation	Out Patients		In Patients	
		No of Cases	%	No of Cases	%
01	Difficulty in breathing	20	100	20	100
02	Tightness of chest	15	75	20	100
03	Wheeze - Added sound	20	100	20	100
04	Dry cough	20	100	20	100
05	Sneezing	18	90	19	95
06	Hoarseness of voice	05	25	08	40
07	Sleep disturbance	07	35	11	55
08	Nocturnal wheezing	0	0	0	0
09	Associated symptoms	03	15	0	0

Figure –4.2.12, Illustrates the Clinical Manifestation of patients.



Among 20 Outpatients:

100% of cases Difficulty in breathing, 75% of cases Tightness of chest, 100% of cases Wheeze - Added sound,100% of cases Dry cough, 90% of cases Sneezing, 25% of cases Hoarseness of voice, 35% of casesSleep disturbance, 15% of cases Associated symptoms

Among 20 In patients:

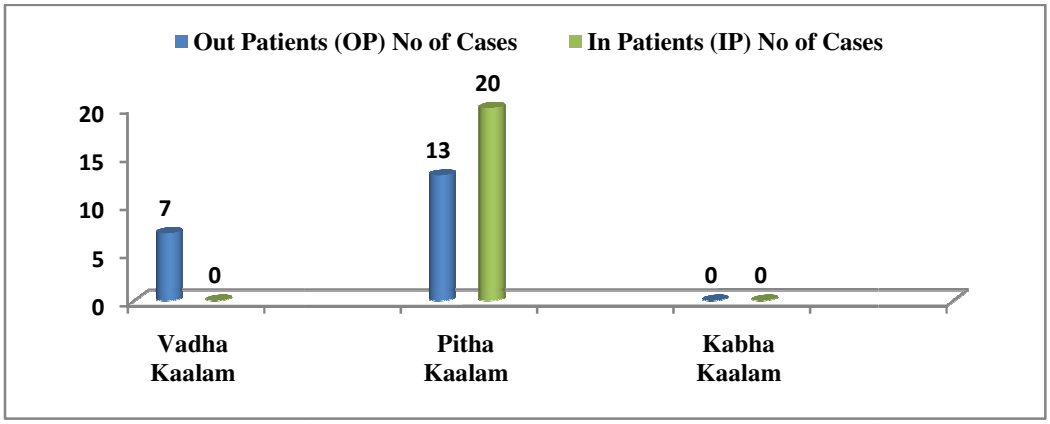
100% of cases Difficulty in breathing, 100% of cases Tightness of chest, 100% of cases Wheeze - Added sound,100% of cases Dry cough, 95% of cases Sneezing, 40% of cases Hoarseness of voice, 55% of casesSleep disturbance.

4.2.13. KAALAM

TABLE–4.2.13 Illustrates Kaalam and relative percentage

S.No	Kalam	Out Patients		In Patients	
		No of Cases	%	No of Cases	%
01	Vadha Kaalam (first 33yrs and 4months)	07	35	0	0
02	Pitha Kaalam (second 33yrs and 4 months)	13	65	20	100
03	Kabha Kaalam (Third 33yrs and 4months)	0	0	0	0

Figure –4.2.13 Distribution of Kaalam.



Among 20 Outpatients:

35% Patients under Vatha Kaalam, 65% Patient under Piththakaalam

Among 20 Inpatients:

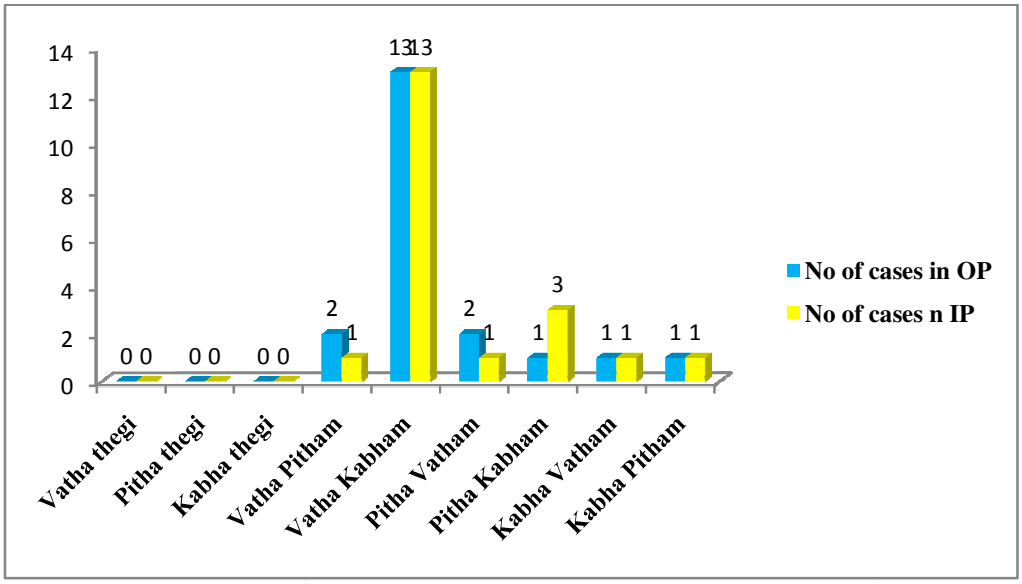
100% Patients under Piththakaalam

4.2.14. CONSTITUTION OF THE BODY

TABLE -4.2. 14 Illustrate constitution of the body and its relative Percentage.

S.No	Constitutions of the body	Out Patients		In Patients	
		No of Cases	%	No of Cases	%
01	Vatha thegi	0	0	0	0
02	Pitha thegi	0	0	0	0
03	Kabha thegi	0	0	0	0
04	Vatha Pitham	02	10	01	05
05	Vatha Kabham	13	65	13	65
06	Pitha Vatham	02	10	01	05
07	Pitha Kabham	01	05	03	15
08	Kabha Vatham	01	05	01	05
09	Kabha Pitham	01	05	01	05

Figure -4.2.14– Illustrate constitution of the body



Among 20 Out patients:

10%- vatha pitha thegi, 65%-vatha kabha thegi,10 % pitha vatha thegi, 5% pitha kabha thegi, 5% kaba vatha thegi,5% kaba pitha thegi.

Among 20 Inpatients:

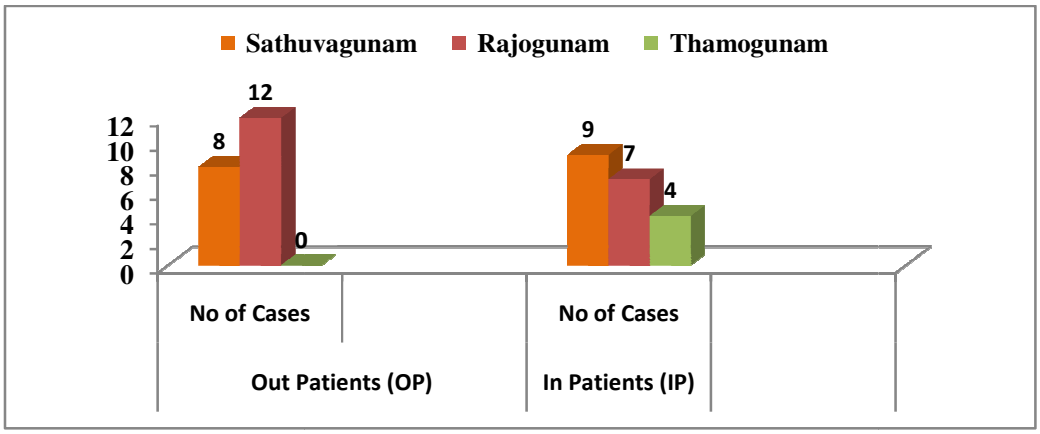
5%- vatha pitha thegi, 65%-vatha kabha thegi,5 % pitha vatha thegi,15% pitha kabha thegi, 5% kaba vatha thegi,5% kaba pitha thegi.

4.2.15. GUNAM

TABLE –4.2. 15 - Shows Gunam and its relative percentage

S.No	Gunam	Out Patients		In Patients	
		No of Cases	%	No of Cases	%
01	Sathuvagunam	08	40	09	45
02	Rajogunam	12	60	07	35
03	Thamogunam	0	0	04	20

Figure –4.2.15, Distribution of Gunam



Among 20 Out patients:

40% under Sathuva gunam,60% under Rajogunam

Among 20 In patients:

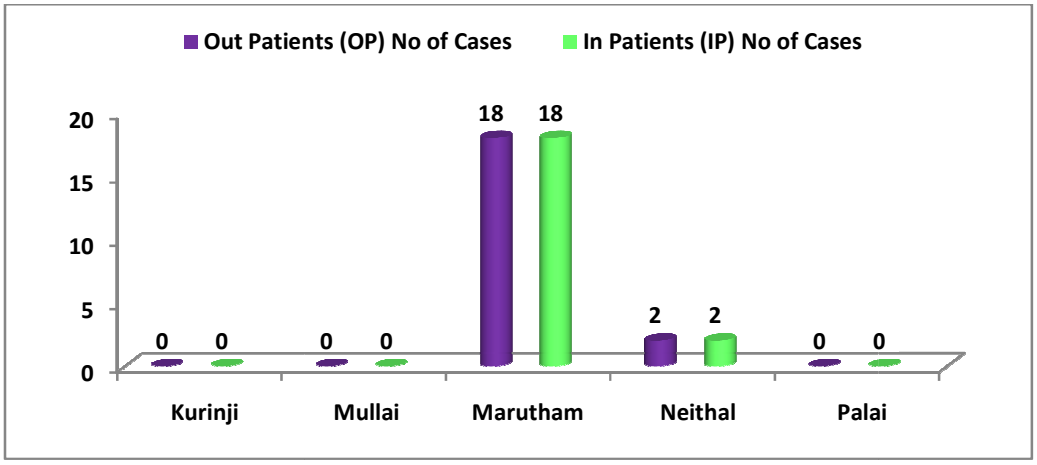
45% are Sathuva gunam, 35% are Rajogunam, 20% thamogunam

4.2.16. THINAI

TABLE -4.2.16 - Illustrates the Thinai and relative percentage.

S.No	Thinai	Out Patients		In Patients	
		No of Cases	%	No of Cases	%
01	Kurinji	0	0	0	0
02	Mullai	0	0	0	0
03	Marutham	18	90	18	90
04	Neithal	02	10	02	10
05	Palai	0	0	0	0

Figure –4.2.16. - Distribution of Thinai .



Among 20 Outpatients:

90% cases were in Marutham and 10% cases were in Neithal.

Among 20 Inpatients:

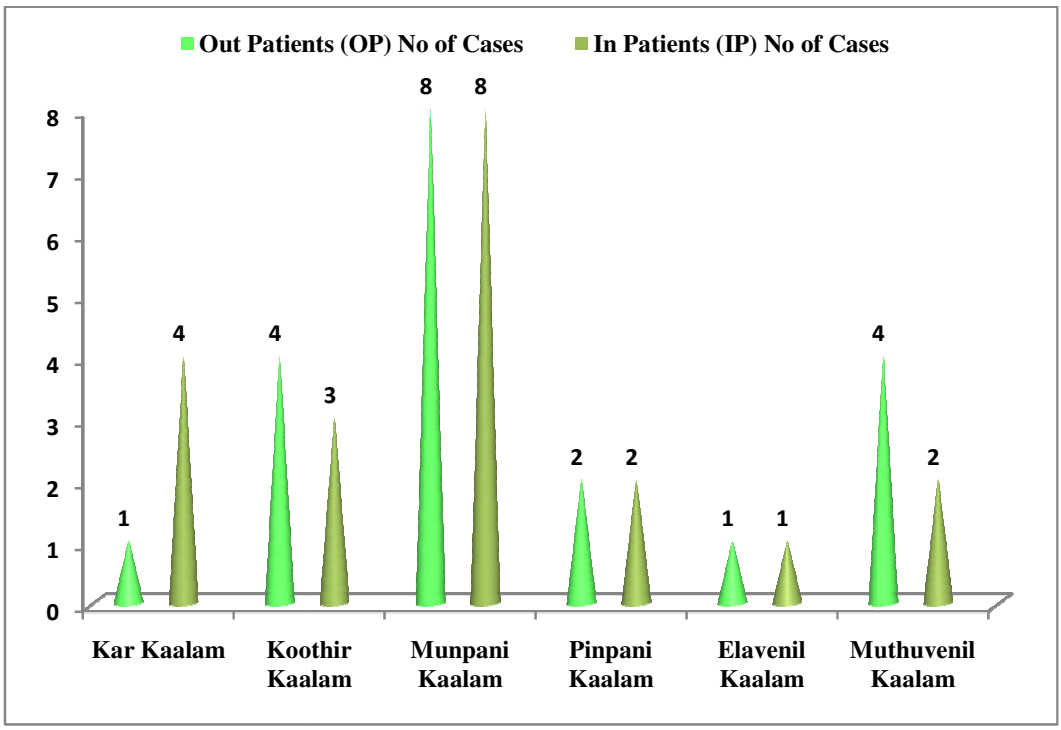
90% cases were in Marutham and 10% cases were in Neithal.

4.2.17. PARUVA KAALAM

TABLE -4.2.17 - Illustrates the paruvakaalam and its relative percentage.

S. No	Paruva Kaalam	Months	Out Patients		In Patients	
			No of Cases	%	No of Cases	%
01	Kar Kaalam	Aavani – Purattasi	01	05	04	20
02	Koothir Kaalam	Iyppasi – Karthigai	04	20	03	15
03	Munpani Kaalam	Markazhi - Thai	08	40	08	40
04	Pinpani Kaalam	Masi - Panguni	02	10	02	10
05	Elavenil Kaalam	Chithirai-Vaikasi	01	05	01	05
06	Muthuvenil Kaalam	Aani - Aadi	04	20	02	10

Figure –4.2.17. Distribution of paruvakalam



Among 20 Out Patients:

5% cases were observed in Kar Kaalam, 20% cases were observed in Koothir Kaalam, 40% cases were observed in Munpani Kaalam, 10% cases were observed in Pinpani Kaalam, 05% cases were observed in Elavenil Kaalam,20% cases were observed in Muthuvenil Kaalam

Among 20 In Patients:

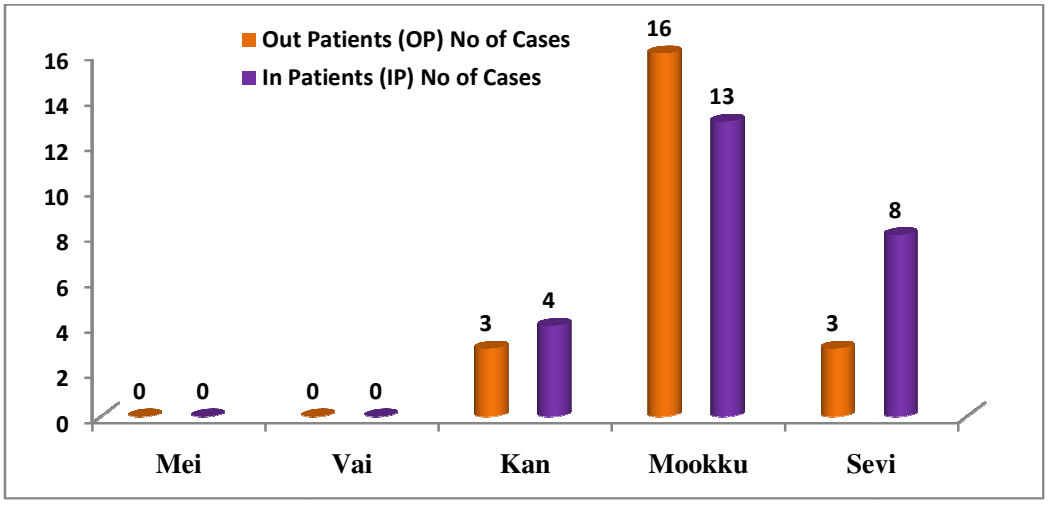
20% cases were observed in Kar Kaalam, 15% cases were observed in Koothir Kaalam, 40% cases were observed in Munpani Kaalam, 10% cases were observed in Pinpani Kaalam, 05% cases were observed in Elavenil Kaalam, 10% cases were observed in Muthuvenil Kaalam

4.2.18. GNANENDRIUM

TABLE –4.2.18 - Illustrates the Gnanendrium and relative percentage.

S.No	Gnanendrium	Out Patients		In Patients	
		No of Cases	%	No of Cases	%
01	Mei	0	0	0	0
02	Vai	0	0	0	0
03	Kan	03	15	04	20
04	Mookku	16	80	13	65
05	Sevi	03	15	08	40

Figure –4.2.18, Condition of Gnanendrium.



Among 20 Out patients:

Kan was affected in 15% cases, Mokku was affected in 80% cases,Sevi was affected in 15% cases.

Among 20 In patients:

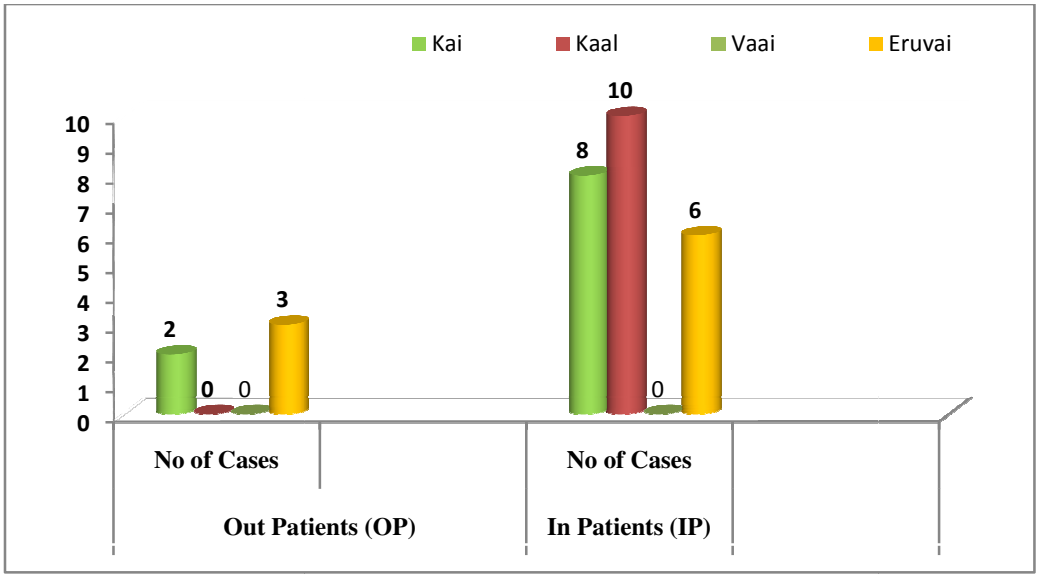
Kan was affected in 20% cases, Mokku was affected in 65% cases,Sevi was affected in 15% cases.

4.2.19. KANMENDRIUM

TABLE –4.2. 19 - Illustrates the Kanmendrium and relative percentage.

S.No	Kanmendrium	Out Patients		In Patients	
		No of Cases	%	No of Cases	%
01	Kai	02	10	08	40
02	Kaal	0	0	10	50
03	Vaai	0	0	0	0
04	Eruvai	03	15	06	35
05	Karuvai	--	--	--	--

Figure –4.2.19 - Condition of Kanmendrium.



Among 20 Out Patients:

Kai was affected in 10% cases, Eruvai was affected in 15% cases.

Among 20 In Patients:

Kai was affected in 40% cases, Kaal was affected in 50% cases, Eruvai was affected in 30% cases.

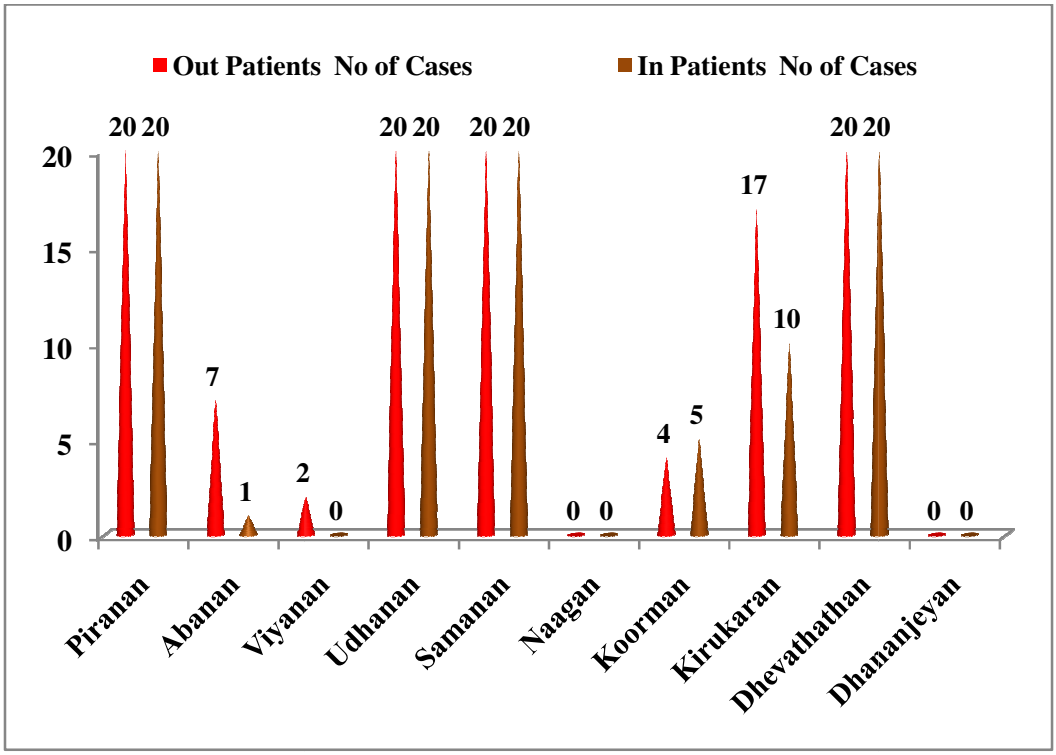
4.2.20. CONDITIONS OF MUKKUTRAM

4.2.20.1 – Condition of Vatham

TABLE –4.2. 20.1 -Condition of Vatham

S.No	Vatham	Out Patients		In Patients	
		No of Cases	%	No of Cases	%
01	Piranan	20	100	20	100
02	Abanan	07	35	01	05
03	Viyanan	02	10	00	00
04	Udhanan	20	100	20	100
05	Samanan	20	100	20	100
06	Naagan	00	00	00	00
07	Koorman	04	20	05	25
08	Kirukaran	17	85	10	50
09	Dhevathathan	20	100	20	100
10	Dhananjeyan	00	00	00	00

Figure –4.2.20.1 - Condition of Vatham



Among 20 Out Patients:

100% cases were observed in Piranan affected, 35% cases were observed in Abanan affected, 10% cases were observed in Viyanan affected, 100% cases were observed in udhanan affected, 100% cases were observed in Samanan affected, 20% cases were observed in Koorman affected, 85% cases were observed in Kirukaran affected,100% cases were observed in Dhevathathan affected.

Among 20 In Patients:

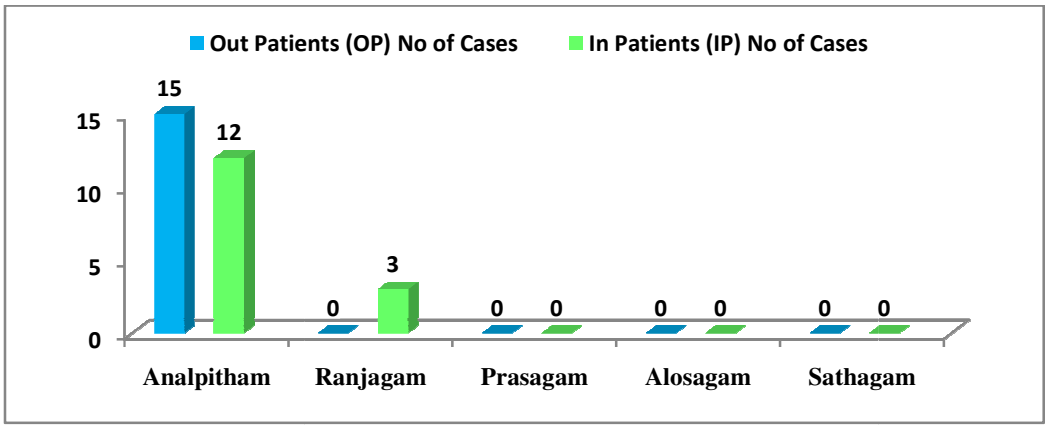
100% cases were observed in Piranan affected, 05% cases were observed in Abanan affected, 100% cases were observed in Uthanan affected, 100% cases were observed in Samanan affected, 25% cases were observed in Koorman affected, 50% cases were observed in Kirukaran affected,100% cases were observed in Dhevathathan affected.

4.2.20.2 – Condition of Piththam

TABLE – 4.2.20.2 -– Condition of Piththam

S.No	Pitham	Out Patients		In Patients	
		No of Cases	%	No of Cases	%
01	Analpitham	15	75	12	60
02	Ranjagam	00	00	03	15
03	Prasagam	00	00	00	00
04	Alosagam	00	00	00	00
05	Sathagam	00	00	00	00

Figure –4.2.20.2- Condition of Piththam



Among 20 Out Patients:

75% cases were Analapitham affected.

Among 20 In Patients:

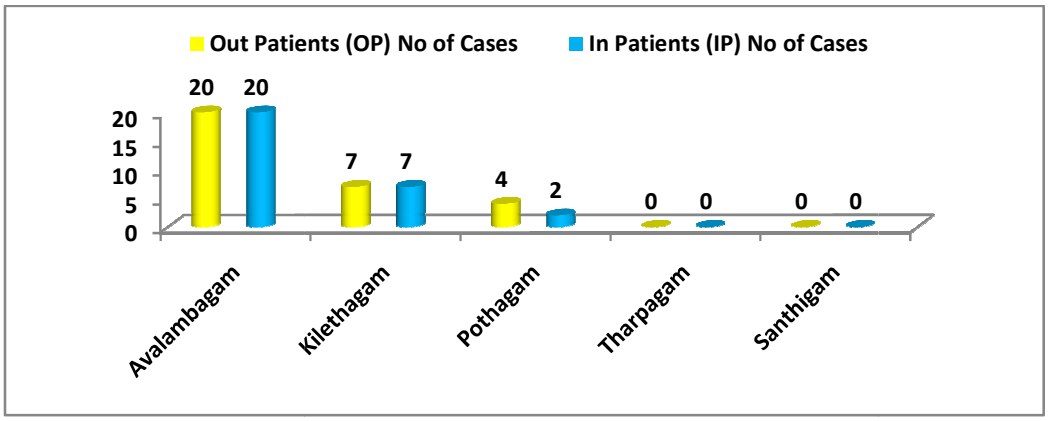
100% cases were observed in Analapitham affected, 15% cases were observed in Ranjagam affected.

4.2.20.3 – Condition of Kabham

TABLE –4.2.20.3Condition of Kabham

S.No	Kabham	Out Patients		In Patients	
		No of Cases	%	No of Cases	%
01	Avalambagam	20	100	20	100
02	Kilethagam	07	35	07	35
03	Pothagam	04	20	02	10
04	Tharpagam	00	00	00	00
05	Santhigam	00	00	00	00

Figure –4.2.20.3 - Condition of Kabham



Among 20 Out Patients:

100% cases were observed in Avalambagam affected, 35% cases were observed in Kilethagam affected, 20% cases were observed in Pothagam affected.

Among 20 In Patients:

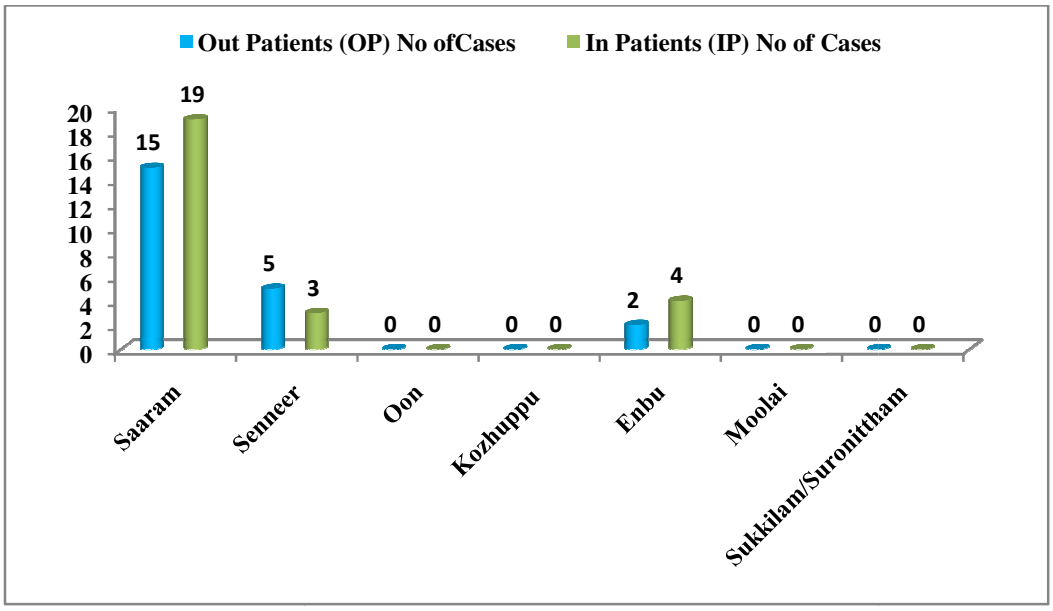
100% cases were observed in Avalambagam affected, 35% cases were observed in Kilethagam affected, 10% cases were observed in Pothagam affected.

4.2.21. Involvement of Udal Kattukal:

Table 4.2.21 – Involvement of udal Kattukal and relative percentage.

S.NO	Udal Kattukal	Out Patients		In Patients	
		No ofCases	%	No of Cases	%
1	Saaram	15	75	19	95
2	Senneer	05	25	03	15
3	Oon	00	00	00	00
4	Kozhuppu	00	00	00	00
5	Enbu	02	10	4	20
6	Moolai	00	00	00	00
7	Sukkilam/Suronittham	00	00	00	00

Figure –4.2.21 – Involvement of udal Kattukal



In OP study:

Saaram was affected in 75% of cases, Senneer was affected in 25% of cases, Enbu was affected in 10% of cases

In IP study:

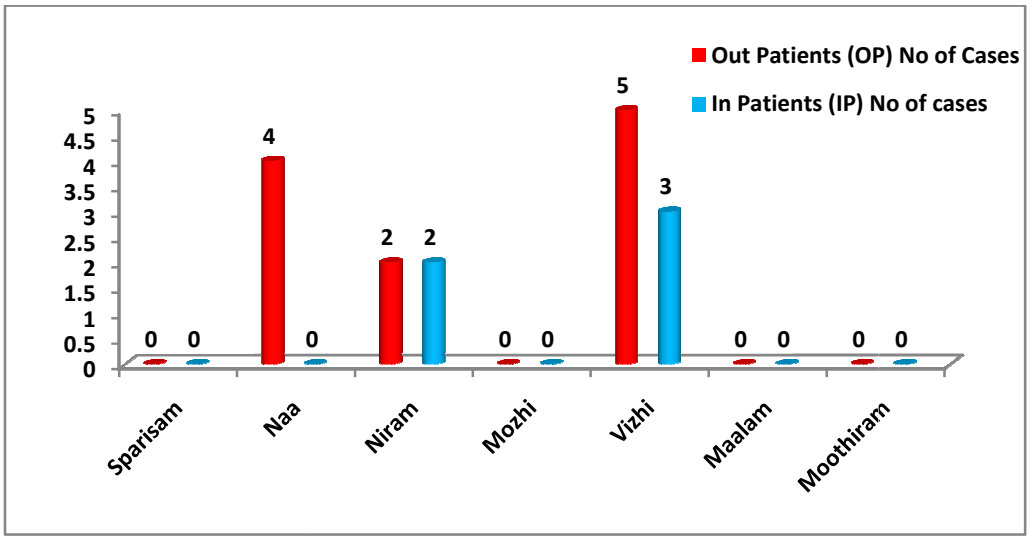
Saaram was affected in 95% of cases, Senneer was affected in 15% of cases,Enbu was affected in 20% of cases

4.2.22. Conditions of Envagai thervugal:

Table -4.2.22 - Illustrates the conditions of Envagai thervugal and relative percentage.

S.NO	Envagai thervugal	Out Patients		In Patients	
		No of Cases	%	No of cases	%
1	Naadi (Thontha Naadi)	--	--	--	--
2	Sparisam	0	0	0	0
3	Naa	04	20	0	0
4	Niram	02	10	02	10
5	Mozhi	0	0	0	0
6	Vizhi	05	25	03	15
7	Maalam	0	0	0	0
8	Moothiram	0	0	0	0

Figure –4.2.22 - Conditions of Envagai thervugal



In OP study:

Naa was affected in 20% of cases, Niram was affected in 10% of cases, Vizhi was affected in 25% of cases.

In IP study:

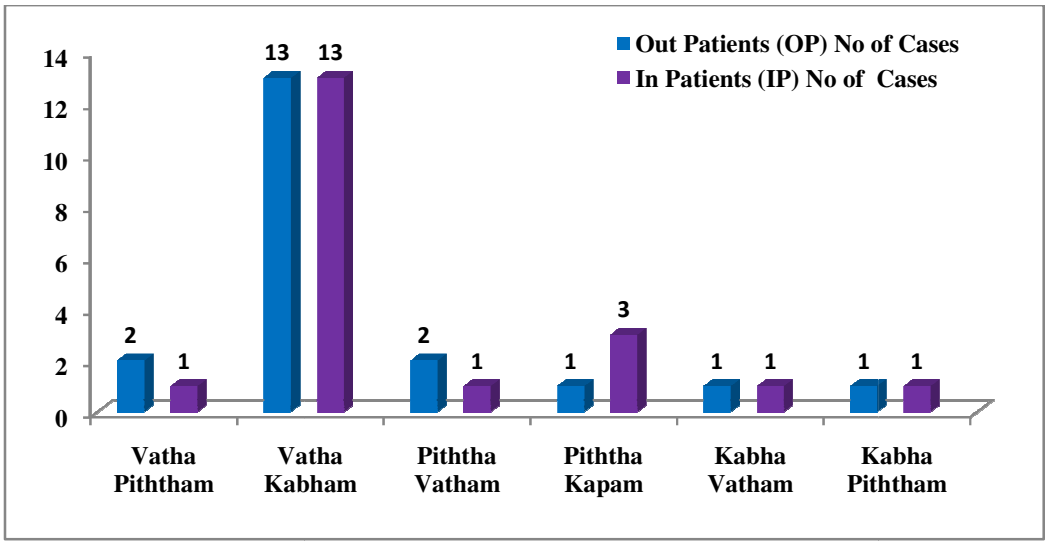
Niram was affected in 10% of cases, Vizhi was affected in 15% of cases.

4.2.22.1 NAADI

Table –4.2.22.1 - Illustrates the conditions of Naadi and relative percentage.

S.NO	Naadi	Out Patients		In Patients	
		No of Cases	%	No of Cases	%
01	Vatha Piththam	02	10	01	05
02	Vatha Kabham	13	65	13	65
03	Piththa Vatham	02	10	01	05
04	Piththa Kapam	01	05	03	15
05	Kabha Vatham	01	05	01	05
06	Kabha Piththam	01	05	01	05

Figure –4.2.22.1 - Illustrates the conditions of Naadi



Among 20 Op Patients:

In OP 10% Vatha Piththam, 65% of Vatha Kabham, 10% Piththa Vatham, 05% Piththa Kabham, 05% Kabha Vatham, 05% Kabha Piththam.

Among 20 In Patients:

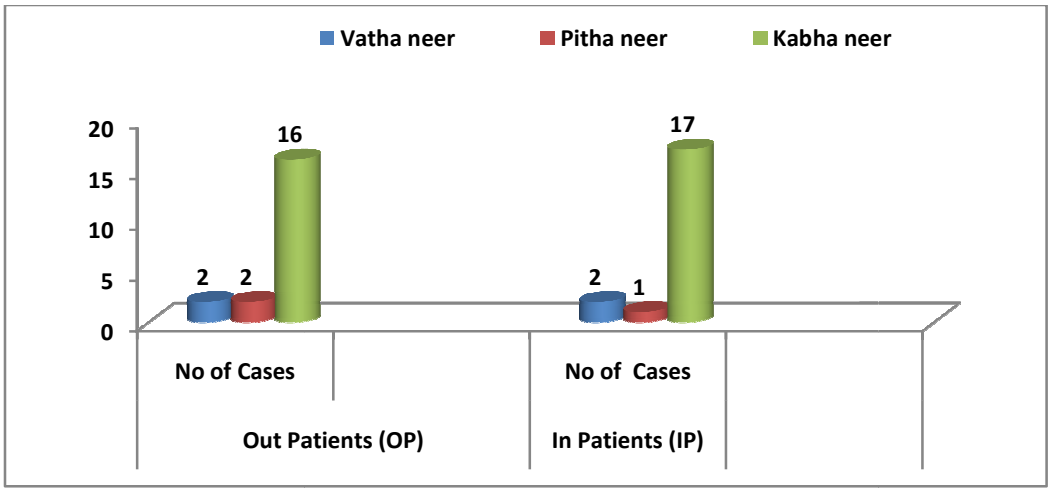
In OP 05% Vatha Piththam, 65% of Vatha Kabham, 05% Piththa Vatham, 15% Piththa Kabham, 05% Kabha Vatham, 5% Kabha Piththam.

4.2.23- NEIKURI

Table –4.2.23. Neikuri Condition and relative percentage.

S.NO	Neikuri	Out Patients		In Patients	
		No of Cases	%	No of Cases	%
1	Vatha neer	02	10	02	10
2	Pitha neer	02	10	01	05
3	Kabha neer	16	80	17	85

Figure –4.2.23 - Neikuri Condition



Out of 20 Out patients:

10% had vathaneer, 10% had pithaneer, 80% had kabhaneer.

Out of 20 In patients:

10% had vathaneer, 05% had pithaneer, 85% had kabhaneer.

4.2.24. CASE REPORT OP 20 PATIENTS TREATED FOR SWASAKASAM

TABLE –4.2.24 CASE REPORT OF OUT PATIENTS

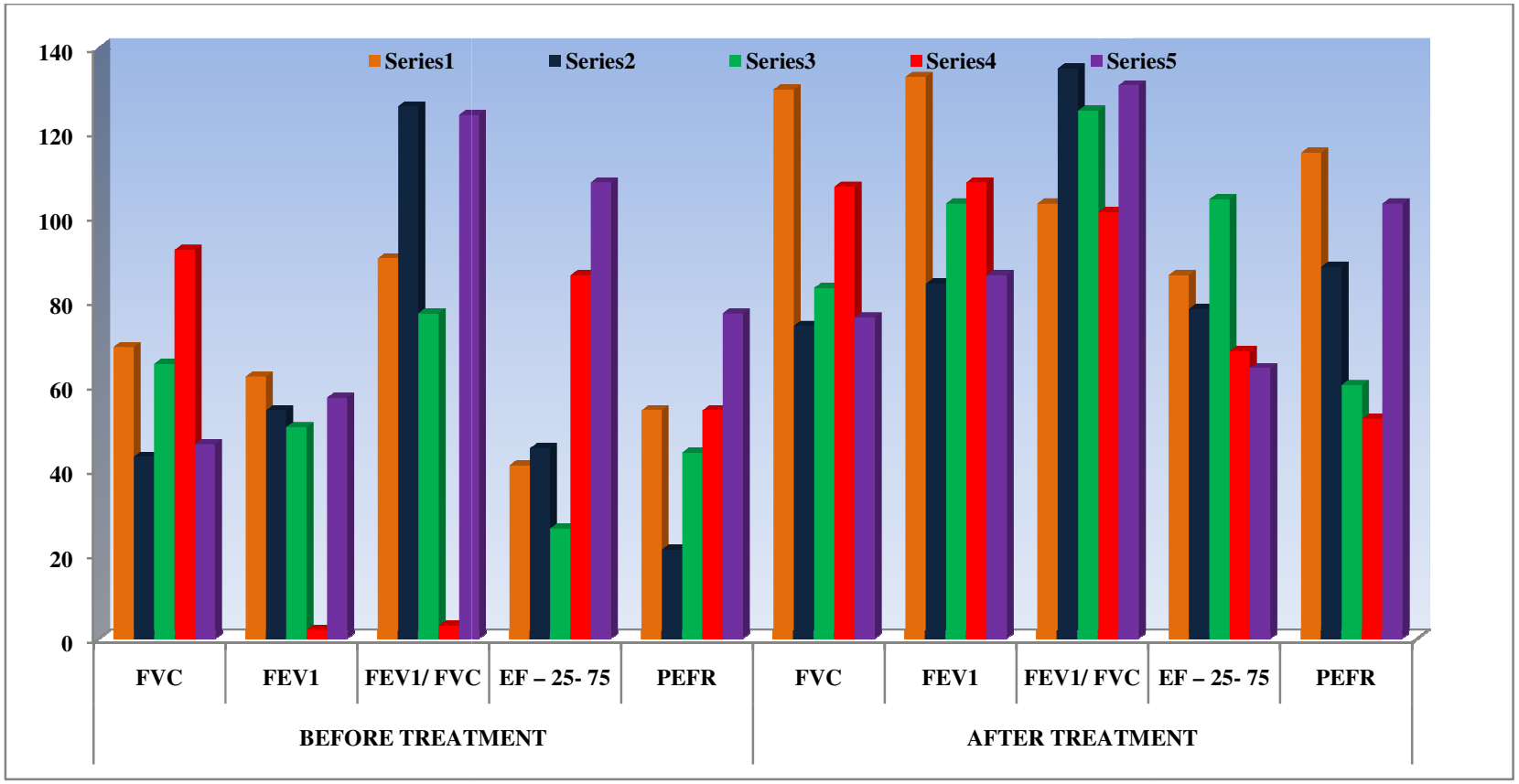
S. No	OP NO	Name	Age	Sex	Date Of Admission	Date Of Discharge	Total No. Of Days	Result
01	34453	UCHINIMAHALI	20	M	15.04.2018	14.05.2018	30	Good
02	64239	LEOINS RANI	56	F	02.08.2018	31.08.2018	30	Moderate
03	68834	RAMESH	32	M	04.08.2018	02.09.2018	30	Good
04	65582	RAMASWAMY	48	M	07.08.2018	05.09.2018	30	Good
05	67535	PAPPA	40	F	14.08.2018	12.09.2018	30	Poor
06	78244	SAMUVEL	25	M	20.09.2018	19.09.2018	30	Good
07	99022	MARIMUTHU	45	M	29.11.2018	28.12.2018	30	Moderate
08	100204	SIVAKUMAR	37	M	03.12.2018	01.01.2019	30	Good
09	100982	LALITHA	30	F	06.12.2018	04.01.2019	30	Good
10	101045	TAMILARASI	30	F	06.12.2018	06.01.2019	32	Good
11	106012	NAGAMMAL	53	F	22.12.2018	20.01.2019	30	Poor
12	107838	VENUGOBAL	43	M	28.12.2018	26.01.2019	30	Good
13	107839	GEETHA	39	F	28.12.2018	28.01.2019	32	Good
14	108698	NATHIYA	28	F	31.12.2018	29.01.2019	30	Good
15	8297	THIRUPPATHI	40	M	24.01.2019	22.02.2019	30	Good
16	9136	MOHAMMED MYDEEN	36	M	24.01.2019	22.02.2019	30	Moderate
17	14887	SOMASUNDHARI	21	F	09.02.2019	10.03.2019	30	Good
18	15345	SUDALAI	55	M	11.12.2019	11.02.2019	30	Moderate
19	18300	KALAISELVI	30	F	19.02.2019	20.03.2019	30	Good
20	30170	MARIAPPAN	44	M	28.03.2019	26.04.2019	30	Moderate

4.2.25. PFT REPORT

TABLE –4.2.25 PFT Report

S.No	OP.No	Age / Sex	PFT									
			BEFORE TREATMENT					AFTER TREATMENT				
			FVC	FEV1	FEV1/ FVC	EF – 25-75	PEFR	FVC	FEV1	FEV1/ FVC	EF – 25-75	PEFR
01	34453	20/M	69	62	90	41	54	130	133	103	86	115
02	100982	30/F	43	54	126	45	21	74	84	135	78	88
03	101045	30/F	65	50	77	26	44	83	103	125	104	60
04	14887	21/F	92	02	03	86	54	107	108	101	68	52
05	18300	30/F	46	57	124	108	77	76	86	131	64	103

Figure –4.2.25 PFT report



4.2.26. LABORATORY INVESTIGATION (OP PATIENTS)

TABLE –4.2.26 LABORATORY INVESTIGATION OF OP PATIENTS

S. No	OP. No	HAEMATOLOGICAL INVESTIGAION												URINE ANALYSIS					
		Before Treatment						After Treatment						Before Treatment			After Treatment		
		TC Cell/cumm	DC			ESR mm/hr	Hb gms%	TC Cell/cumm	DC			ESR mm/1hr	Hb gms%	Albumin	Sugar	Deposit epi / puscells	Albumin	Sugar	Deposit epi / puscells
			P %	L%	E %				P%	L %	E%								
01	34453	6300	64	30	6	20	11.7	6400	66	32	2	14	12.0	Nil	Nil	2-3	Nil	Nil	Nil
02	64239	7300	62	26	12	65	11.2	7600	63	26	11	59	11.6	Nil	Nil	Nil	Nil	Nil	Nil
03	68834	9900	64	27	9	32	11.0	10200	67	30	3	12	11	Nil	Nil	Nil	Nil	Nil	Nil
04	65582	8900	67	24	9	30	12	8900	70	26	4	23	12.2	Nil	Nil	Nil	Nil	Nil	Nil
05	67535	7300	68	22	10	79	9.6	7600	70	21	9	68	10.4	Nil	Nil	2-3	Nil	Nil	1-2
06	78244	9900	63	27	10	32	12.0	10100	67	28	5	14	12.0	Nil	Nil	Nil	Nil	Nil	Nil
07	99022	6000	60	29	11	55	10.5	6400	62	29	9	47	11.0	Nil	Nil	Nil	Nil	Nil	Nil
08	100204	6300	63	33	4	30	12.0	7000	64	33	3	16	12.2	Nil	Nil	Nil	Nil	Nil	Nil
09	100982	8400	66	28	6	30	13.6	9000	66	31	3	10	11.5	Nil	Nil	Nil	Nil	Nil	Nil
10	101045	9800	54	36	10	65	11.2	9800	65	26	9	15	11.6	Nil	Nil	Nil	Nil	Nil	Nil
11	106012	8000	57	27	16	55	11.5	8000	59	28	13	44	12.0	Nil	Nil	2-3	Nil	Nil	1-2
12	107838	9900	64	30	6	36	12	10000	64	32	4	26	12.4	Nil	Nil	Nil	Nil	Nil	Nil
13	107839	6800	62	32	6	50	11.6	6900	64	32	4	42	11.6	Nil	Nil	Nil	Nil	Nil	Nil
14	108698	6400	67	27	6	24	11.6	6800	67	30	3	18	12.0	Nil	Nil	1-2	Nil	Nil	Nil
15	8297	7300	68	26	6	27	12.6	7900	70	27	3	20	12.6	Nil	Nil	Nil	Nil	Nil	Nil
16	9136	6400	62	30	8	50	12.5	6700	64	29	7	45	13.0	Nil	Nil	Nil	Nil	Nil	Nil
17	14887	6800	66	25	9	32	12.6	6800	70	25	5	26	12.4	Nil	Nil	Nil	Nil	Nil	Nil
18	15345	9700	54	33	13	20	12.2	9800	66	24	10	14	12.6	Nil	Nil	1-2	Nil	Nil	Nil
19	18300	8300	67	26	7	40	9.0	8400	68	28	4	29	10.0	Nil	Nil	Nil	Nil	Nil	Nil
20	30170	9300	58	25	17	35	11.0	10000	59	26	15	30	11.0	Nil	Nil	2-3	Nil	Nil	Nil

Figure –4.2.26.1 ESR (OP)

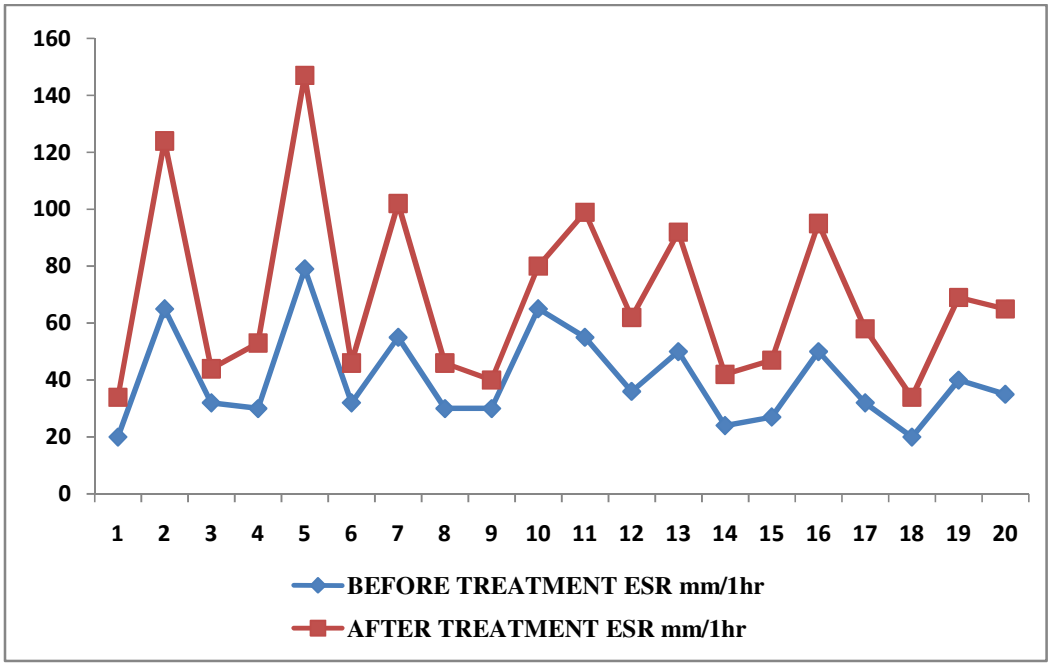
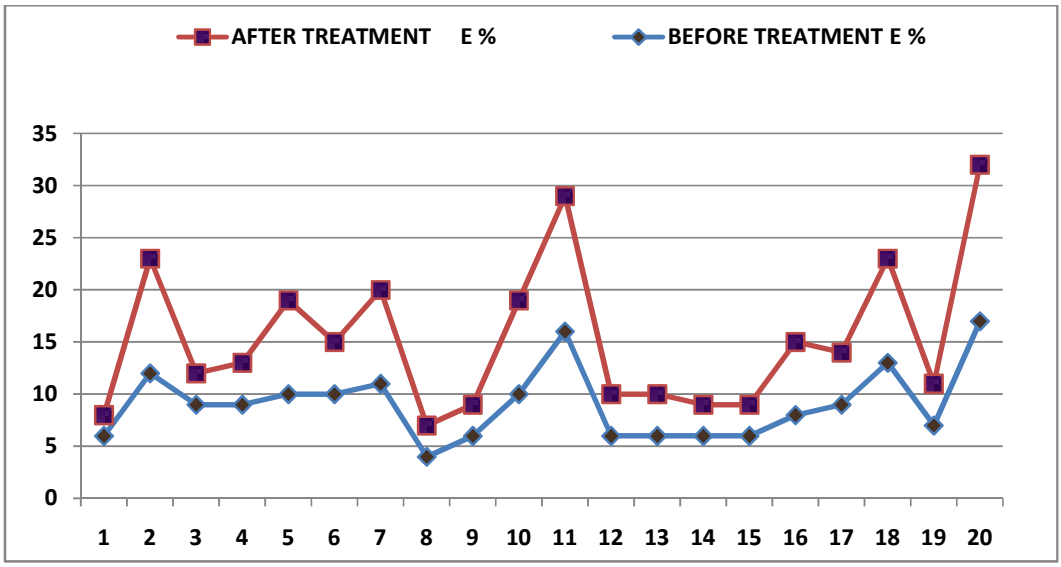


Figure –4.2.26.2EOSINOPHILS COUNT (OP)

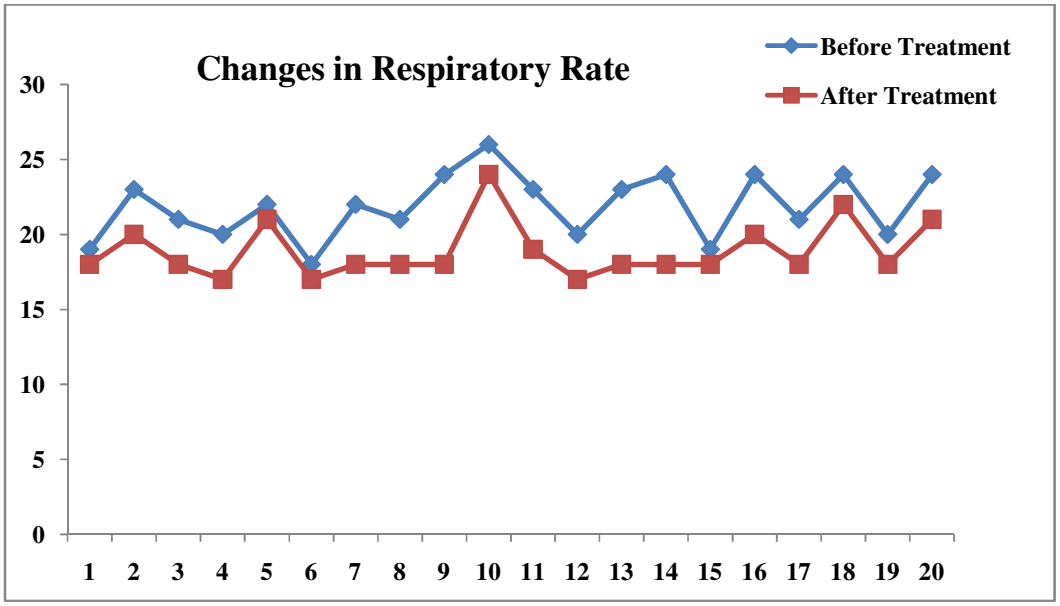


4.2.27. Respiratory Rate in OP Patient

TABLE –4.2. 27. Respiratory Rate in OP Patient before and after treatment.

S.No	O.P No	Before Treatment	After Treatment
1.	34453	19	18
2.	64239	23	20
3.	68834	21	18
4.	65582	20	17
5.	67535	22	21
6.	78244	18	17
7.	99022	22	18
8.	100204	21	18
9.	100982	24	18
10.	101045	26	24
11.	106012	23	19
12.	107838	20	17
13.	107839	23	18
14.	108698	24	18
15.	8297	19	18
16.	9136	24	20
17.	14887	21	18
18.	15345	24	22
19.	18300	20	18
20.	30170	24	21

Figure –4.2.27.Respiratory Rate in OP Patient before and after treatment.



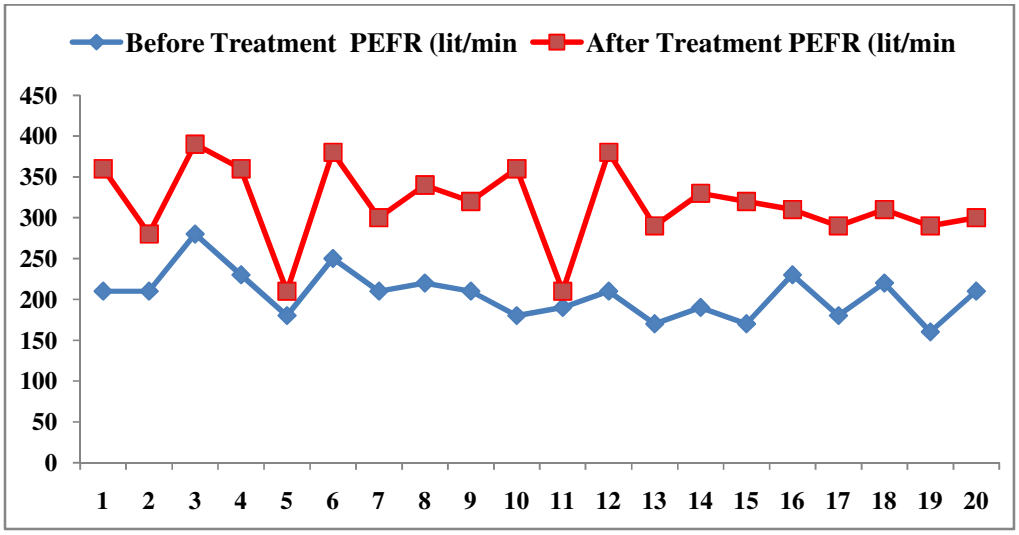
4.2.28. PEFR in OP Patient

TABLE –4.2.28 PEFR in OP Patient before and after treatment.

S. No	O.P No	Age	Sex	PEFR (lit/min) Before Treatment	PEFR (lit/min) After Treatment	Result
1.	34453	20	M	210	360	Good
2.	64239	56	F	210	280	Moderate
3.	68834	32	M	280	390	Good
4.	65582	48	M	230	360	Good
5.	67535	40	F	180	210	Poor
6.	78244	25	M	250	380	Good
7.	99022	45	M	210	300	Moderate
8.	100204	37	M	220	340	Good
9.	100982	30	F	210	320	Good
10.	101045	30	F	180	360	Good
11.	106012	53	F	190	210	Poor
12.	107838	43	M	210	380	Good
13.	107839	39	F	170	290	Good
14.	108698	28	F	190	330	Good
15.	8297	40	M	170	320	Good
16.	9136	36	M	230	310	Moderate
17.	14887	21	F	180	290	Good
18.	15345	55	M	220	310	Moderate
19.	18300	30	F	160	290	Good
20.	30170	44	M	210	300	Moderate

Good – PEFR value increased 100 and above 100
Moderate – PEFR value increased 50 - below100.
Poor – No change and below 50 in PEFR value.

Figure –4.2.28 PEFR in OP Patient before and after treatment.



4.2.29. CASE REPORT IP 20 PATIENTS TREATED FOR SWASAKASAM

TABLE -4.2. 29. CASE REPORT OF IP PATIENTS

S.No	OP NO	IP NO	Name	Age	Sex	Date Of Admission	Date Of Discharge	Number of days with Follow Up		Total No. of Days	Result
								IP	OP		
01	44013	1333	RAJAGOPAL	43	M	19.05.2018	08.06.2018	21	9	30	Moderate
02	60092	1827	MAATHAVAN	50	F	19.07.2018	13.08.2018	26	5	31	Good
03	66343	2046	AAVUDAIAMMAL	50	F	10.08.2018	11.09.2018	33	-	33	Good
04	70005	2159	MALLIGA	49	F	23.08.2018	24.09.2018	33	-	33	Good
05	70129	2163	POOTHATHAN	60	M	23.08.2018	11.09.2018	20	10	30	Moderate
06	70108	2166	VELLAIAMMAL	57	F	23.08.2018	25.09.2018	34	-	34	Good
07	72239	2228	AAVUDAIAMMAL	55	F	30.08.2018	02.10.2018	34	-	34	Good
08	97112	2874	SRIRANGAM	50	F	24.11.2018	21.12.2018	28	4	32	Good
09	98860	2922	GANAPATHI	60	M	29.11.2018	19.12.2018	21	9	30	Poor
10	103591	3080	SHANMUGAVEL	60	M	14.12.2018	08.01.2019	26	5	31	Good
11	105774	3125	ESSAKIAMMAL	60	F	22.12.2018	23.01.2019	33	-	33	Good
12	106816	3145	SUBBAIAH	55	M	25.12.2018	19.01.2019	26	5	31	Good
13	360	4	MANONMANI	59	F	02.01.2019	27.01.2019	26	4	30	Good
14	6277	64	MOHAMMED ASAN	47	M	17.01.2019	16.02.2019	31	-	31	Poor
15	8465	131	TAMILKODI	52	F	23.01.2019	17.02.2019	26	4	30	Good
16	10354	175	SORNAM	60	M	28.01.2019	21.02.2019	25	5	30	Good
17	14511	288	AROKKIYAM	60	M	08.02.2019	07.03.2019	28	2	30	Good
18	14594	299	LAKSHIMI	45	F	08.02.2019	09.03.2019	30	-	30	Good
19	18241	413	PATTAN	60	M	19.02.2019	20.03.2019	30	-	30	Moderate
20	23669	592	KAILASAM	60	M	07.03.2019	06.04.2019	31	-	31	Good

4.2.30. LABORATORY INVESTIGATION (IP PATIENTS)

TABLE -4.2. 30 LABORATORY INVESTIGATION OF IP PATIENTS

S.No	OP.No	IP No	HAEMATOLOGICAL INVESTIGAION												URINE ANALYSIS					
			BEFORE TREATMENT						AFTER TREATMENT						BEFORE TREATMENT			AFTER TREATMENT		
			TC Cell/cumm	DC			ESR mm/hr	Hb gms %	TC Cell/cumm	DC			ESR mm/1hr	Hb gms %	Albumin	Sugar	Deposit epi / puscells	Albumin	Sugar	Deposit epi / puscells
				P %	L %	E %				P%	L %	E %								
01	44013	1333	9000	64	27	9	47	11.9	9900	65	28	7	25	12.0	Nil	Nil	2-3	Nil	Nil	Nil
02	60092	1827	7300	65	28	7	35	11.2	7700	67	29	4	18	11.4	Nil	Nil	Nil	Nil	Nil	Nil
03	66343	2046	8900	67	24	9	40	12.2	9800	69	27	4	17	12.3	Nil	Nil	Nil	Nil	Nil	Nil
04	70005	2159	9900	63	31	6	42	12.0	10200	67	30	3	19	12.7	Nil	Nil	Nil	Nil	Nil	Nil
05	70129	2163	6300	64	28	8	50	11.7	6400	66	27	7	26	11.7	Nil	Nil	2-3	Nil	Nil	1-2
06	70108	2166	8500	67	27	6	30	13.6	8600	70	28	2	15	13.6	Nil	Nil	Nil	Nil	Nil	Nil
07	72239	2228	6800	62	32	6	40	12.5	7000	64	32	4	20	12	Nil	Nil	Nil	Nil	Nil	Nil
08	97112	2874	7000	66	31	3	20	9.2	7100	66	32	2	15	10.0	Nil	Nil	Nil	Nil	Nil	Nil
09	98860	2922	10900	50	38	12	56	13.3	10900	60	29	11	30	14.2	Nil	Nil	Nil	Nil	Nil	Nil
10	103591	3080	7600	63	33	4	26	15.3	7400	64	33	3	15	15.3	Nil	Nil	Nil	Nil	Nil	Nil
11	105774	3125	7500	68	29	3	18	12.0	7600	70	28	2	8	12	Nil	Nil	2-3	Nil	Nil	1-2
12	106816	3145	6700	67	30	3	50	9.7	6900	68	30	2	20	10.3	Nil	Nil	Nil	Nil	Nil	Nil
13	360	4	8900	64	27	9	32	11	9200	70	27	3	14	11.4	Nil	Nil	Nil	Nil	Nil	Nil
14	6277	64	7300	65	25	10	55	11.2	7400	69	22	9	29	11.4	Nil	Nil	1-2	Nil	Nil	Nil
15	8465	131	6100	67	30	3	32	10.6	6200	68	30	2	24	10.9	Nil	Nil	Nil	Nil	Nil	Nil
16	10354	175	6200	66	30	4	32	15.5	7400	66	32	2	22	15.0	Nil	Nil	Nil	Nil	Nil	Nil
17	14511	288	10500	70	20	10	40	8.4	10500	70	26	4	18	9.0	Nil	Nil	Nil	Nil	Nil	Nil
18	14594	299	9200	70	27	3	26	12.0	9700	71	27	2	20	12.0	Nil	Nil	1-2	Nil	Nil	Nil
19	18241	413	8200	51	38	11	75	10.3	8200	57	34	9	26	10.3	Nil	Nil	Nil	Nil	Nil	Nil
20	23669	592	6300	68	28	4	5	10.7	6300	70	28	2	4	11.0	Nil	Nil	2-3	Nil	Nil	Nil

Fig. 4.2.30.1. ESR Variation in IP Patients

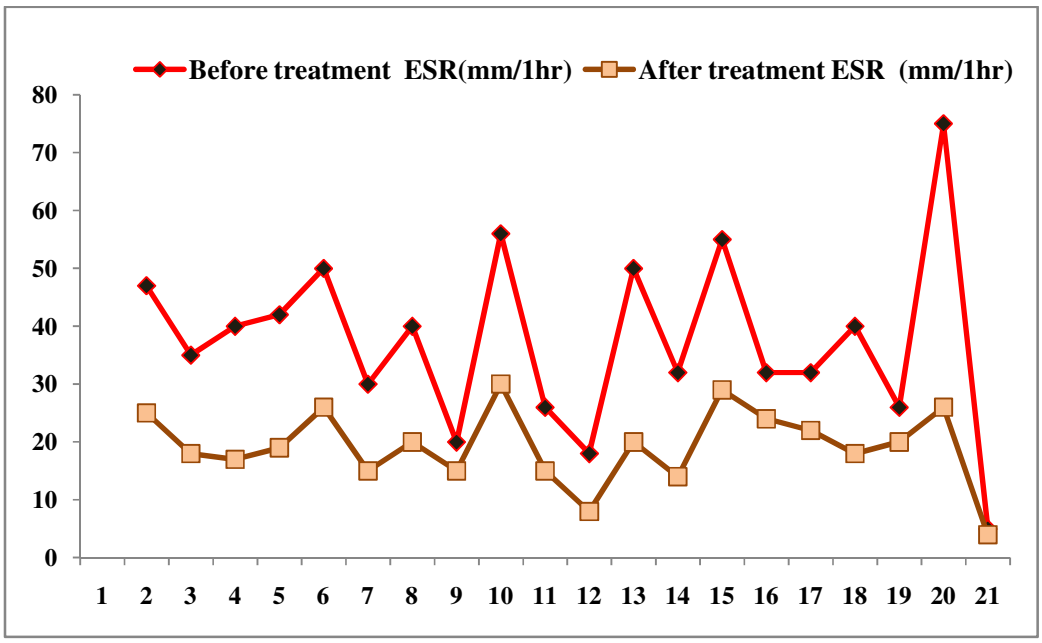
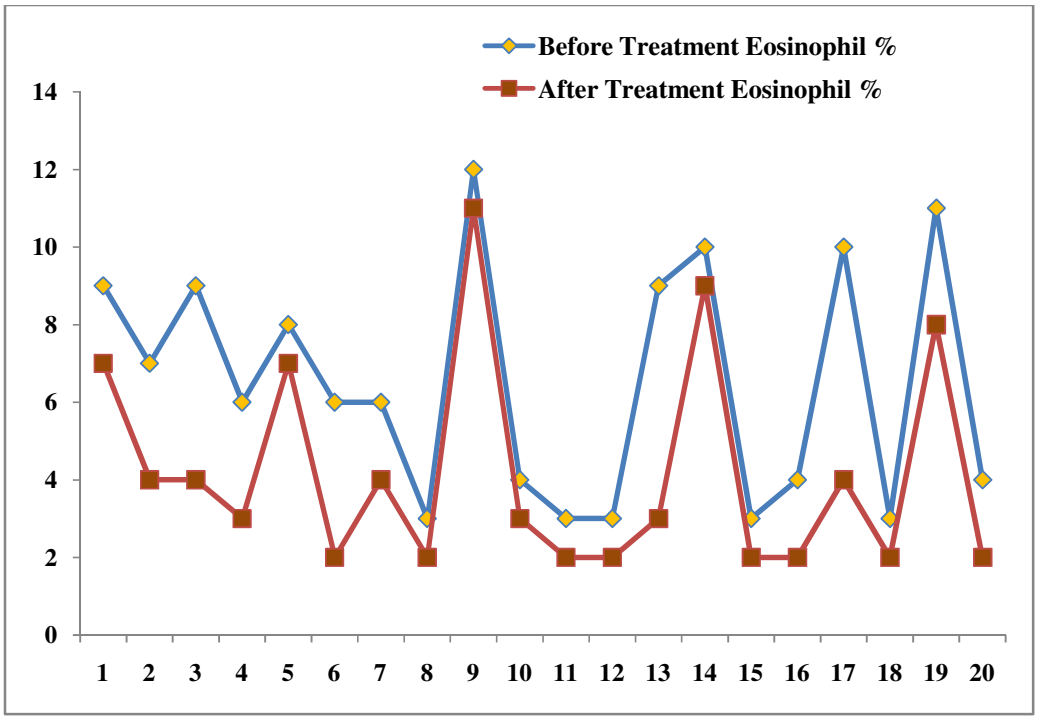


Fig. 4.2. 30.2 Eosinophils countvariation in IP Patients

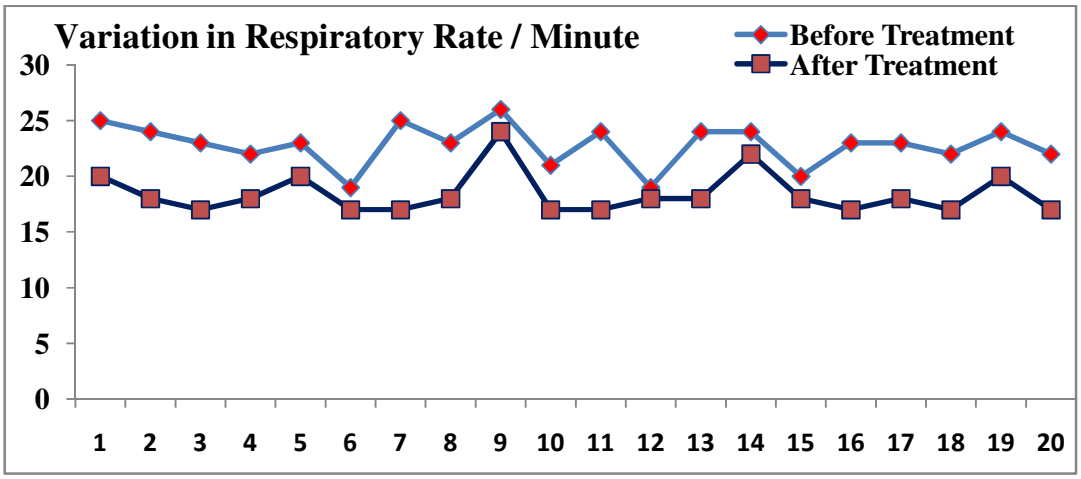


4.2.31. Respiratory Rate in IP Patient

TABLE –4.2. 31 Respiratory Rate in IP Patient before and after treatment.

S.No	I.P No.	Before Treatment	After Treatment
1.	1333	25	20
2.	1827	24	18
3.	2046	23	17
4.	2159	22	18
5.	2163	23	20
6.	2166	19	17
7.	2228	25	17
8.	2874	23	18
9.	2922	26	24
10.	3080	21	17
11.	3125	24	17
12.	3145	19	18
13.	4	24	18
14.	64	24	22
15.	131	20	18
16.	175	23	17
17.	288	23	18
18.	299	22	17
19.	413	24	20
20.	592	22	17

Figure –4.2.31.Respiratory Rate in IP Patient before and after treatment



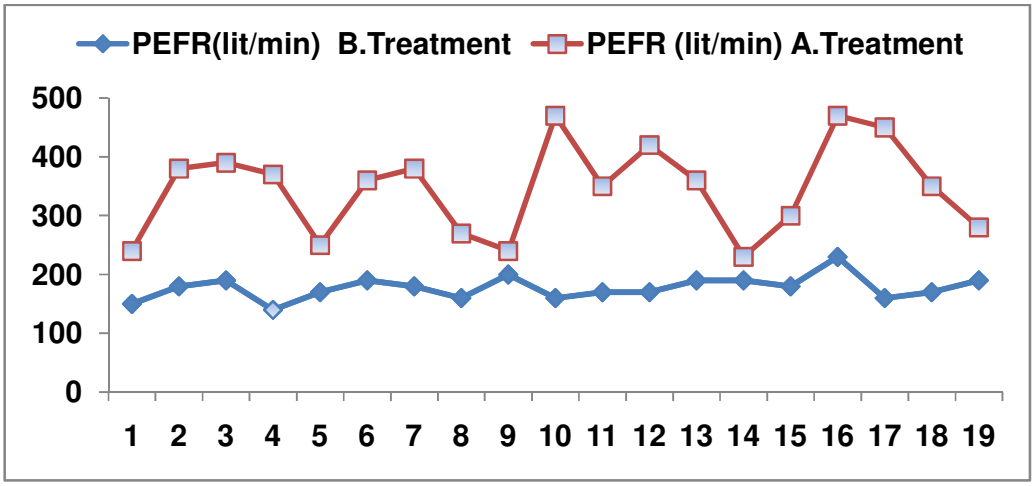
4.2.32. PEFR in IP Patient

TABLE – 4.2.32. PEFR in IP Patient before and after treatment.

S.No	I.P No	Age	Sex	PEFR(lit/min) B.Treatment	PEFR (lit/min) A.Treatment	Result
1.	1333	43	M	150	250	Moderate
2.	1827	50	F	180	380	Good
3.	2046	50	F	190	390	Good
4.	2159	49	F	140	370	Good
5.	2163	60	M	170	250	Moderate
6.	2166	57	F	190	360	Good
7.	2228	55	F	180	380	Good
8.	2874	50	F	160	270	Moderate
9.	2922	60	M	200	240	Poor
10.	3080	60	M	160	470	Good
11.	3125	60	F	170	350	Good
12.	3145	55	M	170	420	Good
13.	4	59	F	190	360	Good
14.	64	47	M	190	230	Poor
15.	131	52	F	180	300	Good
16.	175	60	M	230	470	Good
17.	288	60	M	160	450	Good
18.	299	45	F	170	350	Good
19.	413	60	M	190	280	Moderate
20.	592	60	M	210	430	Good

Good – PEFR value increased 100 and above 100
Moderate – PEFR value increased 50 - below100.
Poor – No change and below 50 in PEFR value.

Figure –4.2.32. PEFR in IP Patient before and after treatment

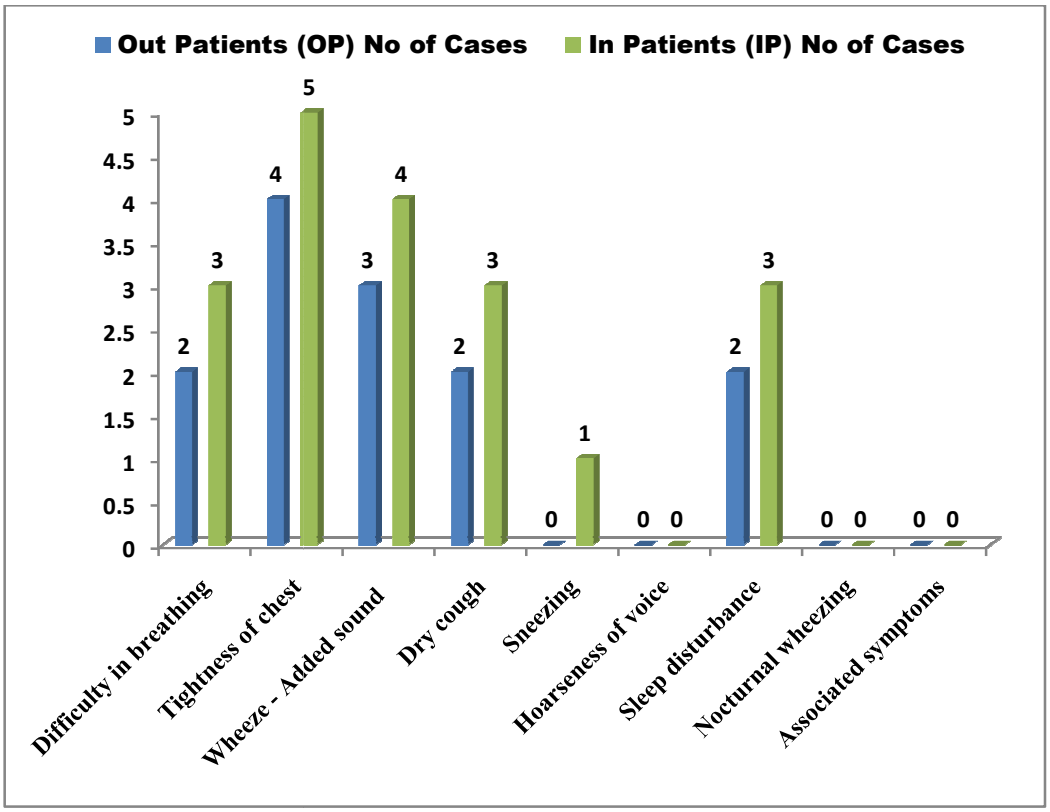


4.2.33. CLINICAL MANIFESTATION – AFTER TREATMENT

TABLE –4.2.33 - Illustrates the Clinical Manifestation
After treatment and relative percentage.

S.No	Clinical manifestation	Out Patients (OP)		In Patients (IP)	
		No of Cases	%	No of Cases	%
01	Difficulty in breathing	2	10	3	15
02	Tightness of chest	4	20	5	25
03	Wheeze - Added sound	3	15	4	20
04	Dry cough	2	10	3	15
05	Sneezing	0	0	1	5
06	Hoarseness of voice	0	0	0	0
07	Sleep disturbance	2	10	3	15
08	Nocturnal wheezing	0	0	0	0
09	Associated symptoms	0	0	0	0

Figure –4.2.33- Clinical Manifestation after treatment.



Among 20 out Patients

After treatment 10 % cases were persisted with the symptom of difficulty in breathing, 20 % cases were persisted with the symptom of tightness of chest, 15 % cases were persisted with the symptom of wheezing (added sound), 10 %cases were persisted with the symptom of dry cough and 10 % cases were persisted with the symptom of sleep disturbances.

Among 20 In Patients

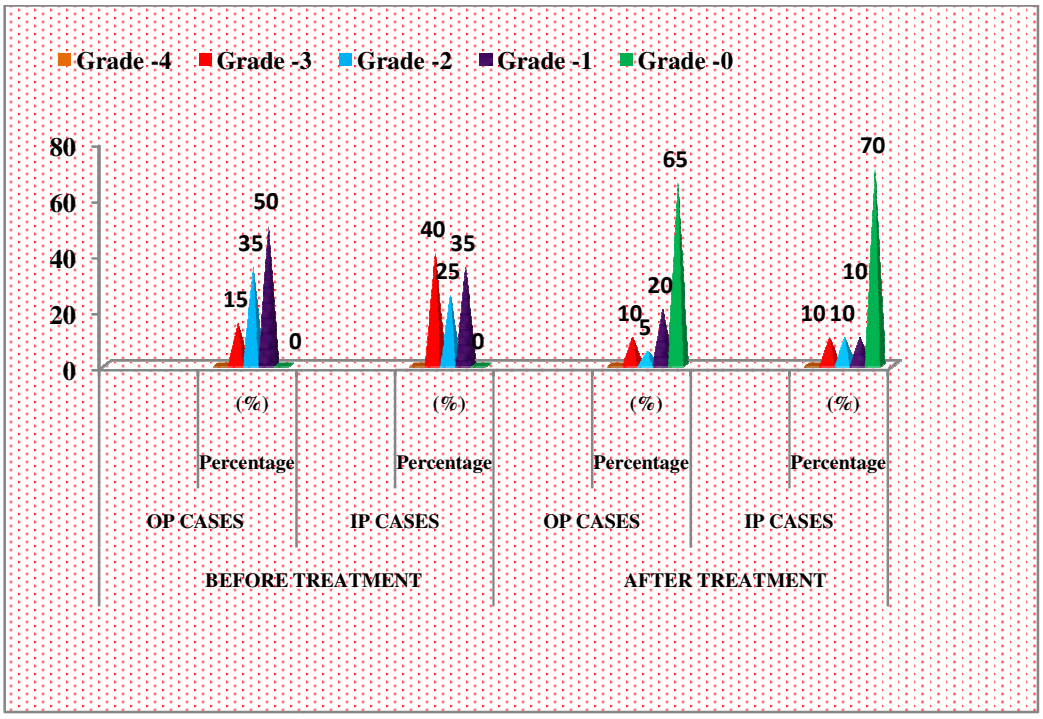
After treatment 15 % cases were persisted with the symptom of difficulty in breathing, 25% cases were persisted with the symptom of tightness of chest,20% cases were persisted with the symptom of wheezing (added sound), 15 % cases were persisted with the symptom of dry cough, 5 % cases were persisted with the symptom of sneezing and 15 % cases were persisted with the symptom of sleep disturbances.

4.2.34.GRADING OF ASTHMA:

Table 4.2.34. Grading of Asthma:

Grade	BEFORE TREATMENT				AFTER TREATMENT			
	OP CASES		IP CASES		OP CASES		IP CASES	
	No of Cases	(%)	No of Cases	(%)	No of Cases	(%)	No of Cases	(%)
Grade -4	0	0	0	0	0	0	0	0
Grade -3	3	15	8	40	2	10	2	10
Grade -2	7	35	5	25	1	5	2	10
Grade -1	10	50	7	35	4	20	2	10
Grade -0	0	0	0	0	13	65	14	70

Figure-4.2.34 Grading of Results



Grade -4 : Severe Persistent Asthma

Grade -3 : Moderate Persistent Asthma

Grade - 2 : Mild Persistent Asthma

Grade -1 : Mild Intermittent Asthma

Grade -0 : Normal

Before treatment:

Among 20 OP patients

50% cases were in Grade I , 35% cases were in Grade II, 15% cases were in Grade III.

Among 20 IP Patients

35% cases were in Grade I, 25% cases were in Grade II, 40% cases were in Grade III

After treatment:

Among 20 OP patients

65% cases were in Grade 0 , 20% cases were in Grade I, 5% cases were in Grade II , 10% cases were in Grade III.

Among 20 IP Patients

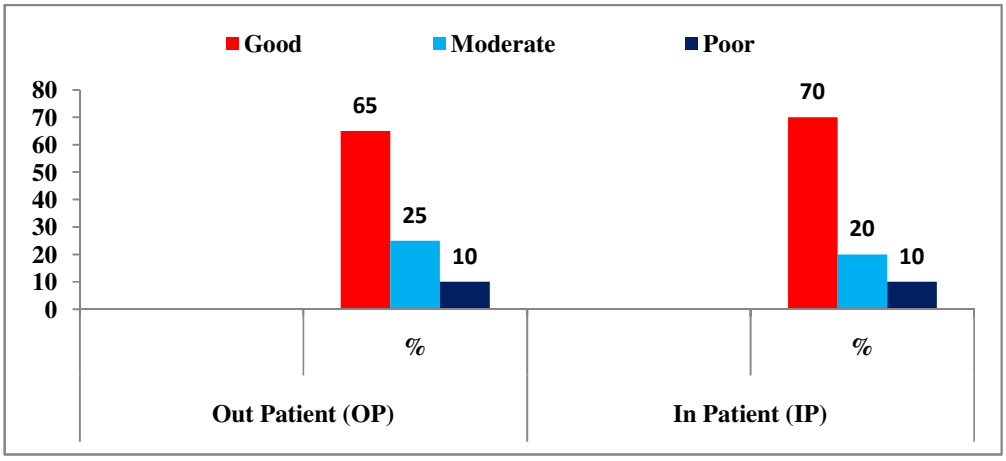
70% cases were in Grade 0, 10% cases were in Grade I ,10 % cases were in Grade- II, 10 % Grade -III

4.2.35.Assessment of Outcome

TABLE –4.2.35. Assessment of Outcome

S. No	Result	Out Patient (OP)		In Patient (IP)	
		No of Cases	%	No of Cases	%
1	Good Response	13	65	14	70
2	Moderate Response	05	25	04	20
3	Poor Response	02	10	02	10

Figure-4.2.35. Assessment of Outcome



Among 20 Out Patients:

65% had good prognosis, 25% had Moderate prognosis, 10% had Poor prognosis.

Among 20 In Patients:

70% had good prognosis, 20% had Moderate prognosis, 10% had Poor prognosis.

4.3.STATISTICAL ANALYSIS

From the below table no.4.3 the paired ' t ' Test of these values shows that all the clinical assessment and parameters were with siginicaficant P value.

Table.4.3.Statistical Analysis

		MEAN	STANDARD DEVIATION	t VALUE	P VALUE
PEFR	**BT**	**192.250**	**28.5089**	**-13.063**	**< 0.01**
	AT	**333.250**	**66.4633**		
EOSINOPHIL COUNT	**BT**	**7.775**	**3.4751**	**10.075**	**< 0.01**
	AT	**5.250**	**3.4770**		
ESR	**BT**	**38.590**	**15.9421**	**8.704**	**< 0.01**
	AT	**23.925**	**13.4248**		
ASTHMA GRADE	**BT**	**1.850**	**0.834**	**11.180**	**< 0.01**
	AT	**0.60**	**1.008**		
CLINICAL MANIFESTATIONS	**BT**	**51.545**	**8.150**	**1.03**	**< 0.01**
	AT	**5.060**	**0.800**		

BT – Before TreatmentAT – After Treatment

V. DISCUSSION

The present study is entitled as "A Prospective, Open labeled, Non-randomized, Phase – II clinical trial on ***SWASAKASAM*** (Bronchial Asthma) with evaluation of the trial drug ***JAATHIPALATHI CHOORANAM.*** 40 patients (20 outpatients and 20 in patients) were selected based on clinical features.Modern investigations and siddha diagnostic methods (envagai thervugal) were carried out for the diagnosis. The trial drug was prepared and given to the patients. The reports of urine, blood and general details were collected from the patients before and after treatment. The PEFR measurement of each patient during the treatment were compared to assess the therapeutic value of the trail drug **JAATHIPALATHI CHOORANAM** .

AGE

In OP cases, the maximum age distribution of Swasakasam was in 18-30 age group- 7 cases (35%). In IP cases, the maximum age distribution of Swasakasam was in 51-60 age group- 13 cases (65%).

SEX

Among the 20 outpatients and 20 in patients, 55% were male and 45% were female.

So in the current study Swasakasam is common in both sex.

RELIGION

By analyzing both outpatients and inpatients, Hindus accounts for 75% and 70% respectively, Christians 25% and 20% respectively, Muslims 0% and 10%respectively.

So, in the current study Swasa kasam was commonly affected in hindus.

EDUCATIONAL STATUS

From the data collected during the enrolment of patients it was learnt that

- 10% of outpatients and 35% of inpatients were illiterate,
- 25 % of out patients and 15% of inpatients had the ability to read and write.
- 15% of the op cases and 25% of the ip cases were studied upto primary school level.
- 10% of the outpatients and 25% of the inpatients were studied upto middle school level.
- 20% of the outpatients were studied upto high school .
- 20% of the outpatients obtained degree education.

OCCUPATION

From the data collected during the enrolment of patients it was learnt that

- 25% of out patients and 30% of in patients were Agricultural labourers.
- 15% of out patients and 20% of inpatients were house wives.
- 15% of out patients were office workers
- 10% of out patients and 15% of inpatients were labourer.
- 10% of out patients were college student.
- 5% of the outpatients and 5% of the Inpatients were hotel server.
- 5% of out patients and 5% of In patients were Masons.
- 5% of inpatients were painter.
- 5% of Out patients and 10% of In patients were carpenter.
- 5% of Out patients and 10% of In patients were Beedi makers.
- 5% of Out patients were Driver.

So, more incidence in Swasakasam was commonly affected agricultural labourers.

SOCIO-ECONOMIC STATUS

The present study revealed that of (75% OPD and 55% IPD) were hailing from the Middle class. The second majority were from Poor income class (45% of in patients and 5% of out patients). Patients from rich sector were only 20% who visited OP to receive treatment.

So, Swasa Kaasam was found to have increased prevalances in middle income cases.

DIET

Out of the 40 cases,15% of outpatients and 25% of in patients were taking Vegitarian diet.Out of the 40 cases,85% of outpatients and 75% of in patients were taking Non- Vegitarian diet.

So, Swasa Kaasam was commonly present in Non vegitarian patients.

PERSONAL HABITS

It was noted that 15% of outpatients and50% inpatients had smoking habit. 40% of outpatients and 45% inpatients had alcoholism.

So, Swasa Kaasam was more prevalent in persons with abusive habits.

TYPE OF THE PATIENTS

Out of the 40 cases whowere recruited for the study majority of them

- 05% of out patients and 10% of in patients were acute patients.
- 95% of outpatients and 90% in patients were chronic patients.

So, most of the treated cases in the trial were chronic patients.

TRIGGER FACTOR

- 70% of out patients and 70% of in patients exposed to dust.
- 25% of outpatients and 65% inpatients exposed to smoke.
- 10% of outpatients and 10% of inpatients exposed to passive smoking.
- 60% of out patients and 45% of in patients hadcold exposure.
- 05% of out patients and 5% of in patients were affected during exercise.
- 45% of out patients and 35% of in patients were affected due to emotion.
- 25% of outpatients and 40% of inpatients were affected because of occupation nature.
- 10% of out patients exposed to food additive.
- 05% of out patients exposed to fumes of paints and petrol
- 10% of Out patients and 5% of In patients exposed to detergents
- 15% of out patients and 15% of In patients were exposed to chemicals
- 25% of out patients and 20% of In patients were exposed to husks, grass, pollans.

So, Swasa Kaasam can be triggered as a commonly dust, cold exposer, emotionand occupation and exposure to husk, grass pollens.

DISTRIBUTION OF FAMILY HISTORY

15% of Out Patients and 10% of In patients had positive family history. 85% of Out patients and 95% of Inpatients had no relative family history.So, Swasa Kaasam shows no relations with Family history in the current study.

CLINICAL MANIFESTATION

- 100% of out patients and in patients difficulty in breathing
- 75% of out patients and 100% in patients had tightness of chest
- 100% of out patients and 100% of in patients had wheeze
- 100% of out patients and in patients had dry cough
- 90% of out patients and 95% of in patients had sneezing
- 25% of outpatients and 40% of inpatients had hoarseness of voice,

- 35% of out patients and 55% of in patients had sleep disturbance
- Associated symptoms of Bronchial asthma were showed in 15% of Out patients.

So, Swasa Kaasam was commonly presented with wheezing, defaulting breathing, dry cough and tightness of chest.

KAALAM

Among the patients

- 35% of the out patients were admitted in vatha kaalam
- 65% of the out patients and 100% of the in patients were admitted in piththa kaalam.

So, the prevalence of disease is during Piththa kaalam in this trial study.

THEGI (CONSTITUTION OF BODY)

Among 20 Out patients:

10%- vatha pitha thegi, 65%-vatha kabha thegi,10 % pitha vatha thegi, 5% pitha kabha thegi, 5% kaba vatha thegi,5% kaba pitha thegi.

Among 20 Inpatients:

5%- vatha pitha thegi, 65%-vatha kabha thegi,5 % pitha vatha thegi,15% pitha kabha thegi, 5% kaba vatha thegi,5% kaba pitha thegi.

So in the current study Swasakasam is common in Vatha kaba thegi.

GUNAM

Among the 40 patients

- 60% of the out patients and 35% of the in patients had Rajogunam
- 40% of the out patients and 45% of the inpatients had Sathuvagunam
- 20% of In patients had Thamogunam.

So, most of the patients affected were subjects with Rajogunam.

THINAI

Among the patients who were selected for the trial

- 90% of the out patients and 90% of the in patients were from Marutha nilam.
- 10% of Out patients and 10% of in patients were from Neithal nilam.

So, most of the cases were determined in Marutha nilam.

PARUVAKAALAM

In general, Swasa Kaasam occurs in all the seasons. But in the present study, it was found to be

- More during Munpani kalam (40% out patients and 40% of in patients).
- 10% of out patient and 10% of in patients during Pinpani kaalam
- 5% of out patients 5% of in patients during illavenil kaalam
- 20% of out patients 10% of in patients during muthuvenil kaalam
- 20% of out patients 15% of in patients during Koothir kaalam
- 5% of outpatients and 20 % of In patients during Kar Kaalam.

So, prevalence of disease is common during Munpani kaalam.

GNANENDRIUM

- In 80% of the outpatients and 65% of the inpatients Mookku was affected.
- 15% of the outpatients and 40% of the inpatients Sevi was affected.
- 15% of the out patients and 20% of the in patients Kan was affected.

KANMENDRIUM

- In 15% of the outpatients and 35% of the inpatients eruvai was affected.
- In 10% of the outpatients and 40% of the in patients Kai was affected.
- In 50% of the in patients Kaal was affected.

CONDITIONS OF MUKKUTRAM

A. DISTURBANCE OF VATHAM

In OP cases, derangement in vayus were noted as follows

Piranan 100%, Abanan 35%, Viyanan 10%, Udhanan 100%, Samanan 100%, Koorman 20%, Kirukaran 85% and Dhevathathan 100%.

In IP cases,derangement in vayus were noted as follows

Piranan 100%, Abanan 05%, Udhanan 100%, Samanan 100%, Koorman 25%, Kirukaran 50% and 100% Dhevathathan.

- Affected Pranan can produce shortness of breath.
- Affected Abanan can produce constipation.
- Affected Viyanan can produce malaise, fatigue, neuralgic pain etc.
- Affected Uthanan can producenausea and vomiting.
- Affected Samanan can produce head ache, giddiness and all system affected.
- Affected Naagan can produce loss of appetite and taste disturbance.
- Affected Koorman can produce altered sensorium, horipliation and bluring of vision.
- Affected Kirukaran can produce body pain and tiredness.
- Affected Dhevathathan can produce malaise, fatigue, sleeplessness.

B. DERANGEMENT OF PITHAM

In OP cases, derangement in pitham noted was Analapitham 75% & In IP cases were Analapitham 60% and Ranjagam 15% .

- Affected Anal piththam can produce loss of appetite.
- Affected Ranjaga piththam can produce pallor of nailbed, skin and conjunctiva, reduced haemoglobin
- Affected Prasaga piththam can produce pallor of skin.
- Affected Alosaga piththam can produce blurring of vision.
- Affected Sathaga piththam can produce mental confusion and difficulty in concentration.

C. DERANGEMENT OF KABHAM

In OP and IP cases derangement were noted in Avalambagam 100%, Kilethagam 35%. In 20% Op cases & 10% IP cases, pothagam was affected.

- Affected Avalambagam can produced derangement of other kabham.
- Affected Kilethagam can produced loss of appetite.
- Affected Pothagam can produced cough and respiratory discomfort.
- Affected Santhigam can produced difficulty in join movements.

UDAL KATTUKKAL

Saaram was affected in 75% of out patients and 75% of in patients.

Senneer was affected in 25% of outpatients and 15% of inpatients.

Enbu was affected in 10% of outpatients and 20% of In patients.

- Affected Saaram can produces weakness of the body and mind, fear and anxiety.
- Affected Senneer can produces derangement in piththam.
- Affected Enbu can produces difficulty in range of movement, joint pain.

ENVAGAI THAERVUGAL

Naa was affected in 20% of the Out Patients.

Niram was affected in 10% of the Out Patients and 10% of the In Patients .

Vizhi was affected in 25% of the Out Patients and 15% of the In Patients.

- Affected Naa and niram can produced paleness.
- Affected Vizhi can produced blurring of vision, redness of eyes.
- Affected Malam can produced constipation.

NAADI

In OP, 65% of the cases had Vadha Kabha Naadi, 10% cases had Vatha Pitha Naadi, 10% cases had Pitha Vatha Naadi, 5% cases had Pitha Kabha Naadi,5% cases had Kabha Vatha Naadi and 5% cases had Kabha Pitha Naadi.

In IP, 65% of the cases had Vadha Kabha Naadi, 5% cases had Vatha Pitha Naadi, 5% cases had Pitha Vatha Naadi, 15% cases had Pitha Kabha Naadi,5% cases had Kabha Vatha Naadi and 5% cases had Kabha Pitha Naadi.

NEIKURI

80% of outpatients and 85% of in patients were found to hadKabha neer

10% of outpatients and 10% of inpatients hadVathaneer.

10% of out patient and 5% of in patients were found Pitha neer.

So, most of the cases were found Kabha neer.

LAB INVESTIGATION

Routine investigation of blood and urine were done during the time of admission, between the treatment and at the time of discharge for all cases.

LABORATORY INVESTIGATIONS

Routine investigations of blood and urine were done before and after treatment in every case. Before treatment blood investigations of the patientsshowed that the Eosinophils count was in increased level range from 6- 15% cells and after treatment it was decreased to the range of 5 – 6%.

Before treatment blood investigations of the patients showed that the ESR was in increased level range from 20 -50 mm/hr and after treatment it was decreased to the range of 10 -20 mm/hr

Blood Urea, Creatinine, Bilirubin and serum cholesterol were found to be in normal range before and after treatment.

Sputum examination (AFB) was found to be negative for all thecases of both Out and In patients.

SPECIAL INVESTIGATION:

Among the 18 Female (45%)patients, before treatment the peak flow meter reading were ranged from 100 lit/min to 180 lit/min and after treatment it got improvement and attained the range 190lit/min to 360 lit/min.

Among the 22 Male (55%)patients, before treatment the peak flow meter reading were ranged from 170 lit/min to 230 lit/min and after treatment it got improvement and attained the range 250 lit/min to 470 lit/min.

PRIMARY OUTCOME

As per objective parameters (PEFR)

Among 20 cases of Out patients, 65% of cases had good improvement, 25% of cases had moderate improvement and 10% of cases had mild improvement.

Among 20 cases of In patients, 70% of cases had clinically good improvement, 20% of cases had clinically moderate improvement and 10% of cases had clinically mild improvement.

SECONDARY OUTCOME

As per subjective parameters (Clinical symptoms)

Among 20 cases of out patients, 90% of cases were relieved from difficulty in breathing, 90% of cases were relieved from dry cough, 85% of cases were relieved from wheezing, 80% of cases were relieved from tightness of chest, 100% of cases were relieved from sneezing and 90% of cases were relieved from Sleep disturbance. Among 20 cases of In patients, 85% of cases were relieved from difficulty in breathing, 85% of cases were relieved from dry cough, 80% of cases relieved from wheezing, 75% of cases were relieved from tightness of chest, 95% of cases relieved from sneezing and 85% of cases were relieved from Sleep disturbance.

STATISTICAL ANALYSIS

Paired 't' test was used to test the significance of treatment using before and after treatment data on PEFR, Gradation of asthma, Clinical Manifestations, Eosinophil and ESR.

The level of significance probability 0.05 was used to test the treatment difference and the values are statistically significant.

STATISTICAL ANALYSIS OF PEAK EXPIRATORY FLOW RATE

The mean value ofPEFRbefore treatment is **192.250** and after treatment is **333.250** and **t value is -13.063** which is statistically significant ($p<0.01$). It is classical evidence that clinical trial drug has high potential in Swasakasam.

STASTITICAL ANALYSIS OF EOSINOPHILCOUNT :

The mean value of Eosinophil count before treatment is **7.775** and after treatment is 5.250 and t value is 10.075 which is statistically significant ($p<0.01$)

STATISTICAL ANALYSIS OF ERYTHROCYTE SEDIMENTATION RATE (mm / 1 hr)

The mean value of ESR (mm/ 1 hr)before treatment is **38.950** and after treatment is **23.925 and t value is** 8.704 which is statistically significant ($p<0.01$).

STATISTICAL ANALYSIS OF GRADING OF ASTHMA

Grading of Asthma before treatment is 1.85 and after treatment is 0.60 and t value is 11.180 which is statistically significant ($p<0.01$).

STATISTICAL ANALYSIS OF CLINICAL MANIFESTATIONS

The mean value of clinical symptomsbefore treatment is 3.55 and after treatment is 0.55 and t value is 1.03 which is statistically significant ($p<0.01$).

VI. SUMMARY

Swasa kasam (Bronchial Asthma) now becomes a very common disease in the society due to increasing the air pollution and climate changes. It is common in both sex. **Jaathipalathi Chooranam 30mg/kg/Bw with honey for 30 days** was administered to subjects for the management of swasa kasam in this clinical study.

The etiology, pathology, pathophysiology, classification, clinical features, complications, prognosis, diagnosis, treatment and prevention of the disease were collected from various literatures in Siddha and modern system of medicine.

- Pharmacological & Toxicological studies were carried out in the pharmacological laboratory of K.M.Collage of Pharmacy, Madurai.
- Biochemical analysis was performed in the Biochemistry lab of GSMC, Palayamkottai.
- Based on the inclusion and exclusion criterias totally 40 cases were selected. Out of this, 20 cases were treated in OPD and 20 cases in IPD.
- The trial medicine showed the presence of calcium, starch, ferrous iron, tannic acid, unsaturated compounds, reducing sugar and amino acids in bio-chemical analysis.
- The trial medicine showed the presence of Alkaloids, Carbohydrates and glycosides, Phytosterols, Flavanoids, Tannins, proteins,Lignin ,Fixed oil and fats in phytochemical analysis.
- In pharmacological analysis, the trial medicine has shown significant anti histaminic, anti-anaphylactic, bronchodilator and anti- inflammatory activity
- Trial drug showed the anti microbial acivity against both Gram positive(*Staphylococcus aureus , Streptococcus mutans, Bacillus subtilis)* and Gram negative bacteria
  (Klebsiella pneumonia, and E.coli)
- Toxicity study reveals that the trial drug is safe even in higher dosage of 2gm/kg in albino rats.
- During the study period, no adverse reactions were reported.
- The trial medicine *Jaathipalathi chooranam* has the tastes of *Kaippu, Kaarppu*, *Thuvarppu*. *Jaathipalathi chooranam* has got the *Kaarppu pirivu*. The *Karppu suvai* which has potent to act as antagonist the excessive *Kabam* .
- All these drugs has got the *thanmai veppam (*presence of*karppu* taste). The *thanmai veppam* has go to action to decrease the vitiated *Kabam* .

- ❖ After ingestion while the trial medicine reaches the gastric juice ,it will change into *vibagam karppu.* At this stage also, the medicine will acts as *anti kaba medicine* due to the *vibagam karppu.*
- ❖ The trial drug was found to play the major role in the correction of
  - the deranged vayus such as pranan, abanan, udhanan, kirugaran, devathathan
  - pitham such as anal pitham and the vitiated kabam.
- ❖ Blood and urine Investigations were carried out before and after treatment and data was recorded in the proforma.
- ❖ Among 20 Out patients cases, 65% had clinically good improvement, 25% had clinically moderate improvement and 10% had clinically poor response.
- ❖ Among 20In patients cases, 70% had clinically good improvement, 20% had clinically moderate improvement and 10% had clinically poor response.
- ❖ As per objective parameters (PEFR)inOut patients cases, 65% had good improvement, 25% had moderate improvement and 10% had poor.Among In patients cases, 70% had good improvement, 20% had moderate improvement and 10% had poor response.
- ❖ Paired 't' test was used to test the significance (before and after treatment data) on PEFR gradation of asthma , clinical Manifestations, eosinophil and ESR. The values were found to be statistically significant ($p<0.01$)

VII.CONCLUSION

- The pharmacological analysis of Jaathipalathi chooranam showed the following findings.
  - **Mast cell stabilizing potential** of JPC resulted in significant degranulation of mesenteric mast cells,JPC prolonged the latent period of preconvulsion dyspnea as compared to control ,following exposure to histamine aerosols.
  - The **anti anaphylactic effect** of JPC was demonstrated and it may be due to inhibition of phenomenon of sensitization or non-availability of antibodies on the mast cell surface.
  - JPC reduced the Carrageenan induced edema considerably on oral administration of 100&200 mg/kg and decreased the pleural exudates,this revealed the **anti inflammatory action** of JPC.
- Trial drug showed the anti microbial acivity against both Gram positive(*Staphylococcus aureus , Streptococcus mutans, Bacillus subtilis*) and Gram negative bacteria (*Klebsiella pneumonia, and E.coli*)
- The toxicity study of trial medicine was done and found to be non toxic and safe to use for longer duration.No evidence of Chronic toxicity was seen on the administration of JPC at higher concentration.
- Statistical analysis of PEFR,Eosinophil, ESR, Gradation of asthma and clinical manifestation was statistically significant.
- The clinical efficacy of JPC in the treatment of Swasakasam were noted in the following manner:-
  - 67.5% got good improvement
  - 22.5% showed the moderate result
  - 10%showed poor results.
- After the trial drug administration, the clinical symptoms like difficulty in breathing,tightness of chest,dry cough and sneezing were reduced.

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ANNEXURE - I

PREPARATION OF TRIAL MEDICINE

JAATHIPALATHI CHOORANAM

அக்கினி மந்தம், சுவாசகாசம், வறட்சி, குன்மம், உள்ளெரிவு, ஈரல்குலையெரிவு, பீலிகை, சேத்தும பித்த விகாரங்களுக்குச் சூரணம்

சாதிக்கா யும்வெள்ளி லோத்திரமு
மிலவங்கந் தக்கோலத்தோ
டோதுசெவ் வியமிளகுங் கற்பூரஞ்
சர்(க்) கரையி னுடனாகப்பூ
வாதியந்த மாயொன்பது வகைமருந்
துஞ்சரியாய ரைத்துத்தேனில்
பேதமிலா நெய்யிரண்டி லொன்றதிலே
கலந்துகுழப் பியுங்கொள்வாயே (228)

கொன்ளலக் கினியின்மந்தங் காசசுவா
சம்வறட்சி குன்மத்தோடே
உள்ளெரிவி னுடனீரல் குலையெரிவும்
பீலிகையி னுடனேசேத்தும
முள்ளவிகா ரங்கள்சேத்தும விகாரங்கள்
கண்டத்தி லுற்ற நோய்கள்
தள்ளியூர்விட் டுக்கதிர் கண்டபனி
யெனவோடுஞ் சகத்திற்றானே (229)

சாதிக்காய், கிராம்பு, செவ்வியம், கற்பூரம், சிறு நாகப்பூ, வெள்ளிலோத்திரப்பட்டை, தக்கோலம், மிளகு, சர்க்கரை- இந்த ஒன்பது வகைச் சரக்குகளையும் சமனெடை எடுத்துச் சூரணித்து, வஸ்திரகாயம் செய்து கொண்டு, தேனிலோ அல்லது நெய்யிலோ குழைத்துச் சாப்பிடவும். இதனால் அக்கினி மந்தம், காசசுவாசம், வறட்சி, குன்மம், உள்ளெரிவு (தேகத்தின் அனத்தல்),ஈரல்குலை எரிவு, பீலிகக் கட்டி, கபத்தினாலுண்டான விகாரங்கள், கழுத்து வியாதிகள் முதலியன தீரும்.

INGREDIENTS

01. ***Jaathikkai***	**-**	சாதிக்காய்
02. ***Kirambu***	**-**	கிராம்பு
03. ***Cheviyam***	**-**	செவ்வியம்
04. ***Sirunagapoo***	**-**	சிறுநாகப்பூ
05. ***Vellilothrappattai***	**-**	வெள்ளிலோத்திரப்பட்டை
06. ***Thakkolam***	**-**	தக்கோலம்
07. ***Milagu***	**-**	மிளகு
08. ***Karpporam***	**-**	கற்பூரம்
09. ***Nattu sarkarai***	**-**	நாட்டு சர்க்கரை

PURIFICATION OF RAW DRUGS.

1. ***Jathikkai:***

Peeled off the outer layer and cut into small pieces allowed it to dried on the shade light.

2. ***Kirambu:***

Removed the adulterant & the flower bud and made it dried on the shade light.

3. ***Cheviyam:***

Peeled off the outer layer and cut into small pieces allowed it to dried on the shade light.

4. ***Karpporam:***

Soaked in *Senkazhuneer* flower juice for 1 *nazhigai* (24mins) then allowed it to dried on the sun light.

5. ***Sirunagappu:***

Removed the adulterant and made it dried on the shade light.

6. ***Vellilothirapattai:***

Removed the adulterant and made it dried on the shade light.

7. ***Thakkolam:***

Removed the adulterant and made it dried on the shade light.

8. ***Milagu:***

Soaked in butter milk for 3 days then fried in the clay plate.

METHOD OF PREPARATION AND DISPENSING

- Each purified raw drugs was taken in equal quantity and powdered separately. Then the powders of all the drugs were mixed homogenously and taken as a compound powder.
- The chooranam was stored in air tight clean container and labelled as JPC and it was issued to patients in packets.
- Each packet contains 6g of the compound powder.
- For OP patients, 2 packets were given twice a day.
- In case of IP patients, the medicine packet was directly issued by me every time.

01.JAATHIKKAI

- Botanical name *: Myristica fragrans Houtt.*
- Family : *Myristicaceae*
- Part used : seed
- Other name : குலக்காய்
- சுவை : துவர்ப்பு, கார்ப்பு
- தன்மை : வெப்பம்
- பிரிவு : கார்ப்பு
- Phytochemicals : neolignins,licarin A, Licarin B,Odoratisol A, B-Sitosterol
- Action : Stimulant, Carminative, Narcotic,Aromatic, Aprodisiac,Tonic
- குணம்:

"தாது நட்டம் பேதி சருவாசி யஞ்சிர நோய்
ஓதுசுவா சங்காசம் உட்கிரணி –வேதோ
டிலக்காய் வரும்பிணிபோம் ஏற்றமயல் பித்தங்
குலக்காய் யருந்துவர்க்குக் கூறு."

இதனால் விந்து குறைவு, பெருங்கழிச்சல், வாயுவினால் உண்டாகும் நோய், தலைவலி, இரைப்பு (சுவாசம்), இருமல் (காசம்), நாட்பட்ட கழிச்சல், வெப்பத்தை முன்னிட்டு வரும் பிணிகள் இவைகள் போகும். ஆனால், மயக்கத்தைத் தரும். மேலும் இது வயிற்றுவலி, வயிற்றுப்பொருமல், அக்கினி மந்தம் இவைகளையும் போக்கும்.

02. கிராம்பு - Kirambu

- Botanical Name : *Syzygiumaromaticum.*Linn
- Family : Myrtaceae
- Part used : Flowerbud
- Other name : இலவங்கம், அஞ்சுகம், உற்கடம், சோகம், திரளி, வராங்கம்
- சுவை : காரம்
- தன்மை : வெப்பம்
- பிரிவு : கார்ப்பு
- Phytochemicals : Alkaloids, Sapanin, Flavonoids , Tanin , Terpenoids
- Action : Antispasmodic ,Carminative ,Stomachic Antibacterial ,Stimulant

- **குணம் :**

"பித்த மயக்கம் பேதியொடு வாந்தியும்போம்
சுத்தவிரத் தக்கடுப்புந் தோன்றுமோ – மெத்த
இலவங்கங் கொண்டவருக் தோன்றுமோ – மெத்த
மலமங்கே கட்டுமென வாழ்ந்து"

"சுக்கிலநட் டங்கர்ண சூர்வியங்க லாஞ்சனந்தாட்
சிக்கலவிடாச் சர்வா சியப்பிணியு – மக்கிக்குட்
டங்கப் பூவோடு தரிபடருந் தோன்றிலில்
வங்கப்பூ வோடுரைத்து வா"

இது, மயக்கம், பேதி, வாந்தி, குருதிக்கழிச்சல், நாட்பட்ட கழிச்சல், எருவாய்க்கடுப்பு, செவிநோய், சிவந்தமச்சம், கறுத்த மச்சம், கண்ணில் பூ, படைகள் ஆகியவற்றை நீக்கும்.

3. செவ்வியம்- Cheveyam

- Botanical Name : *Piper nigram.*Linn
- Family : Piperaceae
- Part used : Root
- Other name : கண்டீரை, சவிகை, சவியம்
- Phytochemicals : Piperin ,Piperidine,Chavicin
- Action : Expectorant , Bronchodilator, Antidote , Carminative

- **குணம் :**

"சூலை அருகிசன்னி தொல்லிருமல் ஈளைபித்தம்
மேலைக் குரற்கம்மல் வெங்களநோய் - மூலசுரம்
கவ்வியங்கத் தேறு களதா வரவிடமுஞ்
செவ்விணங் கொள்ளவிடுந் தேர்"

சூலை, சுவையின்மை, முப்பிணி, நாட்பட்ட சுரம், நீடித்த இருமல்,ஈளை, வெறி, குரற்கம்மல், தொண்டை, நோய்,சுரம், எலும்பைப்பற்றி ஏறுகின்ற நஞ்சு ஆகியவை போம்.

04.சிறுநாகப்பூ - Sirunakapoo

- Botanical Name : *Mesua naggesarium* .Linn
- Family : Clusiaceace
- Part used : Flower

- ❖ Other name : நாகம், நாகபுட்பம், நாககேசரம், கேசரம், சாம்பேயபம்
- ❖ சுவை : சிறுகைப்பு
- ❖ தன்மை : தட்பம்
- ❖ பிரிவு : கார்ப்பு
- ❖ Phytochemicals : Flavanoids , Triterpennoids ,Coumarins
- ❖ Action : Astringent ,Carminative
- ❖ **குணம் :**

"சிறுநாகப் பூவினது செய்கைதனை சொல்வோம்
குறியாகும் மேகத்தைக் கொல்லும் - நெறிவிட்டுத்
தீதாய்ச் செல்வாயுவையுந் தீர்க்குமிரு மற்போக்கும்
கோதாய் இதையறிந்து கொள்"

வெள்ளை, இருமல், கழிச்சல் இவைகளைப் போக்கும்.

5.VELLILOTHRAPPATTAI

- ❖ Botanical Name : *Symplocos racemosa Roxb.*
- ❖ Family : *Symplocaceae*
- ❖ Part used : stem bark
- ❖ வேறு பெயர் : காச சங்கை, காய விலை, தில்லகம், லொத்துகத் தோல் , வெள்ளலத்திப் பட்டை
- ❖ சுவை : துவர்ப்பு
- ❖ தன்மை : தட்பம்
- ❖ பிரிவு : இனிப்பு
- ❖ Phytochemicals : Benzolsalireposide, Symploracemoside, Alkaloids, Loutrine, Colloturine, ash having carbonate of soda.
- ❖ Actions : Mild astringent, Refrigerant, Antidote.
- ❖ குணம் :

"தாவரநஞ் சென்புருக்கி தாழா மகோதர நோய்
கூவவொட்டாத குரற்சாதம்- பூவுலகில்
வெல்லவரி தாய வியங்கமுதா வாத்தமும்போம்
நல்ல வெள்ளி லோத்திரத்தினால்"

இதனால் கழிச்சல், சீதக்கழிச்சல், வீக்கம், கண்நோய்,சுரம், புண்கள்,ஈரலைப் பற்றிய பிணிகள், பெரும்பாடு, சூதகத் தடை இவை நீங்கும்.

6.THAKKOLAM

- Botanical Name : *Illium verum Hook.*
- Family : *Illicium*
- Part used : fruit
- வேறு பெயர் : அன்னாசிப் பூ
- சுவை : இனிப்பு, விறுவிறுப்பு
- தன்மை : வெப்பம்
- பிரிவு : கார்ப்பு
- Phytochemicals : Tannins,Linoleic Acid , Foeniculin, Palmittic Acid.
- Actions : Spasmodic, Stimulant, Tonic.
- **குணம்**

"பாண்டுசுரம் போகும் பகரிற் பலஞ்சேருமட
தீண்டுமுப யாசியமுந் தீருங்காண் - நீண்டதொரு
தாதுவிர்த்தி யாகுந் தளர்ந்தமல முங்கட்டும்
கோதகலுந் தக்கோலங் கொள்"

இதனால் பாண்டு, சுரம், வாயைப்பற்றிய வளி நொய்கள் போகும். உடல் வன்மை பெறும். ஆண்மை பெறும்.

7. மிளகு - Milagu

- Botanical Name : *Piper nigrum.*Linn
- Family : Piperaceae
- Part used : Fruit
- Other name : கலினை, கறி,காயம், கோளகம், திரங்கல், சருமபந்தம், வள்ளிசம், மாசம், குறுமிளகு, மலையாளி
- சுவை : கைப்பு
- தன்மை : வெப்பம்
- பிரிவு : கார்ப்பு
- Phytochemicals : Piperin, Piperlonguminine
- Action : Carminative, Rubefacient ,Stimulant Resolvent , Antivatha ,Antidode

❖ குணம்:

"சீதசுரம் பாண்டு சிலேத்துமங் கிராணிகுன்மம்
வாதம் அருசிபித்தம் மாமூலம் - ஓதுசன்னி
யாசமபஸ் மாரம் அடன்மேகம் காசமிவை
நாசங் கறிமிளகினால்"

"கோணுகின்ற பக்கவலி குய்யவுரோ கம்வாத
சோணிதங்க ழுத்திற்குள் தோன்றுநோய் - காணரிய
காதுநோய் மாதர்குன்மங் காமாலை மந்நமென்றீர்
ஏதுநோய் காயிருக்கில் ஈங்கு"

குளிர்சுரம், பாண்டு, கோழை, கழிச்சல், குன்மம், வாயு, சுவையின்மை, வெறி, மூலம், சன்னியாசம், அபஸ்மாரம், பிரமேகம், இருமல், செரியாமை, பக்கவாதம், குய்யரோகம்,சோணிதவாதம், கபநோய், செவிவலி, இரத்தகுன்மம், காமாலை இவை போகும்.

8.KARPOORAM (கற்பூரம்)

❖ Botanical Name : Cinnamomum camphora Linn
❖ Family : Lauraceae
❖ Part used : A white crystalline ketone
❖ வேறு பெயர் : கருப்பூரம்,சுடர்க்கொடியோன், பூரம்,தீபம்
❖ சுவை : விறுவிறுப்புடன் கூடிய கைப்பு, கார்ப்பு
❖ தன்மை : வெப்பம்
❖ விபாகம் : கார்ப்பு.
❖ Phytochemicals : Cinnamic acid, Cinnacassiol, Kaempferol, Cinnamtannin B-1
❖ Actions : Expectorant, Carminative,Sedative.

குணம்:

"கிருமிசலதோடங் கிளைவலிப்பு சந்நி
பொருமுமந்தம் அங்கிபட்ட புண்ணோ-டெரிசுரங்கள்
வாந்திபித்தஞ் சீதமுறு வாதஞ் செவிமுக நோய்
காந்திகருப் பூரமொன்றாற் சாற்று"

இதனால் கிருமி, நீரேற்றம், இசிவு, சந்நிபாதம், வாத அலசம், தீச்சுட்ட புண், கோரசுரம், வாந்தி, பித்தம், கபவாதம், காதையும் முகத்தையும் பற்றிய பிணிகள் முதலியன நீங்கும்.

9.Nattu sarkkarai (நாட்டு சர்க்கரை)

- Botanical Name : *Sacharum officinarum.*Linn
- Family : Poaceae
- Part used : Stem juice
- Other name : புனற்பூசம், இக்கு, வேய்
- சுவை : இனிப்பு
- தன்மை : சீதம்
- பிரிவு : இனிப்பு
- Phytochemicals : Phenolic acid,Terpenoids,Flavonoids
- Action : Demulcent, Anti septic, Laxative, Diuretic, Nutrient
- **குணம்:**

"அருந்து மருந்திற் கனுபான மாகப்
பொருத்துமடல் வாந்திபித்தம் போக்கும் - அருந்தருசி
நீக்கு மதிகபத்தை நீற்றுமகிழ்ச்சியுண்
டாக்கு நறுஞ்சர்க்க ரை"

மருந்தின் அனுபானமாயுள்ளது, வாந்தி பித்தம், சுவையின்மை இவற்றை போக்கும். கெட்டிபட்ட கபத்தை இளக்கி மகிழ்ச்சியைத் தரும்.

Figure 2.1.1 ***Myristica fragrans***

Figure 2.1.2*Syzygium aromaticum*

Figure 2.1.3 ***Piper nigrum - seed***

Figure 2.1.4 ***Piper nigrum-root***

Figure 2.1.5 ***Mesua naggesarium***

Figure 2.1.6 ***Symplocos racemosa***

Figure 2.1.7 . *Illicium verum*

Figure 2.1.8.*Cinnamomum camphora*

Figure 2.1.9*Sacharum officinarum*

Figure 2.1.9. JAATHIPALATHI CHOORANAM (JPC)

ANNEXURE - II

PULMONARY FUNCTION TEST - REPORT

PATIENT NO. 1:

PATIENT NAME : TAMILARASI 30/F **OP NO.: 101045**

BEFORE TREATMENT SPIROMETRY

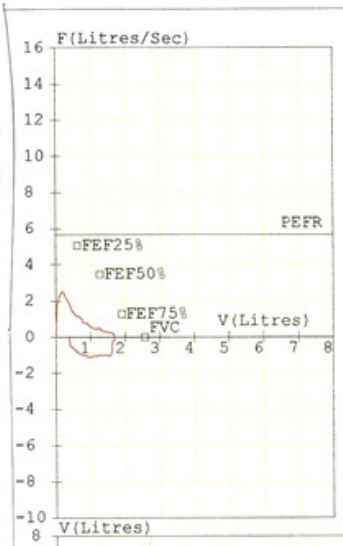
AARTHI SCANS & LABS

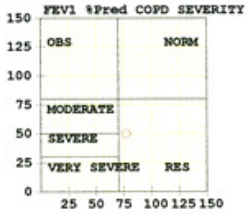
TIRUNELVELI

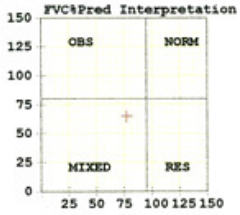
Patient : Ms .P . TAMILARASI
Refd.By : GOVT. SIDDHA . M . COLLEGE
Pred. Eqns : RECORDERS
DATE : 20 -12 -2018 4:23 PM

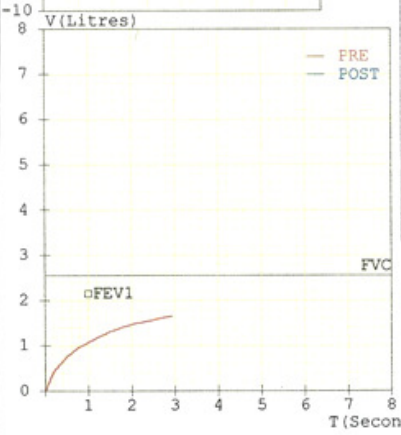
Age : 30 Years
Height : 160 cms
Weight : 68 kgs
ID : 651124

Gender : Female
Smoker : No
Eth .Corr: 100
Tem :









Spirometry(FVC Results)

Parameter		Pred	M.Pre	%Pred	M.Post	%Pred	%Imp
FVC	(L)	02.56	01.67	065	-----	---	---
FEV1	(L)	02.16	01.09	050	-----	---	---
FEV1/FVC	(%)	84.38	65.27	077	-----	---	---
FEF25-75	(L/s)	02.80	00.72	026	-----	---	---
PEFR	(L/s)	05.65	02.47	044	-----	---	---
FIVC	(L)	02.53	01.29	051	-----	---	---
FEV.5	(L)	-----	00.78	---	-----	---	---
FEV3	(L)	-----	01.67	---	-----	---	---
PIFR	(L/s)	-----	01.11	---	-----	---	---
FEF75-85	(L/s)	-----	00.33	---	-----	---	---
FEF.2-1.2	(L/s)	-----	00.85	---	-----	---	---
FEF 25%	(L/s)	05.04	01.65	033	-----	---	---
FEF 50%	(L/s)	03.45	00.75	022	-----	---	---
FEF 75%	(L/s)	01.27	00.46	036	-----	---	---
FEV.5/FVC	(%)	-----	46.71	---	-----	---	---
FEV3/FVC	(%)	-----	100.00	---	-----	---	---
FET	(Sec)	-----	02.95	---	-----	---	---
ExplTime	(Sec)	-----	00.08	---	-----	---	---
Lung Age	(Yrs)	058	087	150	-----	---	---
FEV6	(L)	02.56	-----	---	-----	---	---
FIF25%	(L/s)	-----	00.20	---	-----	---	---
FIF50%	(L/s)	-----	01.00	---	-----	---	---
FIF75%	(L/s)	-----	01.06	---	-----	---	---

Pre Test COPD Severity

Restrictive stage COPD as FEV1/FVC >= 70% and FEV1 < 80%

Pre Medication Report Indicates

Early Small Airway Obstruction as FEF 25-75 %Pred or PEFR %Pred < 70

Mixed Blockage as (FEV1/FVC)%Pred <95 and FVC%Pred <80

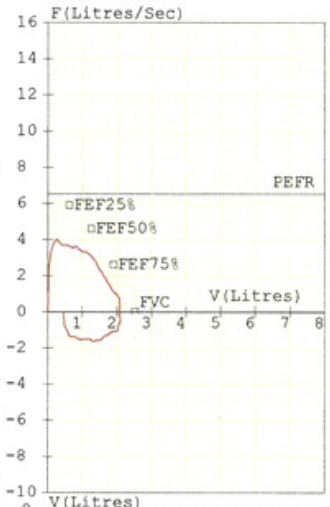
PATIENT NAME : TAMILARASI 30/F **OP NO.: 101045**

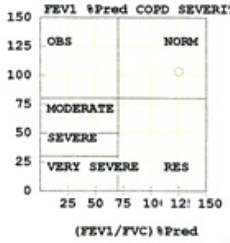
AFTER TREATMENT SPIROMETRY

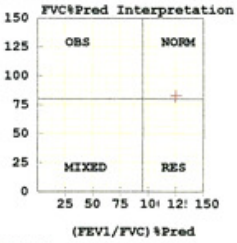
AARTHI SCANS & LABS

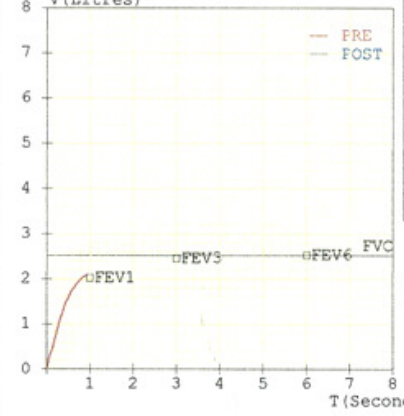
TIRUNELVELI - 627003

Patient: MS.P.THAMILARASI	Age : 30 Years	Gender : Female	
Refd. By: GOVT.SIDDHA.M.COLLEGE	Height : 160 Cms	Smoker : No	
Pred.Eqns: RECORDERS	Weight : 67 Kgs	Eth. Corr: 100	
Date : 01-Feb-2019 05:21 PM	ID: 671192	Temp :	









Spirometry(FVC Results)

Parameter		Pred	M.Pre	%Pred	M.Post	%Pred	%Imp
FVC	(L)	02.53	02.09	083	-----	---	---
FEV1	(L)	02.03	02.09	103	-----	---	---
FEV1/FVC	(%)	80.24	100.00	125	-----	---	---
FEF25-75	(L/s)	02.94	03.07	104	-----	---	---
PEFR	(L/s)	06.52	03.94	060	-----	---	---
FIVC	(L)	-----	01.63	---	-----	---	---
FEV.5	(L)	-----	01.63	---	-----	---	---
FEV3	(L)	02.45	02.09	085	-----	---	---
PIFR	(L/s)	-----	01.61	---	-----	---	---
FEF75-85	(L/s)	-----	01.76	---	-----	---	---
FEF.2-1.2	(L/s)	05.33	03.50	066	-----	---	---
FEF 25%	(L/s)	05.90	03.68	062	-----	---	---
FEF 50%	(L/s)	04.61	03.28	071	-----	---	---
FEF 75%	(L/s)	02.61	02.14	082	-----	---	---
FEV.5/FVC	(%)	-----	77.99	---	-----	---	---
FEV3/FVC	(%)	96.84	100.00	103	-----	---	---
FET	(Sec)	-----	00.90	---	-----	---	---
ExplTime	(Sec)	-----	00.06	---	-----	---	---
Lung Age	(Yrs)	030	029	097	-----	---	---
FEV6	(L)	02.53	-----	---	-----	---	---
FIF25%	(L/s)	-----	00.81	---	-----	---	---
FIF50%	(L/s)	-----	01.28	---	-----	---	---
FIF75%	(L/s)	-----	01.61	---	-----	---	---

Pre Test COPD Severity

Test within normal limits

Pre Medication Report Indicates

Early Small Airway Obstruction as FEF 25-75 %Pred or PEFR %Pred < 70

Spirometry within normal limits as (FEV1/FVC)%Pred >95 and FVC%Pred >80.

PATIENT NO. 2:

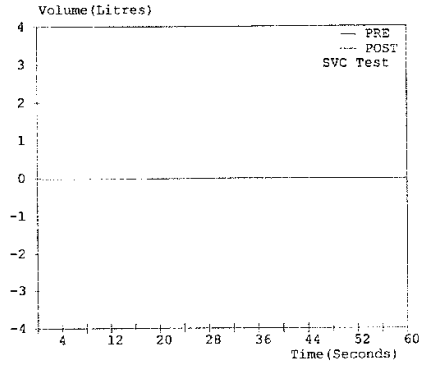
PATIENT NAME : SOMASUNDHARI 21/F **OP NO.: 14887**

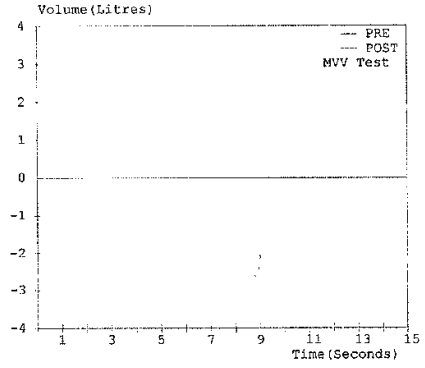
BEFORE TREATMENT SPIROMETRY

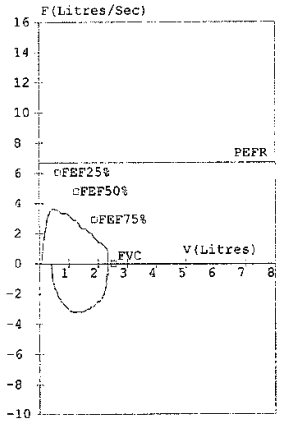
AARTHI SCANS & LABS

TIRUNELVELI - 627003

Patient: MS.SOMASUNDARI	Age : 21 Years	Gender : Female	
Refd. By:	Height : 158 Cms	Smoker : No	
Pred.Eqns: RECORDERS	Weight : 42 Kgs	Eth. Corr: 100	
Date : 07-Feb-2019 06:09 PM	ID: 72184	Temp :	

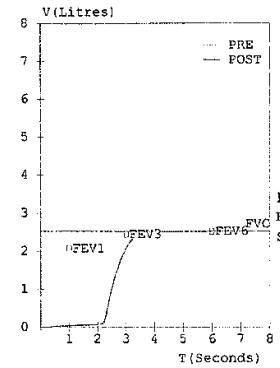






Spirometry Results

Parameter		Pred	M.Pre	%Pred	M.Post	%Pred	%Imp
FVC	(L)	02.52	02.33	092	-----	---	---
FEV1	(L)	02.07	00.05	002	-----	---	---
FEV1/FVC	(%)	82.14	02.15	003	-----	---	---
FEF25-75	(L/s)	03.18	02.72	086	-----	---	---
PEFR	(L/s)	06.69	03.58	054	-----	---	---
FIVC	(L)	-----	01.91	---	-----	---	---
FEV.5	(L)	-----	00.04	---	-----	---	---
FEV3	(L)	02.44	02.16	089	-----	---	---
PIFR	(L/s)	-----	03.19	---	-----	---	---
FEF75-85	(L/s)	-----	01.64	---	-----	---	---
FEF.2-1.2	(L/s)	05.72	03.19	056	-----	---	---
FEF 25%	(L/s)	06.02	03.54	059	-----	---	---
FEF 50%	(L/s)	04.77	02.83	059	-----	---	---
FEF 75%	(L/s)	02.91	02.02	069	-----	---	---
FEV.5/FVC	(%)	-----	01.72	---	-----	---	---
FEV3/FVC	(%)	96.83	92.70	096	-----	---	---
PET	(Sec)	-----	03.17	---	-----	---	---
ExplTime	(Sec)	-----	00.07	---	-----	---	---
Lung Age	(Yrs)	021	042	200	-----	---	---
FEV6	(L)	02.52	-----	---	-----	---	---
FIF 25%	(L/s)	-----	01.15	-----	-----	---	---
FIF 50%	(L/s)	-----	02.82	-----	-----	---	---
FIF 75%	(L/s)	-----	03.15	-----	-----	---	---
SVC	(L)	01.36	-----	---	-----	---	---
ERV	(L)	-----	-----	---	-----	---	---
IRV	(L)	-----	-----	---	-----	---	---
VE	(L/min)	-----	-----	---	-----	---	---
Rf	(1/min)	-----	-----	---	-----	---	---
Ti	(sec)	-----	-----	---	-----	---	---
Te	(sec)	-----	-----	---	-----	---	---
VT	(L)	-----	-----	---	-----	---	---
VT/Ti		-----	-----	---	-----	---	---
Ti/Ttot		-----	-----	---	-----	---	---
IC	(L)	-----	-----	---	-----	---	---
MVV	(L/min)	114	-----	---	-----	---	---
MRf	(1/min)	-----	-----	---	-----	---	---
MVT	(L)	-----	-----	---	-----	---	---



Pre Medication Report Indicates
Early Small Airway Obstruction as FEF 25-75 %Pred or PEFR %Pred < 70
Severe Obstruction as (FEV1/FVC)%Pred <65 and FVC%Pred >80

PATIENT NAME : SOMASUNDHARI 21/F **OP NO.: 14887**

AFTER TREATMENT SPIROMETRY

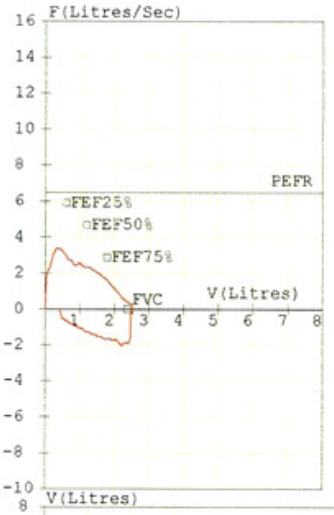
AARTHI SCANS & LABS

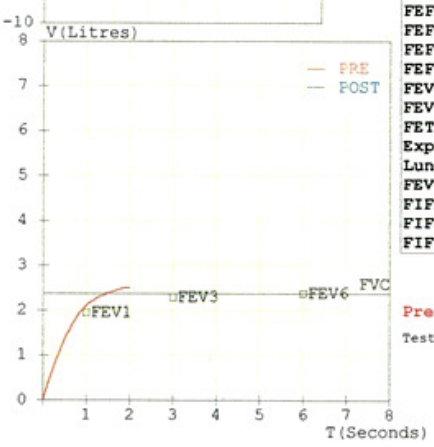
TIRUNELVELI - 627003

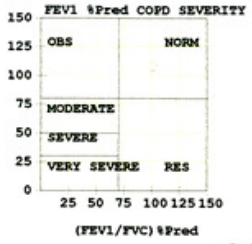
Patient: MISS.R.SOMASUNDARI
Refd. By: GOVT SIDDHA M.COLLEGE
Pred.Eqns: RECORDERS
Date : 02-Jul-2019 04:34 PM

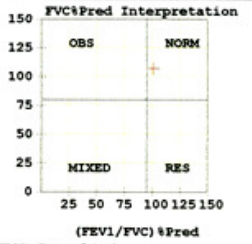
Age : 21 Years
Height : 154 Cms
Weight : 42 Kgs
ID: 15377

Gender : Female
Smoker : No
Eth. Corr: 100
Temp :









Spirometry(FVC Results)

Parameter		Pred	M.Pre	%Pred	M.Post	%Pred	%Imp
FVC	(L)	02.37	02.53	107	-----	---	---
FEV1	(L)	01.96	02.11	108	-----	---	---
FEV1/FVC	(%)	82.70	83.40	101	-----	---	---
FEF25-75	(L/s)	03.08	02.08	068	-----	---	---
PEFR	(L/s)	06.47	03.34	052	-----	---	---
FIVC	(L)	-----	02.10	---	-----	---	---
FEV.5	(L)	-----	01.37	---	-----	---	---
FEV3	(L)	02.30	02.53	110	-----	---	---
PIFR	(L/s)	-----	02.02	---	-----	---	---
FEF75-85	(L/s)	-----	01.01	---	-----	---	---
FEF.2-1.2	(L/s)	05.57	02.69	048	-----	---	---
FEF 25%	(L/s)	05.91	02.80	047	-----	---	---
FEF 50%	(L/s)	04.67	02.27	049	-----	---	---
FEF 75%	(L/s)	02.87	01.31	046	-----	---	---
FEV.5/FVC	(%)	-----	54.15	---	-----	---	---
FEV3/FVC	(%)	97.05	100.00	103	-----	---	---
FET	(Sec)	-----	02.03	---	-----	---	---
ExplTime	(Sec)	-----	00.10	---	-----	---	---
Lung Age	(Yrs)	021	019	090	-----	---	---
FEV6	(L)	02.37	-----	---	-----	---	---
FIF25%	(L/s)	-----	01.72	---	-----	---	---
FIF50%	(L/s)	-----	01.70	---	-----	---	---
FIF75%	(L/s)	-----	01.44	---	-----	---	---

Pre Test COPD Severity

Test within normal limits

Pre Medication Report Indicates

Early Small Airway Obstruction as FEF 25-75 %Pred or PEFR %Pred < 70

Spirometry within normal limits as (FEV1/FVC)%Pred >95 and FVC%Pred >80.

ANNEXURE - III

SCREENING COMMITTEE CERTIFICATE

GOVERNMENT SIDDHA MEDICAL COLLEGE
PALAYAMKOTTAI

SCREENINGCOMMITTEE

Name of the Candidate : Dr. R.Subashini.

Registration No. of the Candidate:……..

DEPARTMENT OF POTHUMARUTHUVAM

This is to certify that the dissertation topic *"A Prospective Open labelled Phase II Non Randomized clinical study of* ***JAATHIPALATHI CHOORANAM for SWASA KASAM"*** has been approved by the screening committee.

Branch	Department	Name	Signature
1	Pothu Maruthuvam	Dr.A.Manoharan. MD(S) Professor	
2	Gunapadam	Dr.A.Kingsly MD(S) Associate Professor	
3	Sirappu Maruthuvam	Dr.A.S.Poongodi Kanthimathi MD(S) Professor	
4	Kuzhandhai Maruthuvam	Dr.D.K.Soundararajan. MD(S) Professor	
5	Noi Nadal	Dr.S.Victoria MD(S) Professor	
6	Nanju Nool Maruthuvam	Dr.M.Thiruthani. MD(S) For. Professor	

Place : Palayamkottai

Date : 26.05.2017

PRINCIPAL
Govt. Siddha Medical College
Palayamkottai.

ANNEXURE - IV

INSTITUTIONAL ETHICAL COMMITTEE CERTIFICATE

INSTITUTIONAL ETHICAL COMMITTEE,
GOVERNMENT SIDDHA MEDICAL COLLEGE,
PALAYAMKOTTAI, TIRUNELVELI- 627002,
TAMIL NADU, INDIA.

Ph: 0462-2572736/2572737/2582010 Fax: 0462-2582010
Email ID: gsmc.palayamkottai@gmail.com

R.No.GSMC/5676/P&D/Res/IEC/2014 **Date: 29.05.2017**

CERTIFICATE OF APPROVAL

Address of Ethical Committee	Government Siddha Medical College, Palayamkottai-627002, Tirunelveli district.
Principal Investigator	Dr.R.SUBASHINI, First year, Department of Pothu Maruthuvam, Reg. No: Not yet registered.
Supervisor	**Prof.Dr.A.Manoharan, M.D(s).,** Head of the Department, Department of PothuMaruthuvam, Government Siddha Medical College and Hospital, Palayamkottai - 627002, Tirunelveli District. drmanoharan25@gmail.com
Guide	**Dr.G.Subash Chandran, M.D(s)., Phd** Lecturer , Department of Pothu Maruthuvam GSMC Palayamkottai, Palayamkottai - 627002, Tirunelveli District. **siddhadrgs21@gmail.com**
Dissertation Topic	A Prospective open labelled Phase II Non-randomized Clinical trial on **"JAATHIPALATHI CHOORANAM"** for the treatment of **SWASA KASAM** (BRONCHIAL ASTHMA)
Documents Filed	(1)Protocol (2)Data Collection Forms (3)Patient Information Sheet (4)Consent Form (5)SAE (Pharmaco vigilance)
Clinical/Non Clinical Trial Protocol (Others-Specify)	Clinical Trial Protocol-yes
Informed Consent Document	Yes
Any other Document	Case Sheet/Investigation Documents
Date of IEC Approval & its Number	**GSMC/IV-IEC/2017/ Br-I/09/29.05.2017**

We approve the trial to be conducted in its presented form.

The Institutional Ethical Committee expects to be informed about the process report to be submitted to the IEC at least annually of the study, any SAE occurring in the course of the study, any changes in the protocol and submission of final report.

Chairman

(Prof. Dr.N.MURUGESAN, MD (S)

Member Secretary

29/5/17

(Prof.Dr.R.NEELAVATHY, MD (S) PH.D)

ANNEXURE - V

INSTITUTIONAL ANIMAL ETHICAL COMMITTEE CERTIFICATE

K.M. COLLEGE OF PHARMACY – MADURAI

IAEC – CERTIFICATE

This is to certificate that the project title A PROSPECTIVE OPEN LABELLED NON-RANDOMIZED PHASE - II CLINICAL TRIAL ON **"JAATHIPALATHI CHOORANAM"** FOR THE TREATMENT OF **SWASA KASAM (BRONCHIAL ASTHMA)** has been approved by the **IAEC/ R. SUBASHINI /TNMGRMU/MD(S)/ 321611009/KMCP/28/2018.**

Dr. N. CHIDAMBARANATHAN

Name of the Chairman / Member Secretary IAEC:

Dr. P. THIRUPATHY KUMARESAN

Name of the CPCSEA Nominee

N. [signature] 1/5/18

Signature with Date

I. A. E. C. CHAIRMAN
INSTITUTIONAL ANIMAL ETHICAL COMMITTEE
K. M. COLLEGE OF PHARMACY
MADURAI-625 107.

[signature] 1/5/18

CPCSEA NOMINEE
INSTITUTIONAL ANIMAL ETHICS COMMITTEE
K M. COLLEGE OF PHARMACY
MADURAI-625 107

Chairman / Member Secretary of IAEC

CPCSEA Nominee

(Kindly make sure that minutes of the meeting duly signed by all the participants are maintained by office).

ANNEXURE - VI(A)

BOTANICAL AUTHENTICATION CERTIFICATE

GOVERNMENT SIDDHA MEDICAL COLLEGE

PALAYAMKOTTAI

Certificate of Botanical Authenticity

Certified the following plant drugs used in Siddha formulation (Internal) **"JAATHIPALATHI CHOORANAM"** for **SWASA KASAM** (Bronchial Asthma) taken up for Post-Graduation Dissertation Studies by Dr.R. SUBASHINI PG Scholar MD siddha, Department of Pothu Maruthuvam are correctly identified and authenticated through Visual inspection / Organoleptic Characters / Experience, Education & Training Morphology Microscopically and Taxonomical methods.

Table 1: Ingredients of Jaathipalathi Chooranam

SL. NO	DRUGS	BOTANICAL NAME	FAMILY	PART USED
1.	JATHIKKAI	*Myristica fragrans. Linn*	Myristicaceae	Seed
2.	KIRAMBU	*Syzygium aromaticum. Linn*	Myrtaceae	Flower bud
3.	CHEVIYAM	*Piper nigrum. Linn*	*Piperaceae*	Root
4.	SIRUNAGAPOO	*Cinnamomum wightii. Meissn*	*Lauraceae*	Flower bud
5.	VELLILOTHRA PATTAI	*Symplocos racemosa. Roxb*	Symplocaceae	Stem bark
6.	THAKKOLAM	*Illicium verum. Hook*	Illiciaceae	Fruit
7.	MILAGU	*Piper nigrum. Linn*	Piperaceae	Fruit

Station: Palayamkottai

Date: 8/2/18

Authorized Signature

Dr. S. SUTHA, M.Sc.,M.Ed.,Ph.D.,
Associate Professor
Dept. of Medicinal Botany
Govt. Siddha Medical College
Palayamkottai, Tirunelveli - 2.

ANNEXURE - VI(B)

MINERAL AUTHENTICATION CERTIFICATE - I

Govt. Siddha Medical College, Palayamkottai, Tirunelveli

Certificate of Gunapadam Authentication

Certified the following Thathu (Mineral) drug used in Siddha formulation (Internal) **"JAATHIPALATHI CHOORANAM"** for **SWASA KASAM** (Bronchial Asthma) taken up for Post-Graduation Dissertation Studies by Dr.R.SUBASHINI, PG Scholar MD siddha, Department of Pothu Maruthuvam (Government Siddha Medical College, Palayamkottai), are correctly identified and authenticated through Visual inspection , Experience, Education and Training Morphology, Biochemical Methods.

1. KARPOORAM *(Cinnamomum camphora)*

Station: Palayamkottai

Date: 04.04.18

Authorized Signature

Dr. A. KINGSLY MD (S)
Reader
Head of the Department
PG Gunapadam
Govt. Siddha Medical College
Palayamkottai.

MINERAL AUTHENTICATION CERTIFICATE - II

Certificate of Mineral Authentication

Certified the following Thathu (Mineral) drug used in Siddha formulation (Internal) **"JAATHIPALATHI CHOORANAM"** for **SWASA KASAM** (Bronchial Asthma) taken up for Post-Graduation Dissertation Studies by Dr.R.SUBASHINI, PG Scholar MD siddha, Department of Pothu Maruthuvam (Government Siddha Medical College, Palayamkottai), are correctly identified and authenticated through Visual inspection , Experience, Education and Training Morphology, Biochemical Methods.

SL. NO	Name	Chemical Name
1.	KARPOORAM	*Cinnamomum camphora*

Station: Palayamkottai

Date: 9/2/18

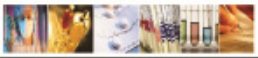
M. Kamalutheen 9/2/18

Authorized Signature

Dr. M. Kamalutheen, M.Sc.,M.Phil.,Ph.D
Head & Associate Professor
Dept. of Chemistry
Sadakathullah Appa College.
(Autonomous)
Tirunelveli - 627 011.
Tamilnadu, India.

ANNEXURE - VII

FIRST PAGE OF CLINICAL TRIAL REGISTRY - INDIA



Clinical Trial Details (PDF Generation Date :- Tue, 02 Apr 2019 16:58:03 GMT)

CTRI Number	CTRI/2018/03/012772 [Registered on: 22/03/2018] - **Trial Registered Prospectively**
Last Modified On	16/03/2018
Post Graduate Thesis	Yes
Type of Trial	Interventional
Type of Study	Siddha
Study Design	Single Arm Trial
Public Title of Study	A Clinical trial to study the effect of trial drug Jaathipalathi Chooranam on Swasakasam Bronchial Asthma
Scientific Title of Study	A Prospective Open Labelled non-randomized phase II clinical trial on Jaathipalathi Chooranam for the treatment of Swasakam Bronchial Asthma

Secondary IDs if Any

Secondary ID	Identifier
NIL	NIL

Details of Principal Investigator or overall Trial Coordinator (multi-center study)

Details of Principal Investigator	
Name	R SUBASHINI
Designation	PG Student
Affiliation	Govt Siddha Medical College Palayamkottai
Address	PG second year Department of Pothumaruthuvam Govt Siddha Medical College and hospital Palayamkottai Tirunelveli 627002 Other
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Fax	
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Details Contact Person (Scientific Query)

Details Contact Person (Scientific Query)	
Name	G Subash Chandran Md Siddha Phd
Designation	Lecturer
Affiliation	Govt Siddha Medical College and hospital Palayamkottai
Address	Department of Pothumaruthuvam Govt Siddha Medical College and hospital Palayamkottai Tirunelveli 627002 Other
Phone	9443358271
Fax	
Email	siddhadrgs21@gmail.com

Details Contact Person (Public Query)

Details Contact Person (Public Query)	
Name	G Subash Chandran Md Siddha Phd
Designation	Lecturer
Affiliation	Govt Siddha Medical College and hospital Palayamkottai
Address	Lecturer Department of Pothumaruthuvam Govt Siddha Medical College and hospital Palayamkottai Tirunelveli 627002 Other

ANNEXURE - VIII

RESEARCH METHODOLOGY & BIOSTATISTICS

PARTICIPATION CERTIFICATE

The Tamil Nadu Dr. M.G.R. Medical University

69, Anna Salai, Guindy, Chennai - 600 032.

This certificate is awarded to Dr/Mr/Mrs.....R.....SUBASHINI.....

for participating as Resource Person / Delegate in the XXIII Workshop on

"RESEARCH METHODOLOGY & BIOSTATISTICS"

Organized by the Department of Siddha,

The Tamil Nadu Dr. M.G.R. Medical University from 6th to 10th March 2017.

Dr. N. KABILAN, M.D.(Siddha)
PROF & HEAD
Dept of Siddha

Dr. T.BALASUBRAMANIAN M.S.,D.L.O.,
REGISTRAR

Prof. Dr. S.GEETHALAKSHMI, M.D.,Ph.D.,
VICE CHANCELLOR

ANNEXURE - IX

CONTINUING MEDICAL EDUCATION PROGRAMME

PARTICIPATION CERTIFICATE - I

GOVERNMENT SIDDHA MEDICAL COLLEGE& HOSPITAL
PALAYAMKOTTAI

CME PROGRAMME

Conducted by
SIRAPPU MARUTHUVAM
DEPARTMENT
GSMCH - PALAYAMKOTTAI

Organised by
ASHTAVAIDYAN THAIKKATTU MOOSS
VAIDYARATNAM

Supported by
PG Student Council
Govt. Siddha Medical College

S.No: 158

CERTIFICATE

This Certifies that

.....Dr. R. Shubhashini.....

has participated in Continuing Medical Education on "**AYUSH External Therapies-II**"
held at GSMCH, Palayamkottai on Dec, 4 2018

Dr. A.S.Poongodi Kanthimathi MD (s).,
Head - Dept. of Sirappu Maruthuvam

Authorised Signatory
VAIDYARATNAM

Dr. R. Neelavathy MD (s), Ph.D.,
Principal

GOVERNMENT SIDDHA MEDICAL COLLEGE

PALAYAMKOTTAI, TIRUNELVELI – 627 002

CONTINUING MEDICAL EDUCATION PROGRAMME

Conducted by

Post Graduate Department of Pothu Maruthuvam

This certificate is awarded to Dr / ~~Mr~~ / Mrs.....SUBASHINI.R.....
has participated in the CME Programme held on 05.12.2018 at Conference Hall, Special Therapy Wing, Government Siddha Medical College, Palayamkottai, Tirunelveli. This programme is focused on "HIV / AIDS"

Prof .Dr.A.MANOHARAN , M.D (s) , (Ph.D)
Head , Department of PothuMaruthuvam
Government Siddha Medical College,
Palayamkottai

Prof . Dr. R. NEELAVATHI, M.D(s)., Ph.D.,
Principal
Government Siddha Medical College
Palayamkottai

CONTINUING MEDICAL EDUCATION PROGRAMME

PARTICIPATION CERTIFICATE - II

ANNEXURE - X

JOURNAL PUBLICATION CERTIFICATE - I

International Journal of Reverse Pharmacology & Health Research

INTERNATIONAL JOURNAL OF REVERSE PHARMACOLOGY AND HEALTH RESEARCH

ISSN 2589 - 3343 *A Peer Reviewed Interdisciplinary Medical Journal*

CERTIFICATE OF PUBLICATION

The board of "International Journal of Reverse Pharmacology and Health Research"
(ISSN 2589-3343, www.ijrphr.com) is herby awarding this certificate to Corresponding Author

Subashini R

in recognition of the publication of the Research/Review Paper entitled

Acute toxicity and sub-acute toxicity study of Siddha herbal formulation "Jaathipalathi Chooranam"

CODENJ: IJRPHR

Published in Volume **2** , Issue **1** , Jan-Mar, **2019**

Council of Science Editors

STOCKHOLM UNIVERSITY PRESS

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(Dr. Vijila Chandrasekar)

Reverse Publications
SINCE 2010

Member, Editorial Board

FIRST PAGE OF JOURNAL PUBLICATION - I

International Journal of Reverse Pharmacology and Health Research (IJRPHR)

Research article

Acute toxicity and sub-acute toxicity study of Siddha herbal formulation "*Jaathipalathi Chooranam*"

Subashini R*, Manoharan A[2], subash chandran G[3]

[1*]PG Scholar, [2]Professor, Head of the Department, [3]Lecturer, Department of Pothu Maruthuvam, GSMC, Palayamkottai,Tamilnadu, India

Abstract

Background

Jaathipalathi chooranam (JPC) is Siddha poly herbal preparation, primarily composed of *Myristica fragrans(Linn).* In terms of Pharmacological action JPC ishaving significant bronchodilator (Nisha et.al,2017) antispasmodic, antidiabetic and hypolipidemic actions.(Arulmozhi et.al,2007). As per the reference text Gunapadamporutpanpunool, the indication of JPC is prescribed primarily for the management of Respiratory disease , DUB and Vatha diseases (Murugesa Mudhaliyar,2016).

Objective

To determine the acute and sub-acute toxicity effect of the siddha poly herbal formulation *Jaathipalathi Chooranam (JPC).*

Methods

Acute &sub-acute toxicity of *Jaathipalathi Chooranam* was evaluated *in* wistar rat models with oral administration of JPC 50mg/kgbw for seven days in acute and 20 days in subacute toxicity.All the studies were carried under OECD Guidelines.

Results

The *Jaathipalathi Chooranam* has not produced any acute and sub-acute toxicity symptoms, no changes in corporal weight and haematological parameters and hepatic enzymes like SGOT & SGPT . The result of the study suggests that JPC is safe to use for long term prescription.

Conclusion

The results suggested that *Jaathipalathi chooranam* is found to benontoxic, when action of JPC was analyzed on hematopoietic and leucopoietic systems.

Keywords

Jaathipalathi chooranam, Siddha drug, Siddha medicine, Toxicity studies

Address for correspondence:

Subashini R

[1]Post Graduate Scholar, Department of Pothu Maruthuvam, GSMC, Palayamkottai, Tamilnadu, India

CODENJ : IJRPHR

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

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Quick response code

How to cite this article:

Subashini R, Manoharan A, subash chandran G, *Acute toxicity and sub-acute toxicity study of Siddha herbal formulation "Jaathipalathi chooranam",* International Journal of Reverse Pharmacology and Health Research, 2019, 2(1), 37-40

Received: January, 2019.

Accepted: March, 2019.

Introduction

The drug *Jaathipalathichooranam* is a poly herbal formulation, which has indicated for the treatment of *Swasakasam* (Bronchial asthma). It is a common and inflammatory disease, irreversible damages in bronchial tree. It is characterized by recurrent episode of wheezing, dry cough, chest tightness, and shortness of breath. These episodes may occur a few times a day or a few times per week.

Journal of Research in Biomedical Sciences

Peer reviewed Open Access Internationally Indexed Journal

ISSN 9582-3343

CERTIFICATE OF PUBLICATION

This certificate is hereby bestowed upon Corresponding Author

Subashini R

For publishing Journal article entitled

Phytochemical analysis of the Siddha poly herbal formulation *Jaathipalathi Chooranam*

in Volume 1 Issue 2 , 2019 (Apr-Jun) www.biosci.in/jrbms

Society for Scholarly Publishing

Dr. Jey Rituz

Editor in Chief

JOURNAL PUBLICATION CERTIFICATE - II

FIRST PAGE OF JOURNAL PUBLICATION - II

Journal of Research in Biomedical Sciences (JRBMS)
A Peer reviewed Indexed International Journal (IF 0.92)
An Official Publication of BioSci Group of Research

RESEARCH ARTICLE

Phytochemical analysis of the Siddha poly herbal formulation *Jaathipalathi Chooranam*

Subashini R*[1], Manoharan A[2]
*[*1]PG Scholar, Department of Pothu Maruthuvam, Government Siddha Medical College, Palayamkottai, Tamilnadu, India.*
[2]Head of the Department, Department of Pothu Maruthuvam, Government Siddha Medical College, Palayamkottai, Tamilnadu, India.

Correspondence and offprint requests to: Subashini R

ABSTRACT

Siddha system is one of the traditional system of medicine prevailing in India. From the manuscripts it can be understood that the siddha system of medicine is capable of strengthening the physical body and soul. The polyherbal formulation *Jaathipalathi chooranam* (JPC) is composed of nine drugs viz. *Myristica fragransLinn., Syzygium aromaticum Linn., Piper nigrum Linn., Mesua naggesariumLinn., Symplocos racemosa Roxb., Illicium verum Hook, Piper nigum Linn., [Rt]Cinnamomum camphor Linn, Sacharum officinarum Linn.* The phytochemical screening of the extract of the JPC provides general idea regarding the nature of chemical constituents present in the each crude drug. The phytochemical analysis reveals that the presence of alkaloids, tannins, flavonoids, glycosides, phenols, proteins, phytosterols , carbohydrates, fixed oils and fats. From the above study it is concluded that the siddha poly herbal formulation JPC shows the presence of phytochemicals, which possess the activities of expectorant, anti-inflammatory, anti-histamine, bronchodilator and anti-spasmodic (*Oluway inka Olufun milayo Owolabi 2018*).The synergistic effect of all these phytochemicals will definitely increases the potency of the drug.

KEYWORDS

Jaathipalathi chooranam, Phytochemical, Antioxidant.

Received: April 2019. Revised: May 2019 Accepted: June 2019

To Cite: Subashini .R, Manoharan.A, Phytochemical analysis of the Siddha poly herbal formulation *Jaathipalathi Chooranam*, J Res Biomed Sci, 1(2), 2019, 71-76.

ANNEXURE - XI

PLAGIARISM REPORT

URKUND

Urkund Analysis Result

Analysed Document:	SUBASHINI.docx (D54181937)
Submitted:	6/27/2019 10:37:00 AM
Submitted By:	jeromstat@gmail.com
Significance:	11 %

Sources included in the report:

https://healthdocbox.com/118207235-Chronic_Pain/Thandaga-vatham-a-study-on-dissertation-submitted-to-of-medicine-siddha-doctor-chennai-32-branch-i-pothu-maruthuvam.html
77bfed09-0502-4c01-8b5a-2cf23d4c5765

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50