

**AN OPEN CLINICAL STUDY ON  
“MERUGULLI THYLAM” (INTERNAL) IN THE TREATMENT OF  
VALI AZHAL KEELVAYU (RHEUMATOID ARTHRITIS)**

**The Dissertation Submitted by**

**Dr.M.SUGANTHI**

**PG Scholar**

**Under the Supervision of**

**PROF.DR.K.MANICKAVASAKAM.M.D(S),**

**Head of the Department of Maruthuvam & Former Director**

**National Institute of Siddha**

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**NATIONAL INSTITUTE OF SIDDHA**

**TAMBARAM SANATORIUM, CHENNAI-600 047**

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## **DECLARATION BY THE CANDIDATE**

I hereby declare that this dissertation entitled “AN OPEN CLINICAL STUDY ON  
MERUGULLI THYLAM (INTERNAL) IN THE TREATMENT OF VALI AZHAL  
KEELVAYU (RHEUMATOID ARTHRITIS)

Under the Guidance of **Dr. H. Vetha merlin kumari M.D(s),Ph.D.**, Lecturer, Department  
of Maruthuvam, National Institute of Siddha, Chennai -47, and the dissertation work has not  
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Date:

Place: Chennai -47

Signature of the candidate

(Dr. M. SUGANTHI)

## **BONAFIDE CERTIFICATE**

Certified that I have gone through the dissertation submitted by  
**Dr. M.SUGANTHI** (Registration No: 321511207) a student of Final year MD(S),Branch I,  
Department of Maruthuvam, National Institute of Siddha, Tambaram Sanatorium, Chennai-  
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does not represent or reproduced the dissertation submitted and approved earlier.

Date :

Place: Chennai-47

Name and Signature of the Guide

Dr.H.VETHAMERLINKUMARI M.D(S), PhD

Lecturer

Department of Maruthuvam

National Institute of Siddha.

Name and Signature of the HOD

Prof.Dr.K.MANICKAVASAKAM,M.D(S)

Head of the Department

Department of Maruthuvam

National Institute of Siddha.

Forwarded by the Head of the Institute

Prof. Dr. V. BANUMATHI, M.D(S)

Director,

National Institute of Siddha

Tambaram Sanatorium, Chennai-600 047.

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## INTRODUCTION

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Siddha system is one of the major system of medicine indigenous to our country. Siddha system can be termed as a scientific art which proves that health soul is the property of a healthy body.

Siddha system of medicine not only deals with external body but also with the inner man or the soul.

The word Siddha means “established truth” and comes from the word siddhi an object to be attained such as perfection in life or heavenly bliss.

The concepts of Siddha system are based on fundamental principles of five basic elements of the universe, three humours , three thathus and seven pillars (Physical constituents of the body), Envagai thervugal (An integral part of Siddha Medicine).

The physical function of the body is mediated by three forces called vali, azhal, iyam. In normal state they are called three forces or three thathu that sustain and nourish the body. When the three humours are deranged, they become Kutrams which produce disease.

Humoural basis of disease diagnosis is needed to select humour based treatment, which can result in better prognosis.

Thiruvalluvar says this way of approach in the following lines;

“Meginum kuraiyinum noi seiyum noolor

Valimudhala enniya moondru”

- **Thirukkural**

When this equilibrium is disturbed, it leads to ailment, which hinders longevity.

The holistic approach adopted by the Siddha system of medicine is very aptly captured by the basic quote of Siddhars “FOOD ITSELF IS MEDICINE –MEDICINE ITSELF IS FOOD”.

Sivavaakiyar says in Sattamuni gnanam;

‘Andathil ullathae pindam’

Which means, what is in the Macrocosm (world/Universe) is in Microcosm (Man). Siddha claims that the human body is the replicate of universe.

In Siddha system, Yugimuni classified diseases into 4448. Yugimuni mentioned 80 types of vatha diseases in the text Yugi Vaidhiya Chinthamani. In which Valiazhal keelvayu is one among them and the signs and symptoms of this disease is correlated with Rheumatoid arthritis in Modern science.

Rheumatoid arthritis (RA) is the most common persistent inflammatory arthritis, occurring throughout the world and in all ethnic groups. The clinical course is prolonged, with intermittent exacerbations and remissions. The typical clinical signs are pain, joint swelling and stiffness affecting the small joints of the hands, feet and wrist.

Incidence of RA is of 3 cases per 10,000 populations per annum. Onset is uncommon under the age of 15 and from then on the incidence rises with age until the age of 80<sup>(1)</sup>.

Prevalence of this disease affecting 0.75% population in India. Projected to the whole population, this would give a total of about 7 million patients. The prevalence of RA in India is quite similar to reported from the developed countries<sup>(2)</sup>.

Around 40% of RA patients are registered disabled within 3 years; around 80% are moderately to severely disabled within 20 years; and 25% will require a large joint replacement<sup>(1)</sup>.

Many formulations are available to treat Vali azhal keel vayu in Siddha system of medicine. I have chosen the drug “MERUGULLI THYLAM” (**Reference:** *Theraiyar Thylavarga Surukkam*, **P. No. :** 80-81**Author:** T.C.Subbramaniya Pandither) as internal medicine. This preparation reduced not only the joint pain but also the restricted movements and other symptoms of the disease Vali azhalkeel vayu. Because the ingredients of the drug are well known for its **Anti-inflammatory, Antioxidant, analgesic and Antibacterial activities**<sup>(3)</sup>.



## AIM AND OBJECTIVES

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### AIM

To Evaluate the Therapeutic efficacy of the siddha formulation “**MERUGULLI THYLAM**” (Internal) in the treatment of “**VALI AZHAL KEELVAYU** (Rheumatoid Arthritis).”

### OBJECTIVES:

#### PRIMARY OBJECTIVES:

To Evaluate the Therapeutic efficacy of the siddha formulation “**MERUGULLI THYLAM**” (Internal) in the treatment of “**VALI AZHAL KEELVAYU** (Rheumatoid Arthritis).”

#### SECONDARY OBJECTIVES:

- To conduct a clinical trial with a well defined Performa on identical patients with vali azhal keelvayu.
- To study vali azhal keelvayu, on the siddha basic principles like Mukkutram, Udalkattugal, Envagai thervu, pori, pulan, Neerkkuri and Neikkuri pattern etc in vali azhal keelvayu patients.
- To correlate the aetiology, clinical features, signs and symptoms of vali azhal keelvayu in Siddha system to Rheumatoid Arthritis in Modern science.
- To screen the elements present in the trial drug.
- To screen the biochemical constituents of the drug.
- To study the influence of other co factors such as Age, Sex, Socio-economic status, Dietary Habits, Family history etc.,
- To find out whether there are any side effects/ adverse effects produced by the trial drug **MERUGULLI THYLAM** (Internal) during treatment.

## REVIEW OF LITERATURE

### SIDDHA ASPECT

Siddha system was propounded by the siddhars and which is a vast and unique system which defines health as a perfect state of physical, psychosocial, social and spiritual well being of an individual.

The system not only deals with medicinal but with spirituality, righteous way of living, Rejuvenation and its main aim is attainment of perfection.

#### VATHA NOI - DEFINITION

Vatha noi is a clinical condition characterised by pain, swelling, pricking sensations and loss of function due to vitiated vatham which is the principle humour of the body.

“பொற்றா மரையான் புனைமெய் யரண்காக்கும்  
பொற்றா மரையான் புகல்வதென் பொற்றாம்  
வளவினிலே யாக்குரம்பை மன்னென மன்ன  
வளவினிலே யாக்கும் வளி”.

–தேரன் யமக வெண்பா

The above verse says that, vatham is being held as the king who rules the (fort) body and enables the wellbeing of the citizen (the uyir) in the fort. Hence, Theraiyar refers Vatham as prime force in normal state.

For wellbeing of a individual three vital humours should be maintained in a equilibrium state. If there is a imbalance in any one of them it will alter the other two resulting in a diseased condition.

#### CHARACTERISTICS OF VATHA DISEASES

“பாங்கான வாதந்தான் மீறுமாகிற்  
பருவயிறு சுவாசமுடன் குத்துக்கோழை  
நீங்காத பிழப்புளைவு வாயு தொந்தம்  
நீர்வெடித்துப் பாய்தல் மந்தம் விடமிப்பாதல்  
தூங்குசன்னி வாதசுர மதனிற் தோடம்  
தொகுத்த கிரா ணிக்கழிச்ச லுதர தோடம்  
வாங்குபல வலிகுளிரச்சி குன்மவாத  
மலசலங்கட் டிடல்வாத வந்திப்பாமே.”

-அங்காதிபாதம்

According to Angaathipatham the deranged Vali produces constipation, scanty micturation , increased lacrimation, with darkening of eyes, fissures in tongue, flatulence, abdominal distension , cough with expectoration, dysarthria, indigestion and diarrhoea.

“மேவியவாதஞ் செய்யுங் குணந்தணை வியம்பக் கேளாய்  
தாவியே வயிறு தந்தஞ் சந்துகள் பொருத்து நோவாஞ்  
சீவிய தாதுநாசஞ் செறுத்துடன் சிறுநீர் வீழுங்  
காவியங் கண்ணி னாளே மலமது கருகிவீழும்.”

-அகத்தியர் வாத காவியம்-1000

“வாதத்தின் குணமேதென்னில் வயிறது பொருமிக்கொள்ளுந்  
தாதுகளுலர்ந்த கைகால் சந்துகள் கடுப்புத் தோன்றுந்  
தீதுற்றச் சிறுநீர்தானுஞ் சிறுத்துடன் கடுத்து வீழும்  
போதுற்ற வாதமென்று புகன்றனர் முனிவர் தாமே.”

- கண்ணுசாமியம்

According to Agathiyar vatha kaaviyum and kannusamiyam the deranged Vatham produces abdominal discomfort, pain in joints , oliguria, dysuria, constipation and flatulence.

## **VALI AZHALKEEL VAYU**

### **Definition (Iyal)**

Vali azhal keelvayu is a type of Arthritis characterised by pain, swelling, stiffness of the joints and restriction of movements due to deranged vatham and pitham.

**VALI AZHAL KEEL VAYU mentioned in Sababathi kaiyedu which indicates Uthiravatha suronitham.**

### **DESCRIPTION OF NOMENCLATURE:**

According to T.V.Sambasivampillai Agarathy volume I

Uthiravatha Suronitham	-	Uthiravatham + Suronitham
Uthiravatham	-	Arthritis of rheumatic origin marked by severe pain and the formation of inflammatory nodules in the region of joints especially in the limbs of the body.
Suronitham	-	Blood and menstrual blood.

## நோய் வரும் வழி -AETIOLOGY

According to Yugi Vaithya Sinthamani,

“என்னவே வாதந்தா னெண்ப தாகும்  
மிகுத்திலே மனிதர்களுக் கெய்து மாறு  
பின்னவே பொந்தனையே சோரஞ் செய்து  
பெரியோர்கள் பிராமணரைத் தூஷ் ணித்தும்  
வன்னவே வச்சொத்திற் சோரஞ் செய்து  
மாதாபிதா குருவை மறந்து பேர்க்கும்  
கன்னவே வேதத்தை நிந்தைசெய்த பேர்க்குங்  
காயத்திற் கலந்திடுமே வாதந் தானே.  
“தானென்ற கசப்போடு துவர்ப்பு ரைப்பு  
சாதகமாய் மிஞ்சுகினுஞ் சமைத்த வன்னம்  
ஆனென்ற வாறினது பொசித்த லாலும்  
ஆகாத் தேறலது குடித்த லாலும்  
பானென்ற பகலுறக்க மிராவி ழிப்பு  
பட்டினியே மிகவறுதல் பார மெய்தல்  
தேனென்ற மொழியாற் மேற் சிந்தை யாகில்  
சீக்கிரமாய் வாதமது செனிக்குந் தானே.”  
“ஆணான வரன்னெளயே மதியா மாந்தர்  
அகதிபர தேசியர்கட் கன்ன மீயார்  
கோனான குரமொழியை மறந்த பேர்கள்  
கொலைகளவு பொய்காமங் குறித்த பேர்க்கு  
ஊனான சடந்தன்னில் வாதம் வந்து  
உற்பவிக்கும் வேதத்தி லுண்மை தானே.”

-யுகி வைத்திய சிந்தாமணி

According to the text, those who are squandering money, insulting the elders, abandoning or forgetting the parents, blaspheming the Holy books, not respecting the divine gifts, having wickedness in their mind and those with day slumber and staying back at night will get Vatha diseases. Increased intake of bitter taste, astringent, pungent, increased intake of water, excessive starvation, increased sexual desire will produce diseases of vatham.

## IN THE TEXT ANGAATHIPATHAM..,

“கானடையாலச் சத்தாற் கடும்பசி யாற்கோ பத்தால்  
ஊனமி லிரவில் வார்த்தை யுரம்பெற விரைக்க லாலுண்  
ஆனபின் முனிவால் மாரு தடுத்தடுத் துரைக்குஞ் சொல்லால்  
ஈனமி லிகழ்ச்சி யான விகல்வாத கோபங் காணும்.”

According to Angaathipatham, increased starvation and increased anger will produce diseases of vatham.

## OTHER IMPORTANT FACTORS THAT INFLUENCE THE VATHA TYPE OF DISEASE:

கால இயல்பு - ENVIRONMENTAL FACTORS;

## AS PER SIDDHA MARUTHUVAANGA CHURUKKAM

“பதுமத்தைப் பூக்க வைக்கும் பானுமிகக் காயும்  
முதுவேனி லிற்பு விறநீர் முற்றும் -கதுமென  
வற்றும் கபமி.கும் வாயுமிகும் வாழ்மாந்தக்  
குற்ற நலிக் கேதிதென் றோது”

-சித்த மருத்துவாங்க சுருக்கம்

In Muthuvenil kaalam (Late summer), the increased solar radiation increases the evaporation of water content from the body in turn produces increase in the Kapham and Vatham thus resulting in the production of vatha disease.

“ஆடியாதியாய் ஐப்பசி ஈறாய்  
அனிலமதற் கோரசியல் காலம்.”

- நோய் நாடல் நோய் முதல் நாடல் திரட்டு II

Vatham elevates in the body from the month of Aadi to Iyppasi (August to November) i.e. from the middle of Muthuvenil kaalam, Karkaalam to half of Koothir kalam.

## HABITS THAT MAY CAUSE VATHA DISEASES

1. In Theraiyar vagadam it is explained as..,

“வெய்யிலில் நடக்கையாலும் மிகத்தண்ணீர் குடிக்கையாலும்  
செய்யிழை மகளினரைச் சேர்ந்தனுப விக்கையாலும்  
பையனே உண்மையாலும் பாகற்காய் தின்கையாலும்  
தையலே வாத ரோகம் சனிக்கு மென்றறிந்து கொள்ளே.”

- தேரையர் வாகடம்

Excessive walking in hot sun, excessive intake of water, bitter guard and increased sexual indulgence, may play a role in disturbing the normal functions of Vatham

### **TASTES THAT MAY INCREASE THE VATHA KUTARM**

“புளிதுவர் விஞ்சும் கறியால் பூரிக்கும் வாதம்”

- நோய் நாடல் நோய் முதல் நாடல் திரட்டு

“வளிதருகாய் கிழங்கு வரைவிலா தமில்ல் கோழை  
புளி தயிர் போன் மிருக்கு முறையிலா வுண்டி கோடல்  
குளிர் தரு வளியிற் றேகங் குனிப்புற வுலவல் பெண்டிர்  
குளி தரு முயக்கம் பெற்றோர் கடி செயல் கருவியாமால்”

-சபாபதி கையேடு

According to Sababathi Kaiyedu, increased intake of tubers, increased exposure to wind, living in higher altitudes, increased exposure to chill, increased sexual desire will aggravate Vali diseases.

“தொழில் பெறு கைப்புக் கார்த்தல் துவர்த்தல் விங்கினுஞ் சோறும்  
பழையதாம் வரகு மற்றைப் பைந்தினையருந்தினாலும்  
எழில் பெறப் இரவினிலுறங்காததாலும்  
மழைநிகா குழலினாலே வாதங்கோ பிக்குங்காணே”

- பரராச சேகரம்

Increased intake of bitter, astringent, acrid taste food , altered sleep pattern contribute to vatha diseases.

### **CLINICAL FEATURES OF VALI AZHALKEEL VAYU**

#### **ACCORDING TO SIDDHA MARUTHUVAM POTHU**

“வாதபித்தக் கீல் வாய்வின்  
வருங்குறி சாற்றக் கேளாய்  
ஏதமார் மந்த மேப்பம்  
இரைச்சலும் வயிற்றிற்காணும்  
ஓதருங் குத்தல் வீக்கம்  
ஓய்தலில் எரிச்சலுண்டாம்  
காதறுமுறக்க மின்மை  
காய்ச்சலும் காணுங்கண்டாய்”

It is characterized by belching, prickling pain, swelling, irritation, fever and lack of sleep.

## ACCORDING TO YUGI VAITHIYA SINTHAMANI

“வைகிதமாய்க் கணைக்காலு முழங்கால் தானும்

மற்கடஞ் சந்து புறவடியும் வீங்கிச்

செய்கித மாற் சிறுவிரல்கள் மிகவும் நொந்து

சிந்தை தடுமாறியே சலிப்புண்டாகும்

பைகிதமாம் பயித்தியத் தில்லாத மிஞ்சிப்

பாரமாய் உற்பவித்து அழலுண்டாகும்

உய்கிதமாம் அசனமது தானும் வேண்டா

உதிர வாத சுரோணிதத்தி னுணர்ச்சியாமே.”

- யூகி வைத்திய சிந்தாமணி

It is characterised by pain and swelling in both ankle joints, knee joints and all smaller joints of the hands, feeling of tiredness, fever, loss of appetite and mental depression.

Also the term ‘Markadam’ (மற்கடம்) indicates the hand of monkey (T.V.Sampasivam Pillai dictionary Pg no: 753) anatomically, which can be correlated clinically with Swan neck deformity and wasting of tenar muscle in Rheumatoid Arthritis.

‘Pararasa sekaram’ describes Suronitham as follows:

“வீழ்பெறு சுரோணிதந்தான் மிகவுடன் மெலிவுமாகித்

தாழ்வில் சந்துகளே வீங்கித் தகை பெற நடைகொடாமல்

வாழ்வுறு கையுங்காலும் வசமின்றி யழன்று நோவாம்

பாழ்பெறு மணங்கினாளே பயனுறப் பகர்ந்திட்டோமே”

It is characterized by debility in Ratha thathu (anaemia), swelling of peripheral joints, restricted movements and pain in limbs.

## ACCORDING TO ‘PARA RASA SEKARAM’:

“பக்கமும் மார்பும் கூடப்பற்றியே இழுத்தும் கொண்டு

நெக்கியே மார்பிளைத்து தோதாய் நரம்பிழுத்து

ஒக்கவே சயித்தியங்கள் உயர்ந்துடன் மேலும் காலம்

மிக்குமே உதிரவாதம் என்றிது விளம்பலாமே.”

- பரராச சேகரம்

It is characterised by pain and tenderness of the axilla, breathlessness, pain in the upper limbs and the lower limbs.

## SIDDHA PATHOLOGY

Siddha system of medicine is based on Thirithodam theory. They are Vatham, Pitham and Kabam the manifestation of all diseases are result of derangement of these Uyir thathus (Thirithodam).

These three humours are primary and essential factors of human body. These factors exist in 1:1/2:1/4 ratio respectively in the normal body any alteration in the above ratio can cause disease in the body.

In Vali azhal keelvayu

1. Vatham – increased

“வாதமலாது மேனிகெடாது” – தேரையர்

2. The increased vatha kutram causes derangement of other two kuttrams (ie. Pitham and Kabam) as a result of this clinical features of disease is exhibited.

### DIAGNOSIS - நோய்கணிப்பு

"நோய்நாடி நோய்முத னாடி யதுதணிக்கும்  
வாய்நாடி வாய்ப்பச் செயல்"

- திருக்குறள்

This Thirukural quote explains the importance of diagnosis, as it is to be made in order of the aetiology, root of cause of the disease thereby treating the disease with appropriate medicine.

### Piniyari muraigal (Method of Diagnosis)

It is based upon the three main principles:

- Poriyal Arithal (Inspection)
- Pulanal Arithal (Palpation)
- Vinaathal (Interrogation)



## **DIAGNOSTIC METHODOLOGY IN SIDDHA SYSTEM OF MEDICINE**

### **ENVAGAI THERVUGAL (EIGHT DIAGNOSTIC TOOLS)**

These tools not only help in the diagnosis but also helps to observe the prognosis of the diseases and for reassuring the patient and to be informed about the nature of diseases, they are

1. Naadi (Pulse)
2. Sparisam (Sensation to Touch)
3. Naa (Tongue)
4. Niram (Colour)
5. Mozhi (Voice)
6. Vizhi (Eyes)
7. Malam (Faeces)
8. Moothiram (Urine)

#### **I. Naadi (Pulse):**

Naadi is the first and foremost diagnostic parameter of the Siddars. It is the seat anchor of energy. The pulse wave as felt on the radial artery, one inch from the wrist by means of palpation with the tip of index, middle and ring finger corresponds to VATHAM, PITHAM, KABAHAM. They normally exit in the ratio 1:1/2:1/4 respectively.

**In VALI AZHAL KEELVAYU the following types of Naadi can be commonly seen.**

**They are**

- Vadhapitham
- Pithavadham
- Vadhakabam

“திருத்தமாம் வாதந்தோடே தீங் கொடு பித்தஞ் சேரில்  
பொருத்துகள் தோறும் நொந்து”

-குணவாகடம் (நோயின் சாரம்)

According to Gunavagadam, vathapiha naadi seen in VALI AZHAL KEELVAYU.

#### **II. Sparisam (Touch):**

Inspection and Palpation of the skin , it reveals that the warmth or chillness, dry or weeping skin, rough or smooth, tenderness, swelling, wrinkle, soft or hard ,any ulcers or fissures etc.

In Valiazhal keelvayu mild warmth is felt over the affected joints with swelling, tenderness and sometimes subcutaneous nodules and the degree of warmth may vary from to other depending on the severity of disease.

### **III. Naa (Tongue Examination)**

The colour, character and condition of tongue are noted.

In Vali azhalkeelvayu tongue commonly does not show any abnormality. In cases with anaemia it may appear pallor, glossy and coated.

### **IV. Niram (Colour)**

Signs of different complexions in Vatham, Pitham, Kabham and Thontha thegis, cyanosis, pallor, yellowish discolouration may be noted.

In Vali azhalkeelvayu no abnormalities are seen normally. Sometimes pallor of skin may be noted in case of anaemia.

### **V. Mozhi:**

It constitutes high ,low-pitched voice, nasal speech, horsiness of voice, slurring and incoherent speech etc.

In Vali azhalkeelvayu no abnormalities are seen normally.

### **VI. Vizhi:**

Both motor and sensory disturbances of eyes noticed. Redness of eyes, paleness, swelling, excessive lacrimation, corneal ulcers may be noted .

In Vali azhalkeelvayu no abnormalities are seen normally. In anaemic patients pale conjunctiva may be noted.

### **VII. Malam:**

Vatha type: Black coloured stool with constipation.

Pitha type: Loose stools with yellowish red colour.

Kabha type: White coloured stools with mucus.

Thontha type: Stools possess of the features of two thonthams.

In Vali azhalkeelvayu constipation was reported in most of the cases.

## VIII. Moothiram:

Neerkuri and Neikuri are special diagnostic methods regarding moothiram.

### NEERKURI: (PHYSICAL EXAMINATION OF URINE)

The urine is collected and examined for the following.

Niram	-	Colour
Edai	-	Specific Gravity
Manam	-	Smell
Nurai	-	Frothy Nature
Enjal	-	Deposits/ quantity of urine voided

In Vali azhalkeelvayu straw or hay coloured urine is noticed in Neerkuri.

### NEIKURI: (OIL ON URINE SIGN)

When the oil drops lengthens like a snake it indicates “Vatha neer”.

When the oil drops spreads like a ring it indicates “Pithaneer”

When the oil drops remains that of pearl it indicates “Kabaneer”.

In Vali azhalkeelvayu the pattern of Neikuri is mostly “Aravena neendathu - Vatham”. In some cases the oil drop remain as that of a pearl or ring indicating Kaba neer. Pitha neer accordingly.

### MUKKUTRAM :

#### VATHAM:[BIO ENERGY MOVEMENTS]

When some of the factors like food, occupation, seasonal variations etc., disturb Vatham, it loses its control, which may be exaggerated or diminished. So the other two Uyir Thathus are also disturbed which leads to the genesis of “Vatha” diseases. Uyir thathu can be termed as “Vatha thodam”.

#### The sites of vatham :

Umbilicus, Abdomen, Rectum, Faecal matters , Anus, Bones, Hip joints, Joints, Navel, Plexus, Hair follicle and Muscles.

“நாமென்ற வாதத்துக் கிருப்பிடமே கேளாய்  
நாபிக்குக் கீழென்று நவில லாகும்”

- யூகி முனி

“அறிந்திடும் வாத மடங்கு மலத்தினில்”

- திருமூலர்

According to Yugi muni and Sage Thirumoolar the location of Vatham are the anus and the sub naval region.

**Natural properties of Vatham:**

- Giving briskness
- Functions of mind
- Expiration and inspiration
- Regulation of the “Fourteen Physical Reflexes” (Vegam).
- Protection and strengthening of the five sensory organs (Iymporigal).

**Symptoms of Vatha thodam:**

- ❖ Body ache
- ❖ Pricking pain
- ❖ Nerve weakness
- ❖ Tearing pain
- ❖ Joints pain
- ❖ Traumatic pain
- ❖ Mental distress
- ❖ Weakness of organs
- ❖ Paralysis of limbs
- ❖ Severe pain in calf and thigh muscles
- ❖ Bony pricking pain
- ❖ Unable to flexion and extension of the limbs
- ❖ Excessive salivation
- ❖ All tastes to be like astringent
- ❖ Polydypsia
- ❖ Anuria and constipation

**DESCRIPTION OF VATHAM: BIO ENERGY MOVEMENTS**

The Siddha classical texts divide the general principles of Vatham into ten subsidiary forms that differ from one another by their localization in the body (Anatomical) and by their particular functions (Physiological). They are

**PRAANAN: Life force/Life air**

It is otherwise called as “*Uyirkkaal*”. It refers to be “*Heart centre*”. It maintains the action of the heart, the functioning of the mental faculties of perception and concentrations and also cares for the arteries, veins and nerves. It also regulates the respiration and digestion.

**ABAANAN: [Downward air]**

It is otherwise termed as “*Keezhnökkumkaal*”, “*Moolaadharam centre*”. It corresponds to the pelvic area and controls the excretion. It occupies the sites in the bladder and genitals and focussed in the lower part of the gut . It has a tendency to travel downwards. It moves in the whole Genitourinary tract and regulates the defecation, menstruation, parturition and ejaculation.

**VIYAANAN: [Centrifugal air]**

It also known as “*Paravukaal*” , “*Forehead centre*”. It corresponds to the naso ciliary area i.e at the root of the nose and base of the skull and controls the will. It helps in the circulation of energy throughout the entire nervous system and the movements of the various parts of the body.

**UDHAANAN: [Upward air]**

It is otherwise named as “*Melnökkukaal*”, “*Throat centre*”. This corresponds to the pharyngeal area in the throat region and controls speech and breathing and also physiological reflex actions like vomiting, hiccup, cough etc. It has the tendency to travel upwards.

**SAMAANAN: [Homeostatic air]**

It balances the other vayus. It is also called “*Nadukkaal*”, “*Navel centre*”. It corresponds to the navel region and controls digestion. It selects the useful substances from the swallowed food and supplies them to the whole body.

**NAAGAN: [Intellectual air]**

It is responsible for the intelligence of an individual , wrinkling, singing and pilo erection.

**KIRUGARAN: [Secretary air]**

It is responsible for salivation and nasal secretion. It helps to indigestion and meditation. It produces cough and sneeze.

**DHEVATHATHAN: [Tiresome air]**

It is responsible for laziness, lassitude, quarrelling, arguing, and also for much anger. It helps to movements of the eyeball in various directions and is present in genital and anal region.

**DHANANJEYAN: [Intracranial air]**

It is present in nose and responsible for swelling of the body and tinnitus. It leaves the body by blowing up the cranium only on the third day after death.

In Vali azhalkeelvayu,

- Abanan - affected (produces constipation).
- Viyanan - affected (produces restricted joint movements).
- Samanan - affected (due to derangement of other vayus).

**2. PITHAM: BIO ENERGY FIRE****The sites of Azhal:**

According to **Vaithiya Sathagam**, the pingalai, Urinary bladder, Stomach and heart are the places where Azhal is sustained. In addition to the above places, the umbilicus, epigastric region, stomach, sweat, saliva, blood, Essence of food, eyes and skin where Azhal sustains.

According to Yugi muni says that the Azhal resides in urine and the places below the neck region.

**The character of Azhal:**

It is responsible for the digestion, hunger, thirst, maintenance of the body temperature, vision, taste etc. Its other functions include thought, knowledge, strength and softness.

**The types of Azhal**

- Anala pitham – The fire of digestion.
- Ranjaga pitham – Haematinic fire.

- Saathaga pitham – The fire of achievement.
- Prasaka pitham – The fire of brightness.
- Alosaga pitham – The fire of vision.

In case of Vali azhalkeelvayu,

Saathagam – affected (Difficulty in walking, climbing upstairs, squatting etc).

### **3.KABAM [Iyyam] –BIO ENERGY WATER**

#### **Sites of Iyyam**

Head, tongue, eyes, nose, throat, thorax, bone, bone marrow, Joints, blood, fat, sperm and colon .

#### **The natural quality of Iyyam:**

Stability, greasiness, formation of joints, thirst, the ability to withstand hunger, sorrow and distress are the qualities.

#### **Five types of Iyyam:**

- Azhal Iyyam (Avalambagam) - Nodal/Pivotal Iyyam- It controls all other 4 Iyyams.
- Neerpi Iyyam (Kilethagam) - Digestive/Aqueous Iyyam-It gives moisture and softness to ingested food.
- Suvaikaan Iyyam(Pothagam) - Taste/gustatory Iyyam-It is responsible for the sense of taste.
- Niraiivu Iyyam (Tharpagam) - Coolant Iyyam-It gives coolness to the eyes.
- Ondri Iyyam (Santhigam) - Articular Iyyam-Its gives lubrication to the bones particularly in the joints.

In Vali azhalkeelvayu Santhigam is affected.

### **UDAL KATTUGAL: SEVEN PHYSICAL CONSTITUENTS OF THE BODY:**

In Vali azhalkeelvayu, the udal kattugal affected are

Saaram [Essence/chyme]	-	Weakness
Senner [Blood]	-	Tiredness, Anemia
Kozhuppu [Fat]	-	Pain in the affected joint
Enbu [Bone]	-	Weakness of bones
Moolai [Marrow]	-	Osteoporotic changes, Swelling in joints

#### IV. GNANENTHIRIYAM [ORGANS OF PERCEPTION]

Gnanenthiriyam are Mei, Vaai, Kan, Mooku and Sevi.

In Vali azhalkeelvayu 'Mei' is affected. This is due to pain, swelling, morning stiffness and deformities.

#### IV.KANMENTHIRIYAM [MOTOR ORGANS]

Kanmenthirium are Kai, Kaal, vaai, Eruvai, Karuvai.

In Vali azhalkeelvayu Kai and Kaal are affected. This is due to pain, swelling, morning stiffness and deformities.

#### YUGI VAIDHYA CHINTHAMANI CLASSIFIED VATHA SURONITHAM INTO 7 TYPES.

- Vadha Suronitham
- Sithuvatha Suronitham
- Vaithiya Vatha Suronitham
- Paithiya Vatha Suronitham
- Slethumavatha Suronitham
- Utharavatha Suronitham
- Uthiravatha Suronitham

#### DIFFERENTIAL DIAGNOSIS

Vali azhalkeelvayu is differentiated from other types of Vatha Suronitham as follows:

##### வாதசுரோணிதம்

“அறிந்திட்ட அங்கமெல்லா மெலிவ தாகி  
அசைவான தவ்விடங்கள் வீக்க மாகி  
நறிந்திட்ட நடைகொடா தானி ருத்தல்  
வலியாகி மொழிமொழிய வீக்க மாகச்  
சொறிந்திட்ட தேகமெங்கு மசைவு காணல்  
சோற்றின்மே னினையின்றித் தூக்க மாதல்  
வுறிந்திட்ட வாயதனி வீர்தா நூறல்  
வாதசுரோ ணிதந்தானும் வகுத்த வாறே.”

-யுகி வைத்திய சிந்தாமணி



## VATHA SURONITHAM

- Emaciation
- Swelling of joints
- Restricted movements
- Joint pain
- Discomfort
- Excessive salivation
- Loss of appetite

### சித்துவாதசுரோணிதம்

“வாறான சரீரமெல்லா நுழைந்து ஊதல்  
மாசற்ற தோல்தானுந் திரைந்து போகும்  
நாறான நாறுபோல் நரம்பு சுக்கும்  
நாக்குத்தான் வழவழத்துக் கோழை யாகும்  
தூறான நெருப்புத்தான் பட்டார் போல  
நொந்துமே சடமெல்லாங் கொப்ப ளிக்கும்  
வீறான வரிந்துபின்னை வெதும் பீங்கும்  
மிக்கசித்து வாதசுரோ ணிதமா மாமே.”

-யூகி வைத்திய சிந்தாமணி

## SITHUVATHA SURONITHAM

- Anasarca
- Wrinkles
- Neural pain
- Glossy tongue
- Sialorrhoea
- Bullous eruption as in burn
- Exfoliation, swelling and Warm

### பயித்தியவாதசுரோணிதம்

“உணர்ச்சியாய்ச் சுரோணிதந்தான் மிகவே தும்பி  
ஊக்கமாய்த் தேகமெங்கு மிகவே நொந்து  
முணர்ச்சியாய் முழங்கால்கள் முழங்கை யொக்க  
முனையான சிறுவிரல்கள் கன்னம் நெற்றி  
தணர்ச்சியாய்ச் சந்துசரு வாங்க மெங்கும்

தாட்டிக மாய்க்குடைந்து சுரமு முண்டாம்  
பணர்ச்சியாய்ப் பாண்டதுபோன் மேனி யாகும்  
பயித்தியவா தசுரோணிதத்தின் பண்பு தானே.”

-யூகி வைத்திய சிந்தாமணி

### PAITHIYA VATHA SURONITHAM

- Hyperaemia
- Tenderness in knee, elbow and smaller joints
- Poly arthralgia
- Pyrexia
- Anaemia

#### சேத்துமவாதசுரோணிதம்

“பண்பாக வுடல்குளிர்ந்து ஏறு வீங்கிப்  
பதைப்பான விடந்தொட்டாற் பார நோவாம்  
திண்பான சிரசுநெற்றி நோக்கா டுண்டாம்  
சிலேட்டுமமாய்க் கோழையொடு சுவாச மாகும்  
மண்பாக மயக்கமொடு கனவு முண்டாம்  
வாய்வரண்டு ருசியில்லா வருத்த மாகும்  
நண்பாக நாடியுமே படப ட்ககும்  
நற்சேட்ப சுரோணிதமாம் நாடுங் காலே”

-யூகி வைத்திய சிந்தாமணி

### SLETHUMAVATHA SURONITHAM

- Chillness with abdominal distension
- Severe pain and Head ache
- Syncope and Hallucination
- Dryness of mouth and Anorexia
- Tachycardia

#### உதரவாதசுரோணிதம்

“நாடுமே சுரம்வந்து நடுக்க லுண்டாம்  
நாவரண்டு தலைநொந்து உடம் பழுத்தி  
வாடுமே தேகமெல்லா மனிச்சம் பூப்போல்  
மகாவருத்த முண்டாகி மயக்க மாகும்

சாடுமே யடிக்கடிதான் பேதி தானும்  
தவிக்குமே தண்ணீர்தா னாட்ட மாகித்  
தேடுமே சோற்றின்மேல் நினைவு தானும்  
செய்வுதர வாதசுரோ ணிதந்தா னென்னே.”

-யூகி வைத்திய சிந்தாமணி

### UTHARAVATHA SURONITHAM

- Fever with rigor
- Dryness of mouth
- Pain in all over the joints
- Headache
- Diarrhoea
- Excessive thirst
- Hunger

#### வைகிதவாதம்

“ஆமென்ற வீங்கினதோர் விடத்தில் ரத்தம்  
அழுத்தமாய்த் திரண்டுமே எங்கும் பாய்ந்து  
ஓமென்று ஓட்டியே திரண்டி ருக்கும்  
உறுதியாய்த் தொட்டுடனே மெத்தென் றாகும்  
தேமென்ற தேகமெங் கணுமு சுக்கும்  
சீறியதோ ரிருமலொடு காச்சலுண் டாகும்  
பாமென்ற படந்தனிலே திமிருண் டாகும்  
பாரமாய் வைகிதமாம் வாதந் தானே.”

-யூகி வைத்திய சிந்தாமணி

### VAIKITHA VATHA SURONITHAM

- Swelling with hyperaemia
- Soft on touch
- Cough with pyrexia
- Irritability

## MANAGEMENT IN SIDDHA

According to siddha system, the main aim of the treatment is to cure physical illness and mental illness Treatment is not only for complete healing but also for the rejuvenation.

"மிகினும் குறையினும் நோய்செய்யும் நூலோர்  
வளி முதலா வெண்ணிய மூன்று"

-திருக்குறள்

Siddha system line of treatment consists of the following

1. Neekam (Treatment)
2. Niraivu (Restoration of wellbeing)
3. Kappu (Prevention)

### NEEKAM

- a) To bring the Three Thodams to equilibrium state.
- b) To treat the patient by Internal medicine.
- c) To stabilize 7 Udal thadhukal and 3 Uyir thadhukal.

"விரேசனத்தால் வாதந் தாமும்"

-சித்த மருத்துவாங்க சுருக்கம்

The trial drug MERUGULLI THYLAM (internally) was given on the first day of the treatment.

### NIRAIVU

By promoting the awareness about the dietary, seasonal, emotional influence on the disease assurance from disease recovery was given .Life-style modification was also advised to them.

“செங்கமுநீர் கோடைத் தேனமிளகு நல்லெண்ணெய்  
தங்கு பெருங்காயத் தமுதாழை – எங்கெங்கும்  
கட்டு சிறு முத்து நெய் கோதில் உளுந்திவைகள்  
வாட்டு மனிலத்தை மதி”

- பதார்த்த குண சிந்தாமணி

Honey collected during summer, pepper , gingely oil , asafoetida, castor oil, oil and black gram are very useful in Vatha disease.

## KAAPU:

Knowing the cause there by removing it and thus preventing the disease is the main aim of Siddha system of medicine.

Siddha system emphasizes the purification of thought and activities as mentioned in the siddha text “Theraiyar Pinianuga Vithi” which emphasizes virtuousness to be followed even in the daily life activities.

## DIETARY ADVICE

In Siddha system of medicine the importance of dietary habits have been emphasised for the management of diseases and its prevention in a effective manner.

கடுகு நற்றிலத் தெண்ணெய் கூழ்பாண்டங்கள் கடலை  
வருவதாகிய தெங்குமா வருக்கை நற்காயம்  
மடிவிலாத வெள்ளுள்ளிகொள் புகையிலை மதுபெண்  
இடறு பாகலோ டகத்தி நீக்கிடலிச்சா பத்தியம்”

-சித்த மருத்துவாங்க சுருக்கம்

“புளிதுவர் விஞ்சும் கறியால் பூரிக்கும் வாதம்”

- நோய் நாடல் நோய் முதல் நாடல் திரட்டு

During the course of treatment, the patients were advised to follow certain diet regimen (pathiyam) which is mentioned for vatha diseases.

1. Kadugu - Brassica nigra.Linn. (Mustard seed)
2. Ell Nei - Gingelly oil
3. Pooanikkai - Bennicasa hispida.Thunb.
4. Kadalai - Arachis hypogeal.Linn.
5. Thengai - Coccus nucifera.Linn.
6. Mangai - Mangifera indica.Linn.
7. Pala - Artocarpus heterophyllus.Lam.
8. Kollu - Macrotyloma uniflorum.Lam.(Horse gram)
9. Pugaiyilai - Nicotiana tobaccum.Linn.
10. Pagal - Momordica charantia.Linn.
11. Agathi - Sesbania grandiflora.Linn.
12. Sour taste
13. Astringent taste

### MODERN ASPECT

#### INTRODUCTION

The bones of the skeleton are joined by a variety of structural arrangements collectively known as “Joints”. Joints allow differential growth to the remission of forces and movements.

Normal structure of joints:

The joints are two types,

1. Diarthrodial or synovial joints with a joint cavity.
2. Synarthrodial or non synovial joints without a joint cavity.

Most of the diseases of joints affect diarthrodial or synovial joints. In Diarthrodial joints, the ends of the two bones are held together by joint capsule with ligaments and tendons inserted at the outer surface of the capsule. The articular surfaces of bones are covered by hyaline cartilage which is thicker in weight-bearing areas than in non weight-bearing areas. The joint space is lined by synovial membrane or synovium which forms synovial fluid that lubricates the joint during movements. The synovium may be smooth or thrown into numerous folds and villi. The synovial membrane is composed of inner layer of 1-4 cell thick synoviocytes and outer layer of loose vascular connective tissue.

#### **The structure of the joints consists of:**

##### **[1] Soft tissues:**

- |                             |   |
|-----------------------------|---|
| Joint space                 | - Joint space contains articular cartilage with thin film of synovial fluid.  |
| Joint capsule and ligaments | - The size of the capsule varies as per the joint involved, small joints have close filling joint capsules, but larger joints like knee and hip have larger joints capsule. |
| Periarticular tissue        | -The soft tissue covering the periosteum is called periarticular soft tissue.   |

##### **[2] Bone ends**

- ❖ In adults it consists of sub articular cortex, joint margin and Medulla and In younger age group it consists of Epiphysis and diaphysis

### [3] Structure of synovial joints:

The majority of joints in our body are synovial joints. In this type, the bone ends are not directly connected by any tissue. They have smooth articular surface covered by a layer of hyaline cartilage. Two bones are held together by a capsule made up of fibrous tissue. The capsule encloses the articular surfaces within a joint cavity. The capsule is lined by a synovial membrane which secretes a synovial fluid that acts as a lubricating agent and provides nourishment to the articular cartilage.

## CLASSIFICATION OF JOINTS

### Cartilaginous

( synchondroses and symphyeses) – Partially movable joints.

Fibrous (synarthrodial) – Immobile joints found in cranial vault and teeth.

Synovial joints ( diarthrosis) – Freely movable joints are the most common joints found in the skeleton.

### Cartilaginous ( synchondroses and symphyeses)

**a. Synchondroses :** Eg. Costal cartilage - sternum

**b. Symphyeses:** Eg. Pubic symphysis.

### Fibrous (synarthrodial)

**a. Suture** –E.g.Skull

**b. Gomphoses** –E.g Alveoli/Teeth

**c. Syndesmoses** – E.g Tibiofibular ligament

### Synovial joints ( diarthrosis)

#### a. Uniaxial joints

❖ Pivot joint ( neck, atlas and axis bones, Radio-ulna joint)

❖ Hinge joint ( elbow and knee)

#### b. Biaxial joints

❖ Condylar joint ( wrist)

❖ Saddle joint ( thumb)

#### c. Multi axial joints

❖ Gliding joint ( intercarpal, Between vertebrae in spine)

❖ Ball and socket joint ( shoulder and hip)

## **ARTHRITIS**

### **Definition:**

Arthritis means inflammation of joints

### **Characteristic features of arthritis:**

- Inflammation of the Joint
- Pain
- Redness
- Increased warmth
- Stiffness
- Swelling( major and minor joints)
- Fluid accumulation (synovial effusion)
- degenerative changes
- Resulting from infection,
- Metabolic disturbances or other causes.

### **Types of arthritis:**

- Osteoarthritis
- Rheumatoid arthritis
- Gout and Pseudo-gout
- Septic arthritis
- Juvenile idiopathic arthritis
- Ankylosing spondylitis
- Still's disease

## **RHEUMATOID ARTHRITIS (RA)**

Rheumatoid Arthritis is an autoimmune disease that results in a chronic, systemic inflammatory disorder of unknown causes. It may affect many tissues and organs, but principally attacks flexible (synovial) joints usually with a symmetrical distribution, It can be a disabling and painful condition, which can lead to substantial loss of functioning and mobility if not adequately treated. Its systemic manifestations include hematologic, pulmonary, neurological and cardiovascular abnormalities.



The name Rheumatoid arthritis originates from the Greek word

*Rheuma* = "that which flows as a river or stream,"

*Oid* = like or resembling

*Arthritis* = Inflammation of joints.

- The name is based on the term "rheumatic fever", an illness which includes joint pain and is derived from the Greek word *rheuma* (*nom.*), *-rheumatosis* (*gen.*) ("flow, current"). The suffix *-oid* ("resembling") gives the translation as *joint inflammation that resembles rheumatic fever*.
- The first recognized description of RA was in 1800 by the French physician Dr. Augustin Jacob Landre-Beauvais (1772 -1840) who was based in the famed Salpetriere Hospital in Paris.
- The name "Rheumatoid Arthritis" itself was coined in 1859 by British Rheumatologist Dr Alfred Baring Garrod.

## PREVALENCE

- The prevalence of rheumatoid arthritis in most Caucasian populations approaches 1% of adults and increases with age, approaching 2% in men and 5% in women, respectively.
- The incidence also increases with age, peaking between the 4th and 6th decades.
- The annual incidence for all adults has been estimated at 67 per 100,000.
- About 1% of the world's population is affected by rheumatoid arthritis, women three times more often than men. The incidence of RA is of 3 cases per 10,000 populations per annum. Onset is uncommon under the age of 15 and from then on the incidence rises with age until the age of 80 <sup>(1)</sup>.
- In India a local survey in Delhi shows the prevalence of this disease affecting 0.75% of population <sup>(2)</sup>.
- Around 40% of RA patients are registered disabled within 3 years; around 80% are moderately to severely disabled within 20 years; and 25% will require a large joint replacement <sup>(1)</sup>.
- It is 4 times more common in smokers than non-smokers.
- Family history is an important risk factor because It is strongly associated with the inherited tissue type Major histocompatibility complex (MHC) antigen HLA-DR4 (most specifically DR0401 usually in Indian patients and 0404)

- 80% affected are women. Male: Female ratio is 1:3.

### **ONSET:**

Mostly its onset is insidious and slow onset varying from weeks to months .In some people it is acute or sub acute onset.

### **PATTERNS OF ONSET ON RHEUMATOID ARTHRITIS.**

Insidious - 75%	Acute -15%	Sub acute -10%
Monoarticular - 20%	Palindromic -5%	
Oligo articular - 45%	Poly articular -35%	

### **CLINICAL COURSE**

Rheumatoid arthritis is usually life long with intermittent exacerbations and remissions.

### **CAUSES**

The exact causes of RA are unknown. But research has shown that several factors may contribute to the development of RA .

#### **Antigenic agents:**

In which probably act as predisposing factors are Epstein bar, rubella, viruses etc, Genetic, psychological stress, endocrine factors, metabolic factors and allergic factors may also play a role.

#### **Genetic**

Certain genes play a role in the immune system - for some people, genetic factors may be involved in determining whether they will develop RA. It is associated with Class II major histocompatibility complex allele HLA-DR4 and HLA-DRB1

- ❖ HLA-DR4 gene - 50 to 75 % (Severe deformities)
- ❖ HLA-DRB1 gene - Common in Indian patients.

### **ENVIRONMENTAL RISK FACTORS:**

Life style factors:

- ✓ Obesity is a risk factor for Rheumatoid arthritis
- ✓ Smoking is a major environmental risk factor for developing Rheumatoid arthritis

- ✓ Alcohol cuts the risk most in smokers with genetic risk factors for RA
- ✓ There are complex interactions between the female sex hormones and Rheumatoid arthritis
- ✓ Coffee drinkers seems to be at increased risk of developing Rheumatoid arthritis
- ✓ The oral contraceptive pill or some other factor associated with its use appears to protect against the development of severe Rheumatoid arthritis
- ✓ Stress aggravates this disease

**TRIGGERING FACTORS:**

- **Viral infections** –Hepatitis B, Hepatitis C ,Epstein –Barr Virus and others.
- **Bacterial infections** – Shigella, salmonella , group A Streptococcal ,Mycobacterium tuberculosis.
- **Drugs , Toxins, UV light, vaccination, physical trauma.**

**CLINICAL FEATURES**

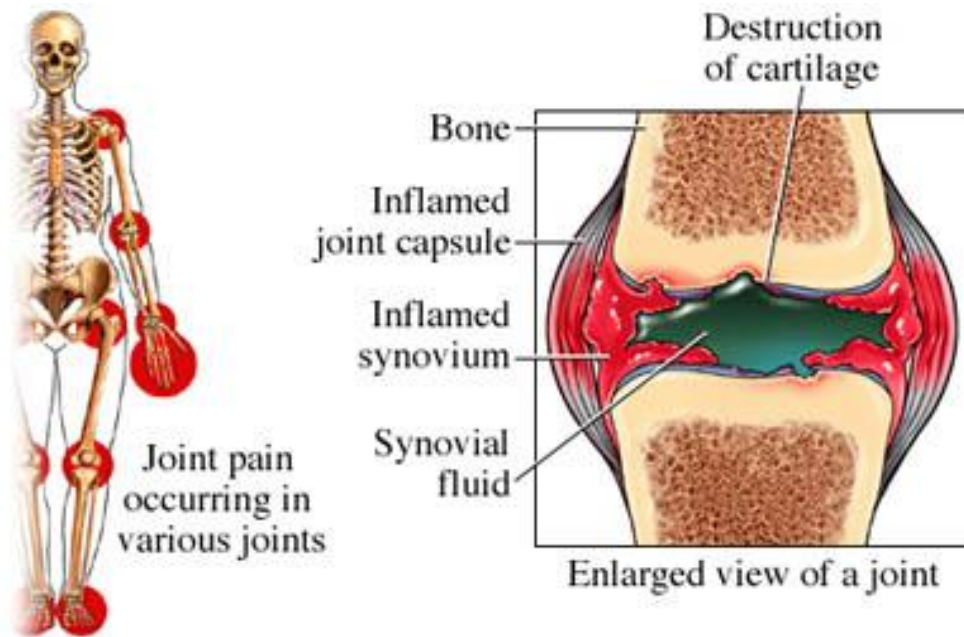
- Morning stiffness for at least one hour and present for at least six weeks.
- Swelling of three or more joints for at least six weeks.
- Swelling of major and minor joints like wrist joints, Metacarpophalangeal joints or proximal interphalangeal joints for at least six weeks.
- Symmetrical joint swelling.
- Low - grade fever.
- Fatigue
- Anorexia
- Depression
- Changes in appearance of the joints (Spindle shaped appearance of fingers , Rheumatoid nodules , Swan neck deformity, Button hole deformity )

**INVOLVEMENT OF INDIVIDUAL JOINTS**

Meta Carpo Phalangeal /Meta Tarso phalangeal		
/Proximal Inter Phalangeal joints	-	90%
Knee, ankle and Wrist	-	80%
Shoulder joint	-	60%
Hip, elbow, acromion	-	50%

Cervical spine	-	40%
Temporomandibular & Sternomastoid joints	-	30%
Cricoartenoid joint	-	10%

**Commonly involved joints:** Finger joint (Meta Carpo Phalangeal /Meta Tarso phalangeal /Proximal Inter Phalangeal joints ), Shoulder joint, and Foot joint.



### **HAND DEFORMITIES IN RHEUMATOID ARTHRITIS**

- Swan neck deformity
- Button hole deformity or Boutonniere's deformity.
- Z deformity or hitch
- Morant baker's cyst
- Ulnar deviation of hand
- Trigger finger
- Equinus deformity

### **SWAN NECK DEFORMITY**

Hyperextension of Proximal Inter Phalangeal joints with flexion of Distal Inter Phalangeal joints.



### **BUTTON HOLE DEFORMITY OR BOUTONNIERE'S DEFORMITY**

Hyperextension of Distal Inter Phalangeal (DIP) and Meta Carpo Phalangeal (MCP) joints with flexion of Proximal Inter Phalangeal (PIP) joints



### **.Z DEFORMITY OF THUMB OR HITCH**

Severe hyperextension of the inter phalangeal joint of thumb with flexion of Meta Carpo Phalangeal (MCP) joint



### **ULNAR DEVIATION OF HAND:**

Ulnar deviation or ulnar drift, it is a deformity of the hands in which the meta carpo phalangeal (MCP)joints bends or deviate towards the little finger.



### **TRIGGER FINGER**

Also known as Stenosing tenosynovitis, it is an inflammation of synovial sheath that encloses the flexor tendons of the thumb and fingers. it may result from enlargement of tendon itself or narrowing of 1 st annular pulley.



### **SHOULDER JOINT:**

The shoulder can not be moved, forward, backward in rotation. Difficulty in dressing, combing hair, eating, may be produced. It may lead to the formation of frozen shoulder.

## **OTHER DEFORMITIES (OR) FEATURES**

### **ANKLE AND KNEE JOINTS**

- Hallus valgus
- Claw toes
- Hammer toes
- Over-riding of 2 and 3 toes
- Flattening of longitudinal arch ,
- Prominent metatarsal head
- Excessive plantar tilt of meta tarsals
- Rheumatoid nodules
- Achilles tendinitis
- Calcaneal erosions.

### **HALLUS VALGUS**

Also known as **bunion**, is when there is a medial deviation of the 1 st metatarsal and lateral deviation of the great toe (hallux).



### **CLAW TOES**

It is characterized by hyper extension of Meta Tarso Phalangeal joint and flexion of Inter Phalangeal joint, except big toe.



### **HAMMER TOES**

Hammer toe or contracted toe is a deformity of Proximal Inter Phalangeal joint of the second, third, or fourth

Toe causing it to be permanently bent, resembling hammer.



### **EQUINUS DEFORMITY**

- Decreased ankle dorsiflexion due to gastrocnemius contracture.

### **PATHOLOGY OF RHEUMATOID ARTHRITIS**

Synovial tissues are the primary target of auto immune inflammatory process in Rheumatoid arthritis.

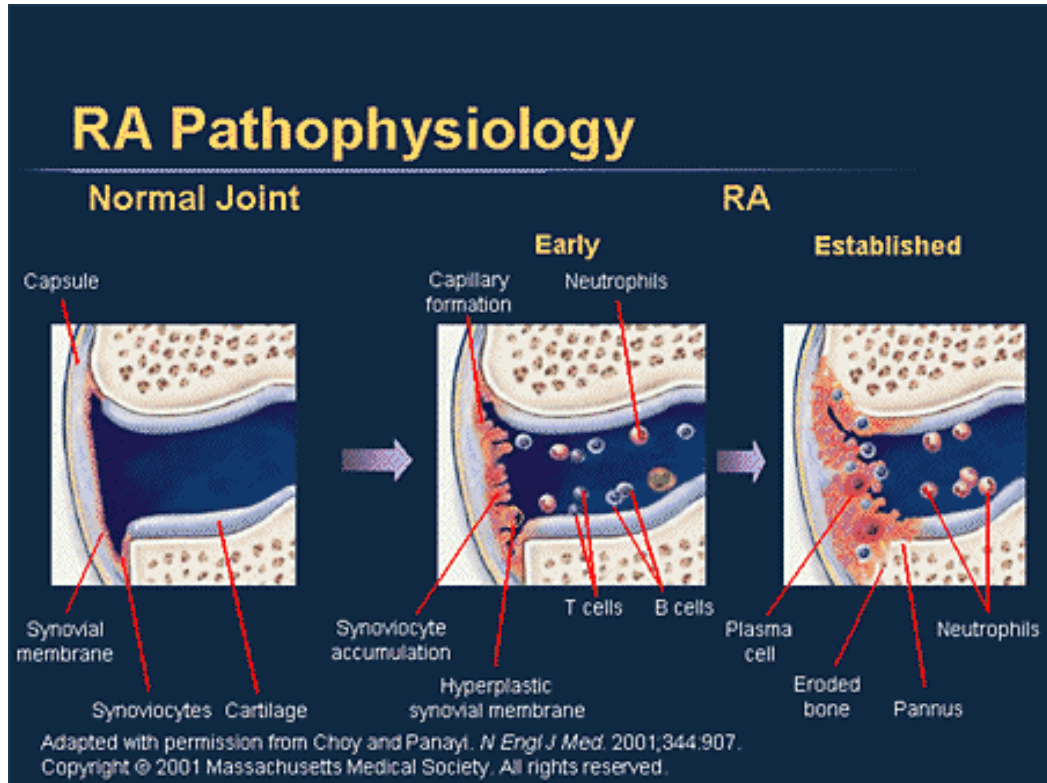
The following changes occurs in synovial tissues

- Proliferation of Tcells ,B cells, macrophages, synovial cells in synovium.
- Production of excess amount of pannus and infiltration of pannus which results in synovitis.
- Destruction of cartilage and bones associated with tendons and ligaments occurs
- As a result signs and symptoms of rheumatoid occurs.



## STAGES IN PATHOLOGY OF RHEUMATOID ARTHRITIS

- I. Pathology of Joints and Tendons.
- II. Pathology of Extra-articular tissues.



### I. PATHOLOGY OF JOINTS AND TENDONS

It can be explained in three stages.

1. Synovitis.
2. Destruction.
3. Deformity.

#### 1. SYNOVITIS

Initial lesion occurs in the synovium, leading on to vascular stasis, and infiltration of the sub synovial layers with inflammatory cells and formation of fibrinous exudates. Synovial hypertrophy occurs with the thickening of capsular structures.

Though this stage is painful, tender and swollen, their structures are still intact and mobile. So, these disorders are reversibly potential.

## 2. DESTRUCTION:

### Pannus formation:

Hypertrophied synovium along with granulation tissue leads to formation of pannus which encroaches the articular from its periphery.

### Articular cartilage:

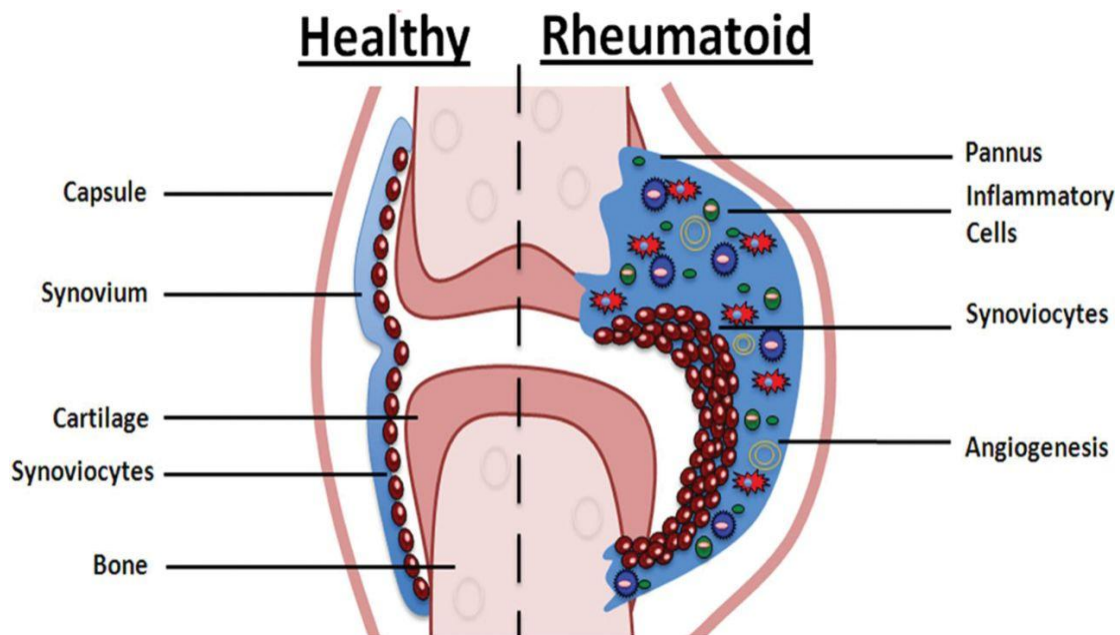
The articular cartilage gets destroyed gradually. Further the bony surface is involved, leading to obliteration of joint face. Joint get destroyed and deformed.

## 3. DEFORMITY:

The extending granular pannus gets into fibrous tissue, bone, which leads to fibrous ankylosis and later bony ankylosis.

Muscles, tendons, and soft tissues around the joint also undergo inflammatory changes and get contracted or ruptured.

Juxta-articular osteoporosis occurs, Not all patients progress through all three stages.



## EXTRA – ARTICULAR MANIFESTATIONS – COMPLICATIONS

- **SYSTEMIC:**

Weight loss

Fatigue

Susceptibility of infection

- **VASCULITIS:**
  - Digital arteritis
  - Pyoderma gangrenosum
  - Ulcers
  
- **HAEMATOLOGICAL:**
  - Anaemia
  - Thrombocytosis
  - Eosinophilia
  - Mononeuritis multiplex Visceral arteritis
  
- **MUSCULOSKELETAL:**
  - Muscle Wasting
  - Tenosynovitis
  - Bursitis
  - Osteoporosis
  
- **LYMPHATIC:**
  - Splenomegaly
  - Lymphadenopathy
  - Felty's syndrome
  
- **OCCULAR:**
  - Episcleritis
  - Scleritis
  - Scleromalacia
  - Kerato conjunctivitis sicca
  
- **CARDIAC:**
  - Pericarditis
  - Myocarditis
  - Endocarditis
  - Conduction defects
  - Coronary vasculitis
  - Granulomatous arthritis

- **PULMONARY:**

- Nodules
- Pleural effusion
- Fibrosing alveolitis
- Bronchiolitis

- **NEUROLOGICAL:**

- Cervical Cord compression
- Compression neuropathies
- Peripheral neuropathy
- Mononeuritis multiplex
- Amyloidosis

- **NODULES:**

- Sinuses
- Fistula

## **DIAGNOSIS**

### **I.CRITERIA FOR DIAGNOSING RHEUMATOID ARTHRITIS**

- (American Rheumatism Association 1988)

- Morning stiffness more than 1 hour for more than 6 weeks.
- Arthritis of three or more joints for more than 6 weeks.
- Arthritis of hand joints (wrist, MCP or PIP joints.) for more than 6 weeks.
- Symmetrical arthritis, at least one area lasting for 6 weeks.
- Rheumatoid factor.
- Rheumatoid nodules.
- Radiological changes.
- Duration of 6 weeks or more.

Diagnosis of Rheumatoid Arthritis is made with 4 or more criteria

## **LABORATORY INVESTIGATIONS**

### **1. BLOOD**

#### **Complete Blood Count**

Haemoglobin	-	Anaemia
Thrombocytes	-	Thrombocytosis
ESR	-	Increased

#### **Serum proteins:**

Albumin	-	Decreased
Gamma globulin	-	Increased
IgG, IgM, IgA	-	Increased

### **2. SEROLOGICAL TESTS**

#### **a) RHEUMATOID FACTOR**

Rheumatoid factor measures how many of one type of antibodies (IgM, sometimes IgA) binds to a second type of your antibodies (IgG). Initially, only one third of people with RA test positive for the set of antibody called the Rheumatoid Factor (RF).

Most people with Rheumatoid Arthritis will eventually develop this marker and a positive RF is considered a sign and symptom of rheumatoid arthritis. However, some people test positive for rheumatoid factor, yet never develop the disease.

#### **b) ANTI-CCP**

These anti-CCP antibodies bind to some self proteins that are found predominately in the synovial tissue. The citrullinated proteins include filaggrin and its circular form (cyclic citrullinated peptide: CCP). The presence of these antibodies often correlates with some joint destruction. Although this test is relatively recent, a high level of anti-CCP is considered a sign and symptom of Rheumatoid Arthritis.

#### **c) ERYTHROCYTE SEDIMENTATION RATE**

It measures the quantity and how quickly the cells are pelleted by spinning in a centrifuge. Indirectly, it measures how many cells are bigger and thus activated.

#### **d) C-REACTIVE PROTEIN**

A higher than normal level of C-reactive protein (CRP) in the blood also indicates that your body has chronic inflammation, and is a common sign and symptom of Rheumatoid Arthritis.

### **3 .RADIOLOGY: X-rays**

#### **Early changes**

- Soft tissue swelling
- Peri articular osteoporosis
- Erosions-Peri articular and sub articular cysts

#### **Late changes**

- Articular surface irregularity
- Osteoporosis
- Subluxation
- Ankylosis
- Secondary Osteoarthritis

**4. ULTRASOUND:** Soft tissue abnormalities, e.g. synovial cysts.

**5. CT SCAN, MRI:** Much greater information of bone, joint and soft tissue.

### **6. ARTHROSCOPY**

- Direct view of joint and synovial fluid.
- Potential for biopsy and therapeutic procedures.

### **7. SYNOVIAL FLUID**

- White cell count raised in infection.
- Crystal identification: Presence of Urate, Calcium pyrophosphate, crystals present.
- Synovial fluid analysis confirms the presence of inflammatory arthritis.

### **8.BIOPSY**

Synovial biopsy : Villu formation with thickening of synovial layer and infiltration with abnormal cells.

## **DIFFERENTIAL DIAGNOSIS**

Several other medical conditions can resemble RA, and usually need to be distinguished from it at the time of diagnosis.

### **Systemic Lupus Erythematosus (SLE)**

Distinguished by specific clinical symptoms and blood tests.

- Anti Nuclear Antibody (ANA) titre
- Anti-DNA
- Complement fixation decreased
- ESR increased
- Complete Blood Count, Urine Analysis
- Kidney biopsy

### **Crystal Induced arthritis (Gout, and Pseudo gout)**

- It usually involves particular joints (knee, Meta tarsal phalanges, heels)
- It can be distinguished with aspiration of joint fluid if in doubt. Redness (RA doesn't have redness at the joints),
- Asymmetric distribution of affected joints,
- Pain occurs at night and the starting pain is less than an hour with gout.

### **Osteoarthritis :**

Due to “wear and tear”, develops slowly in Middle-aged and elderly

- Late joint changes,
- bony sclerosis,
- minimal inflammation,
- Synovial fluid increased,
- spur formation
- Gait analysis

### **Psoriatic arthritis:**

Resembles RA, skin symptoms and nail changes distinguish between them.

**Reactive Arthritis (previously Reiter's disease)**

Asymmetrically involves heel, sacroiliac joints, and large joints of the leg. It is usually associated with urethritis, conjunctivitis, iritis, painless buccal ulcers, and keratoderma blennorrhagica.

**Ankylosing spondylitis:**

This involves the spine, although a RA-like symmetrical small-joint polyarthritis may occur in the context of this condition.

**Hepatitis C :**

Hepatitis C may also induce Rheumatoid Factor auto-antibodies.

**Sarcoidosis, Amyloidosis and Whipple's disease** can also resemble RA.

**Hemochromatosis**

May cause hand joint arthritis.

**Acute Rheumatic fever**

It can be differentiated from RA by a migratory pattern of joint involvement and evidence of antecedent streptococcal infection. Bacterial arthritis (such as streptococcus) is usually asymmetric. While RA usually involves symmetrical joints.



## MATERIALS AND METHODS

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The Study on VALIAZHAI KEELVAYU was carried out in the OPD and IPD of the Maruthuvam department, National Institute of Siddha, Chennai.

The trial drug “**MERUGULLI THYLAM**”(Internal) was indicated in the authorised Siddha text **Theraiyar Thylavarga Surukkam**, P.NO 80-81 for VALIAZHAI KEELVAYU.

### STUDY DESIGN

An open Clinical trial

### STUDY PLACE

OPD and IPD of Ayothidoss Pandithar Hospital,  
National Institute of Siddha, Tambaram Sanatorium, Chennai-47.

### STUDY PERIOD

November 2015-2018 October

### SAMPLE SIZE

40 patients, 39 cases were treated in OPD and one case was admitted in IPD and the trial drug was given.

### TRIAL DRUG

#### INTERNAL MEDICINE

<b>Drug</b>	:	Merugulli thylam
<b>Dosage</b>	:	kaal balam-9 grams (9 ml)-3 days morning only(2 days drug holiday)
<b>Duration</b>	:	45 days
<b>Reference</b>	:	<i>Theraiyar Thylavarga Surukkam</i>
<b>Publication</b>	:	B. Rathna Nayakar & Sons.
<b>Author</b>	:	T.C.Subbramaniya Pandithar
<b>Page No.</b>	:	80-81
<b>Edition</b>	:	11 <sup>th</sup> edition, 2012.

### **Source of raw drugs**

The required raw drugs for preparation of “*Merugulli thylam*” (Internal) were purchased from a well reputed country shop and the purchased drugs were authenticated by Assistant professor of the Medicinal botany at National Institute of Siddha, Chennai.

### **Drug Storage**

*Merugulli thylam* was stored in a clean and narrow mouthed glass bottles.

### **Dispensing:**

The Internal medicine (9 ml) was distributed in Disposable pet bottles.

### **SUBJECT SELECTION**

Patients reporting to NIS were subjected to screening by screening Proforma. After screening they were enrolled for the study fulfilling the inclusion criteria as said below.

### **Inclusion Criteria**

- Age: 20- 60 years.
- Both male and female.
- Symmetrical joint involvement at least one joint for more than 6 weeks
- Arthritis of three or more joints for more than 6 weeks
- Swelling present in major and minor joints especially in the inter-phalangeal joint.
- Rheumatoid factor positive or negative.
- Morning stiffness for more than one hour for more than 6 weeks
- Deformities like Button hole deformity and Swan neck deformity, spindle shaped deformity etc.
- Anti CCP positive.
- American criteria for rheumatoid arthritis were followed.
- Patients willing for admission and stay in IPD or willing to attend OPD.
- Patient willing to undergo Radiological investigation and for laboratory investigation.
- Patient willing to sign the informed consent stating that he/she was consciously stick to the treatment during 45days but could opt out of the trial of his/her own conscious discretion.

## **Exclusion Criteria**

- Pregnancy and lactation
- Tubercular arthritis
- Any other serious systemic illness like cancer, Cardiac Disease
- Osteoarthritis
- Psoriatic arthritis
- Gouty arthritis
- Diabetic Mellitus
- Hypertension
- Thyroidism (Hypo/hyper)

## **Withdrawal Criteria**

- Intolerance to the drug and development of adverse reactions during the trial.
- Poor patient compliance and defaulters.
- Patient turned unwilling to continue in the course of clinical trial.

## **Tests and Assessments**

- A. Clinical assessment
- B. Siddha investigation
- C. Laboratory investigations
- D. Radiological investigation

### **A. Clinical Assessment**

- ❖ Arthritis involving three or more joints
- ❖ Symmetrical joint involvement
- ❖ Morning stiffness
- ❖ Anorexia
- ❖ Spindle shaped appearance of fingers
- ❖ Rheumatoid nodules
- ❖ Depression
- ❖ Swelling of small joints of hands and foot.
- ❖ Swan neck deformity
- ❖ Button hole deformity

## **B. Siddha System Examination**

1. Naadi
2. Sparisam
3. Naa
4. Niram
5. Mozhi
6. Vizhi
7. Malam
8. Moothiram

### a. Neer kuri

- Niram - colour
- Edai - Specific gravity
- Manam- Smell
- Enjal - Deposits/quantity urine voided.

### b. Neikuri:

- When the oil drops lenthens like a snake it indicates 'Vatha Neer'
- When the oil drops Spreads like a ring it indicates 'Pitha Neer'
- When the oil drops Remains that of pearl it indicates 'Kaba Neer'

## **C. ROUTINE INVESTIGATIONS**

### **BLOOD**

Hb

Total WBC Count

DC- Polymorphs

1. Lymphocytes
2. Eosinophils
3. Monocytes
4. Basophils

Total RBC count

ESR

½ Hr:            1 Hr:

Blood sugar

Fasting:        PP:

Serum cholesterol

## **URINE**

Albumin  
Sugar (F) (PP)  
Deposits

### **Renal function tests**

Blood Urea  
Uria acid  
Serum Creatinine

### **Liver function tests**

Serum Total bilirubin  
Direct bilirubin  
Indirect bilirubin  
Serum Alkaline phosphatases  
SGOT  
SGPT

## **D. SPECIFIC INVESTIGATIONS**

CRP  
RA factor  
ASO Titre

## **E. RADIOLOGICAL INVESTIGATIONS**

X-Ray of affected joints (AP and Lat view)

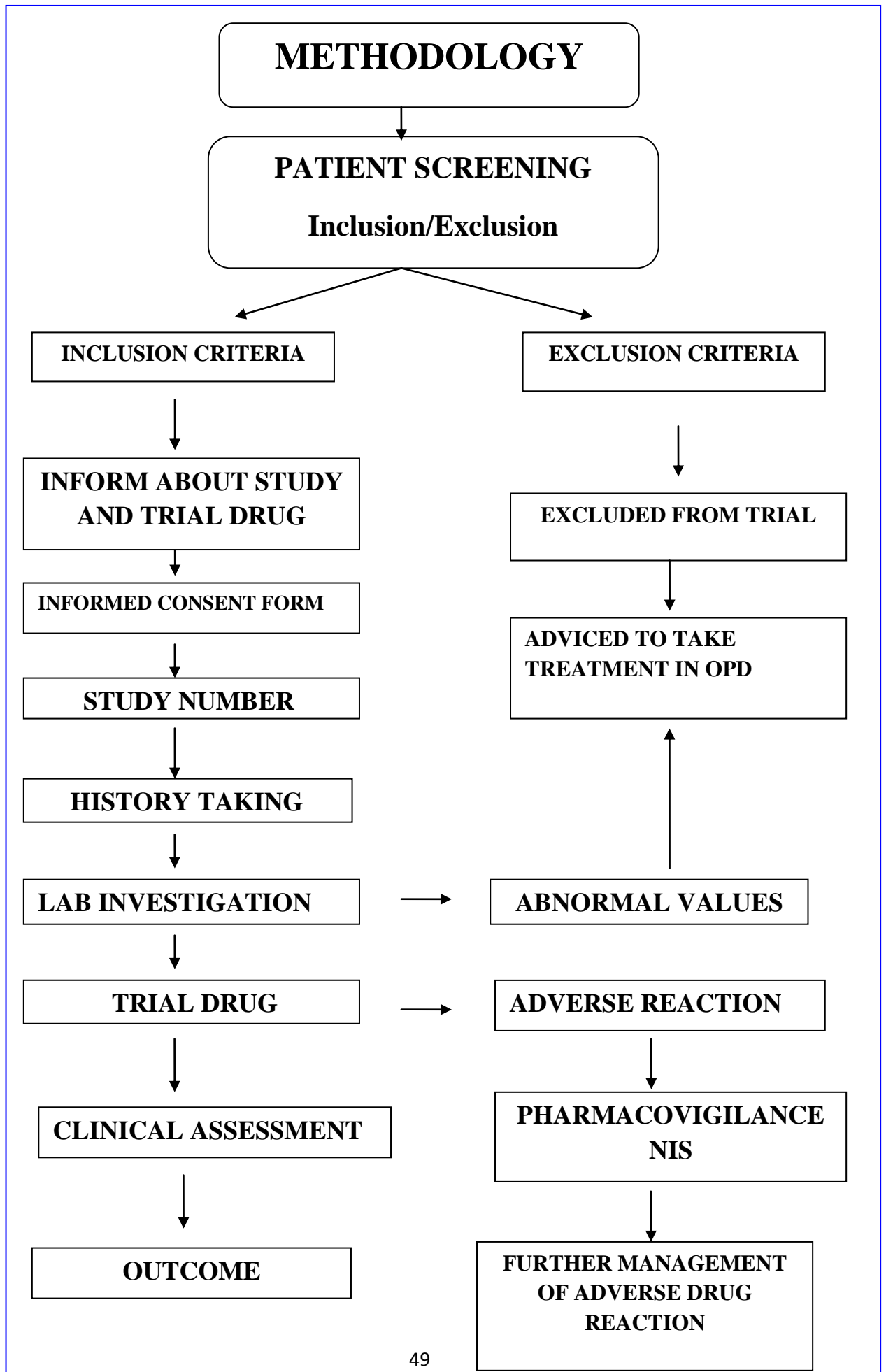
## **G. DATA COLLECTION FORMS:**

Required information was collected from each patient by using following forms.

### **FORMS**

<u>FORM I</u>	:	Screening and Selection Proforma
<u>FORM II</u>	:	History Taking And Clinical Assesment Proforma
<u>FORM III</u>	:	Laboratory Investigation form
<u>FORM IV</u>	:	Drug Compliance form

<u>FORM V</u>	:	Patient Information Sheet
<u>FORM VI</u>	:	Informed Consent Form
<u>FORM VII</u>	:	Withdrawal Form
<u>FORM VII-B</u>	:	Adverse Drug Reaction (or) Pharmacovigilance form
<u>FORM VIII</u>	:	Dietary form



## **METHODOLOGY**

### **STUDY ENROLLMENT**

After registered in CTRI (Clinical Trials Registry-India) the patients were enrolled for the study.

#### **CTRI NO: CTRI/2018/03/012365**

Patients reporting at the OPD of NIS with the clinical symptoms of Vali Azhal Keelvayu were examined clinically. Based on the inclusion and exclusion criteria, they were enrolled for the study.

The patients who were enrolled were informed about the study, trial drug, possible objectives and outcomes of the study in their vernacular language. After ascertaining the patient's willingness, informed consent were obtained in consent form.

Complete clinical history, complaints and duration, examination findings and laboratory findings were recorded in the prescribed Proformas. Patients were advised to take the trial drug and appropriate dietary advice.

### **CONDUCT OF THE STUDY**

The trial drug *Merugulli thylam* (Internal) was given for 45 days. OPD patients were asked to visit the hospital once in 5 days. At each clinical visit clinical assessment was done and prognosis was noted. For IPD patient the clinical assessment was done daily. The results were compared at the end of the study. Laboratory investigations and radiological investigation was done before and after trail. At the end of the treatment, the patients were advised to visit the OPD without trail drug for follow-up for further 2 months for observing any recurrence. Defaulters were not been allowed to continue and be withdrawn from the study.

### **DATA MANAGEMENT**

After enrolling the patient in the study, separate files were maintained for each and every patient and all forms and other information were kept in the file. The screening forms were filed separately. The data entries were monitored by the Head of the department, Maruthuvam. All collected data were statistically analyzed by Senior Research Officer (Statistics) for logical errors and incompleteness of data to avoid any bias. No modification in the results was permitted for unbiased reports. Then final report was generated.



## STATISTICAL ANALYSIS

All the data were entered into computer using MS access software for logical errors and manually cross checked for data entry error. Then the data was explored to STATAL/SPSS software for univariate /multivariate analysis. Student 't' test and paired 't' test and Mantel-Haenszel chi-square test was performed for determining the significance of a particular effect variable.

## OUTCOME

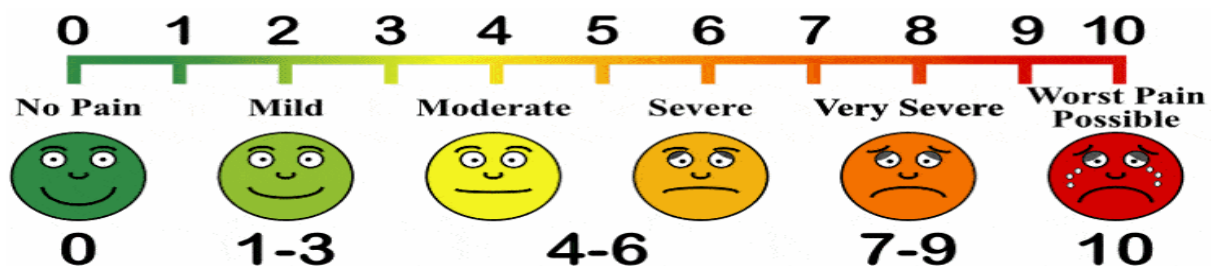
### PRIMARY OUTCOME

Assessment of pain was by Universal pain assessment scale. Other clinical signs and symptoms were assessed by Gradation method.

### SECONDARY OUTCOME

Laboratory investigations such as RA factor, CRP, ASO titre, were also be done at the end of the study.

### UNIVERSAL PAIN ASSESMENT SCALE



Grade 0 : No Pain

Grade 1-3 : Mild pain

Grade 4-6 : Moderate pain

Grade 7-10 : Severe pain

*- Ref: Clinical Manual for Nursing Practise (National Institute of Health Warren Grant Magnuson Clinical Centre )*

### Restricted movements is assessed by the following Gradation,

Grade 1 – Able to perform normal duties

Grade II – Moderate Restriction – Self care is possible

Grade III – Marked restriction – Limited self care/some assistance required.

Grade IV – Confined to bed or wheel chair

## **ADVERSE EFFECTS/ SERIOUS EFFECTS MANAGEMENT**

If the trial patient developed any adverse reaction, he/she would be immediately informed to the Pharmaco-vigilance committee of NIS for further management.

## **ETHICAL ISSUES**

1. To prevent any infection, while collecting blood sample from the patient, only disposable syringes, disposable gloves, with proper sterilization of lab equipments were used.
2. The patients were informed about the treatment and other procedures in his/her vernacular language. After received written consent only (language understandable to the patient) they were enrolled in the study.
3. The data collected from the patient were kept confidential.
4. No other external or internal medicines were used, other than the trial drug during the trial period. There was no infringement on the rights of the patient.
5. Treatment were provided free of cost.
6. For those tests which are performed in outside lab the money should be borne by the patients.
7. If any serious adverse reactions occur during trial, the patients were given alternative treatment at regular OPD of National Institute of Siddha.
8. If the patient was not willing to continue the treatment, he/she was allowed to withdrawn from the trial at any time.

## PURIFICATION OF RAW DRUGS

### 1. Merugan kizhangu (*Alocasia indica*.Schott)

Removed the skin of merugan kizhangu and cut into small pieces & dried.

*Ref: Theraiyar thylavarka surukkam. P.no:80*

### 2. Bulb of Garlic (*Allium sativum*.Linn)

Peeled and cleaned the outer layer of garlic

*Ref: Theraiyar thylavarka surukkam.P.no:80*

### 3. Castor oil (*Ricinus communis*)

Castor oil was taken in a bottle and 1/4 th of the glass bottle was kept under the sand. Then it was under sun shade for 2 days and the filtrate was taken

*Ref: Sigicha rathna theebam ennum vaithiya nool.P.no:27*

### Internal medicine – Merugulli thylam:

#### Ingredients:

- |   |   |                           |
|---|---|---------------------------|
| 1. Merugan kizhangu ( <i>Alocasia indica</i> .Schott) | } | Equal quantity            |
| 2. Garlic ( <i>Allium sativum</i> .Linn)              |   |                           |
| 3. Caster oil( <i>Ricinus communis</i> .Linn)=        |   | Equal quantity of 1 and 2 |

### METHOD OF PREPARATION

Peeled and cleaned skin of the merugan tuberous stem and garlic and cut into small pieces, then it grinded into a paste. Heat the paste with castor oil boiled until it reached a wax consistency. Then filtered and took the oil. Used after 3 days.

#### Drug Storage:

*Merugulli thylam* was stored in a clean and narrow mouthed glass bottles.

#### Dispensing:

The Internal medicine (9 ml) was given in Disposable pet bottles.

## PROPERTIES OF THE INGREDIENTS OF TRIAL DRUGS

### 1. Merugan kizhangu (*Alocasia indica*.Schott)

English name	:	Great leaved caladium , Giant taro,ape.
Botanical name	:	<i>Alocasia indica</i> .Schott
Family	:	Araceae
Parts used	:	Tuber
Constituents	:	Alomacrorrhiza A and allocasin, ascorbic acid.

#### Organoleptic Characters

Taste	:	Kaarppu
Potency	:	Veppam
Pirivu	:	Kaarppu
Therapeutic actions	:	Anti-inflammatory Antinociceptive Antioxidant Analgesic activity

#### Therapeutic effects

மெருகங் கிழங்கு  
அரசு நமைச்சு நதிகாரி சேனைக்  
கரசு நிவர்க்கிகலே யாகிப்பொருவும்  
மிருகமெனு நாயமுயல் மேல்விடு தல்போல்  
மெருகடியை யேவுவினை மேல்.

(தேரன்-வெண்பா)

The analgesic and anti-inflammatory activities of the crude ethanolic extract of dried rhizome of *Alocasia indica* (Roxb.) Schott <sup>(9)</sup>.

The detoxified tuber is used to treat influenza, high fever and malaria; diarrhea and typhoid fever, rheumatic; pulmonary tuberculosis and tuberculous lymphadenopathy; headache; abscesses and ring worms <sup>(10)</sup>.

*Alocasia indica* Schott had ascorbic acid anti-inflammatory, antinociceptive activities and antioxidant property <sup>(11)</sup>.

## 2.Bulb of Garlic (*Allium sativum.Linn*)

English name	:	Garlic
Botanical name	:	<i>Allium sativum.Linn</i>
Family	:	Amaryllidaceae
Parts used	:	Bulb
Constituents	:	Alliin,tryptophan,sativioside, allyl methyl trisulphide, Scordinine A,,A <sub>1</sub> , A <sub>2</sub> & B, Five saponins , n-3 fatty acids, indolic and phenolic compounds, 5-hydroxy-l-tryptophan, in RAW 264.7 cells, organosulfur compounds, phenolic acids, allyl thiosulfinates, flavonoids, and vitamins etc

### Organoleptic Characters

Taste	:	Kaarppu.
Potency	:	Veppam
Pirivu	:	Kaarppu
Therapeutic actions	:	Anti-inflammatory Antinociceptive Antioxidant Analgesic activity Antiarthritic activity Hypolipidemic Anticoagulant Anticancer Antigenotoxic, Anticlastogenic effects

### Therapeutic effects

சன்னியொடு வாதந் தலைநோவு தாள்வலி  
மன்னிவரு நீர்க்கோவை வன்சீதம்- அன்னமே!  
உள்ளுள்ளி கண்பாய் உளைமுல ரோகமும் போம்  
வெள்ளுள்ளி தன்னால் வெருண்டு.

(அகத்தியர் குணவாகடம்)

Alliin the precursor of the antibiotic principle of *Allium sativum* was found useful in the treatment of **rheumatoid arthritis**. A beneficial change in mucoprotein level and **ESR** was observed when clinically evaluated. It gives a significant effect such as pain relief, morning stiffness, swelling in patients with different rheumatic disorder<sup>(12)</sup>.

Alliin exhibits hypolipidemic, antiplatelet, and procirculatory effects. Moreover, it demonstrates antibacterial, anticancer, and chemopreventive activities. Alliin ((R, S)-diallyldisulfid-S-oxide), one of the sulfur compounds from garlic, is formed by the action of the enzyme alliinase on alliin. It possesses antioxidant activity<sup>(13)</sup>.

Antioxidant and Antiarthritic Activity of Alliin were done in Animal Models<sup>(14)</sup>.

### **CASTER OIL(*Ricinus communis.Linn* )**

English name	:	Castor, Castor oil plant.
Botanical name	:	<i>Ricinus communis.Linn</i>
Family	:	Euphorbiaceae
Parts used	:	Root, leaf, Flower, seed, seed oil.
Constituents	:	Alkaloids, ricinine, albumin, ricin and 1-methyle-3-cyano-4-methoxy-2-pyridone, $\beta$ -stosterol, ricinine, Gallic acid, Flavonoid- lucenin , Hydro cyanic acid and uric acids (oil) etc .

### **Organoleptic Characters**

Taste	:	Kaarppu.
Potency	:	Veppam
Pirivu	:	Kaarppu
Therapeutic actions	:	Anti-inflammatory; Spasmogenic, Hepato protective, Anti fertility Purgative Imminizing CNS depressant, Spasmolytic.

### **IN SIDDHA ASPECT**

ஆமணக் கெண்ணெய் தன்னை யணிநில மறியக் கேண்மின்  
பூமணச் சந்ததோறும் பொருந்திய வாதம் போக்கும்  
தீமந்தந் தானும் போக்குந் திகழ்வுடன் விரைவு முண்டாம்  
தீமனக் குடலில் வாதஞ் சேர்குட லேற்றம் போமே

(குணபாடம் - மூலிகை)

Seed oil-anti pyretic, recommended for abdominal disorders, dysentery, chronic articular rheumatism, oedema<sup>(15)</sup>.

## MERUGAN KIZHANGU



## GARLIC





**CASTER OIL**



**MERUGULLI THYLAM**



**BIO -CHEMICAL ANALYSIS OF MERUGULLI THYLAM AT  
NATIONAL INSTITUTE OF SIDDHA**

<b>S.No</b>	<b>EXPERIMENT</b>	<b>OBSERVATION</b>	<b>INFERENCE</b>
1.	Physical Appearance of sample	Dark brown in colour	
2.	<p><b>Solubility:</b></p> <p>a. A little of the sample is shaken well with distilled water.</p> <p>b. A little of the sample is shaken well with con. HCl / Con. H<sub>2</sub>SO<sub>4</sub></p>	Sparingly soluble	<b>Presence of Silicate</b>
3.	<p><b>Action of Heat:</b></p> <p>A small amount of the sample is taken in a dry test tube and heated gently at first and then strong.</p>	No brown fumes	Absence of Nitrate
4.	<p><b>Flame Test:</b></p> <p>A small amount of the sample is made into a paste with con. HCl in a watch glass and introduced into non-luminous part of the Bunsen flame.</p>	No Bluish green flame appeared.	Absence of Copper
5.	<p><b>Ash Tests:</b></p> <p>A filter paper is soaked into a mixture of sample and cobalt nitrate solution and introduced into the Bunsen flame and ignited</p>	No Yellow colour flame	Absence of sodium

**Preparation of Extract:**

5gm of Merugulli thylam is weighed accurately and placed in a 250ml clean beaker and added with 50ml of distilled water. Then it is boiled well for about 10 minutes. Then it is cooled and filtered in a 100ml volumetric flask and made up to 100ml with distilled water.

S.No	EXPERIMENT	OBSERVATION	INFERENCE
	<b>I. Test For Acid Radicals</b>		
1.	<b>Test For Sulphate:</b> 2ml of the above prepared extract is taken in a test tube to this added 2ml of 4% ammonium oxalate solution.	No Cloudy appearance present	Absence of Sulphate
2.	<b>Test For Chloride:</b> 2ml of the above prepared extract is added with dil.Hno <sub>3</sub> till the effervescence ceases. Then 2 ml of Silver nitrate solution is added .	No Cloudy appearance present	Absence of Chloride
3.	<b>Test For Phosphate:</b> 2ml of the extract is treated with 2ml of dil.ammonium molybdate solution and 2ml of con.HNo <sub>3</sub>	Cloudy yellow appearance present	<b>Presence of Phosphate</b>
4.	<b>Test For Carbonate:</b> 2ml of the extract is treated with 2mldil. magnesium sulphate solution	No Cloudy appearance present	<b>Presence of Carbonate</b>
C	<b>Test For Nitrate:</b> 1gm of the substance is heated with copper turning and con.H <sub>2</sub> So <sub>4</sub> and viewed the test tube vertically down.	No Brown gas is evolved	Absence of Nitrate

6.	<b>Test For Sulphide:</b> 1gm of the substance is treated with 2ml of con. HCL	No Rotten Egg Smelling gas evolved	Absence of Sulphide
7.	<b>Test For Fluoride &amp; Oxalate:</b> 2ml of extract is added with 2ml of dil. Acetic acid & 2ml dil. calcium chloride solution & heated.	No Cloudy appearance	Absence of fluoride and oxalate
8.	<b>Test For Nitrite:</b> 3drops of the extract is placed on a filter paper, on that-2 drops of dil.acetic acid and 2 drops of dil. Benzidine solution is placed.	No Characteristic changes	Absence of Nitrite
	<b>Test For Borate:</b> 2 Pinches (50mg) of the substance is made into paste by using dil. sulphuric acid and alcohol (95%) and introduced into the blue flame.	Bluish green colour flame not appeared	Absence of borate
	<b>II. Test For Basic Radicals</b>		
1.	<b>Test For Lead:</b> 2ml of the extract is added with 2ml of dil. potassium iodine solution.	No Yellow Precipitate is obtained.	Absence of Lead
	<b>Test For Copper:</b> a. One pinch(50mg) of substance is made into paste with con. HCl in a watch glass and introduced into the non-luminous part of the flame.	No Blue colour flame No Blue colour precipitate formed.	Absence of copper
3.	<b>Test For Aluminium:</b> To the 2ml of extract dil.sodium hydroxide is added in	No characteristic changes	Absence of aluminium

	5 drops to excess.		
4.	<p><b>Test For Iron:</b></p> <p>a. To the 2ml of extract add 2ml of dil. ammonium solution</p> <p>b. To the 2ml of extract 2ml thiocyanate solution and 2ml of con HNO<sub>3</sub> is added</p>	Blood Red colour appeared	<b>Presence of Iron</b>
5.	<p><b>Test For Zinc:</b></p> <p>To 2ml of the extract dil. sodium hydroxide solution is added in 5 drops to excess and dil. ammonium chloride is added.</p>	White precipitate is not formed	Absence of Zinc
6.	<p><b>Test For Calcium:</b></p> <p>2ml of the extract is added with 2ml of 4% dil. ammonium oxalate solution</p>	Cloudy appearance and white precipitate is obtained	<b>Presence of calcium</b>
7.	<p><b>Test For Magnesium:</b></p> <p>To 2ml of extract dil. sodium hydroxide solution is added in drops to excess.</p>	No White precipitate is obtained	Absence of Magnesium
8.	<p><b>Test For Ammonium:</b></p> <p>To 2ml of extract 1 ml of Nessler's reagent and excess of dil. sodium hydroxide solution are added.</p>	Brown colour appeared	<b>Presence of ammonium</b>
9.	<p><b>Test For Potassium:</b></p> <p>A pinch (25mg) of substance is treated of with 2ml of dil. sodium nitrite solution and then treated with 2ml of dil. cobalt nitrate in 30% dil. glacial acetic acid.</p>	No Yellowish precipitate is obtained.	Absence of Potassium

10.	<b>Test For Sodium:</b> 2 pinches (50mg) of the substance is made into paste by using HCl and introduced into the blue flame of Bunsen burner.	No Yellow colour flame appeared	Absence of Sodium
11.	<b>Test For Mercury:</b> 2ml of the extract is treated with 2ml of dil. sodium hydroxide solution.	No yellow precipitate is obtained	Absence of Mercury
12.	<b>Test For Arsenic:</b> 2ml of the extract is treated with 2ml of dil. sodium hydroxide solution.	No brownish red precipitate is obtained	Absence of Arsenic
<b>III. Miscellaneous</b>			
1.	<b>Test For Starch:</b> 2ml of extract is treated with weak dil. Iodine solution	Blue colour developed	<b>Presence of starch</b>
2.	<b>Test For Reducing Sugar:</b> 5ml of Benedict's qualitative solution is taken in a test tube and allowed to boil for 2 minutes and added 8 to 10 drops of the extract and again boil it for 2 minutes. The colour changes are noted.	No Brick red colour is developed	Absence of reducing sugar
3.	<b>Test For The Alkaloids:</b> a) 2ml of the extract is treated with 2ml of dil. potassium iodide solution. b) 2ml of the extract is treated with 2ml of dil. picric acid. c) 2ml of the extract is treated with 2ml of dil. phosphotungstic acid.	No Red colour developed Yellow colour developed No White precipitate developed	<b>Presence of Alkaloid</b>

4.	<b>Test For Tannic Acid:</b> 2ml of extract is treated with 2ml of dil. ferric chloride solution	No black precipitate is obtained	Absence of Tannic acid
	<b>Test For Unsaturated Compound:</b> To the 2ml of extract 2ml of dil. Potassium permanganate solution is added.	Potassium permanganate is not decolourised	Absence of unsaturated compound
6.	<b>Test For Amino Acid:</b> 2 drops of the extract is placed on a filter paper and dried well. 20ml of Biurette reagent is added.	No Violet colour developed	Absence of amino acids
7.	<b>Test For Type Of Compound:</b> 2ml of the extract is treated with 2 ml of dil.ferric chloride solution.	No green colour Developed No red colour developed No violet colour developed No blue colour developed	Absence of oxy quinole pinephrine and pyro catechol. Anti pyrine, Aliphatic amino acids and meconic acid are absent Apomorphine salicylate and Resorcinol are absent Morphine, Phenol cresol and hydrouinoneare absent

## BIO -CHEMICAL ANALYSIS

<b>S.NO</b>	<b>CONSITUENTS</b>	<b>INFERENCE</b>
1.	<b>Silicate</b>	Present
2.	<b>Iron</b>	Present
3.	<b>Alkaloids</b>	Present
4.	<b>Phosphate</b>	Present
5.	<b>Calcium</b>	Present
6.	<b>Ammonium</b>	Present
7.	<b>Starch</b>	Present



## Standardization Report

S.NO	PARAMETERS	RESULTS
1	Refractive index	1.4752
2	Acid value	9.41
3	Saponification Value	181.45
4	Peroxide Value	5.36
5	Iodine value	83.11
6	Weight	0.964

### Test for Aflatoxin

The trial drug Merugulli thylam was free from Aflatoxins.

### TEST FOR AFLATOXIN

The procedures recommended for the detection of Aflatoxin as per WHO (2007).

### Instrument Details:

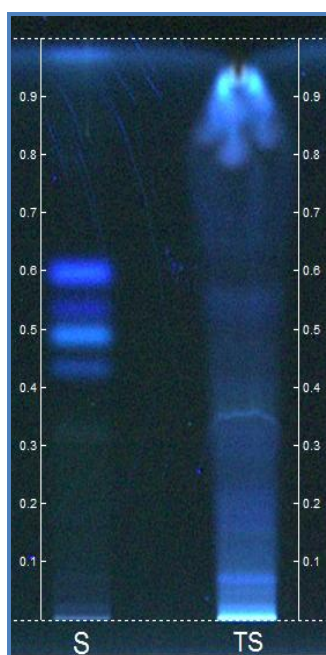
<b>Name of the Instrument</b>	: CAMAG (CAMAG - Automatic TLC sampler, Scanner and Visualiser)
<b>Spray Gas</b>	: N <sub>2</sub>
<b>Lamp used</b>	: Mercury Lamp

The samples were processed as per procedures recommended in WHO 2007 and applied for the Thin Layer Chromatography and High Performance Thin Layer Chromatography study with suitable solvent systems. After development the plate was allowed to dry in air and examined under 366nm.

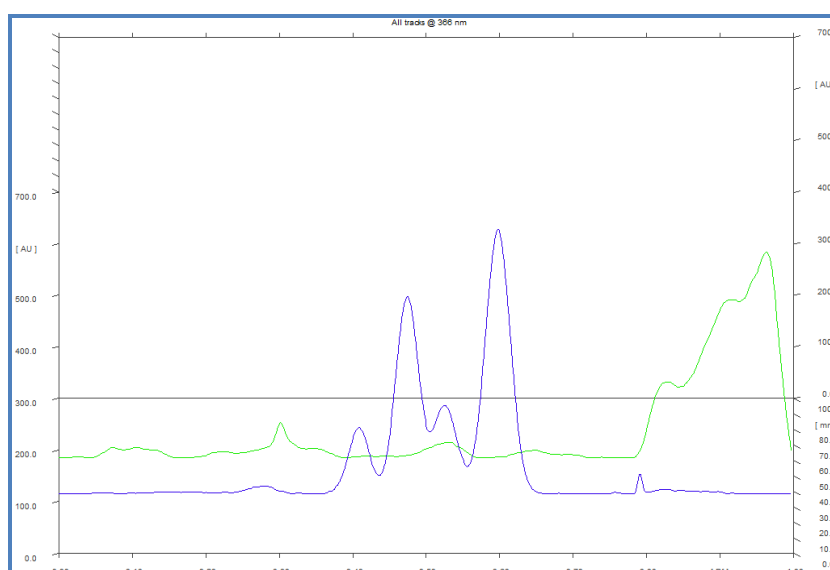
## RESULTS

### TEST FOR AFLATOXIN ANALYSIS:

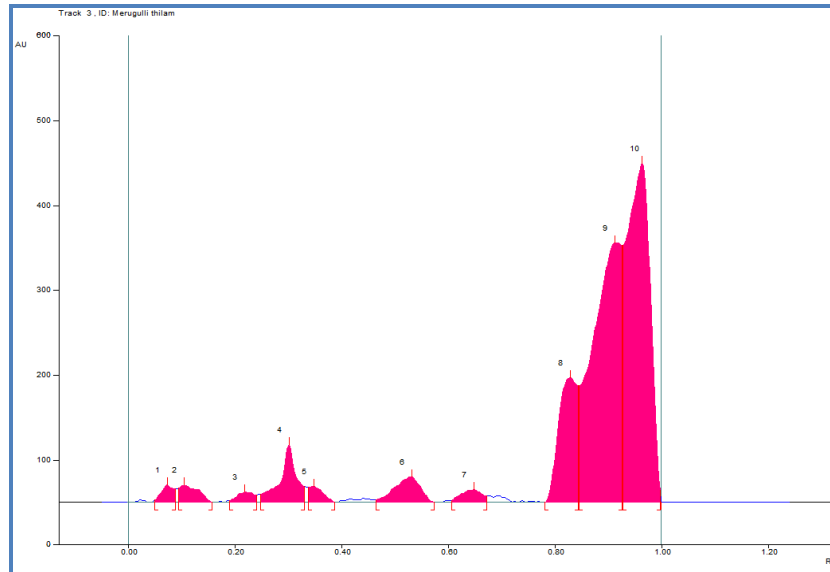
The sample TS: Merugulli thailam, 15µl and Standard Std - G2, G1, B2 and B1 (20 µl) were applied on TLC aluminium sheet silica gel 60 F 254 (E.MERCK) and plate was developed using the solvent system Chloroform : acetone : water (14 : 2 : 0.2). After development the plate was allowed to dry in air and examined under UV 366 nm



UV-366nm



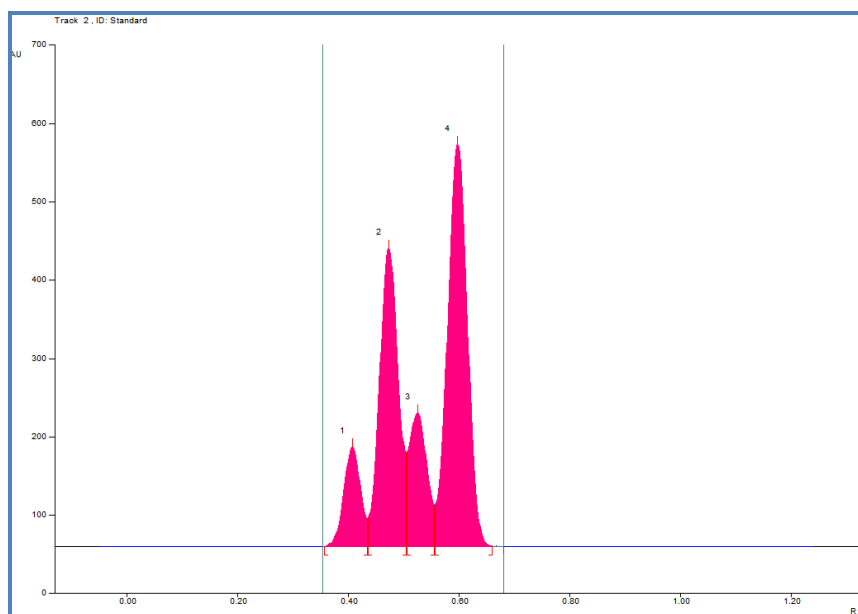
**HPTLC Densitometric chromatogram (366nm)**  
**Test sample (TS) : Merugulli Thailam ; Standard (S) – G2, G1, B2 & B1**



**HPTLC finger print of Sample (TS) : Merugulli thailam at 366nm**

Peak	Start Position	Start Height	Max Position	Max Height	Max %	End Position	End Height	Area	Area %
1	0.05 Rf	2.4 AU	0.07 Rf	20.5 AU	1.98 %	0.09 Rf	15.6 AU	336.9 AU	1.04 %
2	0.10 Rf	16.5 AU	0.10 Rf	20.1 AU	1.94 %	0.16 Rf	0.1 AU	512.0 AU	1.58 %
3	0.19 Rf	1.8 AU	0.22 Rf	11.7 AU	1.13 %	0.24 Rf	8.2 AU	272.5 AU	0.84 %
4	0.25 Rf	9.7 AU	0.30 Rf	68.3 AU	6.59 %	0.33 Rf	18.6 AU	1420.4 AU	4.39 %
5	0.34 Rf	17.7 AU	0.35 Rf	18.7 AU	1.81 %	0.39 Rf	0.1 AU	347.1 AU	1.07 %
6	0.46 Rf	3.2 AU	0.53 Rf	30.2 AU	2.91 %	0.57 Rf	0.3 AU	1036.3 AU	3.20 %
7	0.61 Rf	2.1 AU	0.65 Rf	15.1 AU	1.46 %	0.67 Rf	7.0 AU	420.0 AU	1.30 %
8	0.78 Rf	0.0 AU	0.83 Rf	146.9 AU	14.17 %	0.84 Rf	37.2 AU	3669.8 AU	11.33 %
9	0.85 Rf	137.4 AU	0.91 Rf	305.9 AU	29.51 %	0.93 Rf	02.6 AU	11790.3 AU	36.40 %
10	0.93 Rf	302.8 AU	0.96 Rf	399.2 AU	38.51 %	1.00 Rf	13.8 AU	12585.1 AU	38.85 %

**Rf value of Sample (TS) : Merugulli thailam at 366nm**



**HPTLC finger print of Standard (S) at 366nm**

Peak	Start Position	Start Height	Max Position	Max Height	Max %	End Position	End Height	Area	Area %
1	0.36 Rf	0.2 AU	0.41 Rf	127.8 AU	10.71 %	0.44 Rf	35.2 AU	2818.1 AU	9.58 %
2	0.44 Rf	36.4 AU	0.47 Rf	381.5 AU	31.96 %	0.50 Rf	19.8 AU	9345.2 AU	31.77 %
3	0.51 Rf	120.1 AU	0.53 Rf	170.8 AU	14.31 %	0.56 Rf	52.5 AU	3994.3 AU	13.58 %
4	0.56 Rf	53.8 AU	0.60 Rf	513.6 AU	43.02 %	0.66 Rf	0.6 AU	13254.9 AU	45.07 %

**Rf value of Standard (S) at 366nm**

फोन/Phone :044-26214823  
फैक्स/Fax :044-26207566



ई-मेल/ E-mail: [csmriasdd-chennai@gov.in](mailto:csmriasdd-chennai@gov.in)  
[csmdria@gmail.com](mailto:csmdria@gmail.com)

கேப்டன் சீனிவாசமூர்த்தி ஆயுர்வேத மண்டல மருந்தாக்க நிறுவனம்  
कैप्टन श्रीनिवासमूर्ति क्षेत्रीय आयुर्वेद औषध विकास संस्थान  
केन्द्रीय आयुर्वेदीय विज्ञान अनुसंधान परिषद,  
आयुष मंत्रालय, भारत सरकार,  
ए. ए. सरकारी अस्पताल परिसर, अरुम्बाक्कम, चेन्नै-600 106

**CAPTAIN SRINIVASA MURTHY**  
**REGIONAL AYURVEDA DRUG DEVELOPMENT INSTITUTE**  
Central Council for Research in Ayurvedic Sciences,  
**Ministry of AYUSH, Government of India,**  
A.A Government Hospital Campus, Arumbakkam, Chennai: 600 106.

F.1-24/Test Reports/2018-19/CSMRADDI/

**TEST CERTIFICATE**

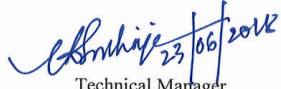
Customer's Name & Address : Dr. M. Suganthi,  
NIS, Tambaram Sanatorium,  
Chennai – 47.

Ref. No. : Your Lr. Dt. 26.04.2018

Tests requested by customer : Refractive Index, Acid value, Saponification value, Iodine value,  
Peroxide value, Iodine Value, TLC, HPTLC and Weight

Lab. Method Used : 1. SOP: CSM/CL/022  
Ref: Indian Pharmacopeia, (IP) Vol.1,2014,P.203, 2.4.27  
2. SOP: CSM/CL/023  
Ref: Indian Pharmacopeia, Vol.1, 2014, P.100, 2.3.23  
3. SOP: CSM/CL/024  
Ref: Indian Pharmacopeia, Vol.1, 2014,P.109,2.3.37  
4. SOP:CSM/CL/026  
Ref: Indian Pharmacopeia, Vol.1, 2014, P.109, 2.3.35  
5. SOP:CSM/CL/025  
Ref: Indian Pharmacopeia Vol.1, 2014, P.102, 2.3.28  
6. SOP:CSM/CL/007  
Ref: Wagner, H. and Bladt, S. Plant Drug Analysis, A Thin Layer  
Chromatography Atlas IIInd edition 1996.  
7. SOP:CSM/CL/008  
Ref: Dr. Sethi P.D. High Performance Thin Layer Chromatography  
Quantitative Analysis of Pharmaceutical formulations CBS  
Publisher and Distributors, Delhi, 1<sup>st</sup> edition 1996.  
8. Not under NABL Scope  
Ref: API Appendix volume – 2, 3, 4 appendix clauses 3.1.3. P.251

Report No : 429/2018-19, dated 23/06/18

  
Technical Manager  
Name & Designation  
(*R.O. (Chem.)*)  
R.O. (Chem.)

  
Quality Manager  
(Authorized Signatory)

**PART A: Particulars of Sample Submitted**

a) Name of sample : Merugalli Tailam  
b) Grade /Variety/Type/Size/Class etc. : Tailam  
c) Declared values, if any : Nil  
d) Code No : Nil  
e) Batch No. and Date of manufacture : Nil  
f) Quantity : 100 ml  
g) Mode of packing : Plastic container  
h) Seal : Sealed  
i) Sample received on : 26.04.2018  
j) CSMDRIA Lab Code No. : 1805427

**PART B: Supplementary Information**

a) Reference to sampling procedure : Drawn and supplied by customer  
b) Supporting documents for the measurements taken and results derived : Nil  
c) Deviation from the test methods as prescribed in relevant ISS/Work Instructions, if any : Nil

**PART C: Test Results**


**Standardization Report**

S. No.	Parameters	Results
1	Refractive Index	1.4752
2	Acid Value	9.41
3	Saponification Value	181.45
4	Peroxide Value	5.36
5	Iodine Value	83.11
6	TLC	Report enclosed
7	HPTLC	Report enclosed
*8	Weight/ml	0.964

**Note:** \*8 Not under Scope

**PART D: Remarks**

- NB: 1. The results stated above relate only to the items tested.  
2. This Test Certificate shall not be reproduced except in full without the written approval of the Laboratory.  
3. The Test report shall not be utilized for any legal purpose without prior intimation to the issuing authority.

  
Technical Manager  
Name & Designation  
*SS. CH. V. Narasimha Raju*  
R.O. (Chem.)

  
Quality Manager  
(Authorized Signatory)

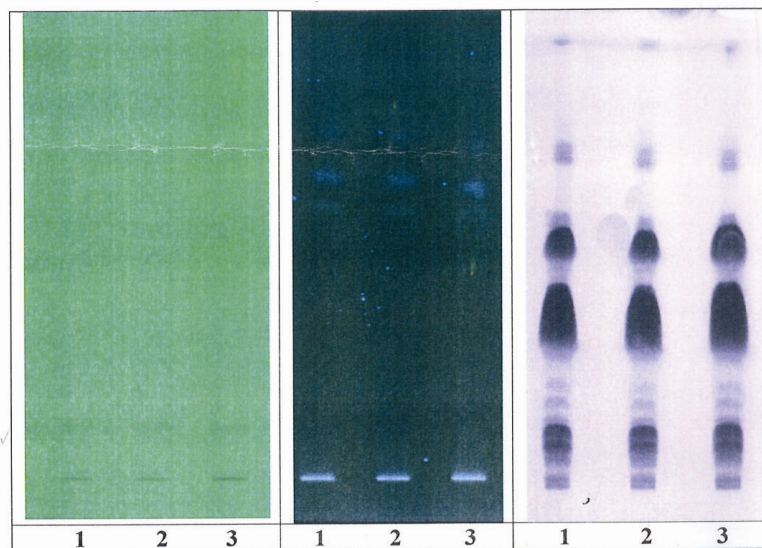
**TLC/ HPTLC Identification of DTL- 1803427**

**TLC Photodocumentation of sample code – DTL 1803427**

UV at 254 nm

UV at 366 nm

Derivatised with Vanillin H<sub>2</sub>SO<sub>4</sub>



Track 1 & 2- Sample solution – 8 µl; Track 3- Sample solution - 12 µl;

Solvent system : *Toluene : Ethylacetate*: (8.5: 1.5)

**TLC Methodology:**

0.3 g of oil dissolved with hexane and made up to 10 ml volumetric flask. The sample solution 8 µl was applied on Tracks-1 & 2, 12 µl was applied on Tracks- 3 respectively on an E. Merck aluminium plate pre-coated with Silica gel 60F<sub>254</sub> of 0.2 mm thickness using ATS4 applicator. The plate was developed in the solvent system of *Toluene: Ethylacetate* (8.5: 1.5) upto 90 cm and dried. The plate was observed through CAMAG TLC Visualizer under UV at 254 nm and 366 nm photos were taken. Finally the plate was dipped in Vanillin-Sulphuric acid reagent and heated in hot air oven at 105°C until the colour of the spots were appeared and photo was documented.

P. Kulkarni  
22/6/18

JK

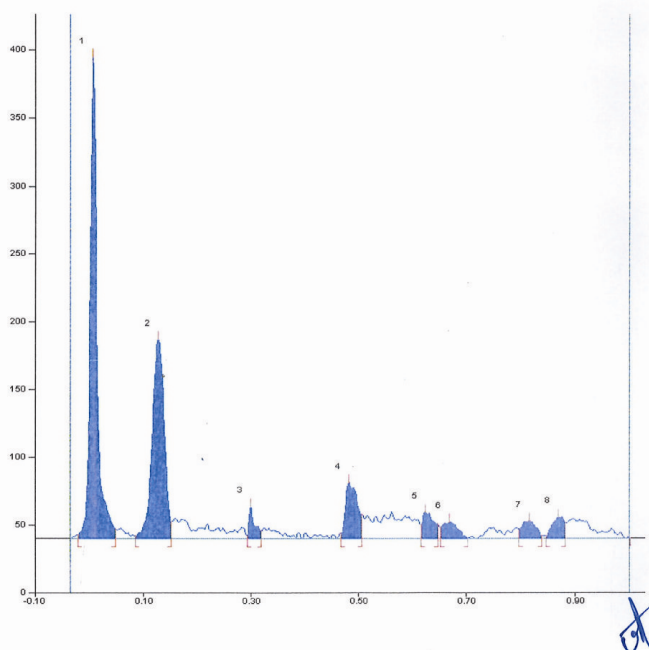
**Rf Values:**

S. No	UV at 254 nm		UV at 366 nm		Derivatised with Vanillin-Sulphuric acid	
	R <sub>f</sub>	Color	R <sub>f</sub>	Color	R <sub>f</sub>	Color
Track-1	0.12, 0.46, 0.59	Green	0.60,	Dull green	0.03, 0.06,	Grey
Track-2 &			0.66,	Fluorescent blue	0.10, 0.13,	Dark Grey
Track 3			0.75	Dull blue	0.15, 0.19, 0.23, 0.37, 0.54, 0.60, 0.72, 0.75, 0.98	Grey Dark Grey Grey Grey

**HPTLC Finger print profile of Sample code - 1805427**

The TLC plate developed above was scanned at 254 nm and 366 nm using scanner 3, Camag HPTLC instrument using D2 lamp.

**HPTLC Finger print profile of Sample at UV 254 nm – 8 µl**

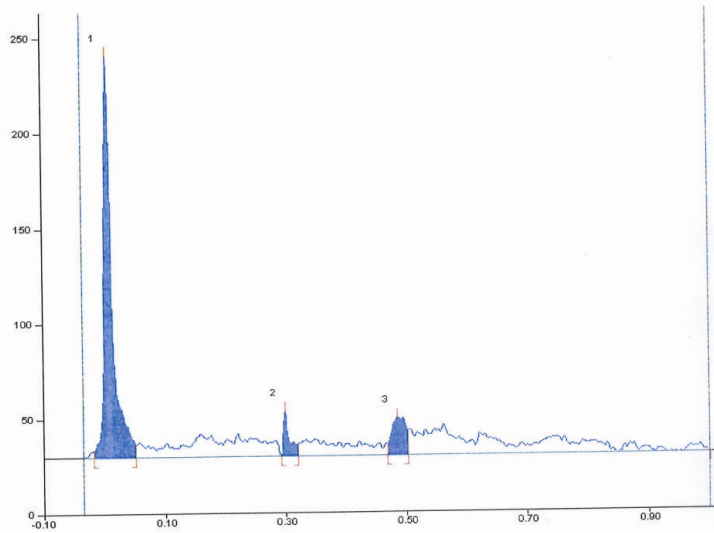


*P. K. K. K.  
22/6/18*



Peak	Start Position	Start Height	Max Position	Max Height	Max %	End Position	End Height	Area	Area %	Assigned substance
1	-0.02 Rf	2.6 AU	0.00 Rf	354.9 AU	56.51 %	0.05 Rf	7.1 AU	4140.6 AU	43.84 %	unknown *
2	0.08 Rf	1.7 AU	0.12 Rf	147.3 AU	23.45 %	0.15 Rf	12.5 AU	2939.6 AU	31.12 %	unknown *
3	0.29 Rf	1.7 AU	0.30 Rf	24.1 AU	3.83 %	0.32 Rf	5.7 AU	229.3 AU	2.43 %	unknown *
4	0.46 Rf	4.1 AU	0.48 Rf	41.3 AU	6.58 %	0.50 Rf	17.8 AU	830.3 AU	8.79 %	unknown *
5	0.61 Rf	10.1 AU	0.62 Rf	19.5 AU	3.11 %	0.64 Rf	10.6 AU	355.5 AU	3.76 %	unknown *
6	0.65 Rf	8.1 AU	0.67 Rf	12.0 AU	1.91 %	0.70 Rf	0.3 AU	314.3 AU	3.33 %	unknown *
7	0.79 Rf	6.7 AU	0.81 Rf	12.9 AU	2.05 %	0.84 Rf	1.9 AU	314.6 AU	3.33 %	unknown *
8	0.84 Rf	1.7 AU	0.87 Rf	16.1 AU	2.56 %	0.88 Rf	11.3 AU	321.4 AU	3.40 %	unknown *

HPTLC Finger print profile of Sample at UV 366 nm – 8 µl



Peak	Start Position	Start Height	Max Position	Max Height	Max %	End Position	End Height	Area	Area %	Assigned substance
1	-0.02 Rf	3.7 AU	0.00 Rf	211.0 AU	83.03 %	0.05 Rf	6.4 AU	2547.0 AU	80.00 %	unknown *
2	0.29 Rf	0.1 AU	0.30 Rf	23.5 AU	9.23 %	0.32 Rf	6.5 AU	208.1 AU	6.54 %	unknown *
3	0.47 Rf	5.7 AU	0.48 Rf	19.7 AU	7.74 %	0.50 Rf	13.4 AU	428.6 AU	13.46 %	unknown *

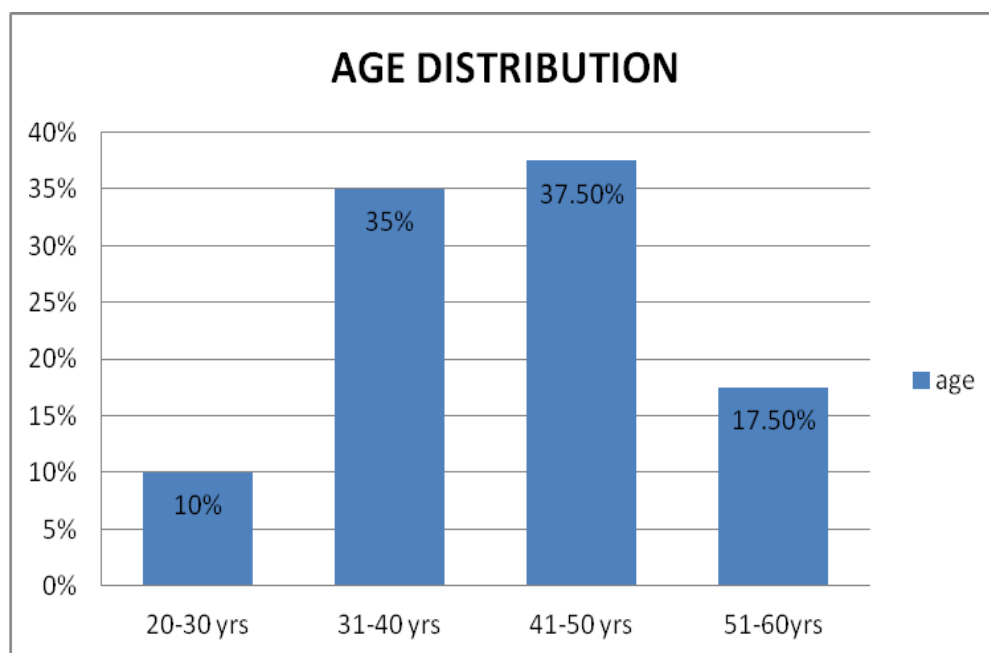
P-Nikla  
22/6/18.

22/6/18

## OBSERVATION AND RESULTS

### 1. AGE DISTRIBUTION

AGE (YEARS)	NUMBER OF PATIENTS	PERCENTAGE %
20 - 30 yrs	4	10%
31 – 40 yrs	14	35%
41 – 50 yrs	15	37.5%
51 – 60 yrs	7	17.5%
<b>Total</b>	<b>40</b>	<b>100%</b>



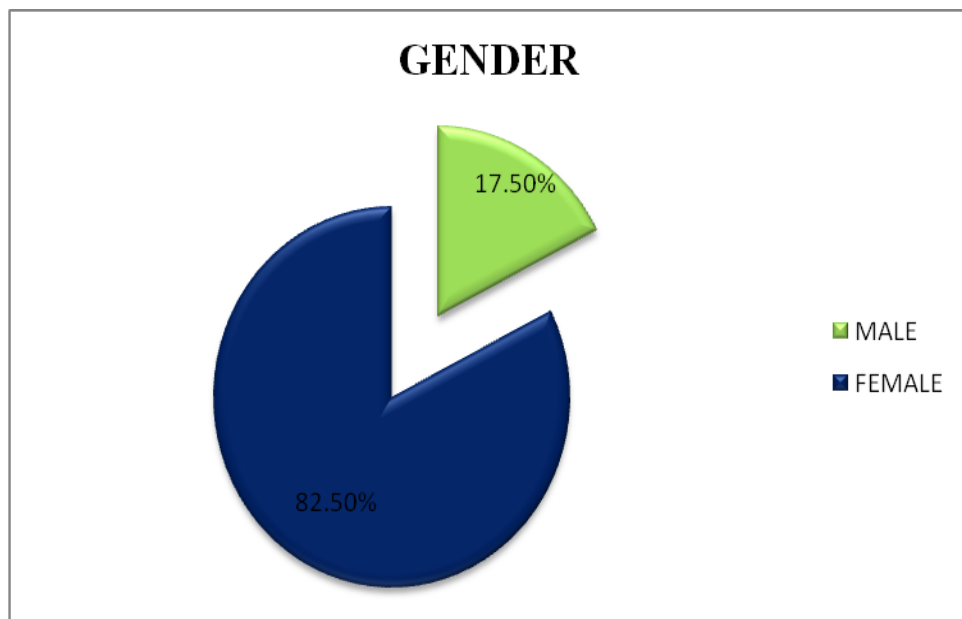
**Fig.1. Age Distribution**

#### **Observation:**

10% (4) of the affected patients came under the age group between 20-30 years. 35 % (14) of the patients came under the age group between 31-40 years, 37.5 % (15) of them were between 41-50 years and 17.5 % (7) of them were between 51-60 years.

## 2. GENDER DISTRIBUTION

GENDER	NUMBER OF PATIENTS	PERCENTAGE %
Male	7	17.5%
Female	33	82.5%
Total	40	100%



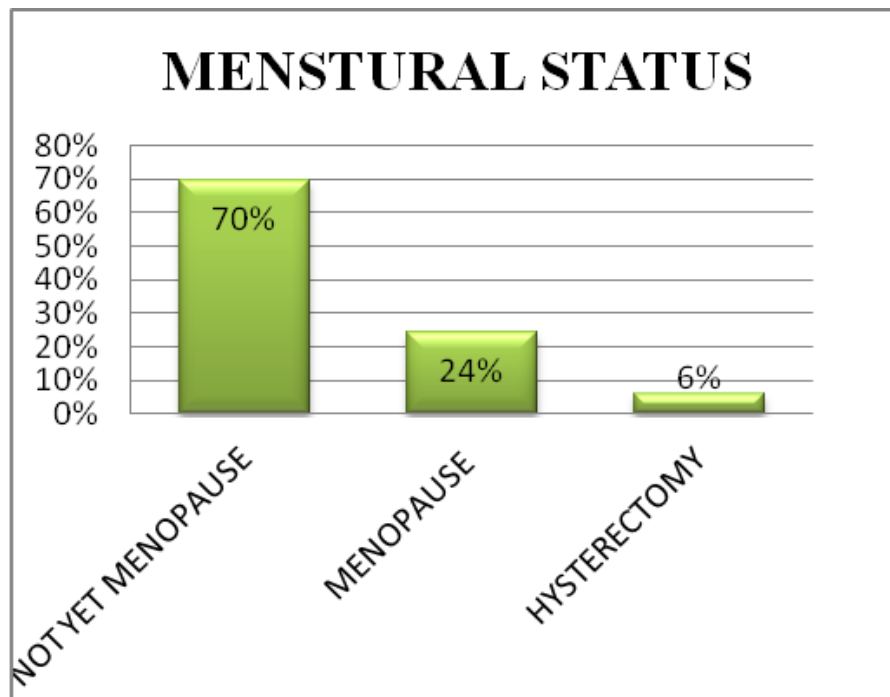
**Fig.2. Gender Distribution**

### **Observation:**

Among the 40 patients selected, the disease (R.A) was found to be higher in 33 females (82.5%) and lower in 7 males (17.5%).

### 3. MENOPAUSAL STATUS:

MENSTRUAL HISTORY	NUMBER OF PATIENTS	PERCENTAGE
NOT YET MENOPAUSE	23	69.69%
ATTAINED MENOPAUSE	8	24.24%
HYSTERECTOMY	2	6.06%
TOTAL	33	100%



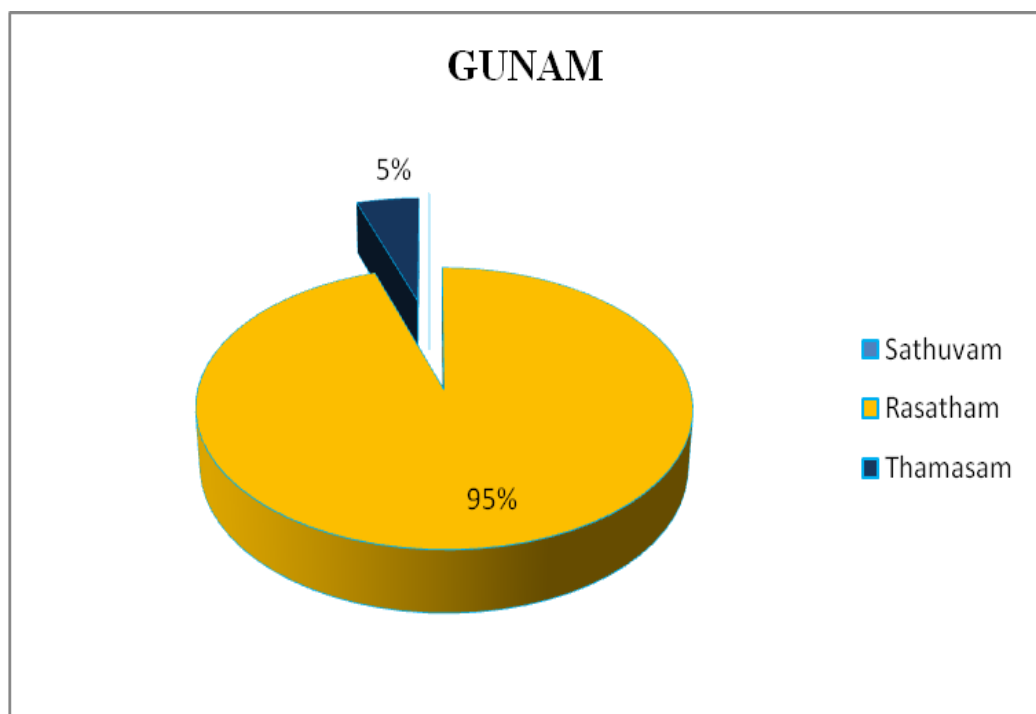
**Fig.3. Menopausal status**

#### **Observation:**

In this study, out of 33 females 8(24%) females attained menopause, 2(6%) females were in hysterectomy status.

#### 4. GUNAM

GUNAM	NUMBER OF PATIENTS	PERCENTAGE( %)
Sathuvam	0	0%
Rasatham	38	95%
Thamasam	2	5%
Total	40	100%



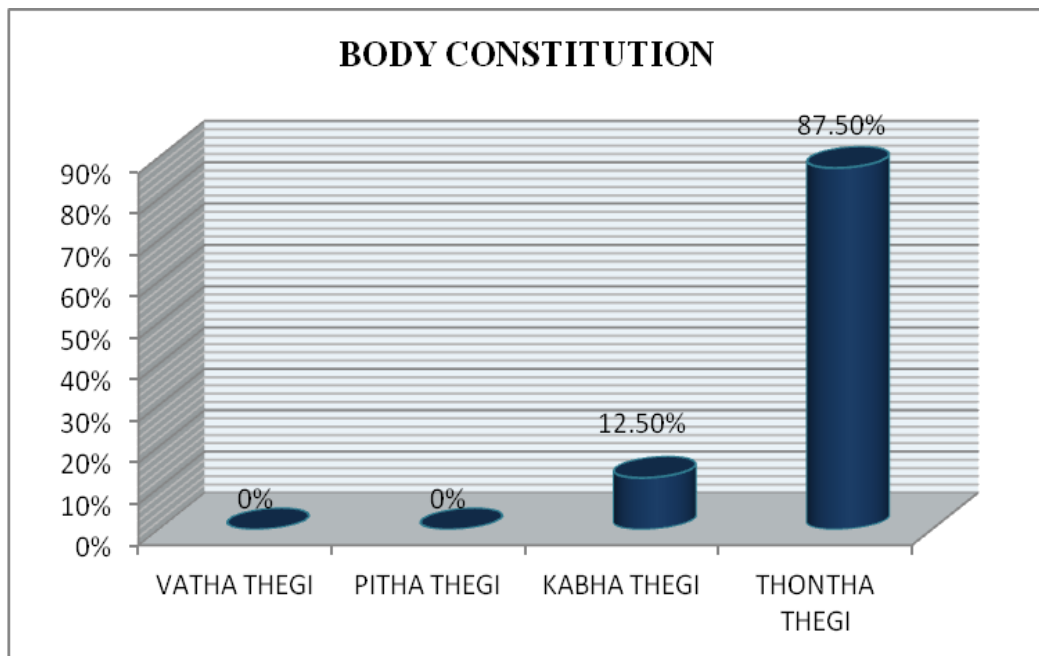
**Fig. 4. Gunam**

**Observation:**

In Gunam, 38 cases (95%) had Rasatha gunam, 2 cases(5%) had Thamasa gunam.

## 5. BODY CONSTITUTION

CONSTITUTION OF THE BODY	NUMBER OF PATIENTS	PERCENTAGE %
Vatha thegi	-	-
Pitha thegi	-	-
Kabam thegi	5	12.5%
Thontha thegi	35	87.5%



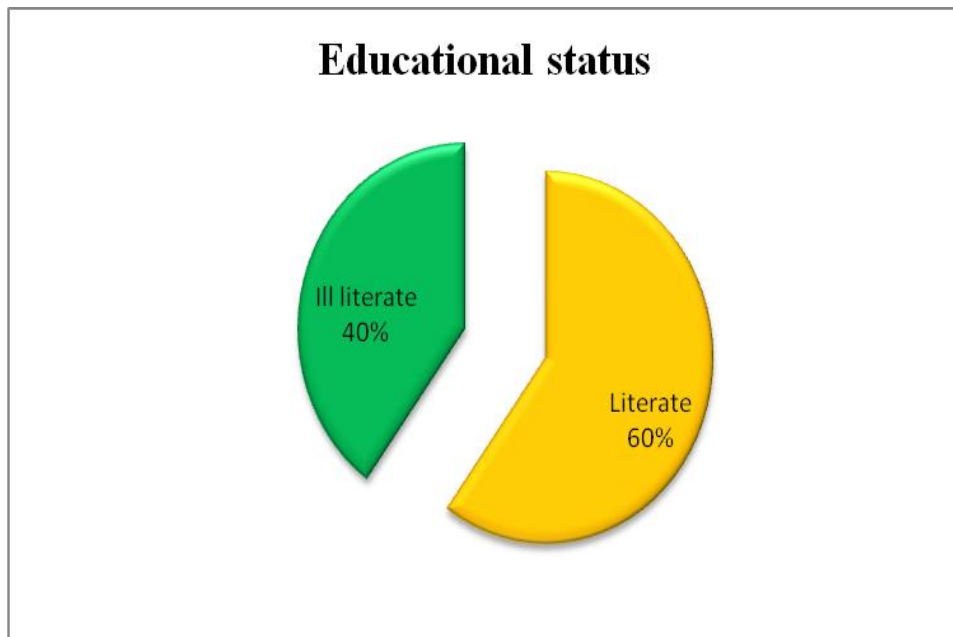
**Fig. 5. Body constitution**

### Observation:

Out of 40 cases, 5 (12.5%) cases came under kabha thegi, 35 cases (87.5%) were came under Thontha Thegi.

## 6. EDUCATIONAL STATUS

EDUCATIONAL STATUS	NUMBER OF PATIENTS	PERCENTAGE
Literate	24	60%
Ill literate	16	40%
TOTAL	40	100%



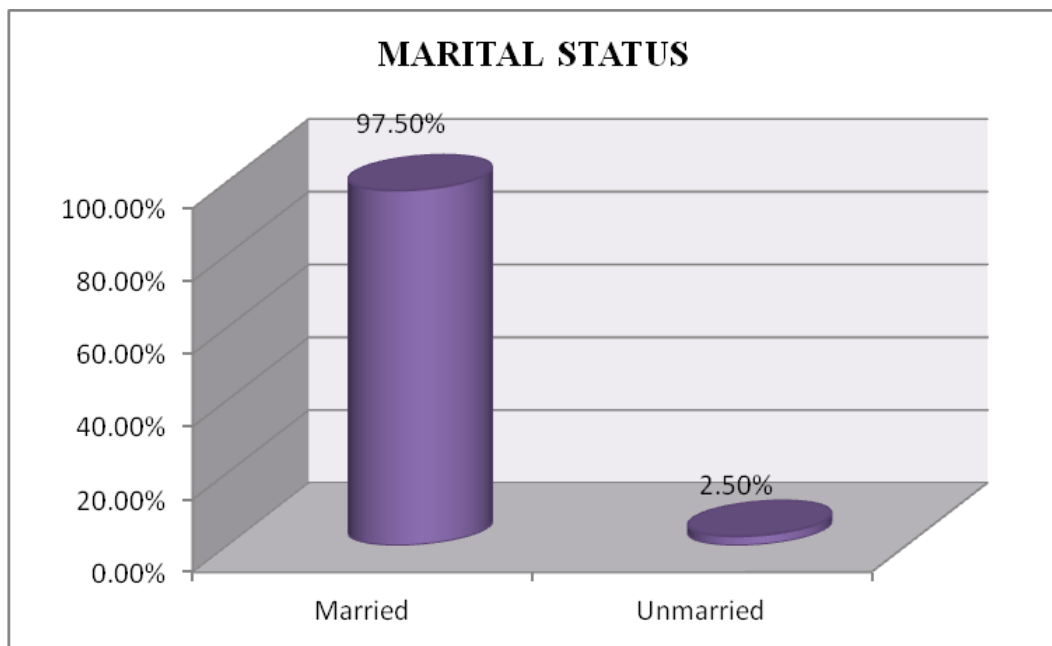
**Fig.6. Educational Status**

### Observation:

Among 40 cases 24 cases (60%) were literate and 16 cases (40%) were ill literate.

## 7. MARITAL STATUS

MARITAL STATUS	NUMBER OF PATIENTS	PERCENTAGE
Married	39	97.50%
Unmarried	1	2.50%
TOTAL	40	100%



**Fig.7. Marital Status**

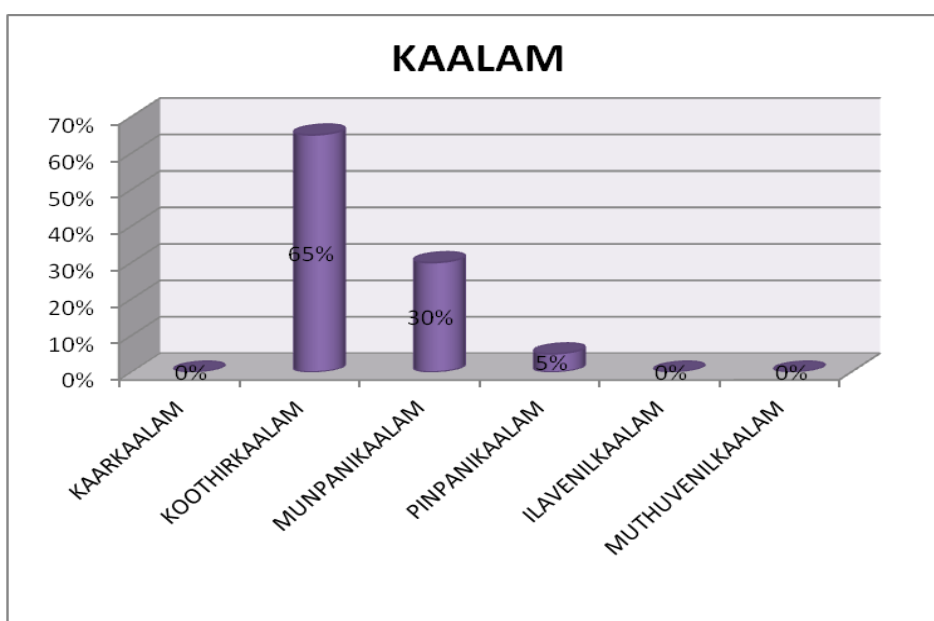
### **Observation:**

Among 40 cases 39 (97.5%) got married and 1 case (2.5%) not married.



## 8. PARUVA KAALAM (SEASON)

SEASONS	Month and the year	Number of the patients	Percentage %
<b>Kaarkaalam</b>	<b>17<sup>th</sup> Aug-17<sup>th</sup> Oct</b>	<b>-</b>	<b>-</b>
<b>Koothirkaalam</b>	<b>18<sup>th</sup> Oct-15<sup>th</sup> Dec</b>	<b>26</b>	<b>65%</b>
<b>Munpanikaalam</b>	<b>16<sup>th</sup> Dec-12<sup>th</sup> Feb</b>	<b>12</b>	<b>30%</b>
<b>Pinpanikaalam</b>	<b>13<sup>th</sup> Feb-13<sup>th</sup> Apr</b>	<b>2</b>	<b>5%</b>
<b>Ilavenil kaalam</b>	<b>14<sup>th</sup> Apr-16<sup>th</sup> June</b>	<b>-</b>	<b>-</b>
<b>Mudhuvenil kaalam</b>	<b>17<sup>th</sup> June-16<sup>th</sup> Aug</b>	<b>-</b>	<b>-</b>
<b>Total</b>		<b>40</b>	<b>100%</b>



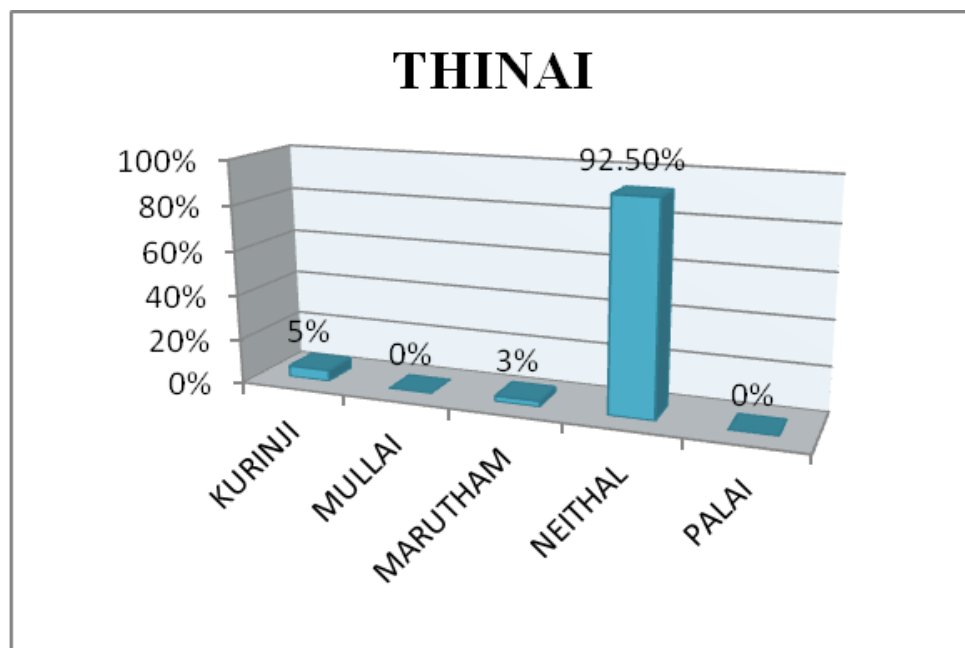
**Fig.8. Paruva kaalam (Season)**

### Observation:

Out of 40 cases 26(65%) cases were included in Koothirkaalam , 12(30%) cases were included in Munpani kaalam and 2(5%) in Pinpani kalam.

## 9. THINAI

THINAI	Number of patients	Percentage %
Kurinji	2	5%
Mullai	-	-
Marutham	1	2.5%
Neithal	37	92.5%
Palai	-	-
Total	40	100%



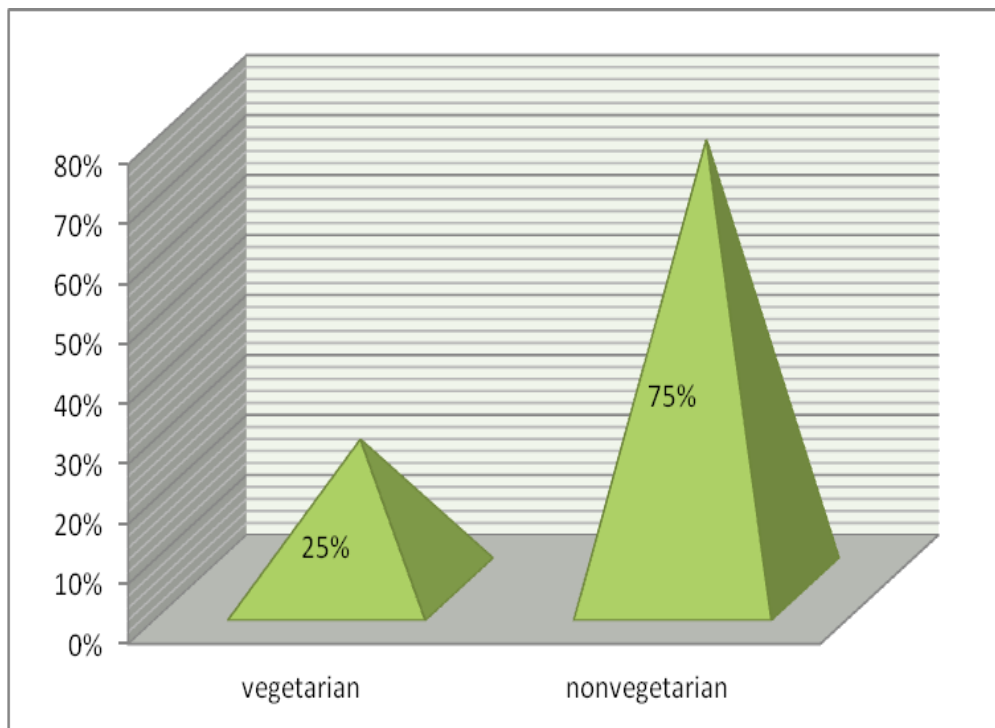
**Fig.9. Thina**

### Observation:

Among the 40 cases, 37(92.5%) cases were from Neithal thina and 2(5%) cases were from Kurinji thina and 1( 2.5% ) case were from Marutham thina.

## 10. DIET

Diet	No of cases	Percentage %
Vegetarian	10	25%
Non vegetarian	30	75%
Total	40	100%



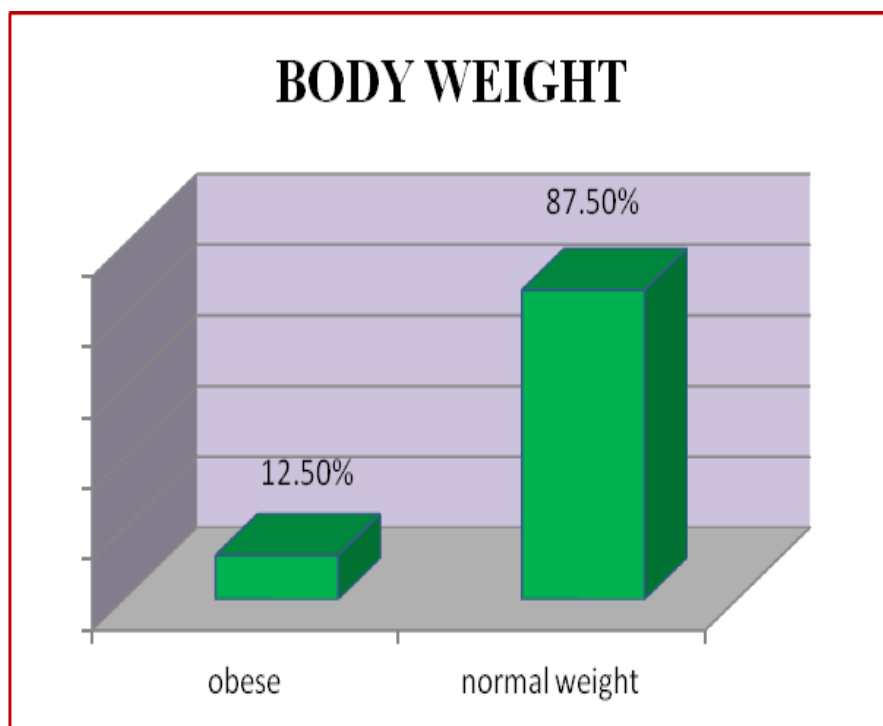
**Fig.10. Diet**

### Observation:

Out of 40 patients , 30 cases were Non vegetarian (75%) dieter and 10 cases were (25%) vegetarian dieter.

## 11. OBESITY

OBESITY	NUMBER OF PATIENTS	PERCENTAGE
OBESE	5	12.5%
NORMAL WEIGHT	35	87.5%
TOTAL	40	100%



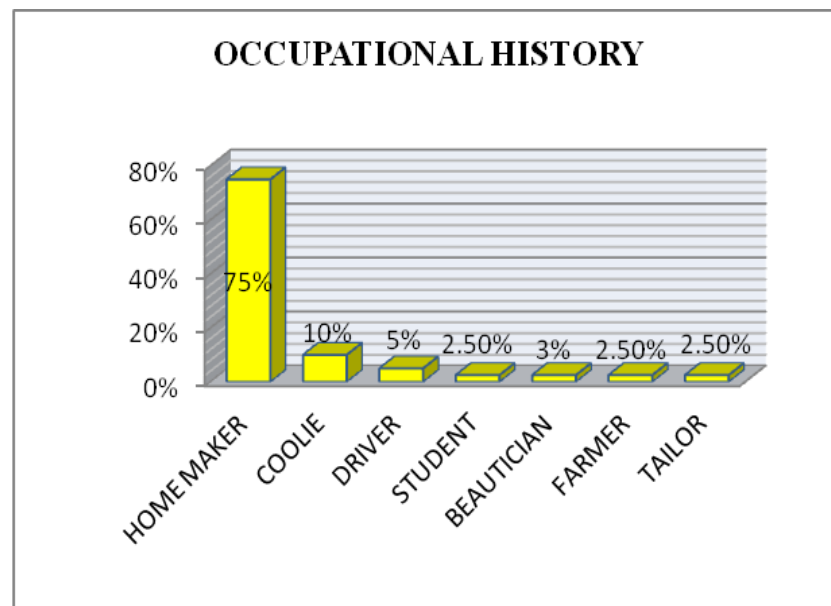
**Fig.11. Obesity**

### Observation:

In this study 5 cases (12.5 %) were Obese and 35 cases (87.5 %) were belongs to normal weight.

## 12. OCCUPATIONAL DISTRIBUTION

OCCUPATION	NO. OF CASES	PERCENTAGE %
Home maker	30	75%
Farmer	1	2.5%
Driver	2	5%
Coolie	4	10%
Student	1	2.5%
Beautician	1	2.5%
Tailor	1	2.5%
Total	40	100%



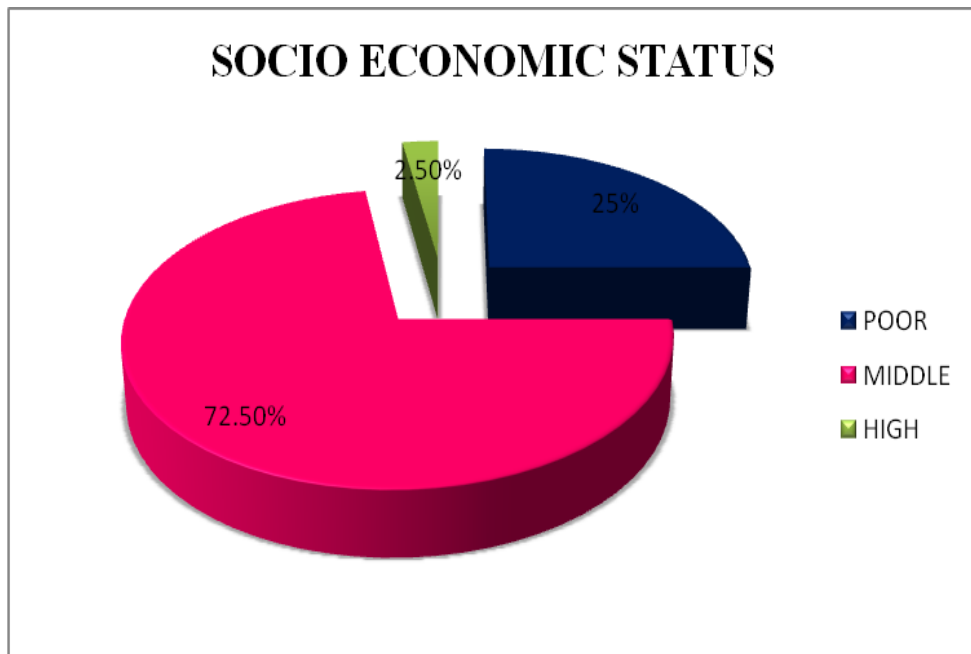
**Fig.12. Occupational distribution**

### Observation:

Among 40 cases, 30cases (75%) were home maker, 1case (2.5% ) was Student,1 Case ( 2.5%) was Beautician, 4 Cases (10%) were cooli, 1 Case (2.5%) was Farmer, 2 cases (5%)were Driver, 1 case (2.5%) was tailer.

### 13. SOCIO-ECONOMIC STATUS

Socio- economic status	No. of cases	Percentage %
Low Income Group	10	25%
Middle Income Group	29	72.5%
High Income Group	1	2.5%
Total	40	100%



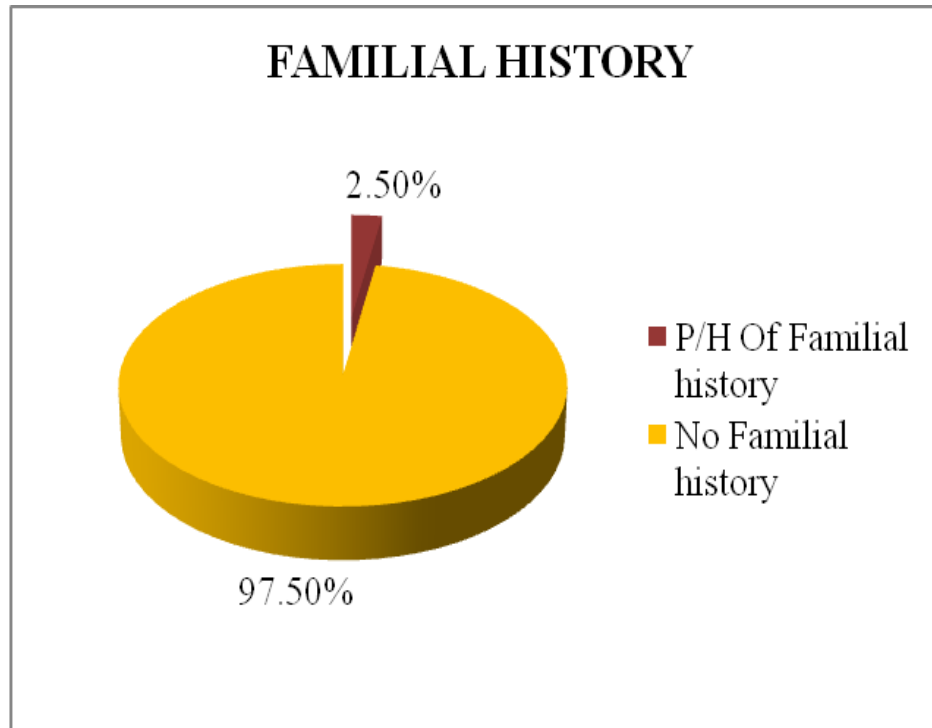
**Fig.13. Socio-economic status**

**Observation:**

In my study the disease was found higher in the middle income group 29 cases (72.5% ), Moderate in the low income group 25%(10 cases), Lower in the High income group 2.5% (1 case).

#### 14. FAMILIAL HISTORY

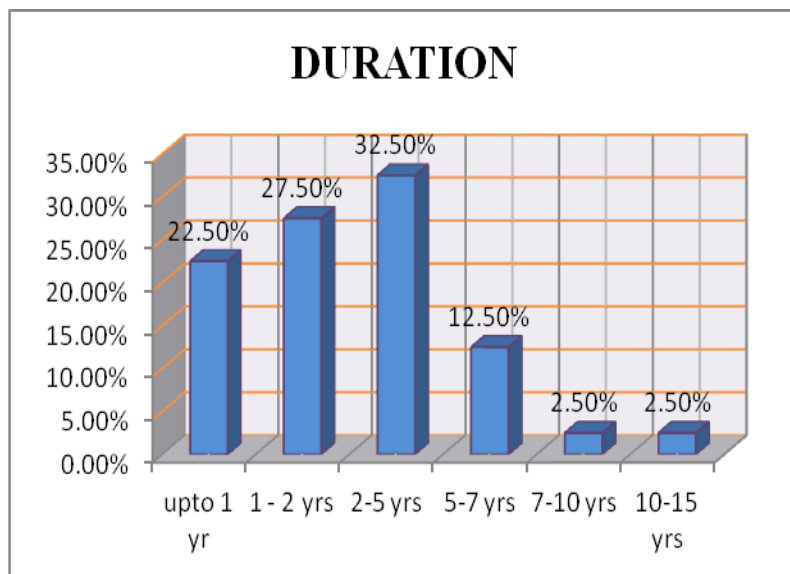
In this study family history of RA is present in one case (2.5%) in all 40 cases.



**Fig.14. Family history**

**15. DURATION OF ILLNESS:**

<b>DURATION OF ILLNESS</b>	<b>NUMBER OF CASES</b>	<b>PERCENTAGE %</b>
<b>Upto 1 yr</b>	<b>9</b>	<b>22.5%</b>
<b>1 year -2 years</b>	<b>11</b>	<b>27.5%</b>
<b>2 years-5 years</b>	<b>13</b>	<b>32.5%</b>
<b>5 years -7years</b>	<b>5</b>	<b>12.5%</b>
<b>7years-10 years</b>	<b>1</b>	<b>2.5%</b>
<b>10 years-15 years</b>	<b>1</b>	<b>2.5%</b>
<b>Total</b>	<b>40</b>	<b>100%</b>



**Fig.15. Duration of Illness**

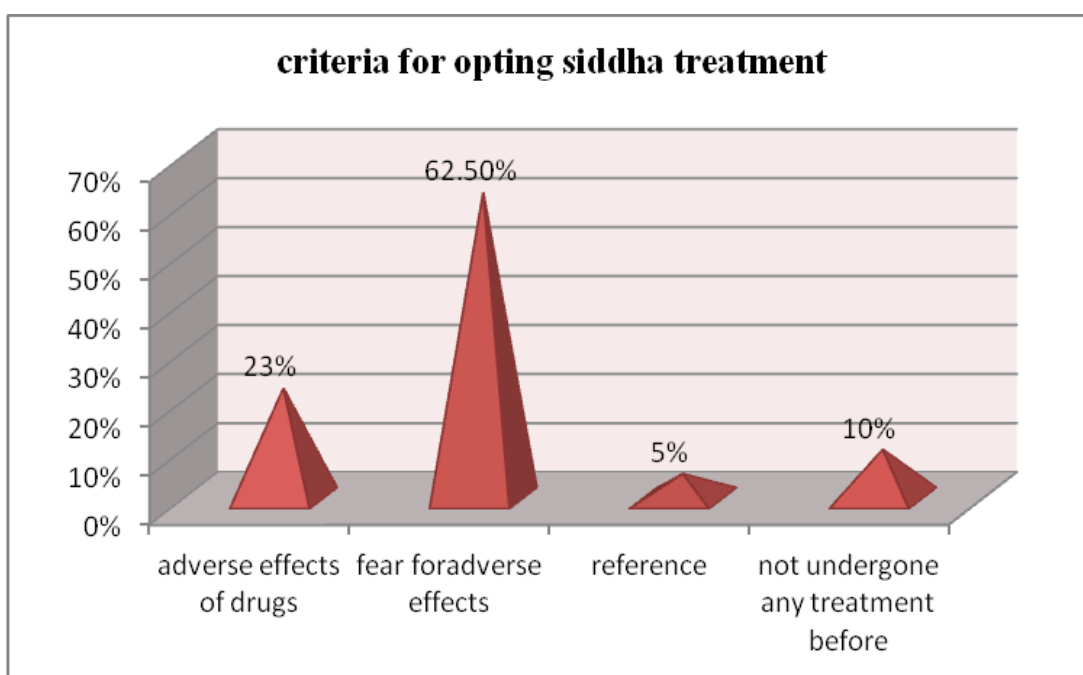
**Observation:**

In this study, about 9(22.5% )cases had symptoms upto 1 yr of duration,11( 27.5%) cases had the sign and symptoms of RA 1 to 2 yrs of duration,13( 32.5% )cases had 2-5 yrs of duration, 5(12.5%) cases had 5 to 7yrs of duration ,one ( 2.5%) case had 7-10 yrs and another one case (2.5%) had 10-15 yrs of duration.



## 16. TREATMENTAL HISTORY OTHER THAN SIDDHA TREATMENT:

CRITERIA FOR OPTING SIDDHA TREATMENT	NO.OF CASES	PERCENTAGE
Adverse effects of drugs(like NSAIDS, Steroids)	9	22.5%
Fear for adverse effects	25	62.5%
Referred from rheumatologist	2	5%
Not undergone any treatment before	4	10%
Total	40	100%



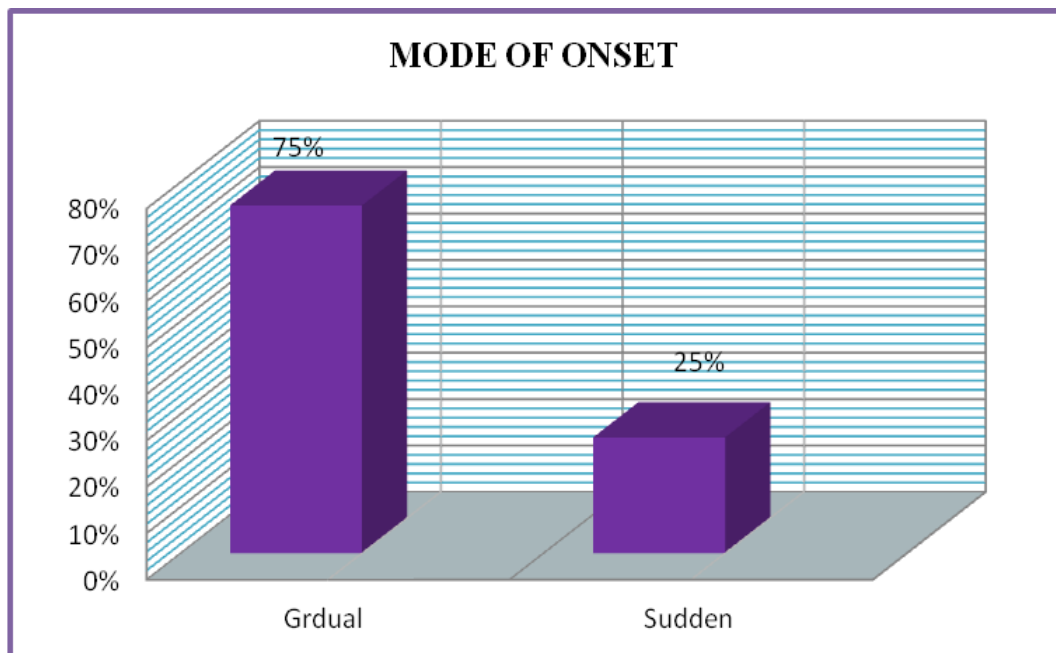
**Fig.16. Treatmental History Other Than Siddha Treatment**

### Observation:

Among 40 patients the reason for the patients to undergo Siddha treatment was more in 25 (62.5%) cases due to fear for adverse effects in other system of medicine. 9 cases (22.5%) due to Adverse effects of drugs, 2 cases (5%) were referred from Rheumatologist, and 4 cases (10%) were not undergo any treatment.

## 17. MODE OF ONSET

Mode of onset	No of Cases	Percentage %
Gradual onset	30	75%
Sudden onset	10	25%
Total	40	100%



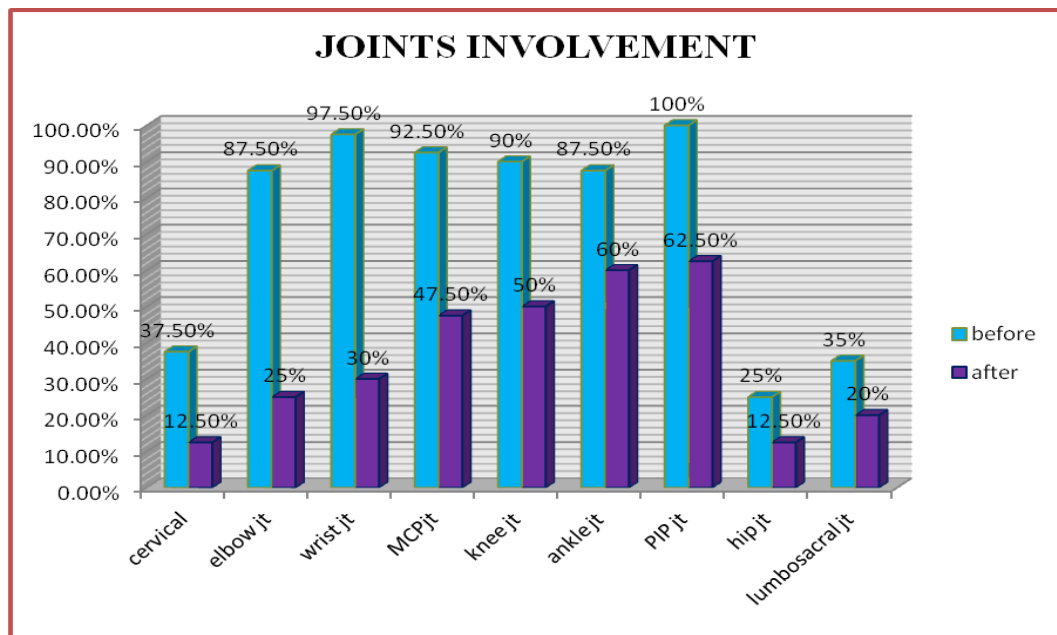
**Fig. 17. Mode of Onset**

### **Observation :**

In this study 30 cases(75%) had Gradual onset of illness, 10 cases(25%) had Sudden onset of the disease.

## 18. INVOLVEMENT OF JOINTS:

Name of the joint	Before Trt	After Trt	Before trt %	After trt %
Cervical joint	15	5	37.5%	12.5%
Elbow joint	35	10	87.5%	25%
Wrist joint	39	12	97.5%	30%
MCP joint	37	19	92.5%	47.5%
Knee joint	36	20	90%	50%
Ankle joint	35	24	87.5%	60%
PIP joint	40	25	100%	62.5%
Hip joint	10	5	25%	12.5%
Lumbosacral jt	14	8	35%	20%



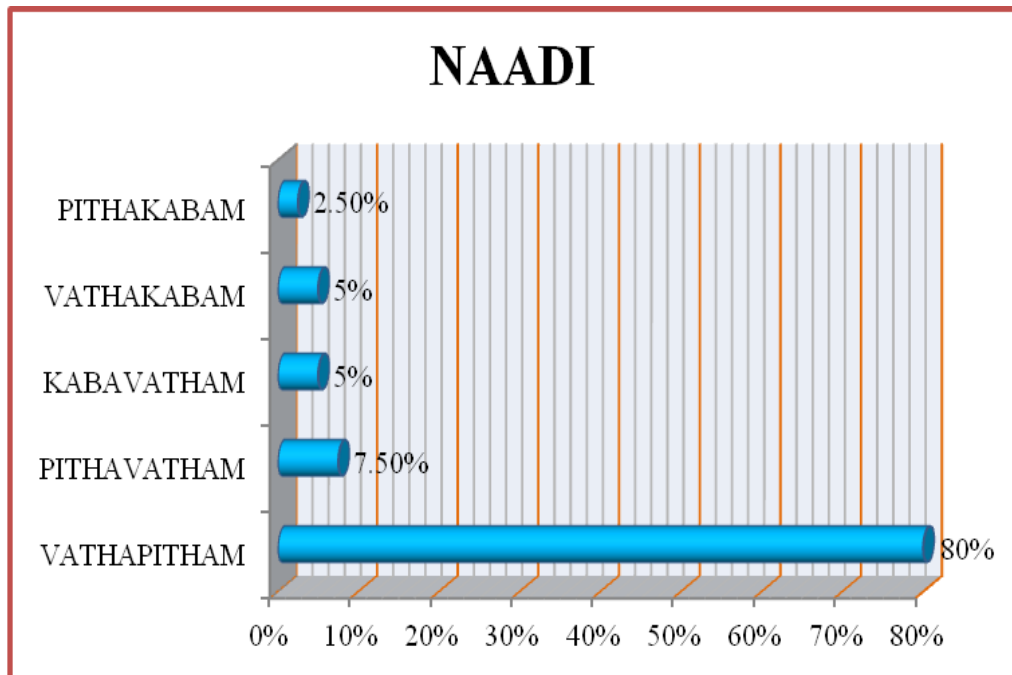
**Fig.18. involvement of joints**

### Observation:

Cervical vertebrae were involved in 15 cases (37.5%), elbow joint and ankle joint were involved in 35 cases (87.5%), 39 cases (97.5%) in wrist joint, after treatment it was 12.5%, 25%, 60%, 30% respectively. MCP joint was involved in 37 cases (92.5%), Knee joint in 36 cases 90% after treatment it was reduced 47.5% (19 cases) and 20 cases (50%). PIP joint were affected 40 cases (100%) before treatment, After treatment it was 62.5% (25 cases). Before treatment Lumbosacral joint was affected in 14 cases (35%) after treatment it was 20% (8 cases).

## 19. NAADI

NAADI	NUMBER OF PATIENTS	PERCENTAGE %
Vatha pitham	32	80%
Pitha vatham	3	7.5%
Pitha kabam	1	2.5%
Vatha kabam	2	5%
Kaba vatham	2	5%
Total	40	100%



**Fig. 19. Naadi**

### Observation :

Among 40 cases, Vatha pitha naadi was found in 32 cases (80%), Pitha vatha naadi was found in 3 cases (7.5%), Pitha kaba naadi was found in 1 case (2.5%), Vatha kaba naadi was found in 2 cases (5%) and kaba vatha naadi was found in 2 cases (5%).

## THREE HUMORS

### 20. DISTURBANCES IN VALI

VALI	NUMBER OF PATIENTS	PERCENTAGE %
Praanan	5	12.5%
Abaanan	37	92.5%
Udhaanan	-	-
Viyaanan	40	100%
Samaanan	40	100%
Naagan	1	2.5%
Koormam	-	-
Kirukaran	-	-
Devathatan	28	70%
Dhananjeyan	-	-

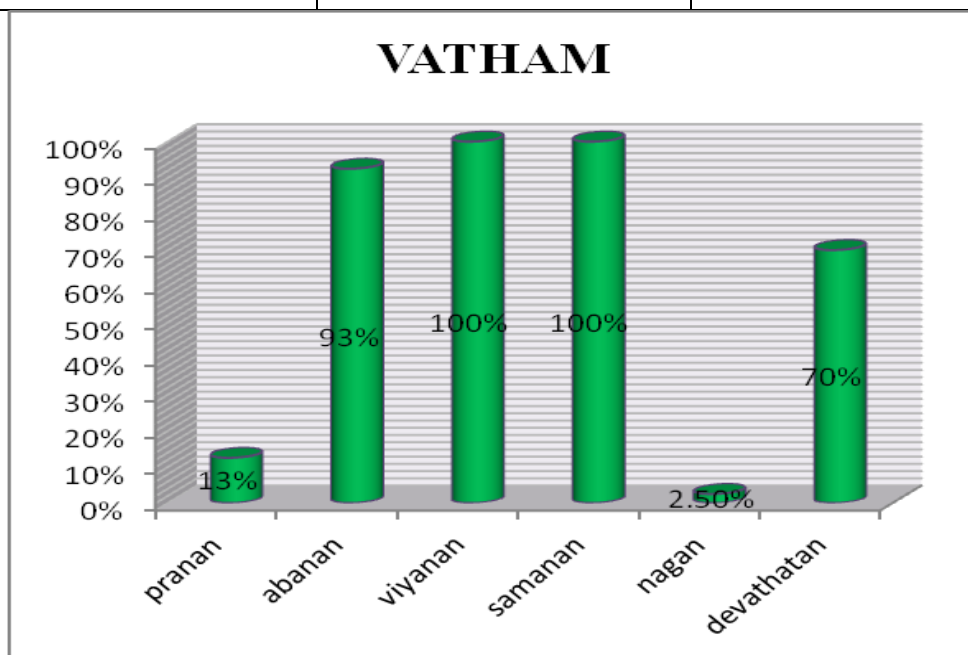


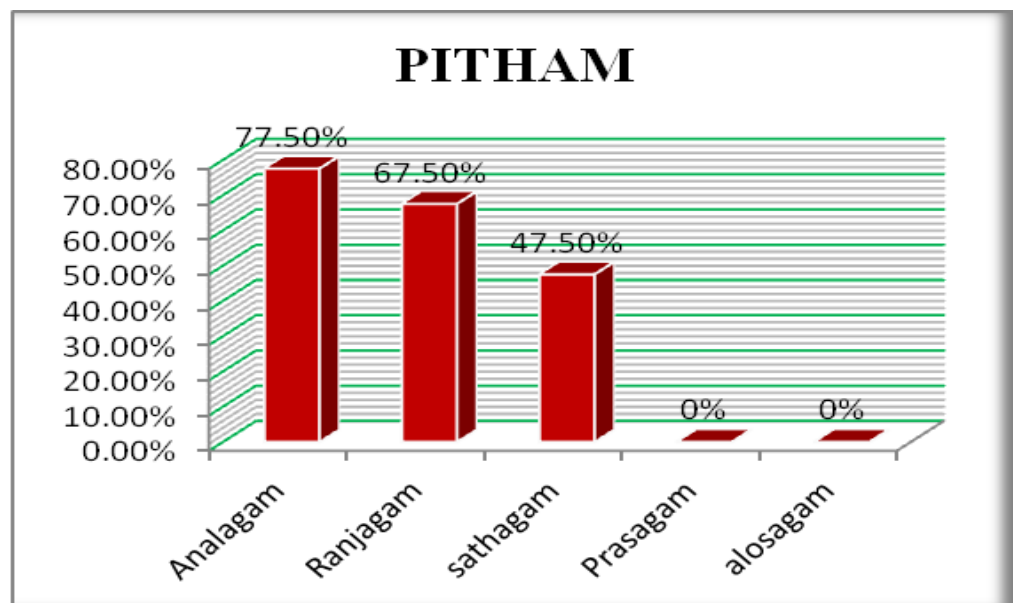
Fig.20. Disturbances in Vali

#### Observation:

In Vatham, Viyaanan and Samanan were affected in all 40 cases (100%), pranana was affected in 5 cases (12.5%), Abanan was affected in 37 cases (92.5%) and Devathathan was affected in 28 cases (70%) and naagan was affected in 1 case (2.5%).

## 21. DISTURBANCES IN AZHAL

AZHAL	NUMBER OF PATIENTS	PERCENTAGE %
Analakam	31	77.5%
Ranjagam	27	67.5%
Saathagam	19	47.5%
Alosagam	-	-
Prasagam	-	-



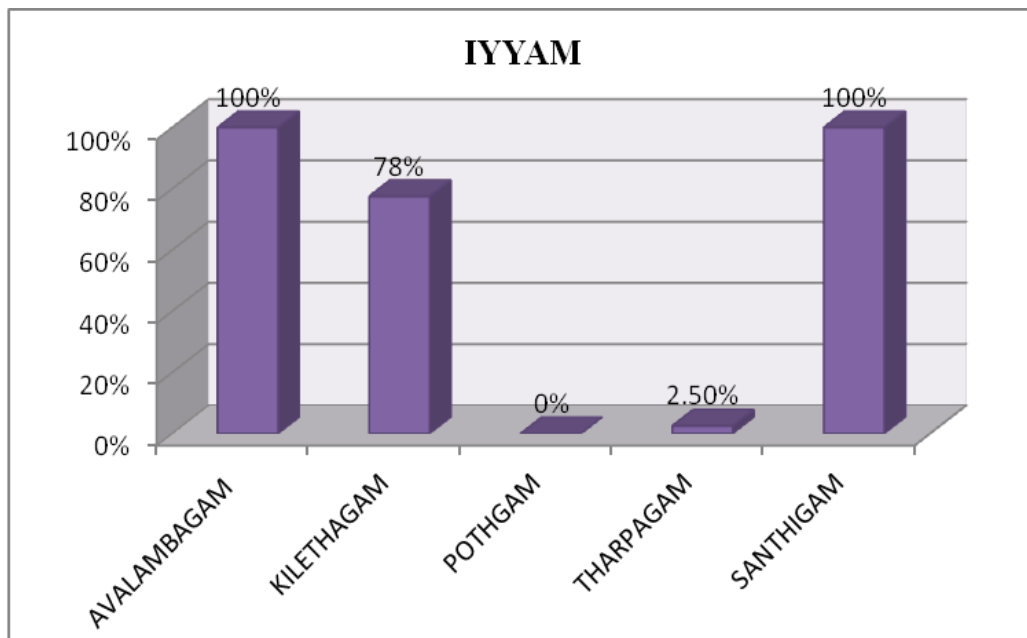
**Fig. 21. Disturbances in Azhal**

### Observation:

Among 40 cases, Analagam was affected in 31 cases (77.5%) , Saathagam was affected in all 19 cases (47.5%) , Ranjagam was affected in 27 cases(67.5%).

## 22. DISTURBANCES IN IYAM

IYYAM	NUMBER OF PATIENTS	PERCENTAGE
AVALAMBAGAM	40	100%
KILETHAGAM	31	77.5%
POTHAGAM	0	0%
THARPAGAM	1	2.5%
SANTHIGAM	40	100%



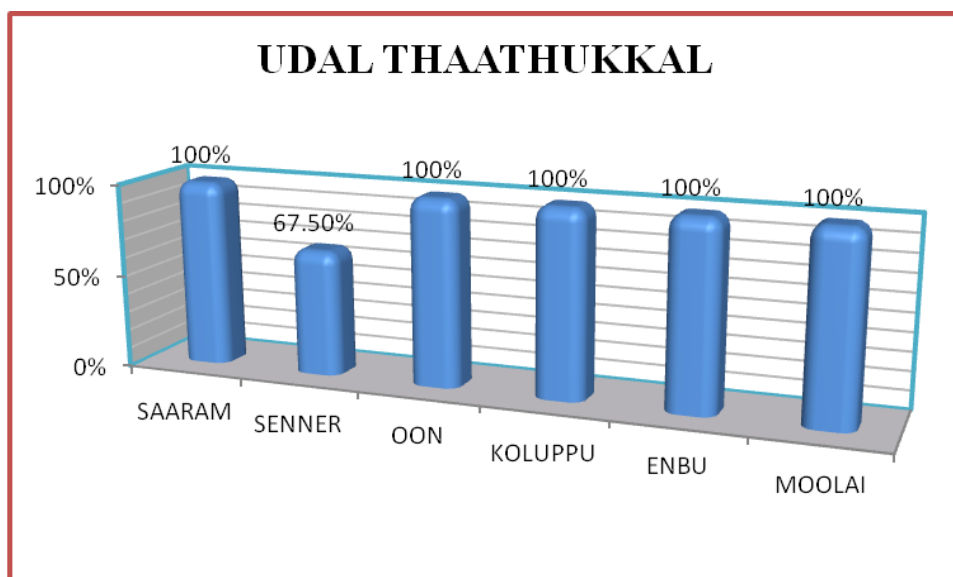
**Fig. 22. Disturbances in Iyam**

### Observation:

Santhigam was affected in all the 40 cases(100%), Avalambagam affected in 40 cases (100%), kilethagam affected in 31 cases (78%)and tharpagam affected in 1 case(2.5%).

### 23. UDAL THAATHUKKAL

UDAL THAATHUKKAL	NUMBER OF PATIENTS	PERCENTAGE %
Saaram	40	100 %
Senneer	27	67.5%
Oon	40	100%
Kozhuppu	40	100%
Enbu	40	100%
Moolai	40	100%
Sukkilam / Suronitham	-	-



**Fig.23. Udal Thaathukkal**

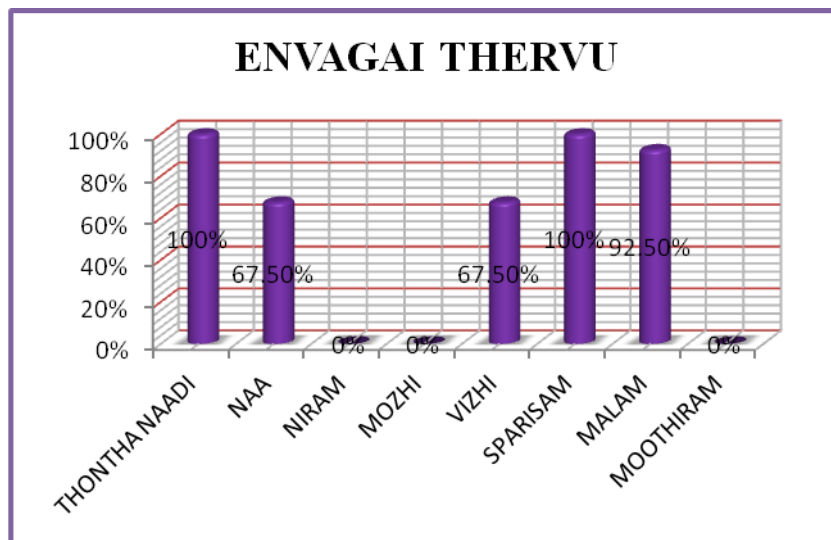
#### **Observation:**

In this study Saram, Oon, Kozhuppu, Enbu and moolai were affected in all 40 cases(100%) and Senneer was affected in 27(67.5%) cases only.



## 24. ENVAGAI THERVUGAL

ENVAGAI THERVUGAL	NUMBER OF CASES	PERCENTAGE %
Naadi (Thontha naadi)	40	100%
Sparisam	40	100%
Niram	-	-
Mozhi	-	-
Vizhi	27	67.5%
Naa	27	67.5%
Malam	37	92.50%
Moothiram	-	-



**Fig.24. Envagai Thervugal**

### Observation:

In Envagai thervu , Thontha naadi in all 40 cases, Sparisam was affected in 40(100%) patients where as Vizhi was affected in 27 cases (67.5%), Naa was affected in 27 cases( 67.5%) and Malam was affected in 37(92.5%) of patients.

## 25. KOSANGAL:

KOSANGAL	NUMBER OF PATIENTS	PERCENTAGE
Annamaya kosam	31	77.5%
Pranamaya kosam	5	12.5%
Manomaya kosam	26	65%
Vinyanamaya kosam	40	100%
Ananthamaya kosam	3	7.5%

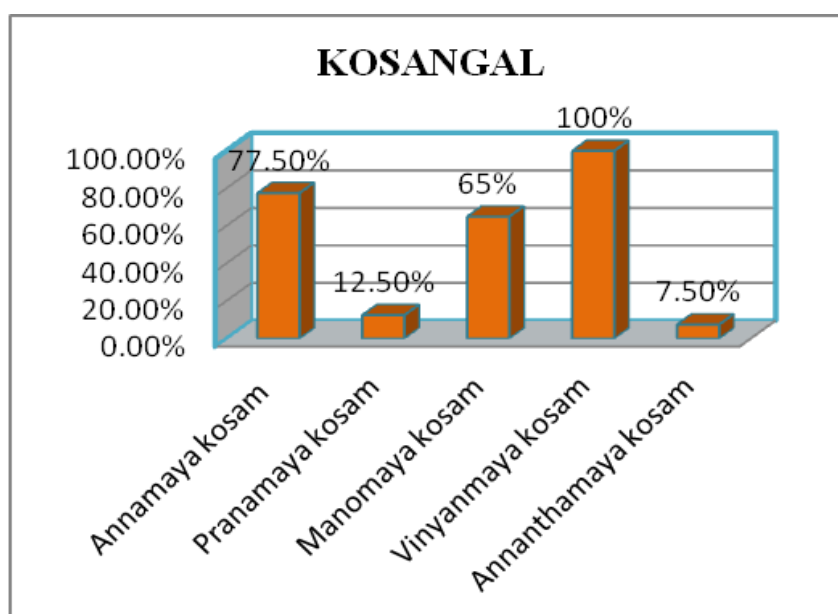


Fig.25. Kosangal

### Observation

In this study Annamaya kosam was affected in 31 cases(77.5%), Pranamaya kosam was affected in 5 cases(12.5%), Manomaya kosam was affected in 26 cases (65%), Vinyanamaya kosam was affected in 40 cases (100%) and Ananthamaya kosam affected in 3 cases (7.5%).

## 26. KANMENTHIRIYAM

Kanmenthiriyam	No of cases	Percentage %
<b>Kai</b>	<b>40</b>	<b>100%</b>
<b>Kaal</b>	<b>40</b>	<b>100%</b>
<b>Vai</b>	-	-
<b>Eruvai</b>	<b>37</b>	<b>92.5%</b>
<b>Karuvai</b>	-	-

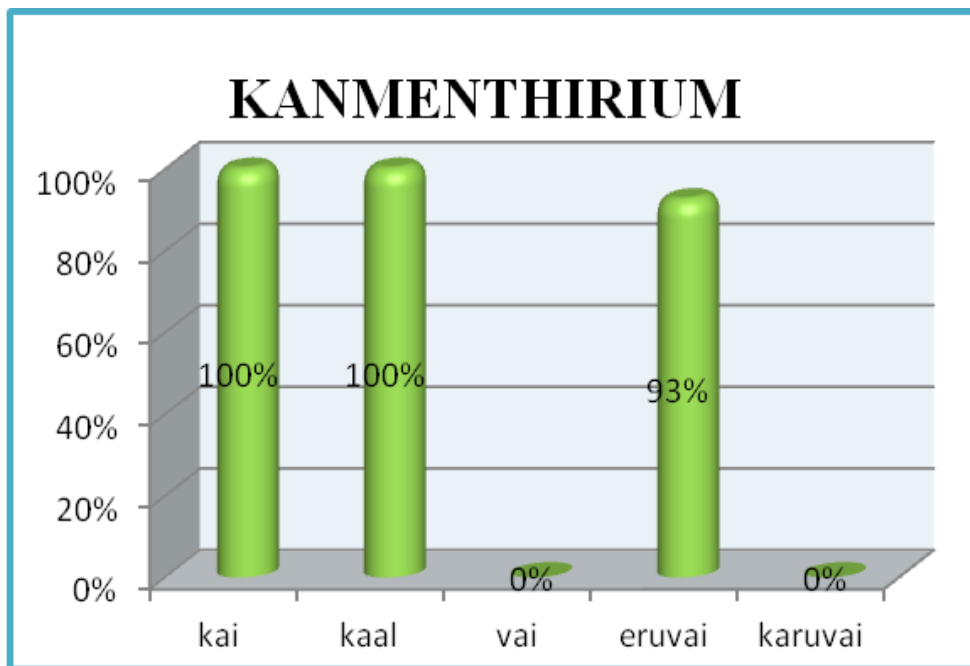


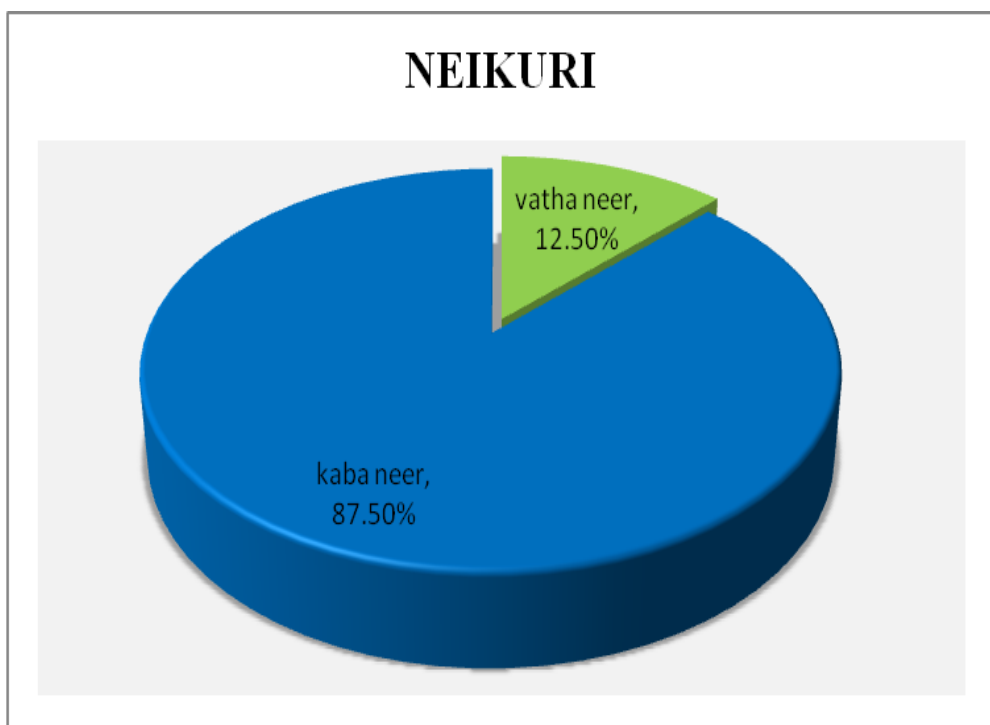
Fig 26. Kanmenthiriyam

### Observation:

In Kanmendrium Kai and Kaal were affected in 40(100%) cases, Eruvai was affected in 37 (92.5%) cases.

## 27. NEIKKURI

SPREADING PATTERN	NUMBER OF PATIENTS	PERCENTAGE %
Aravena neendathu – Vatha neer	5	12.5%
Aazhi pol paraviyadhu – Pitha neer	-	0%
Muthothu nindrathu – Kaba neer	35	87.5%
<b>Total</b>	<b>40</b>	<b>100%</b>



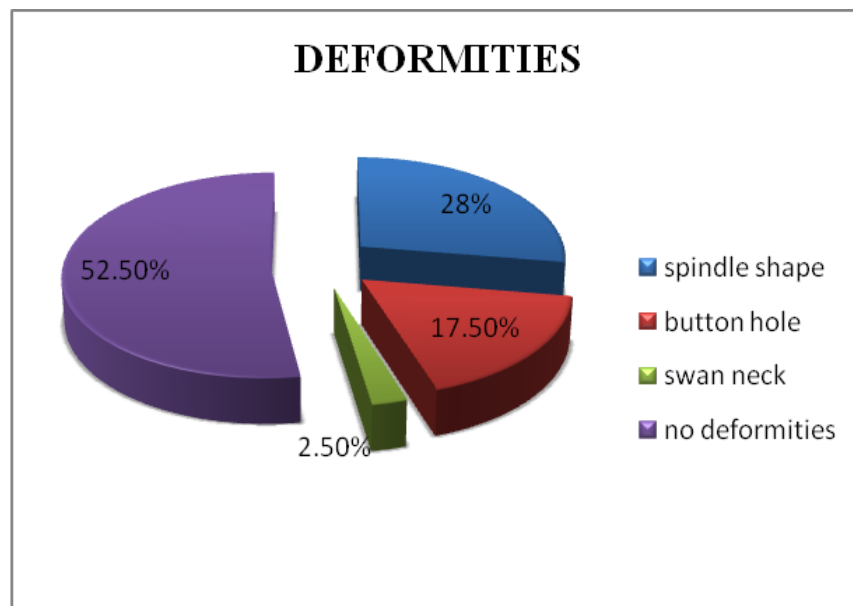
**Fig.27. Neikkuri**

### **Observation:**

Among 40 cases, Vatha neer was found in 5 cases (12.5%) , and Kaba neer was found in 35 cases (87.5%).

## 28. DEFORMITIES:

DEFORMITY	NO OF CASES	PERCENTAGE %
Button hole	7	17.5%
Swan neck	1	2.5%
Spindle shape deformity	11	27.5%
No deformity	21	52.5%



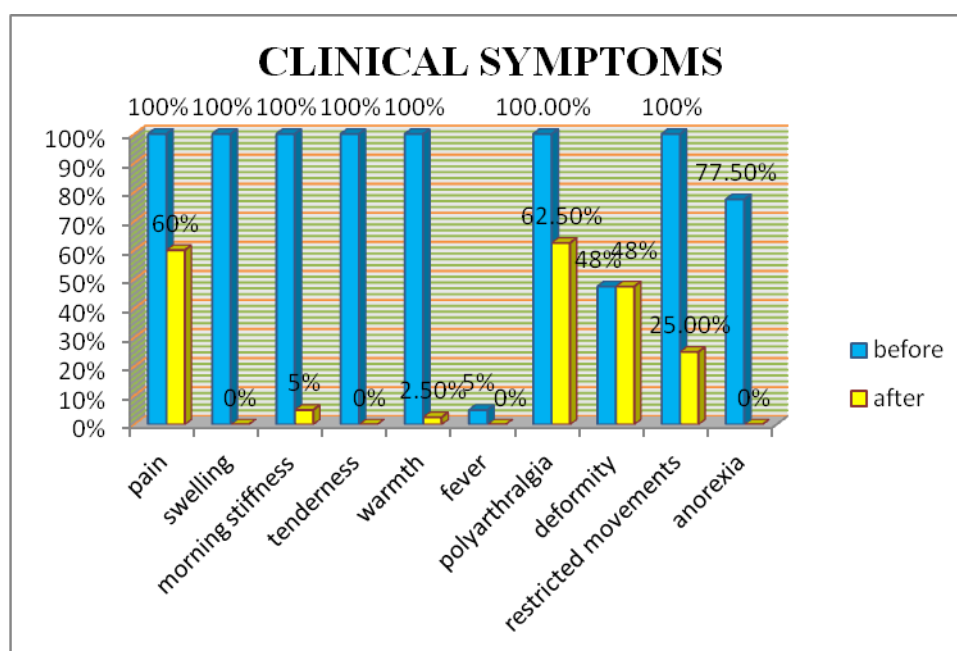
**Fig.28. Deformities**

### Observation

In this study, 11 cases (27.5%) had spindle shape deformity, 7 cases (17.5%) had buttonhole deformity and 1 case (2.5%) had swan neck deformity. Remaining 21 cases (52.50%) had not any deformities.

## 29. CLINICAL SYMPTOMS

Clinical features	Before trt	After trt	Before trt%	After trt %
<b>Pain</b>	<b>40</b>	<b>24</b>	<b>100%</b>	<b>60%</b>
<b>Swelling</b>	<b>40</b>	<b>0</b>	<b>100%</b>	<b>0%</b>
<b>Morning stiffness</b>	<b>40</b>	<b>2</b>	<b>100%</b>	<b>5%</b>
<b>Tenderness</b>	<b>40</b>	<b>0</b>	<b>100%</b>	<b>0%</b>
<b>Warmth</b>	<b>40</b>	<b>1</b>	<b>100%</b>	<b>2.5%</b>
<b>Fever</b>	<b>2</b>	<b>-</b>	<b>5%</b>	<b>0%</b>
<b>Poly arthralgia</b>	<b>40</b>	<b>25</b>	<b>100%</b>	<b>62.5%</b>
<b>Deformity</b>	<b>19</b>	<b>19</b>	<b>47.5%</b>	<b>47.5%</b>
<b>Restricted movements</b>	<b>40</b>	<b>10</b>	<b>100%</b>	<b>25%</b>
<b>Anorexia</b>	<b>31</b>	<b>-</b>	<b>77.5%</b>	<b>0%</b>



**Fig.29. Clinical Symptoms**

### Observation:

In this study, all 40 cases (100%) had pain before treatment, after treatment it was reduced to 24 cases (60%). All 40 cases (100%) had swelling before treatment, after treatment no one had swelling. All 40 cases (100%) had morning stiffness before treatment, after treatment it was reduced to 2 cases (5%). All 40 cases (100%) had tenderness before treatment, after treatment it was reduced to 0%. All 40 cases (100%) had warmth before

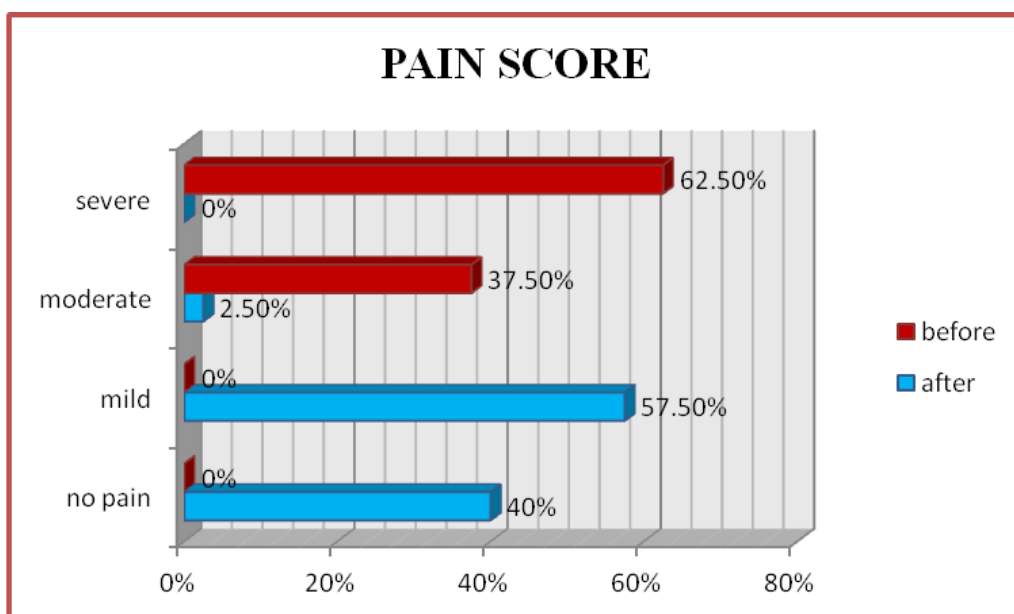
treatment, after treatment it was reduced to 1 case (2.5%). Before treatment 40 cases (100%) had polyarthralgia, after treatment it was reduced to 25 cases (62.5%). Deformities remained the same before and after treatment in 19 cases (47.5%). Before treatment anorexia was in 31 cases (77.5%) after treatment no cases were reported with anorexia. Before treatment Fever was found in 2 cases (5%) which was relieved after treatment. Before treatment 40 cases (77.5%) had restricted movements, after treatment it was reduced to 10 cases (25%).

## PRIMARY OUTCOME

### PAIN ASSESSMENT SCALE

#### 30. REDUCTION OF PAIN

Pain	Before Treatment		After Treatment	
	No of patient	Percentage %	No of patient	Percentage %
Severe Pain	25	62.5%	0	0%
Moderate Pain	15	37.5%	1	2.5%
Mild Pain	0	0%	23	57.5%
No Pain	-	-	16	40%
Total	40	100%	40	100%



**Fig.30. Reduction Of Pain**

#### Observation:

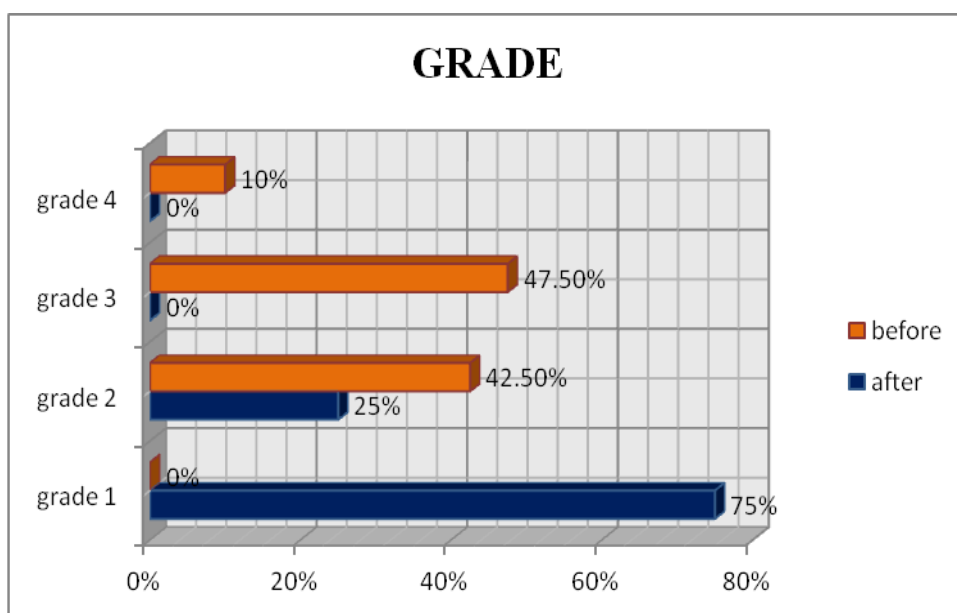
In this study, Before treatment 25 cases (62.5%) had Severe pain, 15 cases (37.50%) had Moderate pain. After treatment no one had Severe pain, one case( 2.5%) had Moderate pain, 23 cases (57.5%) had Mild pain and 16 cases(40%) had No pain.



### 31. FUNCTIONAL ABILITY GRADATION

Grade	No. of patients			
	Before Treatment	%	After Treatment	%
Grade IV	4	10%	0	0%
Grade III	19	47.5%	0	0%
Grade II	17	42.5%	10	25%
Grade I	-	0%	30	75%
Total	40	100%	40	100%

- Grade I** - Fit for all activities  
**Grade II** - Mild restriction  
**Grade III** - Moderate restriction  
**Grade IV** - Confined to chair or bed ridden



**Fig.31. Functional Ability Gradation**

**Observation:**

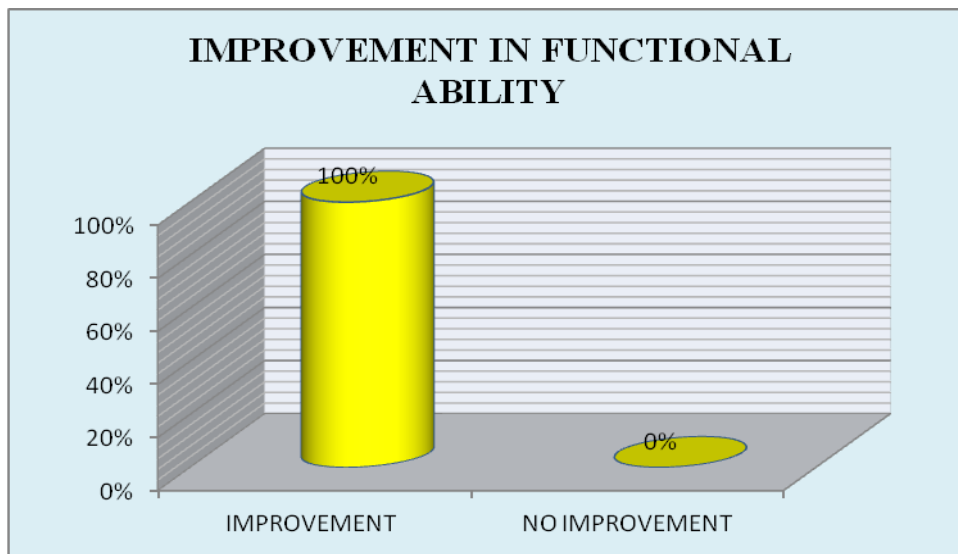
Among 40 cases, Before treatment 4 (10%) cases came under grade IV and 19 (47.5%) cases came under Grade III, 17(42.5%) cases in Grade II. after treatment no one came under Grade IV and III ,10(25%) cases came under Grade II and 30 cases (75%) came under Grade I.

### 32. IMPROVEMENT IN FUNCTIONAL ABILITY ASSESSMENT PER PATIENT:

As per Cross tabulation 31

**Before treatment functional ability –After treatment functional ability**

		AFTER TREATMENT FUNCTIONAL ABILITY				TOTAL
		I	II	III	IV	
BT	II	17	0	0	0	17
	III	12	7	0	0	19
	IV	1	3	0	0	4
TOTAL		30	10	0	0	40



**Fig.32. Improvement in functional ability Assessment Per Patient**

**Observation:**

Before treatment 4 cases (10%) came under grade IV after treatment 1 case (2.5%) under grade I and 3 cases (7.5%) under Grade II. Before treatment 19 cases (47.5%) came under Grade III after treatment 12 cases (30%) came under grade I and 7 cases (17.5%) came under grade II, Before treatment 17(42.5%) cases in Grade II after treatment all 17 (42.5%) cases came under Grade I.

In this study, 100% cases showed improvement in functional ability.

## SECONDARY OUTCOME

### LAB PARAMETERS

#### 33. RA FACTOR

Before treatment	Number of patients	Percentage	After treatment	Number of cases	Percentage
POSITIVE	27	67.5%	POSITIVE	18	45%

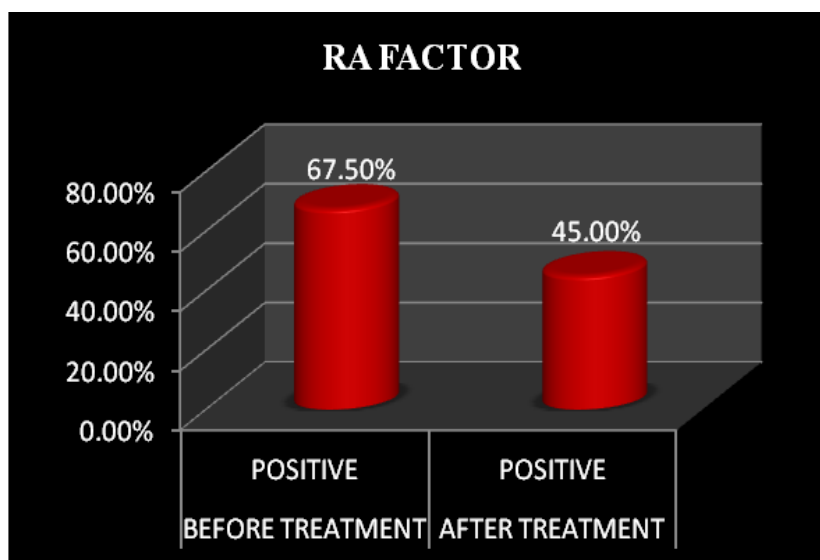


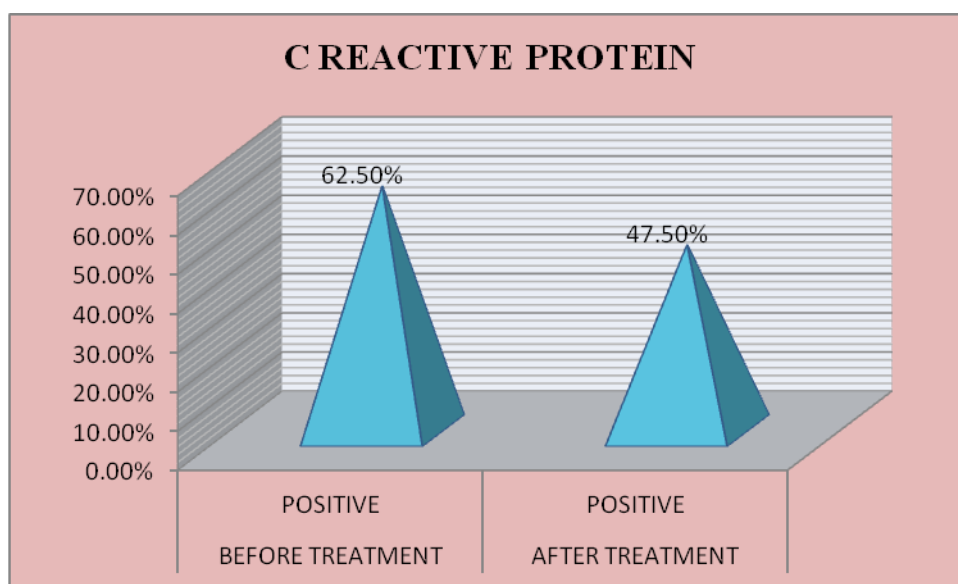
Fig.33. RA Factor

#### Observation:

Among 27 cases (67.5%) who are positive at commencement of the treatment 9 (33.3%) were screened negative and 18 cases (45%) remained positive for RA factor after the treatment.

### 34. C-REACTIVE PROTEIN

Before treatment	Number of patients	Percentage	After treatment	Number of cases	Percentage
POSITIVE	25	62.5%	POSITIVE	19	47.5%



**Fig.34. C - reactive protein**

#### **Observation:**

Among 25 cases (62.5%) who are positive at commencement of the treatment 6(24%) were screened negative and 19 cases (47.5%) remained positive for C reactive protein after the treatment.

### 35. ASO TITRE

Before treatment	Number of patients	Percentage	After treatment	Number of cases	Percentage
POSITIVE	10	25%	POSITIVE	8	20%

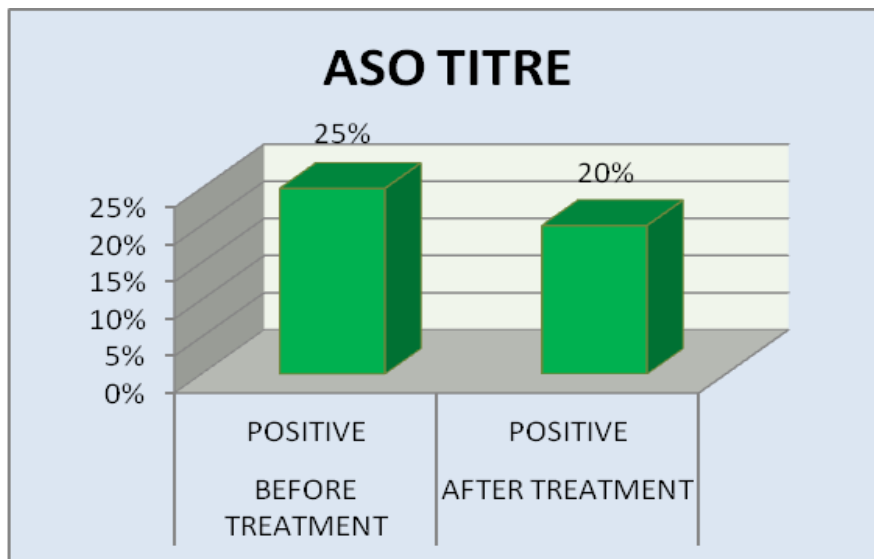


Fig.35. ASO Titre

#### Observation:

Among 10 cases who are positive at commencement of the treatment 2(20%) cases were screened negative and 8 (20%) cases remained positive for Aso titre after the treatment.

## STATISTICAL ANALYSIS

All collected data were entered into MS Excel software using different columns as variables and rows as patients. SPSS software was used to perform statistical analysis. Basic descriptive statistics include frequency distributions and cross-tabulations were performed. The quantity variables were expressed as Mean  $\pm$  Standard Deviation and qualitative data as percentage. A probability value of  $<0.05$  was considered to indicate as statistical significance. Paired 't' test was performed for determining the significance between before and after treatment. In my study statistical analysis was done for pain score and all Blood investigations to find the significance of the treatment statistically.

### Paired Samples Statistics

#### A) PAIN SCORE

PAIN SCORE	MEAN $\pm$ SD	t VALUE	p VALUE
Before treatment	7 $\pm$ 1.22	<b>28.50</b>	<b>P &lt; 0.001</b>
After treatment	1.3 $\pm$ 1.24		

The mean $\pm$  standard deviation of pain score before and after treatment were 7  $\pm$  1.22 and 1.3 $\pm$ 1.24 respectively which is **statistically significant** ( $p<0.001$ ) The analysis reveals that significant reduction of pain with the trial drug i.e. there is **81.4%** reduction in pain compared to start of the treatment.

#### B.) ERTHROCYTE SEDIMENTATION RATE (ESR)

ESR (1/2 AN HOUR)	MEAN $\pm$ SD	t VALUE	p VALUE
Before treatment	32.02 $\pm$ 19.75	<b>6.09</b>	<b>P &lt; 0.001</b>
After treatment	16.1 $\pm$ 10.91		

ESR (1 HOUR)	MEAN $\pm$ SD	t VALUE	p VALUE
Before treatment	57.97 $\pm$ 32.54	<b>6.84</b>	<b>P &lt; 0.001</b>
After treatment	27.57 $\pm$ 19.52		

The mean  $\pm$  standard deviation before treatment is 32.02 $\pm$  19.75 and after treatment is 16.1  $\pm$ 10.91 for  $\frac{1}{2}$  hr. The analysis reveals that there is **49.7%** reduction in **ESR  $\frac{1}{2}$  hr** compared to start of the treatment.

The mean  $\pm$  standard deviation before treatment is **57.97 $\pm$  32.54** and after treatment is **27.57  $\pm$ 19.52** for 1 hr. The analysis reveals that there is **52.44%** reduction in **ESR 1 hr** compared to start of the treatment.

The statistical analysis reveals that there has been a **significant reduction in ESR** value after treatment indicating the control over the inflammatory process of the disease.

### **HAEMOGLOBIN**

HAEMOGLOBIN	MEAN $\pm$ SD	t VALUE	p VALUE
<b>Before treatment</b>	<b>11.44 <math>\pm</math> 2.57</b>	<b>-1.2252</b>	<b>P &gt; 0.2279</b>
<b>After treatment</b>	<b>11.78<math>\pm</math>1.83</b>		

The mean  $\pm$  standard deviation before treatment is **11.44 $\pm$  2.57** and after treatment is **11.78 $\pm$ 1.83** . The analysis reveals that among 40 cases , there was no significant increase after the treatment statistically.

SL NO	OP NO/IP NO	AGE	SEX	SEROLOGY			
				RA before	RA after	ASO titre before	ASO titre after
1	I09544	25	F	<b>+ ve</b>	<b>- ve</b>	- ve	- ve
2	I59413	41	F	+ ve	+ ve	- ve	- ve
3	J35977	54	F	+ ve	+ ve	- ve	- ve
4	H94125	48	F	+ ve	+ ve	- ve	- ve
5	J22144	40	F	<b>+ ve</b>	<b>- ve</b>	+ ve	+ ve
6	J70445	48	F	<b>+ ve</b>	<b>- ve</b>	+ ve	+ ve
7	0075-18 (IP)	46	F	<b>+ ve</b>	<b>- ve</b>	- ve	- ve
8	J73469	40	F	- ve	- ve	- ve	- ve
9	H77668	40	M	<b>+ ve</b>	<b>- ve</b>	+ ve	+ ve
10	G15638	22	M	- ve	- ve	- ve	- ve
11	I10061	47	M	+ ve	+ ve	- ve	- ve
12	J73797	36	M	- ve	- ve	- ve	- ve
13	J65069	32	M	- ve	- ve	- ve	- ve
14	J74063	55	F	+ ve	+ ve	- ve	- ve
15	I32409	50	F	- ve	- ve	- ve	- ve
16	J65774	30	F	+ ve	+ ve	+ ve	+ ve
17	J44905	44	F	- ve	- ve	- ve	- ve
18	J64112	47	F	+ ve	+ ve	+ ve	+ ve
19	I14459	32	F	- ve	- ve	<b>+ ve</b>	<b>- ve</b>
20	I97794	47	M	+ ve	+ ve	- ve	- ve



SL NO	OP NO	AGE	SEX	SEROLOGY			
				RA before	RA after	ASO titre before	ASO titre after
21	F91016	40	F	- ve	- ve	- ve	- ve
22	J67779	50	M	- ve	- ve	- ve	- ve
23	J69753	42	F	+ ve	+ ve	+ ve	+ ve
24	H91904	36	F	- ve	- ve	- ve	- ve
25	I73928	33	F	<b>+ ve</b>	<b>- ve</b>	+ ve	+ ve
26	H15822	50	F	<b>+ ve</b>	<b>- ve</b>	- ve	- ve
27	G17963	48	F	+ ve	+ ve	- ve	- ve
28	J77255	38	F	+ ve	+ ve	<b>+ ve</b>	<b>- ve</b>
29	J57078	52	F	- ve	- ve	- ve	- ve
30	J75796	58	F	+ ve	+ ve	- ve	- ve
31	J73061	39	F	+ ve	+ ve	- ve	- ve
32	J64099	49	F	- ve	- ve	- ve	- ve
33	J83067	56	F	+ ve	+ ve	- ve	- ve
34	I48032	36	F	+ ve	+ ve	- ve	- ve
35	H62467	38	F	<b>+ ve</b>	<b>- ve</b>	- ve	- ve
36	J10306	55	F	+ ve	+ ve	- ve	- ve
37	I85405	58	F	- ve	- ve	- ve	- ve
38	H88015	39	F	<b>+ ve</b>	<b>- ve</b>	- ve	- ve
39	K04937	27	F	+ ve	+ ve	+ ve	+ ve
40	D0092	44	F	+ ve	+ ve	- ve	- ve

S.NO	OP NO/IP NO	AGE	SEX	SEROLOGY	
				C-Reactive protein before	C-Reactive protein after
1	I09544	25	F	+ ve	+ ve
2	I59413	41	F	- ve	- ve
3	J35977	54	F	+ ve	+ ve
4	H94125	48	F	+ ve	+ ve
5	J22144	40	F	+ ve	+ ve
6	J70445	48	F	- ve	- ve
7	0075-18 (IP)	46	F	+ ve	+ ve
8	J73469	40	F	+ ve	+ ve
9	H77668	40	M	+ ve	+ ve
10	G15638	22	M	- ve	- ve
11	I10061	47	M	+ ve	+ ve
12	J73797	36	M	- ve	- ve
13	J65069	32	M	<b>+ ve</b>	<b>- ve</b>
14	J74063	55	F	+ ve	+ ve
15	I32409	50	F	- ve	- ve
16	J65774	30	F	<b>+ ve</b>	<b>- ve</b>
17	J44905	44	F	- ve	- ve
18	J64112	47	F	+ ve	+ ve
19	I14459	32	F	+ ve	+ ve
20	I97794	47	M	+ ve	+ ve

S. NO	OP NO	AGE	SEX	SEROLOGY	
				CRP before	CRP after
21	F91016	40	F	- ve	- ve
22	J67779	50	M	<b>+ ve</b>	<b>- ve</b>
23	J69753	42	F	+ ve	+ ve
24	H91904	36	F	+ ve	+ ve
25	I73928	33	F	+ ve	+ ve
26	H15822	50	F	+ ve	+ ve
27	G17963	48	F	- ve	- ve
28	J77255	38	F	- ve	- ve
29	J57078	52	F	<b>+ ve</b>	<b>- ve</b>
30	J75796	58	F	- ve	- ve
31	J73061	39	F	- ve	- ve
32	J64099	49	F	+ ve	+ ve
33	J83067	56	F	<b>+ ve</b>	<b>- ve</b>
34	I48032	36	F	- ve	- ve
35	H62467	38	F	- ve	- ve
36	J10306	55	F	+ ve	+ ve
37	I85405	58	F	- ve	- ve
38	H88015	39	F	+ ve	+ ve
39	K04937	27	F	<b>+ ve</b>	<b>- ve</b>
40	D0092	44	F	- ve	- ve

SL NO	OP NO/IP NO	Haemoglobin (gm/dl)		Total WBC count (cells/ $\mu$ L)		Total RBC count (million/ $\mu$ L)	
		Before	After	Before	After	Before	After
1	I09544	10.4	10.3	6800	7600	4.2	4.2
2	I59413	6.8	8	3300	3900	3.5	3.9
3	J35977	8.7	8.8	7500	8900	3.7	3.8
4	H94125	11.6	11.5	9300	8500	4.1	4
5	J22144	12.1	12.1	6600	6200	3.9	3.9
6	J70445	12.2	12.3	6200	5400	4.3	4.2
7	0075-18(IP)	7	6.6	6900	6400	3.7	3.6
8	J73469	10.9	11.1	7800	7800	4.5	4.6
9	H77668	14.4	13.5	8000	9500	5.7	5.4
10	G15638	15.2	14.6	7200	8000	5.1	4.8
11	I10061	13.6	13.4	8800	9200	4.6	4.6
12	J73797	15	15.2	7100	7200	5	5.1
13	J65069	15	15.1	7300	7200	5.2	5.2
14	J74063	10.7	10.9	14300	11200	4.4	4.4
15	I32409	11.2	11.1	6000	6900	4.7	4.6
16	J65774	10.4	11.2	6700	6900	4.6	4.6
17	J44905	13.2	13.2	6800	6500	4.6	4.7
18	J64112	12.3	12.1	8900	10900	4.7	5.1
19	I14459	11.2	11.6	4900	5100	4	4.1
20	I97794	14.7	14.9	8500	7700	5.1	5.2
21	F91016	10.4	11.4	8700	9000	3.9	4
22	J67779	12.9	13	6900	6000	4.6	4.8
23	J69753	11.6	11.8	6200	7100	4.8	4.8
24	H91904	11.5	11.6	11800	11400	4.2	4.8
25	I73928	8.3	8.5	4500	4480	3.5	3.5
26	H15822	12.7	12.6	5700	5710	4.3	4.2
27	G17963	11.5	11.5	10800	10600	4.2	4.2
28	J77255	9.7	9.8	9000	9400	4.5	4.5
29	J57078	11.9	11.8	3400	4200	4.3	4.3
30	J75796	13.3	13	6800	7500	4.3	4.3
31	J73061	12.1	12.1	6700	5800	4.7	4.7
32	J64099	12.2	11.9	6800	9000	4.4	4.3
33	J83067	9.3	10.1	7400	7500	4	4.1
34	I48032	14	14.1	7100	7200	4.7	4.7
35	H62467	10.9	11	9400	9500	4	4
36	J10306	12	12.1	6900	7000	4.2	4.2
37	I85405	11.4	11.1	6800	5400	4.2	4.1
38	H88015	12	12.1	10400	9600	4.5	4.5
39	K04937	12.1	12.1	7530	7600	4.2	4.2
40	D0092	1.3	12.2	6300	7400	4.2	4.2

SL NO	OP NO/IP NO	Differential count					
		Polymorphs before (%)	Polymorphs after (%)	Lymphocytes before (%)	Lymphocytes after (%)	Monocytes before (%)	Monocytes after (%)
1	I09544	56	64	39	31	3	2
2	I59413	58	60	40	36	0	0
3	J35977	58	69	37	28	2	0
4	H94125	71	71	26	27	0	0
5	J22144	60	45	39	48	0	3
6	J70445	53	50	42	45	2	2
7	0075-18(IP)	73	67	24	28	0	2
8	J73469	66	64	31	34	1	0
9	H77668	68	78	29	20	1	0
10	G15638	69	74	28	23	0	0
11	I10061	60	62	31	25	0	4
12	J73797	70	69	27	28	0	1
13	J65069	60	61	37	38	1	0
14	J74063	72	68	26	29	0	1
15	I32409	46	64	49	30	1	2
16	J65774	55	58	42	41	1	0
17	J44905	53	48	44	50	1	0
18	J64112	66.3	74	23.8	24	4.3	0
19	I14459	50	54	43	43	2	1
20	I97794	58	63	38	35	0	0
21	F91016	68	71	24	26	3	1
22	J67779	75	72	23	27	0	0
23	J69753	60	61	36	36	0	1
24	H91904	65	63	33	35	0	0
25	I73928	59	60	38	38	1	1
26	H15822	60	50	33	30	0	4
27	G17963	64	63	34	34	0	1
28	J77255	61	65	31	32	2	1
29	J57078	62	63	33	34	2	2
30	J75796	65	64	32	33	0	0
31	J73061	65	60	30	37	1	0
32	J64099	52	43	45	54	1	0
33	J83067	62	63	36	35	0	1
34	I48032	67	66	30	29	0	2
35	H62467	76	77	19	20	2	1
36	J10306	64	65	34	34	0	1
37	I85405	70	65	27	30	1	2
38	H88015	77	76	21	20	0	2
39	K04937	63	66	32	33	2	1
40	D0092	67	68	30	30	1	1

SL NO	OP NO/IP NO	Differential count				Platelet count lks/ $\mu$ L	
		Eosinophils before (%)	Eosinophils after (%)	Basophils before(%)	Basophils after(%)	Before	After
1	I09544	2	3	0	0	4.7	4.1
2	I59413	2	4	0	0	5	5
3	J35977	3	3	0	0	6.1	5.8
4	H94125	3	2	0	0	3	3.1
5	J22144	1	4	0	0	2.9	2.9
6	J70445	3	3	0	0	2.5	2.5
7	007518(IP)	3	3	0	0	5.2	5.4
8	J73469	2	2	0	0	4	4
9	H77668	2	2	0	0	2.7	2.7
10	G15638	3	3	0	0	2	2.1
11	I10061	9	9	0	0	3	3
12	J73797	3	2	0	0	2	2.1
13	J65069	2	1	0	0	1.9	1.9
14	J74063	2	2	0	0	5.5	5.5
15	I32409	4	4	0	0	3.4	3.4
16	J65774	2	1	0	0	2.5	2.6
17	J44905	2	2	0	0	2.5	2.3
18	J64112	5.4	2	0.2	0	2.4	2.5
19	I14459	4	2	1	0	3.1	3.1
20	I97794	4	2	0	0	3.6	3.5
21	F91016	5	2	0	0	1.5	1.5
22	J67779	2	1	0	0	2	2
23	J69753	4	2	0	0	2.5	2.5
24	H91904	2	2	0	0	3.3	3.3
25	I73928	2	1	0	0	2.3	2.3
26	H15822	7	6	0	0	2.4	2.3
27	G17963	2	2	0	0	3.3	3.3
28	J77255	6	2	0	0	4	4
29	J57078	3	1	0	0	2.3	2.4
30	J75796	3	3	0	0	2.2	2.3
31	J73061	4	3	0	0	3.4	3.2
32	J64099	2	3	0	0	4	3.6
33	J83067	2	1	0	0	1.8	1.8
34	I48032	3	3	0	0	2.9	2.9
35	H62467	3	2	0	0	3.4	3.4
36	J10306	2	1	0	0	2.9	2.9
37	I85405	2	3	0	0	2.8	2.1
38	H88015	2	2	0	0	3.5	3.5
39	K04937	3	0	0	0	2.1	2.1
40	D0092	2	1	0	0	2.4	2.4

SL NO	OP NO/IP NO	Erythrocytesedimentation rate ½ hr (mm)		Erythrocytesedimentation rate 1 hr (mm)		PCV (%)	
		before	after	before	after	before	After
1	I09544	42	12	24	20	31.8	32
2	I59413	40	30	80	62	23.6	26.8
3	J35977	40	34	80	70	29.5	29.3
4	H94125	12	26	24	52	33.8	38
5	J22144	44	14	90	38	34.7	34.6
6	J70445	40	18	80	20	35.7	35.8
7	0075-18(IP)	44	4	90	10	25.8	24.2
8	J73469	10	10	20	20	35.4	35.5
9	H77668	14	6	30	14	42.5	43.2
10	G15638	14	4	30	8	44.3	42.7
11	I10061	20	10	42	18	38.9	38.8
12	J73797	40	14	82	30	44	44.3
13	J65069	10	4	20	10	42.7	41
14	J74063	54	24	110	38	34.7	33.8
15	I32409	10	20	20	40	35.4	34.6
16	J65774	15	10	32	12	40.1	40
17	J44905	14	10	30	22	40.2	39.4
18	J64112	38	17	54	12	36.9	37
19	I14459	80	24	100	41	32.9	33.4
20	I97794	24	12	50	26	44.4	44.6
21	F91016	40	19	68	24	37.5	37
22	J67779	20	2	40	4	37.9	38.4
23	J69753	64	20	130	40	36	37.2
24	H91904	16	12	32	20	35	34.6
25	I73928	40	18	80	24	26.3	28
26	H15822	20	19	42	18	36.9	36.7
27	G17963	15	12	32	20	35	36.1
28	J77255	10	7	20	10	32.5	31.5
29	J57078	64	20	130	40	35.3	35.2
30	J75796	18	8	28	18	39.6	38.1
31	J73061	12	10	24	12	36.9	37
32	J64099	46	60	92	100	37.6	36
33	J83067	30	10	62	14	36.1	36
34	I48032	8	10	16	18	39.7	38.5
35	H62467	42	12	54	20	36.8	36.4
36	J10306	40	21	82	40	35	36.1
37	I85405	90	40	100	60	35	33.4
38	H88015	30	11	62	18	36.6	35.5
39	K04937	37	20	89	24	40	39
40	D0092	34	10	48	16	35.2	35

SL NO	OP NO/IP NO	MCV (% ft)		MCH (pg)		MCHC (gm/dL)	
		before	after	before	after	before	after
1	I09544	75.4	75.8	24.6	24.4	32.7	32.2
2	I59413	66.5	67.7	19.2	20.2	28.8	29.9
3	J35977	78	76.7	23	23	29.5	30
4	H94125	81.6	80.9	28	28.2	34.3	34.8
5	J22144	88.1	88.3	30.9	30.9	34.9	38.9
6	J70445	82.3	81.4	28.1	28	34.2	34.2
7	007518(IP)	68.6	66.1	18.6	18	27.1	27.3
8	J73469	77.5	77	23.9	24.1	30.8	31.3
9	H77668	74.2	73.9	25.1	24.8	33.9	33.6
10	G15638	86.4	88.2	29.6	30.2	34.3	34.2
11	I10061	84.4	84.3	29.5	29	25	34.5
12	J73797	84.4	86	29	29.6	34	34.3
13	J65069	80.9	81.2	28.4	30	35.1	34
14	J74063	77.5	79.1	23.9	26.4	30.8	31.4
15	I32409	74.4	74.1	23.5	23.8	31.6	32.1
16	J65774	84.9	85.4	29.2	28.4	32.8	33.2
17	J44905	85.9	83.1	28.2	27.8	32.8	33.5
18	J64112	78.3	79	26.1	27	33.3	34
19	I14459	82	82.5	27.9	27.5	34	34.2
20	I97794	85.5	85	28.3	28.4	33.1	33.4
21	F91016	85	84.5	32.4	32	32.5	32.5
22	J67779	80.8	79.2	27.5	26.8	34	33.9
23	J69753	74.7	75	24.1	24.4	32.2	31.8
24	H91904	82.5	82.4	27	27.6	32.9	33.5
25	I73928	73.3	75.3	23.1	23	31.6	31
26	H15822	85.6	85.6	29.5	29.4	34.4	34.4
27	G17963	82.5	82	27	27.2	33	33.1
28	J77255	71.7	70.4	21.4	20.5	29.8	29.9
29	J57078	81.5	80.4	27.5	28	33.7	34.2
30	J75796	90.4	87.8	30.4	30	33.6	34.1
31	J73061	77.7	77.9	25.7	25.5	32.8	32.7
32	J64099	85.1	83.5	27.6	27.6	32.4	33.1
33	J83067	80.1	80.4	26.4	24.4	32.4	32.5
34	I48032	84.5	84	29.8	29.5	35.3	35
35	H62467	84.2	84	27.2	27.1	83.4	82.8
36	J10306	81.6	82.6	28	28.1	34.3	34.5
37	I85405	81.6	80.1	26.6	26.6	32.6	33.2
38	H88015	80.3	79.2	26.3	26.2	32.8	32.4
39	K04937	82.2	82.4	30.4	31.2	36.2	36
40	D0092	79.5	84.5	30.5	29	34.8	32.4



SL NO	OP NO/IP NO	Blood sugar				Blood Urea before(mg/dl)	Blood Urea after(mg/dl)
		Fasting (mg/dl)		Post prandial(mg/dl)			
		before	after	before	After		
1	I09544	83	82	119	92	11	14
2	I59413	86	83	109	112	11	9
3	J35977	91	103	108	130	22	11
4	H94125	85	90	102	104	35	37
5	J22144	86	95	137	115	24	17
6	J70445	96	90	87	100	28	27
7	007518(IP)	91	89	119	82	11	14
8	J73469	90	92	110	114	16	16
9	H77668	80	88	95	99	19	16
10	G15638	86	90	89	89	10	7
11	I10061	85	87	93	113	14	15
12	J73797	90	86	110	89	10	14
13	J65069	77	90	100	110	24	28
14	J74063	119	120	140	138	18	20
15	I32409	94	96	99	84	23	13
16	J65774	80	95	110	115	15	18
17	J44905	88	90	95	139	15	17
18	J64112	80	91	100	119	18	15
19	I14459	92	89	110	120	14	16
20	I97794	85	87	101	106	15	13
21	F91016	70	85	100	110	17	18
22	J67779	126	123	145	210	18	20
23	J69753	81	90	130	120	12	16
24	H91904	88	90	105	120	17	15
25	I73928	76	90	110	120	18	20
26	H15822	90	92	71	100	15	15
27	G17963	88	100	105	120	18	20
28	J77255	91	106	106	120	18	20
29	J57078	88	90	127	130	13	16
30	J75796	108	109	96	116	16	14
31	J73061	90	96	110	120	18	19
32	J64099	86	85	119	102	20	22
33	J83067	82	90	102	110	15	20
34	I48032	83	90	112	130	13	18
35	H62467	90	94	130	135	12	14
36	J10306	102	110	128	130	17	18
37	I85405	102	101	91	118	14	11
38	H88015	84	90	147	138	9	10
39	K04937	90	102	110	130	41	35
40	D0092	98	180	118	120	19	20

SL NO	OP NO/IP NO	Liver function test (mg/dl)					
		T.bilirubin before	T.bilirubin after	D.bilirubin before	D.bilirubin after	I.bilirubin before	I.bilirubin after
1	I09544	0.3	0.2	0.1	0.1	0.2	0.3
2	I59413	0.2	0.3	0.1	0.1	0.1	0.2
3	J35977	0.3	0.3	0.2	0.1	0.1	0.3
4	H94125	0.2	0.3	0.1	0.1	0.1	0.2
5	J22144	0.6	0.2	0.3	0.1	0.3	0.6
6	J70445	0.6	0.4	0.3	0.3	0.3	0.6
7	007518(IP)	0.3	0.2	0.1	0.1	0.2	0.3
8	J73469	0.3	0.3	0.1	0.1	0.2	0.3
9	H77668	0.6	0.5	0.2	0.2	0.4	0.6
10	G15638	0.5	0.5	0.3	0.3	0.3	0.5
11	I10061	0.5	0.3	0.2	0.2	0.3	0.5
12	J73797	0.5	0.4	0.3	0.1	0.3	0.5
13	J65069	0.9	0.8	0.3	0.2	0.5	0.9
14	J74063	0.3	0.3	0.1	0.2	0.2	0.3
15	I32409	0.3	0.3	0.1	0.1	0.2	0.3
16	J65774	0.5	0.4	0.2	0.2	0.2	0.5
17	J44905	0.5	0.5	0.2	0.2	0.3	0.5
18	J64112	0.4	0.6	0.1	0.2	0.2	0.4
19	I14459	0.3	0.2	0.1	0.1	0.2	0.3
20	I97794	0.4	0.4	0.1	0.1	0.3	0.4
21	F91016	0.3	0.2	0.2	0.2	0.1	0.3
22	J67779	0.5	0.6	0.2	0.2	0.2	0.5
23	J69753	0.3	0.3	0.1	0.2	0.2	0.3
24	H91904	0.3	0.3	0.2	0.1	0.1	0.3
25	I73928	0.2	0.9	0.1	0.1	0.1	0.2
26	H15822	0.4	0.3	0.2	0.2	0.2	0.4
27	G17963	0.2	0.3	0.2	0.2	0.1	0.2
28	J77255	0.2	0.3	0.1	0.2	0.1	0.2
29	J57078	0.3	0.2	0.2	0.1	0.1	0.3
30	J75796	0.5	0.5	0.2	0.2	0.3	0.5
31	J73061	0.3	0.2	0.1	0.1	0.2	0.3
32	J64099	0.2	0.3	0.1	0.1	0.1	0.2
33	J83067	0.5	0.3	0.2	0.1	0.3	0.5
34	I48032	0.5	0.3	0.2	0.2	0.3	0.5
35	H62467	0.3	0.2	0.2	0.1	0.1	0.3
36	J10306	0.4	0.2	0.1	0.1	0.3	0.4
37	I85405	0.5	0.6	0.2	0.2	0.3	0.5
38	H88015	0.3	0.2	0.1	0.1	0.2	0.3
39	K04937	0.1	0.3	0.3	0.2	0.2	0.1
40	D0092	0.2	0.3	0.2	0.2	0.1	0.2

SL NO	OP NO/IP NO	CREATININE (mg/ dl)		Liver Function Test (IU/L)			
		BEFORE	AFTER	SGOT BEFORE	SGOT AFTER	SGPT BEFORE	SGPT AFTER
1	I09544	0.7	0.6	10	15	10	12
2	I59413	0.8	0.7	19	19	13	17
3	J35977	1	0.8	14	9	5	9
4	H94125	0.9	0.8	13	9	12	6
5	J22144	0.8	0.7	22	19	41	25
6	J70445	1.2	1	18	19	16	17
7	007518(IP)	0.7	0.6	10	15	10	12
8	J73469	0.9	0.8	12	15	12	32
9	H77668	1.4	0.8	14	12	12	10
10	G15638	0.9	0.8	14	16	6	12
11	I10061	1.1	0.8	13	20	6	10
12	J73797	0.9	1.2	14	16	6	20
13	J65069	1.1	1.2	21	24	20	30
14	J74063	0.8	0.9	14	18	9	12
15	I32409	0.9	0.7	16	13	13	13
16	J65774	0.9	1.2	15	16	20	23
17	J44905	0.9	0.7	16	17	23	16
18	J64112	0.7	0.8	10	15	8	11
19	I14459	0.8	0.7	12	18	8	12
20	I97794	1.1	0.9	11	15	12	13
21	F91016	0.4	0.9	30	29	28	25
22	J67779	0.8	0.9	20.6	13	14.6	3
23	J69753	0.9	0.9	38	36	33	38
24	H91904	1	1	9	13	10	12
25	I73928	0.8	0.9	19	18	8	10
26	H15822	0.9	1	17	17	20	21
27	G17963	1	1.2	12	9	15	10
28	J77255	1	1.2	14	18	9	12
29	J57078	0.6	0.8	35	32	37	34
30	J75796	1.1	0.9	13	21	21	28
31	J73061	1	1	17	20	16	15
32	J64099	1	1	21	15	13	20
33	J83067	0.6	1.2	24	25	9	12
34	I48032	1	1.2	16	20	9	10
35	H62467	1.8	1.2	18	19	17	20
36	J10306	0.8	0.3	18	20	15	18
37	I85405	0.8	0.9	15	12	17	8
38	H88015	0.7	0.8	13	20	13	19
39	K04937	0.9	0.8	23	25	18	20
40	D0092	0.9	0.8	18	24	17	22

SL NO	OP NO/IP NO	ALKALINE PHOSPHATASE (IU/L)		SERUM CALCIUM (mgm /dl)		SERUM PHOSPHORUS (mgm /dl)	
		BEFORE	AFTER	BEFORE	AFTER	BEFORE	AFTER
1	I09544	72	61	9	8.8	3.8	3.6
2	I59413	95	84	8.2	8.5	3.8	3.9
3	J35977	159	132	9.9	8.9	3.9	4
4	H94125	91	92	9.7	9	3.8	3.9
5	J22144	84	87	9.6	10.2	4	3.9
6	J70445	68	70	10.1	10.2	3.8	3.7
7	007518(IP)	72	61	9	8.8	4	4.1
8	J73469	82	93	7.3	9.7	3.7	3.9
9	H77668	100	91	9	9.1	4	4
10	G15638	110	98	9.3	9.4	3.8	3.9
11	I10061	96	110	8.4	8.2	3.8	3.5
12	J73797	120	104	9	9.4	3.1	3.1
13	J65069	57	90	9.7	9	3.8	4
14	J74063	117	140	9.5	9.5	3.8	3.6
15	I32409	59	62	9.4	8.5	3.4	3.4
16	J65774	99	110	9.4	9.6	4	4.2
17	J44905	99	106	9.6	10.5	3.8	3.9
18	J64112	70	68	9.4	10	3	3.4
19	I14459	60	120	8.4	9	3.8	3.5
20	I97794	125	117	9.4	9.3	4	3.9
21	F91016	110	120	9.8	9.8	3.4	3.5
22	J67779	61	56	9.6	10.4	3.8	3.5
23	J69753	105	110	9.3	9.4	3.8	3.6
24	H91904	88	95	9.7	8.9	3.8	3.8
25	I73928	95	110	8	8.2	3.8	3.4
26	H15822	105	102	9.1	9.1	3.2	3
27	G17963	120	140	9.7	9.5	3.8	3.5
28	J77255	78	120	9	9.2	3.4	3.2
29	J57078	94	102	9.1	9	3.8	3.6
30	J75796	59	54	10	9.3	4	4.2
31	J73061	87	110	9.5	9.4	4	3.9
32	J64099	117	102	9.3	8.9	3.4	3.8
33	J83067	108	110	10	10.1	4	4.1
34	I48032	84	110	10	10.1	3.8	4
35	H62467	110	120	9.8	9.4	3.4	3.2
36	J10306	146	152	10	9.8	3.8	3.4
37	I85405	90	91	10.2	9.2	4	4.1
38	H88015	61	90	10.1	9.8	4	4.1
39	K04937	140	184	9	9.1	3.4	3.2
40	D0092	112	120	8.5	8.9	3.4	3.5

SL NO	OP NO/IP NO	SERUM URIC ACID (mg/dl)		SERUM PROTIEN (gms / dl)		SERUM ALBUMINE (gms / dl)	
		BEFORE	AFTER	BEFORE	AFTER	BEFORE	AFTER
1	I09544	2.7	3.8	7.7	7.7	3.3	3.8
2	I59413	4.2	4.5	6.7	6.6	3.1	3.1
3	J35977	4.2	4.9	7.2	6.8	3.7	3.2
4	H94125	4.2	4.1	7.8	7.7	4.2	3.9
5	J22144	4.2	4	6.8	7	4.2	3.8
6	J70445	5.4	5	7.9	7.8	4.1	4.1
7	007518(IP)	2.7	3.8	7.7	7.7	3.3	3.8
8	J73469	4	5.4	6.6	6.6	3.8	3.7
9	H77668	6.5	6.2	7.5	7.1	4	3.6
10	G15638	4.6	4.8	7.6	7.9	4.1	4
11	I10061	7.4	7	7.7	7.5	3.5	3.2
12	J73797	4.5	4	7	7.9	4.2	4
13	J65069	5.5	5	8.2	8	4.5	4.2
14	J74063	6.1	6	7.6	7.2	3.6	3.4
15	I32409	3.6	4	7	6.6	3.7	3.6
16	J65774	5.2	4.2	7	7.2	4	4.2
17	J44905	4.2	3.8	7.2	7.7	4.2	4
18	J64112	4.9	5.6	7.4	8.3	3	3.7
19	I14459	3.3	3.1	7.5	7	3.9	3.5
20	I97794	7.4	7.2	7.3	7.1	3.7	3.5
21	F91016	3.9	4	7.4	7.3	4.5	4.4
22	J67779	6	5.7	7.4	7.4	4	4.1
23	J69753	3.4	3	7.6	7.5	3.8	3.4
24	H91904	4.7	5.1	6.5	7.3	3.6	3.5
25	I73928	4.9	4	8.3	8	3.4	3.5
26	H15822	4	4.1	7.8	7.5	4.2	4.2
27	G17963	4.7	4.5	6.7	6.5	3.6	3.5
28	J77255	3.7	3.5	7.3	8	3.8	3.5
29	J57078	3.9	4	0.5	7.5	4	4.2
30	J75796	3.9	4.6	7.2	7.5	4.2	4
31	J73061	4.7	4.5	7.4	7.2	3.7	3.5
32	J64099	5.6	5.9	7.8	7.5	4.3	3.7
33	J83067	4.8	4.7	7.4	7.2	3.5	3.2
34	I48032	4.9	4.8	7.5	7.4	4	4.2
35	H62467	3.8	3.4	7.4	7.8	4	4.1
36	J10306	3.4	3.3	8	7.8	3.7	3.5
37	I85405	3.9	4.6	7.3	6.3	4.1	3.7
38	H88015	3	3.8	8.1	8	4.1	4.2
39	K04937	3.2	3.8	7.4	7.8	3.8	3.9
40	D0092	3	2.9	7	7.3	3.8	3.7

SL NO	OP NO/IP NO	SERUM GLOBULIN (gms/dl)		URINE ANALYSIS			
		BEFORE	AFTER	URINE ALBUMIN	URINE ALBUMIN	FASTING BEFORE	FASTING AFTER
1	I09544	4.7	3.9	nil	nil	Nil	Nil
2	I59413	3.5	3.5	nil	nil	Nil	Nil
3	J35977	3.4	3.6	nil	nil	Nil	Nil
4	H94125	3.6	3.8	nil	nil	Nil	Nil
5	J22144	3.3	3.2	nil	nil	Nil	Nil
6	J70445	3.8	3.5	nil	nil	Nil	Nil
7	007518(IP)	4.7	3.9	nil	nil	Nil	Nil
8	J73469	2.9	2.9	nil	nil	nil	Nil
9	H77668	3.5	3.5	nil	nil	nil	Nil
10	G15638	3.5	3.9	nil	nil	nil	Nil
11	I10061	4.2	4	nil	nil	nil	Nil
12	J73797	3.9	3	nil	nil	nil	Nil
13	J65069	3.7	3	nil	nil	nil	Nil
14	J74063	4	3.8	nil	nil	nil	Nil
15	I32409	3.4	3	nil	nil	nil	Nil
16	J65774	3	3.4	nil	nil	nil	Nil
17	J44905	3	3.7	nil	nil	nil	Nil
18	J64112	3.9	4.6	nil	nil	nil	Nil
19	I14459	3.6	3.7	nil	nil	nil	Nil
20	I97794	3.6	3	nil	nil	nil	Nil
21	F91016	2.8	3	nil	nil	nil	Nil
22	J67779	3.1	3.3	nil	nil	nil	Nil
23	J69753	3.8	3.6	nil	nil	nil	Nil
24	H91904	3.1	3.8	nil	nil	nil	Nil
25	I73928	4.9	4.5	nil	nil	nil	Nil
26	H15822	2.9	2.2	nil	nil	nil	Nil
27	G17963	3.1	3	nil	nil	nil	Nil
28	J77255	3.6	2.9	nil	nil	nil	Nil
29	J57078	3.2	3.1	nil	nil	nil	Nil
30	J75796	3.5	3.5	nil	nil	nil	Nil
31	J73061	3.7	3.4	nil	nil	nil	Nil
32	J64099	3.6	3.8	nil	nil	nil	Nil
33	J83067	3.9	3.7	nil	nil	nil	Nil
34	I48032	2.6	2.8	nil	nil	nil	Nil
35	H62467	3.9	3.8	nil	nil	nil	Nil
36	J10306	4.3	4.2	nil	nil	nil	Nil
37	I85405	3.2	2.6	nil	nil	nil	Nil
38	H88015	4	4	nil	nil	nil	Nil
39	K04937	3	3.2	nil	nil	nil	Nil
40	D0092	3.6	3.6	nil	nil	nil	Nil

SL NO	OP NO/IP NO	URINE ANALYSIS					
		POST PRANDIAL BEFORE	POST PRANDIAL AFTER	PUS CELLS BEFORE	PUS CELLS AFTER	EPITHELIAL CELLS BEFORE	EPITHELIAL CELLS AFTER
1	I09544	nil	Nil	4 to 6	2 to4	1 to 2	2 to 4
2	I59413	nil	Nil	1 to 2	4 to 6	1 to 2	4 to 6
3	J35977	nil	Nil	3 to4	1 to 2	1 to 2	1 to 2
4	H94125	nil	Nil	2 to 4	3 to 5	1 to 2	3 to 5
5	J22144	nil	Nil	2 to3	2 to 3	2 to 3	1 to 2
6	J70445	nil	Nil	1 to2	1 to 2	1 to 2	1 to 2
7	007518(IP)	nil	Nil	3 to 5	1 to 2	1 to 2	1 to 2
8	J73469	nil	Nil	1 to 2	6 to 8	1 to 2	10 to 12
9	H77668	nil	Nil	2 to 4	3 to 5	1 to 2	1 to 2
10	G15638	nil	Nil	2 to 4	3 to 5	1 to 2	1 to 2
11	I10061	nil	Nil	1 to 2	1 to 3	1 to 2	1 to 3
12	J73797	nil	Nil	2 to 4	1 to2	1 to 2	1 to 2
13	J65069	nil	Nil	2 to 4	1 to 2	1 to 2	1 to 2
14	J74063	nil	Nil	1 to 2	1 to 2	1 to 2	1 to 3
15	I32409	nil	Nil	3 to 5	1 to 2	2 to 4	1 to 2
16	J65774	nil	Nil	3 to 4	1 to 2	3 to4	1 to 2
17	J44905	nil	nil	3 to 4	1 to 3	3 to 4	1 to 3
18	J64112	nil	nil	3 to 4	1 to 2	1 to 2	1 to 2
19	I14459	nil	nil	8 to 10	2 to 4	3 to 4	1 to 2
20	I97794	nil	nil	10 to 12	6 to 8	1 to 2	1 to 2
21	F91016	nil	nil	3 to 5	1 to 2	1 to 3	1 to 2
22	J67779	nil	nil	1 to 2	3 to 5	1 to 2	3 to 5
23	J69753	nil	nil	1to 2	1 to 2	1 to 2	1 to 2
24	H91904	nil	nil	2 to 4	1 to 2	1 to 2	1 to 2
25	I73928	nil	nil	3 to 4	1 to 2	1 to 2	1 to 2
26	H15822	nil	nil	1 to 2	1 to 2	1 to 2	1 to 3
27	G17963	nil	nil	3 to 5	1 to 2	1 to 2	1 to 2
28	J77255	nil	nil	2 to 4	1 to 2	2 to 4	1 to 2
29	J57078	nil	nil	2 to 4	1 to 2	1 to 2	1 to 3
30	J75796	nil	nil	2 to 3	1 to 2	2 to 4	1 to2
31	J73061	nil	nil	1 to 2	1 to 2	1 to 2	1 to 2
32	J64099	nil	nil	1 to 2	2 to 4	1 to 2	2 to 4
33	J83067	nil	nil	2 to 4	1 to2	2 to 4	1 to 2
34	I48032	nil	nil	2 to4	1 to 2	2 to 4	1 to 2
35	H62467	nil	nil	3 to 5	1 to 2	3 to4	1 to 2
36	J10306	nil	nil	4 to 6	1to 4	1 to 2	1 to 2
37	I85405	nil	nil	3 to 5	2 to 4	2 to 4	2 to 4
38	H88015	nil	nil	1 to 2	1 to 2	3 to 5	1 to 2
39	K04937	nil	nil	3 to 4	1 to 2	1 to 2	1 to 2
40	D0092	nil	nil	3 to 4	1to2	1 to 3	1 to 2

## DISCUSSION

The main aim of this study was to evaluate the Therapeutic effect of the trial drug **MERUGULLI THYLAM** ( Internal medicine) to reduce pain, swelling and restricted joint movements in the disease **VALI AZHAL KEELVAYU** (Rheumatoid arthritis) in which, there occur a derangement of Vatha thathu and Pitha thathu.

Vatham, Pitham, Kabam the three vital humours (uyir thathukkal) are responsible for the physiological functions of udal thathukkal (7 body constituents).Life style modifications (Food and deeds, stress, mental and physical environmental) causes derangement of vital humours resulting in vitiation of uyir thathukkal called mukkutram (disease).

Derangement of the vatham leads to impairment in Udal thathukkal and in turn produces symptoms like pricking pain, body ache, mental stress, difficulty in flexion and extension of joints.

Pitham maintains the body temperature and has the basic function of production and maintenance of the internal environment (Homeostasis). Hence Pitham when deranged produces symptoms like fever and changes in the internal environment. The vitiates vatham and pitham causes vatha noigal ,one among is vali azhalkeelvayu. The signs and symptom of valiazhal keelvayu may be correlated with RA in that of modern scientific system of medicine.

Siddha literature **THERAN MARUTHUVA BHARATHAM** predicts the fact that we should choose medicines for diseases and not diseases for medicine.

Dryness , Roughness, coldness and subtleness are one among the basic qualities of Vatham. Hence a drug possesses the opposite qualities like Heaviness, hotness and solidness would rectify the derangement of vatham. According to siddha philosophy **PUNGENT** taste balances Vatham and sweet taste balances pitham.

The ingredients of the trial drug **Merugulli thylam** posses **Veppa Veeriyam** (Hot potency) naturally and predominantly contains **Kaarpu suvai**( Pungent taste) . Hence the trial drug expected to balance and rectify the deranged vatham.

Hence the trial drug which possess anti-vatha property as mentioned in Siddha literature were selected and the trial drug was prepared in the Gunapadam laboratory of National Institute of Siddha,Chennai. After getting proper authentication of raw drugs from



the Assistant professor of Medicinal Botany at NIS, Chennai 47, The trial drug was prepared by the standard operating procedure as mentioned in the protocol.

Standardization of the trial drug through biochemical analysis was carried out.

The Biochemical qualitative and quantitative analysis were done at the biochemistry lab of NIS. It revealed the presence of effective minerals like calcium, iron etc.

The Drug standardization and TLC, HPTLC were carried out by Captain Srinivasa Murthy Regional Ayurveda Drug Development Institute, Arumbakkam, Chennai and Test for Aflatoxin were done by Regional Research Institute of Unani Medicine, Royapuram respectively.

The clinical study was conducted with a well defined protocol and a proper proforma after the approval of the Institutional Ethical Committee, the clinical study was registered in CTRI (Clinical Trial Registry -India). After that the enrolment of patients was started.

IEC NO: NIS/IEC/2016/11-07/14.10.2016

CTRI NO: CTRI/2018/03/012365

After screening patients reporting at the OPD of department of Maruthuvam, 40 cases of both genders were selected for induction to the trial. Before enrolment into the trial the informed consent was obtained from the patients.

Among the 40 patients 39 were OPD patients and the remaining one was an IPD patient. For In-Patient, who was not in a situation to stay in the hospital for a long time, was advised to attend the Out-Patient Department of Maruthuvam .

From the First day on wards , the patients were treated with trial drug Merugulli thylam ( Internal medicine) 9 ml/dose -3 days morning only in empty stomach (2 days drug holiday) this fashion of drug administration was followed for 45 days . Patients were instructed to take the medicines regularly and advised to follow pathiyam (avoid tamarind, tubers, etc) and advised to avoid cold exposure . Out-Patients were asked to visit the hospital once in 5 days to collect the drug and as well as for clinical assessment and the clinical assessment was done on 0<sup>th</sup> day, 5<sup>th</sup> day, 10<sup>th</sup> day, 15<sup>th</sup> day , 20<sup>th</sup> day, 25<sup>th</sup> day, 30<sup>th</sup> day, 35<sup>th</sup> day, 40<sup>th</sup> day, 45<sup>th</sup> day.

After the treatment, the patients were advised to visit the Out-Patient department of Maruthuvam for another 2 months for follow-up without trial drug.

**The results observed during the study period were discussed on the basis of below.**

## **OBSERVATION AND RESULTS**

### **AGE GROUP**

In Age group

4 (10%) cases affected patients came under the age group between 20-30 years.14 (35 %) cases fall under the age group between 31-40 years.15 (37.5 %) cases were between 41-50 years and 7 (17.5 %) cases were between 51-60 yrs.

Inference:

Most of the cases were affected in the age group of 41-50 yrs.

### **GENDER**

According to the Gender Among the 40 patients selected, the disease (R.A) was found to be higher in females 33 cases (82.5%) and lower in males 7 cases (17.5%).

Inference:

The prevalence was more in females than in Males. The male female ratio is 1:8 .

The most prominent theory about the development of RA being more common in women is associated with changes in the levels of sex hormones, including oestrogen and progesterone which have critical roles in the inflammatory response, and in the overall regulation of the immune system.

### **SOCIO-ECONOMIC STATUS**

In socio-economic status the incidence of the disease was as follows,

In Middle income group - 29 cases(72.5%)

The low income group - 10 cases(25%)

Higher income group - 1 case (2.5%)

Inference:

In this study , most of the cases - 29 cases (72.5%) under middle income group

### **MENSTURAL HISTORY**

Among 40 cases observed, out of 33 females, 8(24.24%) females attained menopause, 2 (6.06%) females in hysterectomy status.

The risk of developing RA is highest in peri and postmenopausal women <sup>(4)</sup>.

## **MARITAL STATUS**

Among 40 cases 39 (97.5%) got married and 1 case (2.5%) not married.

## **EDUCATIONAL STATUS**

Among 40 cases 24 cases (60%) were literate and 16 cases (40%) were ill literate.

## **INCIDENCE DUE TO FAMILIAL INVOLVEMENT HISTORY:**

Among 40 cases, 39 (97.5%) cases did not have any familial history. 1 (2.5%) case had the incidence of the disease in their relationship.

In this study most of the cases 39 (97.5%) cases did not have familial history.

## **OCCUPATIONAL DISTRIBUTION**

In Occupational distribution Among 40 cases, 30 cases (75%) were home maker, 1 case (2.5%) was Student, 1 Case (2.5%) was Beautician, 4 Cases (10%) were cooli, 1 Case (2.5%) was Farmer, 2 Cases (5%) were Driver and 1 Case (2.5%) was Tailor.

In this study 30 cases (75%) were Home maker.

## **DIET**

In diet out of 40 patients, 30 cases were Non vegetarian (75%). They were higher than the vegetarian 10 cases (25%).

Inference:

In this study most of the cases were observed to be non vegetarians.

- ❖ Higher plasma levels of fat derived hormones leptin, adiponectin and visfatin are found to be a modulation of the inflammatory environment in patients with RA. More over prevalence of RA is 50% greater in non vegetarians<sup>(5)</sup>.

## **OBESITY**

In my study Out of 40 cases 5 cases 12.5 % were Obese, 35 cases 87.5 % were belongs to normal weight.

Inference:

In Obesity there seems to be an increase in the inflammatory markers in the blood, most of them produced by the WAT (White Adipose Tissue) in RA

## **TREATMENTAL HISTORY OTHER THAN SIDDHA TREATMENT:**

9 cases (22.5%) due to adverse effects of drugs (like NSAIDS, Steroids), 2 cases (5%) were referred from rheumatologist, 4 cases (10%) were not undergone any treatment before

Among 40 patients, 25 (62.5%) cases came to Siddha treatment due to fear for adverse effects in other system of medicine.

## **THINAI**

In ThinaI Among the 40 cases, 37 (92.5%) cases were from Neithal thinaI, 2 (5%) cases were from Kurinji and 1 (2.5%) case was Marutham.

In Siddha literatures; it is mentioned that vaatha diseases are common in Neithal nilam.

“நெய்தனில மேலுவர்ப்பை நீங்கா துறினுமது  
வெய்தனில மேதங்கு வீடாகும்- நொய்தீன்  
மருங்குடலை முக்காக்கி வல்லுறுப்பைவீக்கும்  
கருங்குடலைக் கீழிறக்குங் காண்”

- பதார்த்த குண சிந்தாமணி

This study also revealed the majority cases were from in **Neithal thinaI**.

## **PARUVA KAALAM**

In Paruva Kaalam (Season) Out of 40 cases, 26 cases(65%) were included in Koothirkaalam and 12 (30%) cases were included in Munpanikaalam, 2% (5) in Pinpani kalam.

- ❖ According to Siddha literature in Kaar kalam Vali azhal keelvayu like Vatha diseases may occur at greater incidence. In Muthuvenil Kaalam the disease may worsen than before
- ❖ According to a recent research, predictors of radiographic progression unveiled a distinct relationship between RA progression and seasonal onset postulate that this could be as a result of either a Vitamin D deficiency or environmental factors such as winter viruses, influencing protein citrullination especially winter and spring<sup>(6)</sup>.

## **KOSANGAL**

Among 40 cases, Vignanamaya kosam was affected in all cases due to pain and restricted of movements of the minor and major joints. Annamaya kosam was affected in 31 cases (77.5%) due to loss of appetite. Pranamaya kosam was affected in 5 cases(12.5%) due to dyspnoea on exertion. Manomaya kosam was affected in 26 cases (65%) due to mental depression. Ananthamaya kosam affected in 3 cases (7.5%) duo to disturbed sexual life owing to pain, restriction of movements and mental depression.

- RA impacts on the sexual lives of a large minority of patients. This limitation was in general symptom-related, fatigue, pain and reduced joint function being the primary culprits <sup>(7)</sup>.
- Depression is more commen in patients with Rheumatoid arthritis than in healthy individuals.(Psychomatic Medicine 64:52-60(2002)) sighing was significantly and strongly related to patient's level of depression and non significant and less strongly related to their reported pain and number of flare days <sup>(8)</sup>.

## **GUNAM**

In Gunam, 38 (95%) of cases had Raso gunam and 2 (5%) of cases had Thamo gunam.

## **BODY CONSTITUTION**

In Body constitution Out of 40 cases, 35 cases (87.5%) were came under Thontha thegi and 5 cases (12.5%) were came under kaba thegi.

## **CONDITION OF MUKKUTTRAM:**

### **Derangement in vatha kutram:**

Viyaanan and Samanan were affected in all 40 cases (100%) which resulted in pain, swelling , morning stiffness and restricted movements of the joints. Praanan was affected in 5 cases (12.5%) which resulted in dyspnoea on exertion. Abaanan was affected in 37 cases (92.5%) which resulted in constipation. naagan was affected in 1 case(2.5%) which resulted in diminished vision. Devathathan was affected in 28 cases (70%) which resulted in lethargy & disturbed sleep. Uthanan, Koorman , Kirukaran, and Dhananjeyan remained normal in all cases.

**Derangement in pitha kutram:**

In Pitham Among 40 cases, Saathagam was affected in all 19 cases (47.5%) which indicates difficulty in walking, difficulty to perform regular duties. Ranjagam was affected in 27 cases (67.5%) which resulted in pallor of conjunctiva. Analagam was affected in 31 cases (77.5%) which resulted loss of appetite.

**Derangement in kaba kutram:**

Among 40 cases, Avalambagam and santhigam were affected in all the 40 Cases (100%) due to pain in joints Klethagam was affected in 31 cases(77.5%) which caused by loss of appetite. Tharpagam was affected in 1 case(2.5%) due to burning sensation of eyes.

**INCIDENCE WITH REFERENCE TO THE ENVAGAI THERVU**

In Envagai Thervu , Naadi : Under the study of naadi, all the 40 cases showed Thontha naadi. Sparisam was affected in 40 cases (100%) as they had swelling, tenderness in joints with local heat. Vizhi was affected in 27 cases (67.5%) as it showed pale conjunctiva. Naa was affected in 27 cases(67.5%) as it showed coating of tongue and pallor. Malam was affected in 37 cases (92.5%) leading to constipation. Mozhi ,niram and Moothiram were found to be normal in all 40 cases.

**INCIDENCE WITH REFERENCE TO THE NAADI TYPE**

While seeing the Naadi, Among 40 cases showed Thontha naadi Vatha pitha naadi was found in 32 cases (80%), Pitha vatha naadi was found in 3 cases (7.5%), Pitha kaba naadi was found in 1 cases (2.5%), Vaatha kaba naadi was found in 2 cases (5%) and Kaba vatha naadi was found in 2 cases (5%).

In this study , Vatha pitha naadi was predominant in 32 cases(80%) .

**INCIDENCE WITH REFERENCE TO THE NEIKKURI**

Among 40 cases ,5 cases (12.5%) had Vatham pattern of Neikuri i.e. Aravena neendathu (Spreading like a snake) 35 cases (87.5%) had Kapham pattern of Neikuri, i.e Muththothu Ninrathu( Stands like a pearl.)

In this study, Most of the cases (87.5%) had Kapham pattern of Neikuri.

## **INCIDENCE WITH REFERENCE TO THE UDAL THAATHUKKAL**

Among 40 cases, **Saaram** was affected in all 40 (100%) cases that produced the symptoms like lethargy. **Senneer** was affected in 27 cases (67.5%) that produced the symptoms like loss of strength and loss of appetite.

**Oon** was affected in all 40 (100%) cases that produced the symptoms like swelling, morning stiffness of affected joints and pain in affected joints. **Kozhuppu** was affected in all 40 (100%) cases that produced the symptoms like swelling in the affected joints particularly interphalangeal, difficulty in movements of affected joints.

**Enbu** was affected in all 40 cases (100%) was affected in all 40 (100%) cases that produced the symptoms like swelling, redness of affected joints, deformities and restriction in movements. **Moolai** was affected in all 40 (100%) cases that produced the symptoms like swelling in the affected joints particularly interphalangeal joints.

**Sukkilam** and **suronitham** were not affected in all the cases concerned to the disease.

## **IN KANMENDRIUM,**

Kai and Kaal were affected in 40 cases (100%) due to pain, swelling, morning stiffness and deformities. Eruvai was affected in 37 (92.5%) cases.

## **DURATION OF ILLNESS**

In Duration of illness, In this study, about 9 (22.5%) cases had upto 1 yr duration, 11(27.5%) cases had 1 to 2 yrs of duration, 13 (32.5%) cases had 2-5 yrs of duration, 5 (12.5%) cases had 5 to 7 yrs of duration and 1 (2.5%) cases had 7-10 yrs and another one case had 10-15 yrs of duration.

## **MODE OF ONSET**

According to the mode of onset In my study 30 (75%) cases had Gradual onset of illness, 10 (25%) cases had Sudden onset of illness.

## **INVOLVEMENT OF JOINTS**

Cervical vertebrae were involved before treatment in 15 (37.5%) cases after treatment it was in 5 cases (12.5%). Elbow joint were involved in before treatment in 35 case (87.5%). After treatment it was in 10 cases (25%).

Wrist joint and ankle joint were involved in 39 cases (97.5%), 35 cases (87.5%) respectively. After treatment it was 12 cases (30%), and 24 cases (60%). MCP joints were involved in 37 cases (92.5%), after treatment it was in 19 cases (47.5%)

Knee joint was involved in 36 cases (90%). After treatment it was 20 cases (50%), PIP joint were involved in 40 cases (100%) before treatment, after it was in 25 cases (62.5%).

Lumbosacral joint was affected in 14 cases (35%) before treatment after treatment it was in 8 cases (20%). (25%) 10 cases were affected in hip joint before treatment, after it was in 5 cases (12.5%).

## **CLINICAL SYMPTOMS**

### **Observation with reference to Clinical symptoms**

#### **Pain**

Before treatment all 40 cases (100%) had pain, After treatment it was reduced into 24 cases (60%).

#### **Swelling in joints**

All 40 cases (100%) had swelling before treatment, No one had swelling after treatment .

#### **Morning stiffness**

All 40 cases (100%) had morning stiffness before treatment, It was reduced to (2 cases) 5%.

#### **Tenderness,**

All 40 cases (100%) had tenderness before treatment, after treatment it was reduced to 0 case (0%)

#### **Fever**

Before treatment Fever was found in 2 cases (5%) which was relieved after treatment.

#### **Restricted movements.**

All 40 cases (100%) had restricted movements before treatment, after treatment it was reduced to 10 cases (25%).

#### **Polyarthralgia**

Before treatment 40 cases (100%) had polyarthralgia, after treatment it was reduced to 25 cases (62.5%).



## **Deformities**

Deformities remained the same before and after treatment in 19 cases (47.5%) Among the Deformities in this study, 11( 27.5%) cases had Spindle shaped deformity, 7 (17.5%) cases had Button hole derormity, 1 (2.5%) cases had Swan neck deformity.

## **Anorexia**

Before treatment 31 cases (77.5%) had Anorexia , After treatment no cases were reported with anorexia.

## **PRIMARY OUTCOME**

### **PAIN ASSESSMENT SCALE**

In this study, 25 cases (62.5%) had severe pain, 15(37.5%) cases had Moderate pain. After treatment no one had severe pain, one (2.5%) case had Moderate pain, 23(57.5%) cases had Mild pain, 16 (40%) cases had no pain.

The mean± standard deviation of pain score before and after treatment were  $7 \pm 1.22$  and  $1.3 \pm 1.24$  respectively which is **statistically significant** ( $p < 0.001$ ) The analysis revealed that significant reduction of pain with the trial drug i.e. there is **81.4%** reduction in pain compared to start of the treatment.

### **FUNCTIONAL ABILITY GRADATION**

- Grade I** - Fit for all activities
- Grade II** - Mild restriction
- Grade III** - Moderate restriction
- Grade IV** - Confined to chair or bed ridden

Among 40 cases, before treatment 4 (10%) cases were in grade IV, 19 (47.5%) cases were in Grade III. After treatment no one came under Grade IV and III. Before treatment 17(42.5%) cases were in Grade II after treatment 10(25%) cases under Grade II. After treatment 30 cases (75%) came under Grade I

### **IMPROVEMENT IN FUNCTIONAL ABILITY ASSESSMENT OF PATIENTS:**

As per Cross tabulation, Before treatment 4 cases (10%) came under grade IV after treatment 1 case (2.5%) under grade I and 3 cases (7.5%) under Grade II. Before treatment 19 cases (47.5%) came under Grade III after treatment 12 cases (30%) came under grade I

and 7 cases (17.5%) came under grade II, Before treatment 17(42.5%) cases in Grade II after treatment all 17 (42.5%) cases came under Grade I.

It revealed that over all good improvement

## **SECONDARY OUTCOME OBSERVATION**

### **LABORATORY INVESTIGATIONS**

#### **Observation with reference to RA factor.**

Among 27 cases (67.5%) who are positive at commencement of the treatment 9 (33.3%) were screened negative and 18 (45%) cases remained positive for RA factor after the treatment.

- ❖ Although the diagnosis of RA is a clinical one, rheumatoid factor is an important prognostic marker, those who test positive are more likely to have a worse prognosis with respect to joint destruction, physical/ occupational disability and quality of life in general.

#### **Observation with reference to C Reactive Protein**

Among 25 cases (62.5%) who are positive at commencement of the treatment 6(24%) were screened negative and 19 (47.5%) cases remained positive for C reactive protein after the treatment.

#### **Observation with reference to ASO titre**

Among 10 cases who are positive at commencement of the treatment 2(20%) cases were screened negative and 8 (20%) cases remained positive for ASO titre after the treatment.

## **HAEMOGLOBIN**

Among 40 cases , there was no significant changes after the treatment statistically.

## **ERYTHROCYTE SEDIMENTATION RATE (ESR)**

The analysis revealed that there is **49.7%** reduction in **ESR ½ HR** and **52.44%** reduction in **ESR 1 HR** compared to start of the treatment.

The mean  $\pm$  standard deviation before treatment is **32.02 $\pm$  19.75** and after treatment is **16.1  $\pm$ 10.91** for ½ hr. The analysis revealed that there is **49.7%** reduction in **ESR ½ HR** compared to start of the treatment.

The mean  $\pm$  standard deviation before treatment is **57.97 $\pm$  32.54** and after treatment is **27.57  $\pm$ 19.52** for 1 hr. The analysis reveals that there is **52.44%** reduction in **ESR 1 HR** compared to start of the treatment.

The statistical analysis reveals that there has been a **significant reduction in ESR** value after treatment indicating the control over the inflammatory process of the disease.

The erythrocyte sedimentation rate (ESR) or C reactive protein (CRP) -Acute phase reactant is measured in RA either, both of which are elevated during active disease as a sign of inflammation.

## BIOCHEMICAL ANALYSIS

Qualitative analysis of MERUGULLI THYLAM done in NIS biochemical lab revealed that Merugulli thylam contains **Calcium, Silicate, Iron , Phosphate, Alkaloids , Starch etc.**

### Standardization Report

S.NO	PARAMETERS	RESULTS
1	Refractive index	1.4752
2	Acid value	9.41
3	Saponification Value	181.45
4	Peroxide Value	5.36
5	Iodine value	83.11
6	Weight	0.964

## TLC & HPTLC

HPTLC finger print of Merugulli thylam could serve as a marker and which is responsible for expression of its biological and clinical actions.

- HPTLC was carried out in UV at 254 nm , UV at 366 nm to establish the finger printing profile and to show the possibly active phytochemical constituents .
- In 254 nm UV the peak corresponds to the Rf values 56.51% has maximum peak area of 4140.6 AU(area 43.84%) is a marker.
- In 366 nm UV the peak corresponds to the Rf values 83.03% has maximum peak area of 2547.0 AU(area 80%) is a marker.
- No Aflatoxins were detected in Merugulli thylam.

## SUMMARY

- The aim of the study was to evaluate the efficacy of the drug **MERUGULLI THYLAM** (Internal) in Vali azhal keelvayu.

Before initiating the clinical trial, approval was got from the Institutional Ethical Committee for conducting the clinical study by submitting the well defined protocol and proforma. **IEC NO: NIS/IEC/2016/11-07/14.10.2016**

- Then the clinical trial was registered in CTRI(Clinical Trial Registry -India). After that the enrolment of patients was started.

**CTRI NO: CTRI/2018/03/012365**

- The raw drugs were authenticated by the Assistant Professor, Medicinal Botany and the trial drug was prepared by the investigator in the Gunapadam lab of National Institute of Siddha as per the Standard Operating Procedure mentioned in the protocol.
- Bio chemical studies were done at the bio chemistry lab of National Institute of Siddha, The standardization and TLC &HPTLC were done at the Captain Srinivasa Murthy Regional Ayurveda Drug Development Institute, Arumbakkam, Chennai.(as per letter of CSMRADDI) And detection of aflatoxin were done in Regional Research Institute of Unani Medicine, Royapuram respectively.
- Among the 105 cases screened at the OPD of department of Maruthuvam NIS, 40 cases were recruited for the trial as per the inclusion and exclusion criteria.
- Clinical diagnosis of valiazhal keelvayu was made by Siddha and Modern methodology.
- Before inducement into the trial informed consent was obtained from the patients. Out of the 40 cases 39 cases were treated in OPD and 1 case in IPD.
- The trial medicine selected for Internal treatment was **MERUGULLI THYLAM** 9 ml/dose morning only in empty stomach with the adjuvant hot water referred under Siddha literature Theraiyar Thylavarga Surukkam.
- During the treatment period of 45 days the trial drug **MERUGULLI THYLAM** (internal) is given for 3 days followed by a re dieting (drug holiday) of 2 days. Likewise the medicine is given till the end of the course.

- Diet restriction was strictly followed during the period of drug administration as well as re dieting period (Diet free of salt, coconut, horse gram etc) as per noted in the form IV (Dietary advice form).
- Required lab investigations were carried out before and after the treatment and the data was recorded in the proforma.
- Clinical assessment was done daily in IP patient and OP patients it was assessed once in 5 days.
- During the study period, there was no event of any adverse reactions owing to the drug or disease.
- In these studies out of 40 cases **81.4%** of cases showed reduction in pain. There was improvement in other clinical symptoms before and after treatment revealing the effect of drug in reducing the pain and other clinical symptoms. Thus improvement of the patients in their daily life activities.
- As per the Siddha Literature and modern science reviews and research articles, the ingredients of the trial drugs were found to have the property of controlling the Vatha diseases, some drugs exhibited anti inflammatory, anti analgesic activities owing to the disease manifestations.
- Clinical Lab parameters there was reduction in RA factor, CRP and ASO titre [RA factor- 27 cases (67.5%) positive at commencement of the treatment 9 (33.3%) were screened negative after the treatment, CRP-25 cases (62.5%) positive at commencement of the treatment 6(24%) were screened negative after the treatment, ASO titre -10 cases positive at commencement of the treatment 2(20%) cases were screened negative after the treatment] and ESR - **49.7%** reduction in **ESR ½ HR** and **52.44%** reduction in **ESR 1 HR** which showed the therapeutic effect of the drug in controlling the disease to a greater extent.
- Statistical analysis showed **significant reduction in pain scale** and a **significant reduction in ESR** value after treatment indicating the control over the inflammatory process of the disease.
- Bio chemical analysis showed the presence of inevitable constituents like Iron, Calcium, Sulphur which played a role in repairing and preventing the joint damage in the disease.
- TLC & HPTLC – HPTLC finger print of Merugulli thylam could serve as a marker and which is responsible for expression of its biological and clinical actions.

- HPTLC was carried out in UV at 254 nm , UV at 366 nm to establish the finger printing profile and to show the possibly active phyto chemical constituents .
- In 254 nm UV the peak corresponds to the Rf values 56.51% has maximum peak area of 4140.6 AU(area 43.84%) is a marker.
- In 366 nm UV the peak corresponds to the Rf values 83.03% % has maximum peak area of 2547.0 AU(area 80%) is a marker
- No Aflatoxins were detected in Merugulli thylam.

## CONCLUSION

- ❖ Statistical analysis [Paired “t” test] revealed that the therapeutic efficacy of the trial drug **Merugulli thylam** by showing, reduction in pain **81.4% of cases**.  
( Universal pain assessment scale: *Ref: Clinical Manual for Nursing Practise National Institute of Health Warren Grant Magnuson Clinical Centre* )
- ❖ As per cross tabulation (vide table no.32) 30 cases (75%) came under Grade I (Fit for all activities) & 10 cases (25%) came under Grade II (Mild restriction) after the treatment. It revealed that **100% cases showed Good improvement in functional ability**.
- ❖ There is a significant reduction in the elevated lab parameters [RA factor- 27 cases (67.5%) positive at commencement of the treatment **9 (33.3%) were screened negative** after the treatment, CRP-25 cases (62.5%) positive at commencement of the treatment **6(24%) were screened negative** after the treatment, ASO titre -10 cases positive at commencement of the treatment **2(20%) cases were screened negative** after the treatment].
- ❖ The mean  $\pm$  standard deviation before treatment is **32.02 $\pm$  19.75** and after treatment is **16.1  $\pm$ 10.91** for **ESR  $\frac{1}{2}$  hr**. The analysis revealed that there is **49.7%** reduction in **ESR  $\frac{1}{2}$  hr** compared to start of the treatment.
- ❖ The mean  $\pm$  standard deviation before treatment is **57.97 $\pm$  32.54** and after treatment is **27.57  $\pm$ 19.52** for **ESR 1 hr**. The analysis reveals that there is **52.44%** reduction in **ESR 1 hr** compared to start of the treatment.
- ❖ There were no adverse reactions complained during the trial period.
- ❖ The results of the clinical trial indicates that the trail drug **MERUGULLI THYLAM** is clinically effective,safe and also economical.
- ❖ Because of the encourage clinical outcome, the study may be further carried out with the same durg in large number of cases.

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**NATIONAL INSTITUTE OF SIDDHA**  
**AYOTHIDOSS PANDITHAR HOSPITAL, CHENNAI – 600 047.**

**DEPARTMENT OF MARUTHUVAM**

**An open Clinical study on "Merugulli Thylam (Internal Medicine)" in the treatment of  
 "Vali Azhal Keel Vayu" (Rheumatoid Arthritis)**

**Principal Investigator: Dr.M.Suganthi**

**FORM II-A – HISTORY TAKING PROFORMA**

<b>STUDY NO:</b>	<b>OP / IP NO:</b>
<b>NAME:</b>	<b>AGE / GENDER:</b>
<b>ADDRESS:</b>	<b>CONTACT NO :</b>
	<b>RELIGION : H / C / M / O.</b>
<b>OCCUPATION:</b>	<b>INCOME:</b>
<b>MARITAL STATUS :</b> 1. Married	2. Unmarried
<b>DATE OF INTIAL ASSESSMENT:</b>	
<b>COMPLAINTS &amp; DURATION:</b>	

**PERSONAL HISTORY:**

<b>PERSONAL HABITS</b>	<b>YES</b>	<b>NO</b>	<b>IF YES SPECIFY DURATION</b>	<b>AMOUNT/Quantity</b>
Smoking				
Tobacco Chewing				
Alcohol				
Whether this problem runs in family?			1. Yes      2. No	
If yes, mention the relationship of affected person(s)			1. _____ 2. _____	
<b>DIETARY STYLE:</b>			1. Vegetarian    2. Non-vegetarian	
<b>MENSTRUAL AND OBSTETRIC HISTORY:</b>				

**FORM II B**

**GENERAL EXAMINATION:**

1. Body weight [Kg]	:		
2. Height [cms]	:		
3. Body Temperature [F]	:		
4. Blood Pressure (mm/Hg)	:		
5. Pulse Rate /min.	:		
6. Heart Rate / min.	:		
7. Respiratory Rate /min.	:		
		<b>Yes</b>	<b>No</b>
8. Pallor	:	<input type="checkbox"/>	<input type="checkbox"/>
9. Jaundice	:	<input type="checkbox"/>	<input type="checkbox"/>
10. Clubbing	:	<input type="checkbox"/>	<input type="checkbox"/>
11. Cyanosis	:	<input type="checkbox"/>	<input type="checkbox"/>
12. Pedal Oedema	:	<input type="checkbox"/>	<input type="checkbox"/>
13. Lymphadenopathy	:	<input type="checkbox"/>	<input type="checkbox"/>
14. Jugular venous pulsation	:	<input type="checkbox"/>	<input type="checkbox"/>

**SYSTEMIC EXAMINATION**

<b>Cardiovascular system</b>	:
<b>Respiratory system</b>	:
<b>Gastro-intestinal system</b>	:
<b>Central Nervous system</b>	:
<b>Urogenital system</b>	:
<b>Endocrine system</b>	:

**SIDDHA SYSTEM OF EXAMINATION**

**1. THEGI (BODY CONSTITUTION):**

1. Vatha udal	<input type="checkbox"/>
2. Pitha udal	<input type="checkbox"/>
3. Kaba udal	<input type="checkbox"/>
4. Thontha udal	<input type="checkbox"/>

**2. NILAM (LAND WHERE THE PATIENT LIVED MOST):**

1. Kurinji (Hilly terrain)	<input type="checkbox"/>
2. Mullai (Forest range)	<input type="checkbox"/>
3. Marutham (Plains)	<input type="checkbox"/>
4. Neithal (Coastal belt)	<input type="checkbox"/>
5. Paalai (Aridregion)	<input type="checkbox"/>

**3. KAALAM:**

1. Kaar kaalam	(Aavani-Purattasi)	<input type="checkbox"/>
2. Koothir kaalam	(Ippasi-Kaarthigai)	<input type="checkbox"/>
3. Munpani kaalam	(Maargazhi-Thai)	<input type="checkbox"/>
4. Pinpani kaalam	(Maasi-Panguni)	<input type="checkbox"/>
5. Ilavenil kaalam	(Chithirai-Vaigasi)	<input type="checkbox"/>
6. Muthuvenil kaalam	(Aani-Aadi)	<input type="checkbox"/>

#### 4. GUNAM:

1. Sathuvam
2. Rasatham
3. Thamasam


#### 5. PORIPULANGAL (SENSORY ORGANS):

	<b>Before treatment</b>	<b>After treatment</b>
<b>Mei (Skin)</b>	Normal / Affected	Normal / Affected
<b>Vai (Tongue)</b>	Normal / Affected	Normal / Affected
<b>Kann (Eye)</b>	Normal / Affected	Normal / Affected
<b>Mooku (Nose)</b>	Normal / Affected	Normal / Affected
<b>Sevi (Ear)</b>	Normal / Affected	Normal / Affected

#### 6.KANMENDRIYAM (MOTOR ORGANS) :

	<b>Before treatment</b>	<b>After treatment</b>
<b>Kai (Upper limb)</b>	Normal /Affected	Normal /Affected
<b>Kaal (Lower limb)</b>	Normal /Affected	Normal /Affected
<b>Vai (Oral cavity)</b>	Normal /Affected	Normal /Affected
<b>Eruvai (Anal region)</b>	Normal /Affected	Normal /Affected
<b>Karuvai (Uro-Genital region)</b>	Normal /Affected	Normal /Affected

#### 7.KOSANGAL (SHEATH):

	<b>Before treatment</b>	<b>After treatment</b>
<b>Annamaya kosam</b>	Normal /Affected	Normal /Affected
<b>Pranamaya kosam</b>	Normal /Affected	Normal /Affected
<b>Manomaya kosam</b>	Normal /Affected	Normal /Affected
<b>Vignanamaya kosam</b>	Normal /Affected	Normal /Affected
<b>Ananthamaya kosam</b>	Normal /Affected	Normal /Affected

#### 8. SEVEN UDAL THAATHUKKAL (SEVEN SOMATIC COMPONENTS)

	<b>Before treatment</b>	<b>After treatment</b>
<b>Saaram</b>	Normal /Affected	Normal /Affected
<b>Senneer</b>	Normal /Affected	Normal /Affected
<b>Oon</b>	Normal /Affected	Normal /Affected
<b>Kozhuppu</b>	Normal /Affected	Normal /Affected
<b>Enbu</b>	Normal /Affected	Normal /Affected
<b>Moolai</b>	Normal /Affected	Normal /Affected
<b>Sukkilam / Suronitham</b>	Normal /Affected	Normal /Affected

**9. UYIR THAATHUKKAL: [THREE HUMORS] (VALI/ AZHAL/ IYYAM)**

**A) VALI**

	0 <sup>th</sup> day	5 <sup>th</sup> day	10 <sup>th</sup> day	15 <sup>nd</sup> day	20 <sup>th</sup> day	25 <sup>th</sup> day	30 <sup>th</sup> day	35day	40 th day	45 th day
<b>Praanan</b>										
<b>Abaanan</b>										
<b>Samaanan</b>										
<b>Udhaanan</b>										
<b>Viyaanan</b>										
<b>Naagan</b>										
<b>Koorman</b>										
<b>Kirukaran</b>										
<b>Devathathan</b>										
<b>Dhananjeyan</b>										

**B) AZHAL**

	0 <sup>th</sup> day	5 <sup>th</sup> day	10 <sup>th</sup> day	15 <sup>nd</sup> day	20 <sup>th</sup> day	25 <sup>th</sup> day	30 <sup>rd</sup> day	35 th day	40 <sup>th</sup> day	45 th day
<b>Analakam</b>										
<b>Ranjakam</b>										
<b>Saathakam</b>										
<b>Prasakam</b>										
<b>Aalosakam</b>										



**C) IYYAM**

	<b>0<sup>th</sup> day</b>	<b>5<sup>th</sup> day</b>	<b>10<sup>th</sup> day</b>	<b>15<sup>nd</sup> day</b>	<b>20<sup>th</sup> day</b>	<b>25<sup>th</sup> day</b>	<b>30<sup>rd</sup> day</b>	<b>35<sup>th</sup> day</b>	<b>40 th day</b>	<b>45 th day</b>
<b>Avalambagam</b>										
<b>Kilethagam</b>										
<b>Pothagam</b>										
<b>Tharpagam</b>										
<b>Santhigam</b>										

**10. ENVAGAI THERVU: [EIGHT TYPES OF EXAMINATION]**

**I. NAADI: [PULSE PERCEPTION]**

<b>NAADI</b>	<b>0<sup>th</sup> day</b>	<b>5<sup>th</sup> day</b>	<b>10<sup>th</sup> day</b>	<b>15<sup>nd</sup> day</b>	<b>20<sup>th</sup> day</b>	<b>25<sup>th</sup> day</b>	<b>30<sup>rd</sup> day</b>	<b>35<sup>th</sup> day</b>	<b>40 th day</b>	<b>45 th day</b>

**II. SPARISAM: [PALPATION]**

<b>Day</b>	<b>SPARISAM</b>
<b>0<sup>th</sup> day</b>	
<b>5<sup>th</sup> day</b>	
<b>10<sup>th</sup> day</b>	
<b>15<sup>nd</sup> day</b>	
<b>20<sup>th</sup> day</b>	
<b>25<sup>th</sup> day</b>	
<b>30<sup>rd</sup> day</b>	
<b>35<sup>th</sup> day</b>	
<b>40th day</b>	
<b>45th day</b>	

**III. NAA: [TONGUE]**

NAA	0 <sup>th</sup> day	5 <sup>th</sup> day	10 <sup>th</sup> d ay	15 <sup>nd</sup> day	20 <sup>th</sup> day	25 <sup>th</sup> day	30 <sup>rd</sup> day	35 th day	40 <sup>th</sup> day	45 th day

**IV. NIRAM: [COMPLEXION]**

1. Vadham
2. Pitham
3. Kabam

**V. MOZHI: [VOICE]**

1. High Pitched
2. Low Pitched
3. Medium Pitched

**VI.VIZHI: [EYES]**

VIZHI	0 <sup>th</sup> day	5 <sup>th</sup> day	10 <sup>th</sup> day	15 <sup>nd</sup> day	20 <sup>th</sup> day	25 <sup>th</sup> day	30 <sup>rd</sup> day	35 th day	40 <sup>th</sup> da y	45 th day

**VII. MALAM: [BOWEL HABITS / STOOLS]**

	Before treatment	After treatment
<b>Niram</b>		
<b>Irugal</b>		
<b>Ilagal</b>		
<b>Others</b>		

**VIII. MOOTHIRAM [URINE EXAMINATION]****NEERKKURI:**

Neerkkuri	Before treatment	After treatment
<b>Niram</b>		
<b>Manam</b>		
<b>Edai</b>		
<b>Nurai</b>		
<b>Enjal</b>		

**NEIKKURI:**

Neikkuri	Before treatment	After treatment
Aravana neendathu/ Snake like pattern		
Azhipol paraviyathu Annular/Ring pattern		
Muththothu ninrathu Pearlbeadepattern		
Other patterns		

**CLINICAL ASSESSMENT**

S.NO	CLINICAL SYMPTOMS	0 <sup>th</sup> day	5 <sup>th</sup> day	10 <sup>th</sup> day	15 <sup>nd</sup> day	20 <sup>th</sup> day	25 <sup>th</sup> day	30 <sup>rd</sup> day	35 <sup>th</sup> day	40 <sup>th</sup> day	45 <sup>th</sup> day
1.	Arthritis of more than 3 joints										
2.	Arthritis of hand joints										
3.	Morning stiffness > 1 hr										
4.	Symmetrical arthritis										
5.	Restricted movements										
6.	Spindled appearance of fingers										
7.	Anorexia										
8.	Low grade fever										
9.	Subcutaneous nodules in specific places										
10.	Depression										

## CLINICAL EXAMINATION:

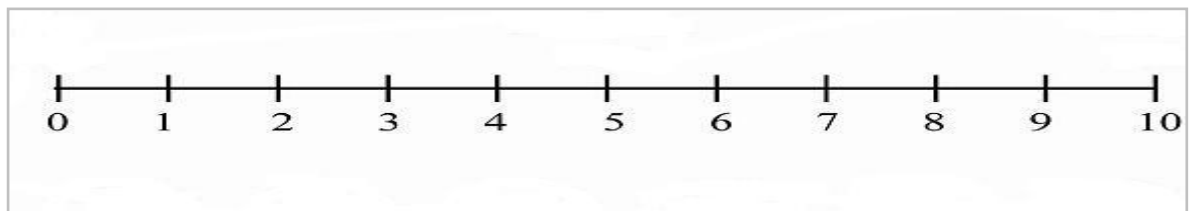
### I.INSPECTION:

S N O		0 <sup>th</sup> day	5 <sup>th</sup> day	10 <sup>th</sup> day	15 <sup>nd</sup> day	20 <sup>th</sup> day	25 <sup>th</sup> day	30 <sup>rd</sup> day	35 <sup>th</sup> day	40 <sup>th</sup> day	45 <sup>th</sup> day
1	Muscle wasting of the upper limbs: Proximal-Distal	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent
2	Joint swelling: Major joints	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent
3	Joint swelling: Minor joints	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent
4	Skin over the joints:	Normal/ Reddish	Normal/ Reddish	Normal/ Reddish	Normal/ Reddish	Normal/ Reddish	Normal/ Reddish	Normal/ Reddish	Normal/ Reddish	Normal/ Reddish	Normal/ Reddish
5	Muscle wasting of the lower limbs:	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent
6	Nodules:	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent
7	Spindled appearance of fingers	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent
8	Deformities Swan neck deformity	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent
9	Button hole deformity	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent
10	Z shaped deformity	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent
11	Ulnar deviation of hand	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent
12	Ulnar deviation of foot	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent
13	Hallus valgus	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent

## II.PALPATION

	0 <sup>th</sup> day	5 <sup>th</sup> day	10 <sup>th</sup> day	15th day	20 <sup>th</sup> day	25 <sup>th</sup> day	30 <sup>rd</sup> day	35 <sup>th</sup> day	40 th day	45 th day
PAIN Onset:	Sudden/ Gradual	Sudden/ Gradual	Sudden/ Gradual	Sudden/ Gradual	Sudden/ Gradual	Sudden/ Gradual	Sudden/ Gradual	Sudden/ Gradual	Sudden/ Gradual	Sudden/ Gradual
Early morning Stiffness	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent
Local heat	Mild/ Moderate/ Severe	Mild/ Moderate/ Severe	Mild/ Moderate/ Severe	Mild/ Moderate/ Severe	Mild/ Moderate/ Severe	Mild/ Moderate/ Severe	Mild/ Moderate/ Severe	Mild/ Moderate/ Severe	Mild/ Moderate/ Severe	Mild/ Moderate/ Severe
Stiffness	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent
Tenderness	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent
Restriction	Fully/ Partial/ No	Fully/ Partial/ No	Fully/ Partial/ No	Fully/ Partial/ No	Fully/ Partial/ No	Fully/ Partial/ No	Fully/ Partial/ No	Fully/ Partial/ No	Fully/ Partial/ No	Fully/ Partial/ No

### UNIVERSAL PAIN ASSESMENT SCALE:



**0** : No Pain

**1-3** : Mild pain

**4-6** : Moderate pain

**7-10** : Severe pain

### RESTRICTED MOVEMENT ASSESSMENT SCALE:

#### GRADATION OF MOVEMENTS

Grade 1 – Able to perform normal duties

Grade II – Moderate Restriction – Self care is possible

Grade III – Marked restriction – Limited self care/some assistance required.

Grade IV – Confined to bed or wheel chair

**AUTONOMIC NERVOUS SYSTEM**

	<b>0<sup>th</sup> day</b>	<b>5<sup>th</sup> day</b>	<b>10<sup>th</sup> day</b>	<b>15<sup>nd</sup> day</b>	<b>20<sup>th</sup> day</b>	<b>25<sup>th</sup> day</b>	<b>30<sup>rd</sup> day</b>	<b>35<sup>th</sup> day</b>	<b>40 th day</b>	<b>45 th day</b>
Bladder										
Bowel										

**Date:**

**Station:**

**Signature of the Investigator:**

**Signature of the Lecturer:**

**Signature of the HOD**

NATIONAL INSTITUTE OF SIDDHA  
AYOTHIDOSS PANDITHAR HOSPITAL, CHENNAI – 600 047.

DEPARTMENT OF MARUTHUVAM

An open Clinical study on "Merugulli thylam (*Internal Medicine*)" in the treatment of "Vali Azhal Keel Vayu" (Rheumatoid Arthritis).

Principal Investigator: Dr.M.Suganthi

1. SERIAL NO:

2. OP /IP NO:

3. NAME:

4. AGE/GENDER:

**FORM-III - LABORATORY INVESTIGATIONS**

BLOOD INVESTIGATIONS		NORMAL VALUES	BEFORE TMT (WITH DATE)	AFTER TMT (WITH DATE)
HB( gm/dl)		M:12-15 W:11.5-14		
T.WBC (cells/cu.mm)		4000-11000		
DIFFERENTIAL COUNT (%)	Polymorphs	40-75		
	Lymphocytes	20-40		
	Monocytes	2-10		
	Eosinophils	1-6		
	Basophils	0-1		
T.RBC(million cells/cu.mm)		M:4.0-5.5 W:3.5-4.5		
ESR(mm/hour)	½ hr.	M:6-12 W:7-18		
	1 hr.			
Blood Investigations		Normal Values	Before TMT(WITH DATE)	After TMT (WITH DATE)
HCT/PCV		Men:36-51% Women:35-48%		

<b>MCV</b>		<b>Men :78-98%ft Women : 78-98%ft</b>		
<b>MCH</b>		<b>Men : 26-34 pg Women : 26-34pg</b>		
<b>MCHC</b>		<b>Men : 31-37 gms/dl Women : 31-37 gms/dl</b>		
<b>Platelet count</b>		<b>Men : 1.5 – 4.5 lkhs/<math>\mu</math>l Women : 1.5-4.5 lkhs/<math>\mu</math>l</b>		
<b>Bleeding Time</b>		<b>1-3 minutes</b>		
<b>Clotting Time</b>		<b>3-8 minutes</b>		
<b>Blood glucose (mg/dl)</b>	<b>Fasting</b>	<b>70-110</b>		
	<b>PP</b>	<b>80-140</b>		
	<b>Random</b>	<b>80-120</b>		
<b>RFT (mg/dl)</b>	<b>Blood urea</b>	<b>16-50</b>		
	<b>Serum creatinine</b>	<b>0.6-1.2</b>		
<b>LFT (mg/dl)</b>	<b>Total bilirubin</b>	<b>0.2-1.2</b>		
	<b>Direct bilirubin</b>	<b>0.1-1.2</b>		
	<b>Indirect bilirubin</b>	<b>0.2-0.7</b>		
	<b>SGOT</b>	<b>0-40</b>		
	<b>SGPT</b>	<b>0-35</b>		
	<b>Alkaline phosphatase</b>	<b>80-290</b>		



<b>OTHER TESTS.</b>	<b>BLOOD INVESTIGATIONS</b>	<b>NORMAL VALUES</b>	<b>BEFORE TMT</b>	<b>AFTER TMT</b>
	Serum calcium	8.5-10.5		
	Serum phosphorus	3.0-4.5		
	Serum uric acid	Men:3.0-9.0 Women:2.5-7.5		
	Serum protein	6.0-8.0		
	Serum albumin	3.5-5.0		
	Serum globulin	2.3-3.5		

<b>Special investigations</b>	<b>Before TMT(with Date)</b>	<b>After TMT (With Date)</b>
<b>RA FACTOR</b>		
<b>ASO TITER</b>		
<b>CRP</b>		
<b>X – RAY FINDINGS</b>		

<b>Urine investigation</b>	<b>Before TMT(with Date)</b>	<b>After TMT (With Date)</b>
<b>Neer kuri</b>		
<b>Niram</b>		
<b>Edai</b>		
<b>Manam</b>		
<b>Nurai</b>		
<b>Enjal</b>		
<b>Nei kuri</b>		
<b>Albumin</b>		
<b>Fasting sugar</b>		
<b>PP sugar</b>		
<b>Deposits</b>		

**Date:**

**Station:**

**Signature of the Investigator:**

**Signature of the Lecturer:**

**Signature of the HOD**

NATIONAL INSTITUTE OF SIDDHA

AYOTHIDOSS PANDITHAR HOSPITAL, CHENNAI – 600 047.

DEPARTMENT OF MARUTHUVAM

**An open Clinical study on "Merugulli thylam (Internal Medicine)" in the treatment of "Vali Azhal Keel Vayu" (Rheumatoid Arthritis).**

**Principal Investigator: Dr.M.Suganthi**

**FORM –IV- DRUG COMPLIANCE FORM**

**SERIAL NO:**

**NAME:**

**DRUG NAME:**

On 1 <sup>st</sup> day-Date:	Drugs issued: (Gms)	Drugs returned: (Gms)
On 5 <sup>th</sup> day-Date:	Drugs issued: (Gms)	Drugs returned: (Gms)
On 10 <sup>th</sup> day-Date:	Drugs issued: (Gms)	Drugs returned: (Gms)
On 15 <sup>th</sup> day-Date:	Drugs issued: (Gms)	Drugs returned: (Gms)
On 20 <sup>th</sup> day-Date:	Drugs issued: (Gms)	Drugs returned: (Gms)
On 25 <sup>th</sup> day-Date:	Drugs issued: (Gms)	Drugs returned: (Gms)
On 30 <sup>th</sup> day-Date:	Drugs issued: (Gms)	Drugs returned: (Gms)
On 35 <sup>th</sup> day-Date:	Drugs issued: (Gms)	Drugs returned: (Gms)
On 40 <sup>th</sup> day-Date:	Drugs issued: (Gms)	Drugs returned: (Gms)
On 45 <sup>th</sup> day-Date:	Drugs issued: (Gms)	Drugs returned: (Gms)

Day	Date	Morning	Evening	Day	Date	Morning	Evening
Day 1				Day25			
Day2				Day26			
Day3				Day27			
Day4				Day28			
Day5				Day29			
Day6				Day30			
Day7				Day31			
Day8				Day32			
Day9				Day33			
Day10				Day34			
Day11				Day35			
Day12				Day36			
Day13				Day37			
Day14				Day38			
Day15				Day39			
Day16				Day40			
Day17				Day41			
Day18				Day42			
Day19				Day43			
Day20				Day44			
Day21				Day45			
Day22							
Day23							
Day24							

**Date:**

**Station:**

**Signature of the Investigator:**

**Signature of the Lecturer:**

**Signature of the HOD**

**NATIONAL INSTITUTE OF SIDDHA  
AYOTHIDOSS PANDITHAR HOSPITAL, CHENNAI – 600 047.**

**DEPARTMENT OF MARUTHUVAM**

**An Open Clinical study on ”*MERUGULLI THYLAM (Internal Medicine)*”  
in the treatment of “*Vali Azhal Keel Vayu*” (Rheumatoid Arthritis)**

**FORM V– PATIENT INFORMATION SHEET**

**Name of Principal Investigator:** Dr.M.Suganthi,

**INFORMATION SHEET FOR PATIENTS PARTICIPATING IN THE OPEN CLINICAL TRIAL.**

I, Dr.M.Suganthi, studying M.D (Siddha) I st year at National Institute of Siddha, Tambaram Sanatorium doing a clinical trial on “Vali Azhal Keel Vayu” (Rheumatoid arthritis). It is a Auto immune disease, occurring throughout the world. In this regard, I am in a need to ask you few questions. I will maintain confidentiality of your comments and data obtained. There will be no risk of disclosing your identity and no physical, psychological or professional risk is involved by taking part in this study. Taking part in this study is voluntary. No compensation will be paid to you for taking part in this study.

You can choose not to take part. You can choose not to answer a specific question. There is no specific benefit for you if you take part in the study. However, taking part in the study may be of benefit to the community, as it may help us to understand the problem of defaulters and potential solutions.

If you agree to be a participant in this study, you will be included in the study primarily by signing the consent form and then you will be given the internal medicine “**MERUGULLI THYLAM**” (Internal medicine) 9 gram(9 ml)-Morning only,(Drug administration-3 days.,drug holiday-2 days) for 45 days . If you wish to stay in the In Patient ward, the internal medicine will be provided to you assuring that you will not be definitely hurt in any course of treatment.

The information I am collecting in this study will remain between you and the principal investigator (myself). I will ask you few questions through a questionnaire. I will not write your name on this form. Ur name won’t be mentioned in the lab investigation form instead a code will be used.

The questionnaire will take approximately 20 minutes of your time.

If you want to know more about this study before taking part, you can ask me all the questions you want or contact Dr.M.Suganthi, PG Scholar cum principal investigator of this study, National Institute of Siddha, Chennai-47. You can also contact the Member-secretary of Ethics committee, National Institute Siddha, Chennai 600047, Tel.No: 91-44-22380789, for rights and participation in the study.

தகவல் படிவம்.

தேசிய சித்த மருத்துவ நிறுவனம்,

அயோத்திதாஸ் பண்டிதர் மருத்துவமனை சென்னை 47

வளி அழல் கீல்வாயு என்னும் நோய்க்கான மெருகுள்ளி தைலம் (உள் மருந்து) சித்த மருந்துகளின் பரிகரிப்புத் திறனைக் கண்டறியும் மருத்துவ ஆய்விற்கான தகவல் படிவம். முதன்மை ஆராய்ச்சியாளர் பெயர்: மருத்துவர் ம.சுகந்தி

நிறுவனத்தின் பெயர் : தேசிய சித்த மருத்துவ நிறுவனம்,

தாம்பரம் சானட்டோரியம்

சென்னை 47

தேசிய சித்த மருத்துவ நிறுவனத்தில் பட்ட மேற்படிப்பு பயின்று வரும் நான் (மருத்துவர். ம.சுகந்தி), வளி அழல் கீல்வாயு என்னும் நோயில் மருத்துவ ஆராய்ச்சியில் ஈடுபட்டுள்ளேன்.

வளி அழல் கீல்வாயு என்னும் என்னும் நோயில் சிறு, பெரு மூட்டுகளில் வலி, வீக்கத்தை உண்டாக்கி காலையில் விறைப்பு தன்மையை உண்டாக்கும்

இது பரவ கூடிய நோய் அல்ல.

இந்த ஆராய்ச்சி சம்பந்தமாக சில கேள்விகள் கேட்கவும், தேவையான ஆய்வக பரிசோதனைக்கு தங்களை உட்படுத்தவும் உள்ளேன்.

இது சம்பந்தமான தங்களது அனைத்து விவரங்களும் ரகசியமாக வைக்கப்படும் என உறுதி அளிக்கிறேன்.

இதில் பயணப்படி முதலிய எந்த உதவித் தொகையும் வழங்கப்படமாட்டாது.

இந்த ஆராய்ச்சியின் போது உடலுக்கு வேறு பாதிப்பு ஏற்படும் பட்சத்தில் தேசிய சித்த மருத்துவமனையில் தக்க சிகிச்சை அளிக்கப்படும்.

இந்த ஆராய்ச்சிக்கு தாங்கள் விருப்பத்தின் பேரில் உட்படும் பட்சத்தில் உள்மருந்தாக மெருகுள்ளி தைலம் 9கி(9மி.லி), 1 வேளை (காலை மட்டும்) உணவுக்கு முன் 45 நாட்கள் உட்கொள்ள வேண்டும். 3 நாட்களுக்கு தொடர்ந்து மருந்து உண்டு பின் 2 நாட்களுக்கு மருந்து உண்ணாமல் பத்தியம் மட்டும் காக்க வேண்டும். வெளி நோயாளர்கள் 5 நாட்களுக்கு ஒருமுறை மருத்துவமனைக்கு வரவேண்டும். உள் நோயாளியாக தங்க விருப்பம் தெரிவிக்கும் பட்சத்தில் நோய்க்கு சிகிச்சை அளிக்கப்படும்.

இந்த ஆராய்ச்சியில் நோயினராக சேர்ந்த பிறகு உங்களுக்கு விருப்பம் இல்லையெனில் எப்போது வேண்டுமானாலும் விலகி கொள்ளலாம்.

இந்த ஆராய்ச்சி சம்பந்தமாக மற்ற விவரங்களுக்கும் நோயின் தன்மை பற்றியும் முதன்மை ஆராய்ச்சியாளரான மருத்துவர் ம.சுகந்தி(பட்ட மேற்படிப்பாளர் பொதுமருத்துவ துறை) அணுகவும். கைப்பேசி எண் 8056786753

மேலும் இந்த ஆராய்ச்சிக்கு IEC சான்று பெறப்பட்டுள்ளது

இந்த மருந்து சிறப்பாக வளி அழல் கீல்வாயு நோய்க்காக அங்கீகரிக்கப்பட்ட சித்த மருத்துவ நூலில் கூறப்பட்டுள்ளது.

ஏற்கனவே உபயோகத்தில் உள்ளது போன்ற மருந்து நோயாளிகளிடம் எந்த வித பக்க விளைவுகளையும் ஏற்படுத்தவில்லை.

மேலும் உணவு முறையில் மருத்துவரால் கூறப்படும் பத்தியம் காக்குமாறு அறிவுறுத்தப்படுகிறது

NATIONAL INSTITUTE OF SIDDHA

AYOTHIDOSS PANDITHAR HOSPITAL, CHENNAI – 600 047.

DEPARTMENT OF MARUTHUVAM

**An open Clinical study on "Merugulli thylam (Internal Medicine)" in the treatment of "Vali Azhal Keel Vayu" (Rheumatoid Arthritis).**

**Principal Investigator: Dr.M.Suganthi**

**FORM-VI – CONSENT FORM**

*"I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it and any questions I have asked have been answered to my satisfaction.*

*I consent voluntarily to participate as a participant in this study and understand that I have the right to withdraw from the study at any time without in any way it affecting my further medical care".*

"I have received a copy of the information sheet/consent form".

Date:

Signature of the participant

In case of illiterate participant

*"I have witnessed the accurate reading of the consent form to the potential participant, and the individual has had the opportunity to ask questions. I confirm individual has given consent freely."*

Date:

Signature of a witness

(Selected by the participant bearing no connection with the survey team)



Left thumb Impression of the Participant

**FORM –VI ஒப்புதல் படிவம்**  
**ஆய்வாளரால் சான்றளிக்கப்பட்டது**

**தேசிய சித்த மருத்துவ நிறுவனம்,**  
**அயோத்திதாஸ் பண்டிதர் மருத்துவமனை, சென்னை.**

வளி அழல் கீல்வாயு என்னும் நோய்க்கான மெருகுள்ளி தைலம் (உள் மருந்து) சித்த மருந்துகளின் பரிகரிப்புத் திறனைக் கண்டறியும் மருத்துவ ஆய்விற்கான தகவல் படிவம்.  
தகவல் படிவம்.

**ஒப்புதல் படிவம்-ஆய்வாளரால் சான்றளிக்கப்பட்டது**

நான் இந்த ஆய்வைக் குறித்த அனைத்து விபரங்களையும் நோயாளிக்குப் புரியும் வகையில் எடுத்துரைத்தேன் என உறுதியளிக்கிறேன்.

தேதி : கையொப்பம்:

இடம்: பெயர் :

**நோயாளியின் ஒப்புதல்**

என்னிடம் இந்த மருத்துவ ஆய்வின் காரணத்தையும், மருந்தின் தன்மை மற்றும் மருத்துவ வழிமுறை பற்றியும், தொடர்ந்து எனது உடல் இயக்கத்தைக் கண்காணிக்கவும், அதனைப் பாதுகாக்கவும் பயன்படும் மருத்துவ ஆய்வுக்கூட பரிசோதனைகள் பற்றி திருப்தி அளிக்கும் வகையில் ஆய்வு மருத்துவரால் விளக்கிக் கூறப்பட்டது.

நான் இந்த மருத்துவ ஆய்வின் போது, காரணம் எதுவும் கூறாமல், எப்பொழுது வேண்டுமானாலும் இந்த ஆய்விலிருந்து என்னை விடுவித்துக் கொள்ளும் உரிமையைத் தெரிந்திருக்கின்றேன். நான் என்னுடைய சுதந்திரமாகத் தேர்வு செய்யும் உரிமையைக் கொண்டு வளி அழல் கீல்வாயு நோய்க்கான மெருகுள்ளி தைலம் (உள் மருந்து) மருந்தின் பரிகரிப்புத் திறனைக் கண்டறியும் மருத்துவ ஆய்விற்கு என்னை உட்படுத்த ஒப்புதல் அளிக்கிறேன்.

தேதி: கையொப்பம்:

இடம்: பெயர் :

தேதி: சாட்சிக்காரர் கையொப்பம்:

இடம்: பெயர்: உறவுமுறை:

விரிவுரையாளர் கையொப்பம்:

துறைத்தலைவர் கையொப்பம்:



NATIONAL INSTITUTE OF SIDDHA,

CHENNAI – 47

AYOTHIDASA PANDITHAR HOSPITAL

DEPARTMENT OF MARUTHUVAM

An Open Clinical study on "Merugulli thylam (Internal Medicine)" in the treatment of "Vali Azhal keel Vayu" (Rheumatoid Arthritis)

**FORM VII- WITHDRAWAL FORM/ADVERSE DRUG REACTION/PHARMACOVIGILANCE FORM**

**IEC NO: NIS/IEC**

NAME: \_\_\_\_\_ OPD/ IPD NUMBER:  
\_\_\_\_\_

AGE: \_\_\_\_\_ SERIAL NO:  
\_\_\_\_\_

DATE OF TRIAL COMMENCEMENT:

DATE OF WITHDRAWAL FROM TRIAL:

REASONS FOR WITHDRAWAL:

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

# NATIONAL PHARMACOVIGILANCE PROGRAMME FOR SIDDHA DRUGS

## Reporting Form for Suspected Adverse Reactions to Siddha Drugs

**Please note:** i. All consumers / patients and reporters information will remain confidential.

ii. It is requested to report all suspected reactions to the concerned, even if it does not have complete data, as soon as possible.

Peripheral Center code:

State:

**1. Patient / consumer identification (please complete or tick boxes below as appropriate)**

Name	Father name	Patient / Record No.
Ethnicity	Occupation	
Address		Date of Birth / Age:
Village / Town		Sex: Male / Female Weight : Degam:
Post / Via		
District / State		

**2. Description of the suspected Adverse Reactions (please complete boxes below)**

Date and time of initial observation		Season:
Description of reaction		Geographical area:

**3. List of all medicines / Formulations including drugs of other systems used by the patient during the reporting period:**

Medicine	Daily dose	Route of administration & Vehicle – Adjuvant	Date		Diagnosis for which medicine taken
			Starting	Stopped	
Siddha					
Any other system of medicines					

**4. Brief details of the Siddha Medicine which seems to be toxic :**

Details	Drug – 1	Drug – 2	Drug - 3
a) Name of the medicine			
b) Manufacturing unit and batch No. and date			
c) Expiry date			
d) Purchased and obtained from			
e) Composition of the formulation / Part of the drug used			

b) Dietary Restrictions if any

c) Whether the drug is consumed under Institutionally qualified medical supervision or used as self medication.

d) Any other relevant information.

**5. Treatment provided for adverse reaction:**

**6. The result of the adverse reaction / side effect / untoward effects (please complete the boxes below)**

Recovered:	Not recovered:	Unknown:	Fatal:	If Fatal Date of death:
Severe: Yes / No.		Reaction abated after drug stopped or dose reduced:		
		Reaction reappeared after re introduction:		

Was the patient admitted to hospital? If yes, give name and address of hospital	
---	--

**7. Any laboratory investigations done to evaluate other possibilities? If Yes specify:**

**8. Whether the patient is suffering with any chronic disorders?**

Hepatic          Renal          Cardiac          Diabetes          Malnutrition

Any Others

**9. H/O previous allergies / Drug reactions:**

**10. Other illness (please describe):**

**11. Identification of the reporter:**

<b>Type</b> (please tick): Nurse / Doctor / Pharmacist / Health worker / Patient / Attendant / Manufacturer / Distributor / Supplier / Any others (please specify)
<b>Name:</b>
<b>Address:</b>
<b>Telephone / E – mail if any :</b>

**Signature of the reporter:**

**Date:**

**Please send the completed form to:**

Name & address of the RRC-  
ASU / PPC-ASU

The Director

National Institute of Siddha,

(Pharmacovigilance Regional Centre For Siddha

Tambaram Sanatorium, Chennai-600 047.

☎ (O) 044-22381314 Fax : 044 – 22381314

Website : [www.nischennai.org](http://www.nischennai.org)

Email : [nischennaisiddha@yahoo.co.in](mailto:nischennaisiddha@yahoo.co.in)

\*\*\*\*\*

**This filled-in ADR report may be sent within one month of observation /occurrence of  
ADR**

**Who Can Report?**

⇒ Any Health care professionals like Siddha Doctors / Nurses / Siddha Pharmacists / Patients etc.

**What to Report?**

⇒ All reactions, Drug interactions,

**Confidentiality**

- ⇒ The patient's identity will be held in strict confidence and protected to the fullest extent.
- ⇒ Submission of report will be taken up for remedial measures only not for legal claim

Date :

Station:

Signature of the Investigator:

Signature of the Lecturer:

Signature of the HOD

**An open Clinical study on ”Merugulli thylam(*Internal Medicine*)” in the  
treatment of “Vali Azhal Keel vayu” (Rheumatoid Arthritis).**

**Principal Investigator: Dr.M.Suganthi**

**சேர்க்க கூடிய உணவுகள்:**

**காய்கள்:**

முருங்கைபிஞ்சு,  
அவரைபிஞ்சு,  
பிரண்டை,  
காரட்,  
பீட்ரூட்.

**கீரைகள்:**

கரிசாலை,  
பொன்னாங்கண்ணி,  
மணத்தக்காளி,  
முருங்கைகீரை,  
பசலைகீரை,  
சிறுகீரை,  
கறிவேப்பிலை,  
கொத்தமல்லி.  
புதினா.

**பழங்கள்:**

மாதுளை,  
ஆப்பிள்,  
வாழை,  
பேரீச்சை,  
அத்தி,  
திராட்சை,  
கொய்யா  
நாவல்,  
சப்போட்டா,  
உலர் திராட்சை.

**தானியங்கள்**

முளை கட்டிய பயிர் வகைகள்,  
சோயாபீன்ஸ்,  
உளுந்து,  
வெந்தயம்.

**அசைவம்:**

வெள்ளாட்டுகறி ஈரல்,  
எலும்புமஜ்ஜை,

**மற்றவை:**

பனை வெல்லம்  
பால்

**தவிர்க்க வேண்டியவைகள்:**

உப்பு  
கோழிக்கறி, மீன், நண்டு, கருவாடு,  
வேர்க்கடலை,  
எள்,  
தேங்காய்,  
பலா,  
புளிப்பு பொருள்கள்,  
புளிப்பு தயிர் மோர்,  
ஊறுகாய்,  
பெண்போகம், புகையிலை ,  
வெற்றிலை,பாக்கு.



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

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

This Certificate is awarded to *Dr/Mr/Mrs.....Suganthi..M.....*

For participating as ~~Resource Person~~ / Delegate in the Twenty First Workshop on

## **“RESEARCH METHODOLOGY & BIOSTATISTICS”**

For **AYUSH** Post Graduates & Researchers

Organized by the Department of Siddha

The Tamil Nadu Dr. M.G.R. Medical University From 25<sup>th</sup> to 29<sup>th</sup> April 2016.

  
**Dr. N. KABILAN**, MD(S),  
PROF & HEAD  
DEPT. OF SIDDHA

  
Prof. **Dr. P. PARUMUGAM**, M.D.,  
REGISTRAR i/c

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





NATIONAL INSTITUTE OF SIDDHA, CHENNAI – 600047

**BOTANICAL CERTIFICATE**

Certified that the following plant drugs used in the Siddha formulation “Merugulli thylam” (Internal) taken up for Post Graduation Dissertation studies by **Dr.M.Suganthi** M.D.(S), II year, Department of Maruthuvam, 2017, are identified through Visual inspection, Experience, Education & Training, Organoleptic characters, Morphology and Taxonomical methods as

*Alocasia indica* (Roxb.) Schott (Araceae), Root tuber

*Allium sativum* Linn. (Liliaceae), Bulb

*Ricinus communis* Linn. (Euphorbiaceae), Seed oil



Certificate No: NISMB3082017

Date: 25-07-17

Authorized Signatory

**Dr. D. ARAVIND, M.D.(s), M.Sc.,**  
Assistant Professor  
Department of Medicinal Botany  
National Institute of Siddha  
Chennai - 600 047, INDIA



NATIONAL INSTITUTE OF SIDDHA- राष्ट्रीय सिद्ध संस्थान

Ministry of AYUSH- आयुष मंत्रालय

GOVERNMENT OF INDIA-भारत सरकार

TAMBARAM SANATORIUM, CHENNAI -600 047 -ताम्बरम सनटोरियमचेन्नई -600 047

फोन\Tele : 044-22411611

फैक्स\Fax : 22381314

ईमेल: [nischennaisiddha@yahoo.co.in](mailto:nischennaisiddha@yahoo.co.in)

वेब : [www.nischennai.org](http://www.nischennai.org)

F.No.NIS/6-20/IEC/15-16

Dt: 14.10.2016

**CERTIFICATE**

<b>Address of Ethics Committee: National Institute of Siddha, Tambaram Sanatorium, Chennai-600047, Tamil Nadu, India</b>	
<b>Principal Investigator: Dr. M.Suganthi – I year, Dept.of Maruthuvam</b>	
<b>Protocol Title:- An open clinical trial on “Merugulli Thylam” (Internal Medicine) in the treatment of “Vali Azhal Keelvayu” (Rheumatoid Arthritis)</b>	
<b>Documents filed</b>	1) Protocol, 2) Data Collection forms
<b>Clinical trial Protocol (others – Specify)</b>	<b>Yes-(M.D-Dissertation)</b>
<b>Informed consent documents</b>	<b>Yes</b>
<b>Any other documents</b>	-
<b>Date of IEC approval &amp; its number</b>	<b>NIS/IEC/2016/11-07/ 14.10.2016</b>

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

The Institutional Ethics Committee expects to be informed about the progress of the study, any SAE occurring in the course of the study.

(Dr.V.Subramanian)  
Chairman



(Prof.Dr.V.Banumathi)  
Member Secretary



Clinical Trial Details (PDF Generation Date :- Thu, 05 Jul 2018 16:01:18 GMT)

<b>CTRI Number</b>	CTRI/2018/03/012365 [Registered on: 06/03/2018] - <b>Trial Registered Retrospectively</b>	
<b>Last Modified On</b>	19/04/2018	
<b>Post Graduate Thesis</b>	Yes	
<b>Type of Trial</b>	Observational	
<b>Type of Study</b>	M D Dissertation	
<b>Study Design</b>	Single Arm Trial	
<b>Public Title of Study</b>	An open clinical trail on "MERUGULLI THYLAM"(Internal medicine) in the treatment of Mudakkuvatham.	
<b>Scientific Title of Study</b>	An open clinical trail on "MERUGULLI THYLAM"(Internal medicine) in the treatment of "VALI AZHAL KEELVAYU" (Rheumatoid Arthritis).	
<b>Secondary IDs if Any</b>	<b>Secondary ID</b>	<b>Identifier</b>
	nil	NIL
<b>Details of Principal Investigator or overall Trial Coordinator (multi-center study)</b>	<b>Details of Principal Investigator</b>	
	<b>Name</b>	DR M Suganthi
	<b>Designation</b>	PG scholar
	<b>Affiliation</b>	National Institute of siddha
	<b>Address</b>	Department of Maruthuvam,National Institute of Siddha, Ayodidoss pandithar hospital Tambaram Sanatorium,Chennai Kancheepuram TAMIL NADU 600047 India
	<b>Phone</b>	8056786753
	<b>Fax</b>	
	<b>Email</b>	drsuganthi6@yahoo.com
<b>Details Contact Person (Scientific Query)</b>	<b>Details Contact Person (Scientific Query)</b>	
	<b>Name</b>	DR K Manikavasagam
	<b>Designation</b>	Professor
	<b>Affiliation</b>	National Institute of Siddha Tambaram Sanatorium Chennai 47
	<b>Address</b>	Department of Maruthuvam,National Institute of Siddha, Ayodidoss pandithar hospital Tambaram Sanatorium,Chennai Kancheepuram TAMIL NADU 600047 India
	<b>Phone</b>	9444249798
	<b>Fax</b>	
	<b>Email</b>	dr.kmvm@gmail.com
<b>Details Contact Person (Public Query)</b>	<b>Details Contact Person (Public Query)</b>	
	<b>Name</b>	DR H Vedha merlin kumari
	<b>Designation</b>	Lecturer
	<b>Affiliation</b>	National Institute of siddha
	<b>Address</b>	Department of Maruthuvam,National Institute of Siddha, Ayodidoss pandithar hospital Tambaram Sanatorium,Chennai Kancheepuram TAMIL NADU 600047 India



	<b>Phone</b>	9894782366		
	<b>Fax</b>			
	<b>Email</b>	dr.vetha@gmail.com		
<b>Source of Monetary or Material Support</b>	<b>Source of Monetary or Material Support</b>			
	> National Institute of Siddha, Ayodidoss pandithar hospital Tambaram Sanatorium, Chennai			
<b>Primary Sponsor</b>	<b>Primary Sponsor Details</b>			
	<b>Name</b>	National Institute of Siddha		
	<b>Address</b>	National Institute of Siddha Tambaram Sanatorium Chennai 47		
	<b>Type of Sponsor</b>	Research institution and hospital		
<b>Details of Secondary Sponsor</b>	<b>Name</b>	<b>Address</b>		
	NIL	NIL		
<b>Countries of Recruitment</b>	<b>List of Countries</b>			
	India			
<b>Sites of Study</b>	<b>Name of Principal Investigator</b>	<b>Name of Site</b>	<b>Site Address</b>	<b>Phone/Fax/Email</b>
	DR M Suganthi	Ayothidoss pandithar hospital	Room no 1 Department of Maruthuvam National institute of siddha Tambaram Sanatorium Chennai 47 Kancheepuram TAMIL NADU	8056786753 drsuganthi6@yahoo.com
<b>Details of Ethics Committee</b>	<b>Name of Committee</b>	<b>Approval Status</b>	<b>Date of Approval</b>	<b>Is Independent Ethics Committee?</b>
	The Institutional Ethics Committee	Approved	14/10/2016	No
<b>Regulatory Clearance Status from DCGI</b>	<b>Status</b>		<b>Date</b>	
	Not Applicable		No Date Specified	
<b>Health Condition / Problems Studied</b>	<b>Health Type</b>		<b>Condition</b>	
	Patients		Arthritis involving three or more joints, Symmetrical joint involvement Morning stiffness swelling of small joints of hand and foot	
<b>Intervention / Comparator Agent</b>	<b>Type</b>	<b>Name</b>	<b>Details</b>	
	Intervention	Merugulli thylam	kaal balam-9grams(9ml)-3 days morning only (2 days drug holiday) for 45 days	
<b>Inclusion Criteria</b>	<b>Inclusion Criteria</b>			
	<b>Age From</b>	20.00 Year(s)		
	<b>Age To</b>	60.00 Year(s)		
	<b>Gender</b>	Both		
	<b>Details</b>	Age:20-60 years Sex:Both male and female Symmetrical joint involvement Arthritis of three or more joints Rheumatoid factor positive or negative Morning stiffness Deformities like Swan neck deformity and Button hole deformity Swelling especially in the inter-phalangeal joint Patients willing for admission in IPD or willing to attend OPD Patient willing to undergo Radiological investigation and for laboratory investigation		



	Patients willing to sign the informed consent stating that he/she will consciously stick to the treatment during 45 days but can opt out of the trial of his/her own conscious discretion.	
<b>Exclusion Criteria</b>	<b>Exclusion Criteria</b>	
<b>Details</b>	Pregnancy and lactation Tubercular arthritis Any other serious systemic illness like cancer, cardiac disease Osteoarthritis Psoriatic arthritis Gouty arthritis Diabetic mellitus Hypertension Thyroidism(Hypo/hyper)	
<b>Method of Generating Random Sequence</b>	Not Applicable	
<b>Method of Concealment</b>	Not Applicable	
<b>Blinding/Masking</b>	Not Applicable	
<b>Primary Outcome</b>	<b>Outcome</b>	<b>Timepoints</b>
	Assessment of pain is by Universal pain assessment scale.Other clinical signs and symptoms will be assessed by Gradation methods	before and After treatment (45 days) Assessment of pain is by Universal pain assessment scale.Other clinical signs and symptoms will be assessed by Gradation methods
<b>Secondary Outcome</b>	<b>Outcome</b>	<b>Timepoints</b>
	Laboratory investigations such as RA factor,CRP,ASO titre will also be done at the end of the study	Before and after treatment(45 days)
<b>Target Sample Size</b>	<b>Total Sample Size=40</b> <b>Sample Size from India=40</b>	
<b>Phase of Trial</b>	N/A	
<b>Date of First Enrollment (India)</b>	01/11/2017	
<b>Date of First Enrollment (Global)</b>	No Date Specified	
<b>Estimated Duration of Trial</b>	<b>Years=1</b> <b>Months=0</b> <b>Days=0</b>	
<b>Recruitment Status of Trial (Global)</b>	Not Applicable	
<b>Recruitment Status of Trial (India)</b>	Open to Recruitment	
<b>Publication Details</b>	nil	
<b>Brief Summary</b>	Its is a single non randomized open label trial to determine the efficacy and safety of "MERUGULLI THYLAM"(Herbal formulation) in the patients with VALI AZHAL KEELVAYU(Rheumatoid arthritis) in this trial 40 patients will be recruited and the trial drug will be administered kaal balam-9gram(9 ml)-3 days morning only(2 days drug holiday) for a period of 45 days, During the trail period if any AE/SAF/SUSAR will be noticed and referred to pharmacovigilance department in NIS and further management will also be given in NIS OPD/IPD. The entire trail will be monitored by the research monitoring committee of NIS. During this trail all the safety efficacy parameters will be recorded in the CRF after completion of the trail all the safety related data will be analysed statistically, the outcome of this trail will be published in Indian Journal of Medical Research.	

# *INTRODUCTION*

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# *SUMMARY*



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# *BIO-CHEMICAL ANALYSIS*

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*LABORATORY  
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*SIDDHA ASPECT*

*MODERN ASPECT*

*PREPARATION AND  
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