A STUDY ON
AZHAL KEEL VAAYU
(Osteoarthritis)

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INTRODUCTION

Prevention and cure are the basic aims of all system of medicine where as the siddha system has in addition the transcendental motivation called the immortality of the body. The basic emphasis of siddha system is on positive health i.e to prevent diseases, by careful dieting and proper relaxation of the mind to achieve a totality of health that assure only longivity but also immortality. The drug of the siddha system of medicine may be broadly classified into herbals, metal and mineral catogories.

In siddha medicine the physiological function in the human system is mediated by three substances (i) vatham (ii) pitham (iii) kapham. Which are made up of the five elements (i) Mann (ii) Neer (iii) Thee (iv) Vayu and (v) Agayam.

In the human body the nervous actions which constitute movements, activity sensation etc. are due to vatham, the metabolic activity etc. are functions of pitham and stability is controlled by kapham.

If these three thathu function normally, normal health is maintained. The normal order of vatham, pitham and kapham are in the proportion of $1: \frac{1}{2}: \frac{1}{4}$ respectively. Any change in these proportions will lead to disease.
The post graduate sirappu maruthuvam is a specialized branch in our system. It consists of varmam, Thokkanam, ottradam, yoga and kaya kalpam mainly the vadha disease are treated by thokanam and ottradam.

In India, approximately 68% of the population is affected by “Azhal keel vayu” and is more common in post menopausal women.

It mostly affects the elderly people above 40 years of age. It produces more pain and discomfort in elder people.
AIM AND OBJECTIVES

AIM:

To evaluate the therapeutic efficacy of siddha formulation “SAGALA VADHA CHOORANAM” (INTERNAL), “ILAGU VADHA KESARI THYLAM” (EXTERNAL) in “AZHAL KEEL VAYU” (Osteo arthritis of knee joint) for the reduction of pain and swelling and to improve the range of movements.

OBJECTIVES:

1. To study the clinical cause of the disease Azhal keel vayu with keen observation on the definition, Aetiology, pathology, Diagnosis, prognosis, complications and the treatment by making use of siddha aspects.

2. To have an idea about the prevalence of Azhal keel vayu with reference of Age, sex, family history, occupation, socio economic status, diet, habit and climatic conditions.

3. To know the correlation of aetiology, classification, symptoms, diagnosis and line of treatment compared with osteo arthritis of knee.

4. To perform the alteration of the disease under the topics of Mukkutram, Uyir thathukal, Porigal, Udal thathukal, Envagai thervugal, Naadi, Neerkuri, Neikuri.
5. To make a clinical trial of patients with the trial medicine SAGALA VADHA CHOORANAM (Internal), ILAGU VADHA KESARI THYLAM (External) in the treatment of Azhal keel vayu.

6. To use of modern parameters in the investigation of X-ray to confirm the diagnosis and to follow the progression of patients.

7. To elicit the Biochemical analysis and Pharmacological action of the trial medicine.

8. To insist Thokkanam, Ottradam, Asanam exercise along with medicine to achieve the good results, which are the salient features of Sirappu Maruthuvam.
REVIEW OF LITERATURE

SIDDHA ASPECT

In siddha system the disease are due to the variation of thrithathu namely vatham, pitham, kapham. Thiruvaluvar says,

“சேர்ந்து செருக்கும் நீரும் மருப்பத்து நீரும்
எனவே நோக்காமை மேலும்”

Vatham, pitham, kapham are called thrithathu in normal condition regulate all physiological activities of the human body.

When these thrithathu are disturbed and they produce disease.

கோண காப்பு

In yugi vaidhya sinhamani vadha diseases are classified into 80 types.

According to Agasthiyar guna vagadam “keel vayu” comes under the 80 types of vatha disease.

“கெல் வையு குக்கல் சிதம்பர் வையு
சிதம்பர் குக்கல் சிதம்பர் வையு கெல்
கெல் வையு குக்கல் சிதம்பர் வையு
சிதம்பர் குக்கல் சிதம்பர் வையு”

அசுரவியை கீழ்பகுதியாக அக்கய வைத்தால்

“Keel vayu” is further divided into 10 types in the text siddha maruthuvam according to Saba pathy manuscript.

Azhal keel vayu fall in this 10 sub divisions of keel vayu.
“Keel vayu” is the general term that includes all kind of joint diseases. In T.V. Sambasivam Pillai Dictionary “Keel vayu” means கெல் வாயு என்பது கொள்ளைகளை எந்த குலமானதும் செய்யவும் வேண்டும். Painful inflammation with swelling affecting the muscles and joints of the human body.

In Yugi Vaidhya Sinthamani it is mentioned as santhu vadham. In Therayar vagadam it is mentioned as muzhangal vatham, according to affect of joints. In Yakobu Vaidhya Sinthamani it is mentioned as mudakku vatha soolai. In Thanvanthiri Vaidhya Kaviyam it is said as mudakku vatham.

In Therayar Vagadam vatham classified into 81 types. Keel vayu comes under the classification of 81 types of vatham.
பாடல்:

ஆரம்பாக தவமனமடையும் விளக்கமைத்துள்ள ராணியான உள்ள பதிவு முன்னரே எவ்விதமாய் அழைக்கப்பட்டு என் உணவுப்புறத்து என் எருத்துண்டு.

“எழுத்துண்டு கருத்தில் வாண்டில் பாடு

தீர்மானிக்கவும் விளக்கத்திற்குள் செனுத்து

யமைத்து இயற்கை நிறுவன

தீர்மானிக்கவும் புரியும் வாண்டில் பாடு

செய்யும் தவமனத்தில் வாண்டில் எறு

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பாடல் பாதிக்கிறது சாத்து குறிப்

பாதித்து பாதிக்கிறது சாத்து குறிப்

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காசக்கான் எழுதியது குறிப் தகிறோ

- காசக்கான் எழுதியது தகிறோ.

பாடல்:

ஆரம்பாக அந்தான், என்றால், இந்தான், குதிரியான் என்ற உன்னு, காரணிப்படுத்தும் இயல், நூற்றாண்டு, தீஸ், எறும், இலைக் கோரித் காலம், காலனித், மனிதிகள், அவை உண்மை என்றுக்கும் ஐந்துக்கும்.

“தவமனத் வாண்டில் கீழ் கொல்லை செய்ய

தீர்மானி என்று கொல்ளை காண்டு” -பாதிப் பாடல்

பாடல்:

என்றும், தீர்மானி என்று செய்யும் கூறுகள் உண்டு.
“அறிவியல் வருவ மலர் மக்களிடம்”

வாதம் மலர்கேறும் அரசியல் நடனத்தை குறிப்பிட்டம்.

அந்த பாகத்தில்:

“வணக்கம் சாத்தி நிறைவுக்கு யாரும்

அவர் விளக்கத் தொடர் தொடர்”

- மந்திரசு சந்திரம்

பாகம்

வாதம் தவறாக வருகையும் பதிவுக்கும் முனையாகும்

சீனா காைகள் கையாள்பட்ட மும்பை முழுங்கை

தம நூற்பாண பாரம்பரியை விளக்கமான பொறுப்பு வெளியும்

சரி வேதாங்க நூற்பாணை விளக்கமான பொறுப்பு கருப்பு

- சுரங்கம் மாதம்

பாகம்

வாதியுடன் பார்வா செய்ய வேண்டும், அனைத்துக் கவனம் வேண்டும்

அவதாரங்கள் வழும் வரும், ஒருமை தொளையும் வேண்டும். ஒருகுருப்பு வருவாக்காது

வாத விளக்கம் என்ன அல்ல விளக்க கருப்பு. தொட்டகு கல்வி, அவனிலை

காட்டுகள் கல்லில் பயன் பட்டியல் செய்து முடிவு.
ஆதார அதிகாரிகளின் ஆராய்ச்சி:

“நீங்கள் அதிகாரிகளுடன் தொடர்ந்து விளக்கம் கீழ்க்கண்டு விளக்கம்
அதிகாரின் அவசைக்கு சாக்காலம் வாத்துக்கு விளக்கம்
நீங்கள் குறிப்பிட்டுள்ள பொருளிலிருந்து கற்று வந்து
அதிகாரிகள் பல்லவம் விளக்கம்”

திருநூற்றாண்டு காலத்தில்

பகுதி:

அதிகாரம் அதிகாரர் களதி, வெறும் பாதியும் காரணம் இருந்து
காரணம் குறிப்பிட்டு குறிப்பிட்டு காரணம் இருந்து
அதிகாரம் வாக்கால ஹவளைகளின் காரணம்
அதிகாரம் தொடர்ந்து பல்லவம் அலந்து

- கீழ்க்கண்ட

அதிகாரம் அதிகாரிகள் களதி, வெறும் காரணம் வெறும் காரணம் சாக்காலம்
வா காரணம் பல்லவம் பல்லவம் விளக்கம் விளக்கம் விளக்கம்.
“அருவன் வணங்கு போரின்
கால்வகன் மூன்று வருடம்
போரின் துணை போரின்
பல்வேறு மாற்றங்கள் நடைபெற்றன
அருவன் கால்வகன் கால்வகன்
என்று முடிய்பட்டு வந்து
அருவன் துணை போரின்
முனையல்லவு தொடங்குத் தோன்றā"

கால்வகன் கால்வக

அருவன் கால்வகன்

நான் கொண்டவைகள் மூன்று வருடம். கால்வகன் போரின் மூன்று வருடம். என்று முடிய்பட்டு வந்து

கீழ்கடிந்த கால்வக

2-வது வருடம் போரின், அவங்கள் முழுக்கமுதலைக் கொண்டவை, குறுகில்
குடும்ப குடும்பத்தை ஆயிரம் பொி தொடங்கினது மறுகின்றது

சிறுவன் வணங்கு போரி.
Environmental factor

Environmental factors influence the survival of organisms. These factors can be divided into two categories: biotic and abiotic. Biotic factors include the interactions between organisms, such as predation, competition, and symbiosis. Abiotic factors include physical and chemical factors of the environment, such as temperature, sunlight, water, and soil. Understanding these factors is crucial for predicting the distribution and abundance of species.

- Biotic factors
- Abiotic factors

The interaction between these factors determines the health and survival of organisms. For example, an increase in temperature can lead to a decrease in the survival rate of a species if it is not adapted to the new temperature. Similarly, an increase in pollution can lead to a decrease in the health of organisms if they are not adapted to the new environmental conditions.

In conclusion, understanding the environmental factors is crucial for predicting the impact of changes in the environment on the survival of organisms.

- Environmental factors influence the survival of organisms.
- Biotic factors include interactions between organisms.
- Abiotic factors include physical and chemical factors of the environment.

The interaction between these factors determines the health and survival of organisms.

- Biotic factors
- Abiotic factors

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Physical factor

தனிப்பட்ட கருப்பில் வழங்கப்பட்டது

அறிக்கைகள் மிகவும் சார்ந்த சாலை
அளிக்கும் மகிழ்ச்சியுடன் பெரும் கருப்பு
அவச்சனத்திலுள்ள அற்புதத் தண்டனை
பலகைகள் பரவலாக கூட்டப்பட்ட தளப்பு

பலகை வைத்து விளையாடும் பலகையுடன்

சுருக்கமாக வைத்து விளையாடும்

- பலகை வைத்து விளையாடும்

நெறுப்பு, நெறுப்பு, நெறுப்பு அறிவு வழங்கல் அறிக்கைகளுக்குப், அடுத்து
அனைத்து குறுக்குத்தும், பதப்புக்கும், இணை விளையாடும்,பலப்பு, பலகைகள் விளை
அறிக்கைகளின் ஆய்வு காரணங்கள் மாற்றும் அறிக்கை.
திமுகப்பு

வங்கியப்பக்கம்:

சுருக்கமாக, தொலைக்காட்சி, மிளகாய் மாறு, அவசயத்து மையா

- கதைகளின் முதலிடம் கையாள்வது ஒன்றுக்கொண்டு சுருக்கம்

- பொதுவாக சுருக்கம் நடைமையாகும் ஒன்றுக்கொண்டு சுருக்கம்

- குறிப்பிட்டு சுருக்கம் நடைமையாகும் ஒன்றுக்கொண்டு சுருக்கம்

- தொடர்பானது சுருக்கம் நடைமையாகும் ஒன்றுக்கொண்டு சுருக்கம்

மற்றும் வேளாண் வேறு

“ஏனைய ஆண்டு தவிர்த்து சூட்டு ஆண்டு குறிப்பிட்டு காரணம்
சூட்டு சூட்டு நூற்றுக்கண்டு நூற்று
சூட்டு சூட்டு நூற்றுக்கண்டு காரணம்
சூட்டு சூட்டு நூற்றுக்கண்டு காரணம்
சூட்டு சூட்டு நூற்றுக்கண்டு காரணம்”  சான்றை காட்சி
• டானின் குறுக்குக்கு தருவியின் முன்னர் காலமாக, முன்னர் குறுக்குக்கு, முன்னர் குறுக்கு காலமாக, முன்னர் குறுக்கு காலமாக.
• இவற்றின் கூறு பட்டரிங்களும் காலமாகே.
• இவற்றின் குறுக்கு குறுக்கு காலமாகே.
• முன்னர் குறுக்கு காலமாகே.
• முன்னர் குறுக்கு காலமாகே.
• முன்னர் குறுக்கு காலமாகே.
• முன்னர் குறுக்கு காலமாகே.
• முன்னர் குறுக்கு காலமாகே.
• முன்னர் குறுக்கு காலமாகே.
• முன்னர் குறுக்கு காலமாகே.
• முன்னர் குறுக்கு காலமாகே.
• முன்னர் குறுக்கு காலமாகே.

![Diagram](image_url)
வாட்டுகள்:

1. தெளிவுகற்பொருள்
2. அம்மன் விளையாட்டு
3. தும்புகற்பொருள்
4. தெளிவுகற்பொருள்
5. தெளிவுகற்பொருள்
6. தெளிவுகற்பொருள்
7. தெளிவுகற்பொருள்
8. தெளிவுகற்பொருள்
9. தெளிவுகற்பொருள்
10. தெளிவுகற்பொருள்

அனுக்கோரிக்கை:

“பிற்காலம் வாழ்ந்த தனிவர்களுக்கான பின்வருவது ஒளி விளக்கிய கினாணறிய பொருட்களை காண்டது நடப்பது விளக்கம் செய்யும் காலத்தில் காணும் காலத்தில் காணும் காலத்தில் காணும்

காலமானது காணும்

பொருட்கள் விளக்காமை காண்பதற்கு விளக்கம் செய்ந்து விளக்கம் விளக்கம்”

- காம்பிடி காம்பிடி
SIGNS AND SYMPTOMS

It is characterized by swelling of joints associated with severe pain.

Since it is not quickly responding to medicine. The prolonged and proper medical care is said to be essential.

DIAGNOSIS IN SIDDHA

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<tr>
<th>பாதை</th>
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<th>முறையே முடிக்கும் வகைகள்</th>
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<th>Vada</th>
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<td><strong>Kabam</strong></td>
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<tr>
<td>5</td>
<td>Keel</td>
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In “Azhal keel vayu”, the vadha kuttram is mainly affected followed by pitham and kabam.

When the vadha dosham is in vitiated condition, activity and dietary habits provoke the pitha dosam and derange the kapham.

The normal structural quality of the pitham is

- Heat (நீர்)
- Sharpness (நீர்)
- Lubrication (நீர்)
- Relaxation (நீர்)
- Motion (நீர்)

In Azal keel vayu the deranged pitham may produce stiffness, restriction of movements in the affected joints.
The normal structural quality of Kapham is

- ねあ (Lubrication)
- ねあ
- ねあ

In Azal keel vayu the deranged kapham may produce decreased secretion of synovial fluid may lead to loss of lubrication resulting in crepitation of joints.

### பதிமுதல் சான்று:

அந்திரிட் மாகா வியாச

அம்ஸ்கரம் நாடி வித்து

அந்திரிட் மாகா வியாச

அம்ஸ்கரம் வியாசம் தைந்து

ஆக்காஸ்து பருந்து வியாச

துறையும் குறிப்பிட்டு வெளியான

இயலாத்திரையானது வெளியான

### மூலை குறிப்பிட்டு

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<tr>
<th>கோட்டை</th>
<th>விளக்கம்</th>
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<td>1</td>
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<td>2.</td>
<td>நிறுந்து</td>
<td>அருங்கள், அச்சங்கள், உள்ளிட்டு வியாசமும் நிலைக்கு வியாசம்</td>
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<td>3.</td>
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4. காலம் | தெலுரிக்கும் நூற்றாண்டு ஆண்டுகள் ஏற்படுத்திய ஆண்டுகள் | பாதுகாப்பு (செய்திகள் நூற்றாண்டு மலை குறுகின்றன)
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7. காலம் | தெலுரிக்கும் நூற்றாண்டு ஆண்டுகள் ஏற்படுத்திய ஆண்டுகள் | பாதுகாப்பு

சமு வளாக விளக்க

“தான் என்றும் என்றும் என்றும் என்றும்
என்று கூறிய நேசிருளம் வெள்ளியாற்றலம்”
- காம்பா மாலை காம்பா மாலை மாலை (முகல் பாலம்)

1. தமர்:

“வைகுரிய விளக்கம் வைகுரிய விளக்கம் தீக்கான விளக்கம்”
அகலாமாம் தமீ

“அழிக்கவாங்கிய தாய்களால்
தங்காலை காம்பாக்காலை”
அகலாமாம் முகலாம் காம்பாம்

“காண்பாம் என்ன என்ன என்ன என்ன என்ன”
காண்பாம்
என்ன, என்ன, என்ன, என்ன, என்ன
2. சபையில்: பாதுகாப்புக் கொரமலை சயிர் பாதுகாப்பு நிலை செய்யப்பட்டு, பாதுகாப்புக் கொரமலை

3. தினம்: பெருவாட்டால், எதிர்நோக்கில் நின்று குறுக்கு தின்ம

4. நிறுவனம்: பெருவாட்டால், நிறுவனம்

5. நாள்கள்: சாத்திகள்

6. கிளை: பெருவாட்டால், எதிர்நோக்கில் நின்று குறுக்கு தின்ம மருத்துவக் குழு

7. மாதம்: பாதுகாப்பு (மாதநிலை கொரமலை)

8. இணையத் தினம்: பெருவாட்டால் எதிர்நோக்கில் நின்று குறுக்கு தின்ம

முறை

“அதன் மட்டும் அதிசயிக்கலாமாய்
ஏனென அவன் அரசாணா குழுகுச்
தம்பிள்ளை என்னு சொல்லும்
ஆக்காரண் சாத்திகள் குன்று பேன்
நூற்றன்முறை காண்கிறார் போனது
சிங்காலத் தின்ம மருத்துவக் குழு
முறை பாதுகாப்பு முறைகள் கேள்”

Prior to the day of urine examination the patient is instructed to take a balanced diet and quantities of food must be proportionate to his routine intake.

The patient could have no disturbed sleep. After waking up in the morning the first urine voided is collected in a clear wide mouthed glass container and is subjected to analysis of “Neerkuri and Neikkuri” within one and a half an hour.

The collected specimen was examined by the following method. The collected urine specimen is kept in a glass container and observed under direct
sunlight without shaking the vessel. Then drip one drop of gingelly oil and observe the spreading pattern and concludes as follows.

"அபுராய தன்னைச் செய்து"  
"இன்றி வெளியில் அணிப்பது"  
"முறுக்குவது விளையாட்டில் வெளியிலியாக கூடு"  
"அருங்குறளாக அம்பிலை அவகா"  
அருங்குறளாக அம்பிலை அவகா

நிலாகியின்:

"வெளி நிலாகியின் மேற்கு தொடர்வலை அறிக்கையிலியால் பல்குத்து மனைவியா"  

சிவப்பு (Colour)  
செல் (Specific Gravity)  
சுற்று (Smell)  
சுவாச (Frothy nature)  
சுண்ணம் (Quantity of urine voided)  

அது விளகியது,  

"அருங்குறளாக முறுக்குவது சூரியனிலியற்று பல்காத்து விளையாட்டில் வெளியிலியா மற்றும் வழியிலியா"  

பதில் காலநிகை: (Seasonal variations)  

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<th>காலம்</th>
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<tr>
<td>ஆண்டு குமாரை முறுக்கு மார்மந்திகள்</td>
<td>புறநிறுங்குகாண்டும்</td>
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<td>ஆண்டு மேற்குமுறை வரும்பாகவே</td>
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It is characterized by excruciating pain and swelling knee joints, hip joints, ankle joints, shoulder joints, elbow joints and associated with dryness of mouth, pyrexia, Headache, palpitation, constipation and sweating.

2. Other conditions

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OTHER CONDITIONS

Other conditions include:

1. Conditions that resemble rheumatic fever

It is characterized by excruciating pain and swelling knee joints, hip joints, ankle joints, shoulder joints, elbow joints and associated with dryness of mouth, pyrexia, Headache, palpitation, constipation and sweating.

2. Conditions that resemble gout

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2. Conditions that resemble gout

It is characterized by excruciating pain and swelling knee joints, hip joints, ankle joints, shoulder joints, elbow joints and associated with dryness of mouth, pyrexia, Headache, palpitation, constipation and sweating.
It is characterized by loss of weight. Anorexia, severe pain in the knee joint, insomnia, cough, hiccough, vomiting, anaemia and dropsy. The common site are vertebrae, hip joint, knee joint.

3. கொள்ளை தற்கால அழற்சி

“அபிஷேகத் தக்க பாலியல் சருமையில் ஏனைய நூற்றணி
கொட்டைகள் தொட்டு கொண்டு ஓழியின் தன்மையுடன் கொண்டு
லவம்கிளைவதன் தன்மை இல்லை மறுவல்ல பாலியல் தன்மை
லவம்கிளைவதன் பின்னர் மறுவல்ல தன்மை முதிக்கல் பாலியல்”

It is characterized by pain in the joints and effusions of joint fluid, swelling, restricted joint movements, pyrexia, fainting, insomnia, lymph adenopathy. The affected joints look like “Fox’s Head”.

AIMS OF TREATMENT OF OA KNEE:

- Relieve pain
- Restore function
- Reduce disability if any
- Rehabilitation

LINE OF TREATMENT

The treatment of Siddha system includes not only the removal of signs and symptoms of a disease but also in total uprootment of the diseases.

In Azhal keel vaayu the deranged vatham is brought to its normal state by purgation

“அழல் கீல் வாயு முற்றிலும் செய்வற்றும்”
1. 15ml of **vellai ennai** is given with warm water early morning (single dose) in empty stomach before starting the treatment with trial drug.

2. **Internal medicine**

   **Sagala vadha chooranam** - 1.5gm three times/day given with water after food.

3. **External medicine**

   **Ilagu vadha kesari thylam** - External application.

   Apart from other department, sirappu maruthuvam department gives equal important to external therapy in siddha system of medicine along with its internal and external medicines.

**EXTERNAL THERAPIES:**

They are kattu, pattu, vaedhu, puravalayam, Thokkanam, ottradam, varmam, asanam etc.,

1. **طفال (Bandage)**

   Kattu is the application of medicine made of herbs, to the affected area and bandaged.

**Herbals:**

- Vitex negundo (เนื้อไม้)
- Justicia beddomei (เห็ดบั้ง)
- Clerodendrum phlomoidis (คละดาวKnife)
**Procedure:**

These plants leaves are made into small pieces and it is mixed with external oil and it is spread in a piece of cotton which is wrapped along the affected joint and bandaged with dressing cloth.

**Use:**

It is used in the condition of acute swelling and pain in osteoarthritis of knee joint.

2. **Thokkanam (Massage)**

Thokkanam is one of the 32 forms of external medicines, mentioned in ancient siddha literature, improves vadha disease by regulating the vadha disturbance.

It signifies a group of therapeutic procedures usually done with hand on the skin of the body in 9 ways, with or without the application of medicated oils (Thylam). These procedures can either be curative or palliative.

Theraiyar says that thokkanam.

- Strengthens blood, flesh and skin
- Improves sleep
- Vitality and relax whole body
- Regulates nerve functions, improves blood circulation, enhances immunity and removes excess tissues.

The treatment normally starts with applying the medicated oil on the knee joint.
Definition:

Massage is a term applied to certain manipulations of the soft tissues. These manipulations are most efficiently performed with the palmar aspect of hand and administered for the purpose of producing effects on the nervous system, muscular system as well as on the local and general circulation of the blood and lymph.

Massage is the mechanical stimulation of soft tissues of the body by rhythmically applied pressure and stretching.

Sequence of Knee Massage:
1. Friction
2. Rounding
3. Stroking
4. Rolling
5. Percussion
6. Joint movements

Action of Massage:

The medicated oil apply to the skin for the purpose of massage penetrate through the skin and reach different tissues and other elements of the body. The medicated oil used for massage remains in the skin for 300 seconds and then gradually spreads to senneer, Oon, Kozhupu, enbu and Moolai.

General effects of massage:
1. Relaxation
2. Increased circulation helps to accelerate the lymphatic system, which absorbs and eliminates many waste products
3. Stimulation of sensory and motor nerves
4. Relief pain and tension
Local effects of massage

1. Local vasodilation
2. Increase the blood circulation and improves muscle nutrition
3. Increased joint mobility
4. Nourishment to the periostium
5. Absorption of the skin’s waste products

Contra indications:

Local

- Recent injuries
- Recent scar
- Dislocation
- Fractures
- Varicose vein
- Hyperpyrexia
- Cancerous tissue
- Skin diseases

3. फेंटेमन (Fomentation)

Ottradam is the application of hot medicated packs.

There are various type of ottradam mentioned in siddha literature. In this study 2 types are used.

- Hot fomentation by medicated pouches.
- Hot fomentation by lemon directly.

I . Medicated pouches:

Medicated pouches are made up of pieces of leaves.

- Vitex negundo (गिन्दूरी) ⬠
- Clerodendrum Phlomoidis (क्लरोडेंड्रम प्लोमोइडिस)
• Calotropis gigantea (சாத்தியம்)
• Delonix elata (அலை பர்ப்பல் தனியே)

Uses:
• It reduce pain and swelling
• Increases blood circulation

2. Lemon Ottadam:
Lemon is cut into two pieces. It is then covered by a piece of cloth. The cut surface of the lemon piece is dipped into the luke warm gingelly oil and applied over the affected parts for 1 hour.

VARMAM ADANGAL:
Life energy flows in the body in a particular pathway. There are certain key points in the body where this life energy “Vaasi” is concentrated. Normally these are the points where two bones joint or a muscle inserts into a bone or the blood vessels, nerves are prominent. These points called “Varmam points”

The therapy of physical manipulations either by applying pressure on the varmam points or using massage therapy with specific medicated oil or blowing certain medicines in the nose or ear is called as varmam treatment.

Varmams or rhythmically turned by varmam therapists for managing various diseases like nervous disorders, arthritis, back pain, spinal problems etc.,

Varmam points to be manipulated for osteoarthritis are as follows

1. Mootu varmam: Centre part of posterior apsect of both knee joints. Mild pressure is applied using tips of middle three fingers.
2. **Kuthiraimuga varmam**  
   Location – Tibial tuberosity  
   Pressure is applied for three time using bulb of thumb.

3. **Mootu Suzharchi**  
   This method stimulates varmam points around knee joint by a circulatory gripping massage around patella using thumb and index finger.

4. **Santhuvarmam**  
   Location : on either side of the mootu varmam

5. **Sirattai varmam**  
   Location : on the patella bone.

6. **Mozhi poruthu varmam**  
   Location : Posterior surface of the knee joint

7. **Asaivu thiru kannu varmam**  
   Location : In centre of anterior surface, 2 finger breadth sideways to the knee joint.

8. **Pathaippu Varmam**  
   Location : 6 finger breadth lateral to the patella.

**YOGASANAM:**  
Yoga therapy is one of the form of relaxing body and mind. Certain simple asana techniques are discussed to knee pain and strengthening thigh muscle.

**Asanam:**
- Vajrasanam
- Utkatasanam
- Machasanam
- Arthamachendrasanam
PRANAYAMAM

The control of breathing called as pranayama

It include three process

1. Rechaka– Process of exhalingor breathing out.

2. Puraka – Process of inhaling


Kumbhaka of two types

1. Internal kumbhakam- Act of retaining breath

2. External kumbhakam- Action of not breathing in and out.

Pranayama

Pranayama is to yoga what heart is to human body

Pranayama is an important bridge between outward practices of yoga like asanas and inward surrendering yoga practices. It is a link between mind and body. It consist of deepening and extending prana or life force until it leads to condition of peace.

Prana – Life force

Anayama – control

Benefit

- Cause rhythmic expansion of lungs creating better circulation within kidney, liver, stomach, spleen, intestine, skin etc.,

- The mind is calm and concentration becomes better.

- Skin become smoother because of better circulation and release of tension.

- Oxygen is provided for better functioning of heart and lungs.
Aims of exercises in osteoarthritis of knee

- To increase the range of movements.
- To increase the stability and shock absorption
- To prevent deformity
- To improve posture
- To reduce pain and stiffness.

Rules of the exercises:

- Build up the exercises gradually
- Avoid rough ground while exercising
- To take warm baths before starting the exercises
- To perform the exercises 20 times each twice a day and later four times a day

Conservative measures:

1. Isometric quadriceps exercise to maintain strength of main stabilizing factor of knee.
2. Avoid movements/ positions which increase patellofemoral pressure.
   Avoid sitting cross legged, climbing status, and squatting positioning.
3. Use of walking stick held in ipsilateral hand or use of crutches to prevent stress on affected knee.
4. Apply preferably moist heat. Avoid short wave diathermy which is destructive
5. Immobilize the knee by a bandage
6. Weight reduction by exercise and diet control is advised.
MODERN ASPECT

Osteoarthritis

Osteoarthritis, also referred to as degenerative joint disease, degenerative arthritis. Osteoarthrosis or hypertrophic arthritis, is among the most frequent and symptomatic medical problems for middle aged and older people. It affects people of all groups in all geographic locations, occurs both in men and women but commonly in women, and it is the most common cause of long term disability in patient populations older than 65 years. More than one third of people older then 45 years report joint symptoms that vary from a sensation of occasional joint stiffness and intermittent aching associated with activity to permanent loss of motion and constant deep pain. The joint degeneration that cause the clinical syndrome of osteoarthritis occurs most frequently in the hand, foot, knee, hip and spine joints, but it can develop in any synovial joint with the prevalence of degenerative changes increase with age.

Though osteoarthritis affects many joints knee is the most common which we come across in our day today practice.
ANATOMY OF THE KNEE JOINT

The knee is the largest and more complex joint of the body. Consist of 3 bones and an extensive network of ligaments and muscles. The knee is one of the most important joints of our body. It plays an essential role in locomotion related to carrying the body weight in horizontal (Running and walking) and vertical (jumps) direction.

Bones of knee joint.

The knee joint is complex synovial joint incorporating two condylar joint between the condyles of the femur and tibia. One saddle joint between the femur and the patella.

The knee joint is formed by

1. The condyles of the femur
2. The patella
3. The condyles of the tibia.

The knee joint capsule

The joint is a thick ligamentous structure that surrounds the entire knee. Inside this capsule is a specialized membrane known as the synovial membrane which provides nourishment to all the surrounding structures other structures include the infrapatellar fat pad and bursa which function as cushion to exterior forces on the knee. The capsule is strengthened by the surrounding ligaments.
Ligaments of the knee joint

The ligaments surrounding the knee offer stability by limiting the movements.

Knee joint is supported by following ligaments.
1. Fibrous capsule
2. Ligamentum patella
3. Tibial collateral or medial collateral ligament
4. Fibular collateral ligament
5. Oblique popliteal ligament
6. Arcuate poplitial ligament
7. Anterior cruciate ligament
8. Posterior cruciate ligament
9. Medial meniscus
10. Lateral meniscus
11. Transverse ligament

Bursae around the knee:

There are 13 bursae around the knee
1. Anterior - 4
2. Lateral - 4
3. Medial - 5

The largest communicative bursa is the supra patellar bursa.

Menisci

Each knee joint has two crescent shaped cartilage menisci. The menisci serve to protect the ends of the bones from rubbing on each
other and to effectively deepen the tibial sockets in to which the femur attaches. They also play a role in shock absorption, and may be cracked or torn, when the knee is forcefully rotated or bent.

**Muscle group Surrounding the knee joint.**

The two main muscle groups of the knee joint are the quadriceps and the hamstrings. Both play a vital role, both moving and stabilizing the knee joint.

**Movements of knee joint**

- Flexion - 120 - 150 °
- Extension - 0 – 5°

**Blood Supply**

**Arteries of the knee**

The femoral artery and the politeal artery help form the arterial network surrounding the knee joint.

6 main branches

1. Superior medial genicular artery
2. Superior lateral genicular artery
3. Inferior medial genicular artery
4. Inferior lateral genicular artery
5. Descending genicular artery
6. Recurrent branch of anterior tibial artery.
OSTEO ARTHRITIS

Definition:

Osteoarthritis defined as a degenerative non-inflammatory joint disease characterized by destruction of articular cartilage and formation of new bone at the joint surfaces and margins. However, it is a misnomer and the right term is osteoarthrosis or degenerative joint disease (DJD).

It results from the rate of degeneration being greater than the rate of repair and / or regeneration of articular cartilage.

By the age of 40 years about 40% of the population have radiographic signs of osteoarthrosis of major weight bearing joint and 50% of these will have symptoms.

Osteoarthritis commonly affects the large weight bearing joint such as hips and knees.

Classifications:

It could be divided into 2 types

1. Primary or idiopathic osteoarthritis
2. Secondary osteoarthritis

Primary osteoarthritis:

Primary osteoarthritis is due to the wear and tear changes that occur in old age in which weight bearing joints such as hip and knees are more commonly affected.

- Obesity is a predisposing factor
- Primary osteoarthritis is commoner than secondary osteoarthrosis

(Primary osteoarthritis of the knee (also called idiopathic)
Aetiological causes for primary Osteoarthritis:

- Though exact cause is not known. The following factors are suspected to play an important role in causation of primary Osteoarthritis.
  - Obesity
  - Genetics and hereditary
  - Occupation involving prolonged standing.
  - Sports
  - Multiple endocrinal disorder.
  - Multiple metabolic disorders.

**Secondary osteoarthritis:**

Secondary osteoarthrosis refers to arthritis occurring in a joint secondary to a previously occurring disease or disorder of the joint.

It may occur in any age and involve any joint.

**Factors associated with secondary Osteoarthritis are as follows:**

1. Congenital malformation of joints
2. Traumatic alteration of articular surfaces causing articular incongruence.
3. Loose bodies in the joint
4. Deforming of the joint
   - Eg: Genu varum
5. Internal derangement of knee
Aetiological factors in Osteoarthritis

1. Geography

In a review of Osteoarthritis in 6 population living in different climates, as determined by latitude.

2. Racial groups:

Prevalence surveys have been carried out in non caucasian population.

3. Age

Osteo arthritis rises progressively with age such that by 65 years. 80% of people have radiographic evidence of Osteoarthritis. Though only 25-30% are symptamatic.

4. Gender

The crude prevalence of Osteoarthritis is the same in both sexes, but in females more joints are affected. At age above 45 years Osteo arthritis appears slightly more frequently in men and involves one or more joints. At ages greater than 55 years Osteoarthritis is more frequent in women and involve multiple joints. It has been shown that Osteoarthritis in post menopausal women was associated with higher body weight, higher subcutaneous fat and stronger muscles linked to hormonal deficiencies.

5. Socio economic groups

6. Occupation

Occupation with physical activity involve repetitive use of particular joint over long period of time. Sports enthusiasts and professional athelets may be conditiond so that their muscles protect their joints, but the manual labourer, factory worker may continious to use the joints even after muscular exhaustion.
7. Obesity

Obesity has been associated with increased bone mass major cause of Osteo arthritis is the failure of subchondral bone to deform with an impact load, leading to increased cartilage damage.

8. Metabolic factors

There has been some evidence for a link between Diabetes and Osteoarthritis, possibly through elevated growth hormone levels that alter cartilage metabolism and increase bone density. Hyperuricaemia has been found more frequently in people with generalized Osteoarthritis.

9. Mechanical factors

It has been long considered that mechanical stress, such as single impact stress, gross anatomical damage, subtle mechanical derangement (long standing internal derangement of the knee) joint, hypermobility and repeated impacts has been associated with Osteoarthritis.

Others

Nutritional problems may cause Osteoarthritis

Pathogenesis:

Normal Articular Cartilage:

Articular cartilage is connective tissue covering the ends of the bones. It is aneural, alymphatic, avascular structure water and chondrocytes gives strength to the articular cartilage.

Supremely adapted to transmit load and movement from one skeletal segment to another. It increases the area of the articular surfaces and helps to improve their adaptability and stability; it changes its shape under load and distributes compressive forces widely to the subarticular bone and covered by a
film of synovial fluid it is more slippery than any man-made material, offering very little frictional resistance to movement and surface gliding.

This specialized connective tissue has a gel-like matrix consisting of a proteoglycan ground substance in which are embedded an architecturally structured collagen network and a relatively sparse scattering of specialized cells, the chondrocytes, which are responsible for producing all the structural components of the tissue. It has a high water content (60-80%), most of which is exchangeable with the synovial fluid.

The fibrillar component of articular cartilage is mainly type II collagen. The collagen bundles are arranged in structured patterns, parallel to the articular surface in the superficial zones and perpendicular to the surface in the deeper layers where they anchor the articular cartilage to the subchondral bone.

Normal cartilage has two main components

i) Extracellular matrix

ii) Chondrocytes

- Extracellular matrix contain water, collagen (Type II collagen present 90 – 95%) proteoglycans and non collagenous protein.
- Condrocytes produce collagen, proteoglycans and enzymes, chondrocyte metabolism responds to both mechanical and chemical stimuli osteoarthritis is a degenerative condition primarily affecting the articular cartilage.

Articular cartilage changes in Osteoarthritis

- The earliest changes, while the cartilage is still morphologically intact, are an increase in water content of the cartilage and easier extractability of the matrix proteoglycans.
- Failure of the internal collagen network that normally restrains the matrix gel. At a slightly later stage there is loss of proteoglycans and defects
appear in the cartilage. As the cartilage becomes less stiff, secondary damage to chondrocytes may cause release of cell enzymes and further matrix breakdown. Cartilage deformation may also add to the stress on the collagen network, thus amplifying the changes in a cycle that leads to tissue breakdown.

- The levels of certain molecular messengers, including IL-I, TNF and nitric oxide are increased in osteoarthritic cartilage. Apoptosis is also increased, likely responsible for a decrease in the number of functional chondrocytes.

- Articular cartilage has an important role in distributing and dissipating the forces associated with joint loading. When it loses its integrity these forces are increasingly concentrated in the subchondral bone. The result is focal trabecular degeneration, cyst formation as well as increased vascularity and reactive sclerosis in the zone of maximal loading.

- What cartilage remains is still capable of regeneration, repair and remodelling. As the articular surfaces become increasingly malapposed and the joint unstable cartilage at the edges of the joint reverts to the more youthful activities of growth and endochondral ossification giving rise to the bony excrescences, or osteophytes.

- Articular cartilage does not usually regenerate after injury or diseases leading to loss of tissue & formation of a defect.

- The international cartilage repair society has set up an arthroscopic grading system by which cartilage defect can be ranked.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
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<tr>
<td>0</td>
<td>(normal) healthy cartilage</td>
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<tr>
<td>1</td>
<td>The cartilage has a soft spot or blisters.</td>
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<tr>
<td>2</td>
<td>Minor tear visible in the cartilage.</td>
</tr>
<tr>
<td>3</td>
<td>Lesions have deep crevices (more than 50% of cartilage layer.)</td>
</tr>
<tr>
<td>4</td>
<td>The cartilage tear exposes the underlying bone.</td>
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</tbody>
</table>
• Articular cartilage has a very limited capacity for self repair. Small damage does not repair itself and can often get worse over time. As cartilage is aneural and avascular, shallow damage often does not trigger pain.

• A grade 4 lesion goes completely through all layers of the cartilage. It is diagnosed as a full thickness lesion. Sometimes part of the torn cartilage will break off inside the joint. Since it is no longer attached to the bone, it can begin to move around within the joint. Cartilage even more damage to the surface of the cartilage. This unattached piece as a loose body.

PATHOLOGY

The cardinal features are:

1. Progressive cartilage destruction
2. Subarticular cyst formation
3. Sclerosis of the surrounding bone
4. Osteophyte formation
5. Capsular fibrosis.

• The first change observed is an increase in water content and depletion of the proteoglycans from the cartilage matrix. Repeated weight bearing on such a cartilage leads to fibrillation.

• The cartilage gets abraded by the grinding mechanism at work at the points of contact between the apposing articular surfaces, until eventually the underlying bone is exposed with further “rubbing” the subchondral bone becomes hard and glossy (eburnated)

• Subchondral sclerosis and subchondral cysts are seen.

• Bony projections and new bone formation (osteophytes) occur within the joints
• Thickening of the joint capsule and synovium leads to stiffness and deformity of the joint
• In the knee medial compartment is affected more than the lateral leading to a varus deforming (Genu varum)

**Signs and Symptoms:**

The patient presents with

• Pain that starts insidiously and increase overtime
• Swelling – as a result of joint effusion
• Morning stiffness, which usually lasts no more than 30 minutes.
• Stiffness from the thickening of capsule and synovium
• Crepitus - While moving the joint
• Limping - due to pain and deformity of the joint
• Tenderness
• Restricted range of joint movements.

**Examination of knee joints:**

• The patient should be examined in the lying down position. First in supine position and then in prone position
• Always compare the affected knee with the opposite normal knee

**INSPECTION:**

1. **Gait:** Recurvatum deformity can be best appreciated when the patient walks. A patient with weakness of the quadriceps muscles may walk with “hand knee gait”.
2. **Skin colour** - If acute Osteoarthritis redness present due to inflammation (Swelling)
3. **Swelling**: Mild Swelling present around the knee joint
4. **Deformity:** Varus deformity present. Flexion deformity is the commonest. Initially, it occurs due to spasm of the hamstring muscles in any painful conditions of the knee.

5. **Muscle wasting:** Quadriceps muscle wasting may be seen.

6. **Skin over the knee:** It may be stretched and shiny in an inflammatory disease.

**PALPATION:**

1. Local Temperature - may be present due to any Inflammation

2. Swelling – 2 important test
   
   a. Fluctuation test
   
   b. Patellar tap - positive in moderate amount of fluid in knee joint.

3. Tenderness : Tenderness on the joint line or tibio femoral joint line, Patello femoral joint.

4. Irregular and enlarged looking joint due to formation of peripheral osteophytes.

5. **Crepitation** present on moving the joint

6. **Nodules** - Loose bodies may be felt.

7. **Movement** :

   a. **Flexion** – Normal range of movement (0 – 140 degrees)

   b. **Extension** – may be restricted

8. **Measurement** :

   a. **Muscle girth** (10cm above the patella) – Quadriceps muscle wasting may be present.

   b. **Measurement at joint line of knee** - for prognosis of swelling

**Diagnosis criteria:**

- Age greater than 40 years
- Pain and swelling in knee joint
• Stiffness from the thickening of capsule and synovium
• Crackling sensation present in knee joint while moving the joint
• Tenderness on the joint line
• Osteophyte formation at the joint margins
• Restricted joint movements
• Deformity such as Genu varum may be present
• Asymmetrical narrowing of the joint space.
• Subchondral sclerosis
• Subchondral cysts.
• Osteophytes at the joint margin
• Loose bodies within the joint Subluxation / dislocation at the later stage,
• Deformity of joint is present

Laboratory Findings:
There is no blood test for the diagnosis of osteoarthritis. Blood test are performed to exclude diseases that can cause secondary osteoarthritis.

These consist of the following
• Serological tests and ESR to rule out Rheumatoid arthritis
• Serum uric acid to rule out Gout.
• Arthroscopy, if a loose body of frayed meniscus is suspected.

Radiological features:
The diagnosis of osteoarthritis is mainly radiological
• asymmetrical narrowing of the joint space
• Subchondral Sclerosis dense bone under the articular surface
• Subchondral cysts
• Osteophytes at the joint margin
• Loose bodies within the joint
• Subluxation / dislocation at the later stage
• Deformity of joint if present.

Radiological classification of knee. (Ahlbach) AP weight bearing and lateral views

Type I – Joint space narrowing
Type II – Total lost of joint space
Type III - <5mm tibial erosion but posterior part of the plateace infact.
Type IV – >5mm tibial erosion and erosion of posterior plateace
Type V – Subluxation.

COMPLICATIONS OF OSTEOARTHRITIS

The major complication of osteoarthritis of knee

• Joint deformities
• Capsular herniation
• Loose bodies
• Subluxtion

RISK FACTORS:

1. Trauma – Fractures involving the articular surface are obvious precursors of secondary osteoarthritis.
2. Occupation – Osteoarthritis of the knee in workers engaged in knee – bending activities
3. Increase risk in Athletes
4. Obesity : Causes increased joint loading and predisposes to Osteoarthritis of knee
5. Family history
MATERIALS AND METHODS

To study on clinical evaluation of the disease “AZHL KEEL VAYU” with the drug SAGALA VADHA CHOORANAM (INTERNAL) and ILAGU VADHA KESARI THYLAM (EXTERNAL) was carried out in Postgraduate Sirappu Maruthuvam, Government Siddha Medical College, Palayamkottai. 20 patients of both male and female were selected for the studies and admitted in Inpatient ward for among 20 IP patients, 10 IP patients will be given massage and varmam treatment along with internal medicine and remaining 10 IP patients will be given massage fomentation without internal medicine.

Another 20 patients are treated with trial drug in the outpatient ward.

SELECTION OF PATIENTS:

INCLUSION CRITERIA:

• Age – 40 – 65 Years
• Sex - Both male and female
• Patients having symptoms of arthritis of both knee joints, swelling, stiffness, crepitation, restricted movements of both knee joints.
• Patients who are willing to undergo radiological investigation and give blood for laboratory investigation.
• Patient willing to sign the informed consent stating that he/she will consciously stick to the treatment during 48 days but can opt out of the trial of his / her own conscious discretion.

EXCLUSION CRITERIA:

• Cardiac disease
• Diabetes mellitus
• Hypertension
• Rheumatoid arthritis
• Pregnancy and lactation
• History of trauma
• Tuberculosis
• Use of narcotic drugs
• Neurological disorder
• Patients with any other serious illness.

STUDY OF CLINICAL DIAGNOSIS:
A case sheet is prepared on the basis of siddha and modern method to diagnose the disease and individual case sheet is maintained for each patient.

SIDDHA DIAGNOSTIC TOOLS:
• Poriyal arithal
• Pulanal arithal
• Vinathal
• Mukkutram
• Ezhu udal thatugal
• Envagai Thervu
• Thinaigal
• Paruva kalangal
• Thega nilai
LABORATORY INVESTIGATIONS:

<table>
<thead>
<tr>
<th>Blood</th>
<th>Urine</th>
</tr>
</thead>
<tbody>
<tr>
<td>TC</td>
<td>Albumin</td>
</tr>
<tr>
<td>DC</td>
<td>Sugar</td>
</tr>
<tr>
<td>ESR</td>
<td>Deposit</td>
</tr>
<tr>
<td>Hb</td>
<td></td>
</tr>
</tbody>
</table>

Aso titre

Radiological investigations:

X-ray of the knee joints (AP and Lat view) Improvement assessed by following assessments.

Selection of drugs:

Selection of drugs was made from the elaborate study of various siddha literatures and finally the drugs were selected from Athma Rakcharmathamennnum Vaidhya Sara Sankiragam.

The trial drugs selected are

1. Sagalavatha Chooranam as internal medicine
2. Ilagu Vadha Kesari Thylem as external medicine.

LINE OF TREATMENT

The treatment of Siddha system includes not only the removal of signs and symptoms of a disease but also in total uprootment of the diseases.

In Azhal keel vaayu the deranged vatham is brought to its normal state by purgation

“அழலை வையு செய்து கருது”

50
1. 15ml of *vellai ennai* is given with warm water early morning (single dose) in empty stomach before starting the treatment with trial drug.

2. **Internal medicine**
   
   *Sagala vadha chooranam* -1.5gm three times/day given with water after food.

3. **External medicine**

   **Ilagu vadha kesari thylam** - External application.

   Apart from other department, sirappu maruthuvam department gives equal important to external therapy in siddha system of medicine along with its internal and external medicines.

**EXTERNAL THERAPIES:**

They are kattu, patru, vaedhu, puravalayam, Thokkanam, ottradam, varmam, asanam etc.,

**ASSESSMENT OF PROGNOSIS:**

1. **Clinical Assessement:**
   - Pain and swelling in both knee joints
   - Stiffness in both knee joint
   - Crepitation in joint line, medial condyle
   - Tenderness in joint line, medial condyle of knee joint
   - Warmth
   - Periarticular atrophy
   - Restricted movements of both the knee joints.

2. **Radiological Assessment:**
   
   X-ray of the both knee (AP view and lateral view)
RESULTS AND OBSERVATION

1. GENDER DISTRIBUTION:

<table>
<thead>
<tr>
<th>GENDER</th>
<th>NUMBER OF CASES</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>18</td>
<td>45%</td>
</tr>
<tr>
<td>Female</td>
<td>22</td>
<td>55%</td>
</tr>
<tr>
<td>Total</td>
<td>40</td>
<td>100%</td>
</tr>
</tbody>
</table>

Inference:

Among the 40 patients selected for this study, 45% were males and 55% were females.
2. AGE DISTRIBUTION:

<table>
<thead>
<tr>
<th>AGE (YEAR)</th>
<th>NUMBER OF CASES</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>40-50</td>
<td>6</td>
<td>15</td>
</tr>
<tr>
<td>51-60</td>
<td>18</td>
<td>45</td>
</tr>
<tr>
<td>61-70</td>
<td>15</td>
<td>37.5</td>
</tr>
<tr>
<td>71-80</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>TOTAL</td>
<td>40</td>
<td>100</td>
</tr>
</tbody>
</table>

Inference:
Most of the cases were above the age group of 50.
**RELIGION**

<table>
<thead>
<tr>
<th>RELIGION</th>
<th>NUMBER OF CASES</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hindu</td>
<td>34</td>
<td>85</td>
</tr>
<tr>
<td>Muslim</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>Christian</td>
<td>5</td>
<td>12.5</td>
</tr>
</tbody>
</table>

**Inference:**

Most of the cases were Hindu.
### 3. KAAALAM DISTRIBUTION:

<table>
<thead>
<tr>
<th>KAALAM</th>
<th>NUMBER OF CASES</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vatha Kaalam</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>(Up to 33 years)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pitha Kaalam</td>
<td>32</td>
<td>80</td>
</tr>
<tr>
<td>(33 years - 66 years)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kabha Kaalam</td>
<td>8</td>
<td>20</td>
</tr>
<tr>
<td>(above 66 years)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>40</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

**Inference:**

Out of 40 cases, 80% of the cases were found to be in Pitha kaalam, and the remaining 20% were found to be in Kabha kaalam.
4. OCCUPATIONAL STATUS:

<table>
<thead>
<tr>
<th>OCCUPATION</th>
<th>NUMBER OF CASES</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculturist</td>
<td>14</td>
<td>35</td>
</tr>
<tr>
<td>Manual labour</td>
<td>15</td>
<td>37.5</td>
</tr>
<tr>
<td>Home maker</td>
<td>11</td>
<td>27.5</td>
</tr>
<tr>
<td>Total</td>
<td>40</td>
<td>100</td>
</tr>
</tbody>
</table>

Inference:

Out of 40 cases, in this study the rate of incidence is higher in occupational group which includes home maker (27.5%) and farmer & manual labour (72.5%) groups.
5. SEASONAL VARIATIONS:

<table>
<thead>
<tr>
<th>SEASONS</th>
<th>NUMBER OF CASES</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kaar kaalam (Aug 16 – Oct 15)</td>
<td>19</td>
<td>47.5</td>
</tr>
<tr>
<td>Koothir kaalam (Oct 16 – Dec 15)</td>
<td>11</td>
<td>27.5</td>
</tr>
<tr>
<td>Munpani kaalam (Dec 16 – Feb15)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Pinpani kaalam (Feb 16 – Apr 15)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Elavenil kaalam (Apr 16 – June 15)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Muthuvenil kaalam (June 16 – Aug 15)</td>
<td>10</td>
<td>25</td>
</tr>
<tr>
<td>Total</td>
<td>40</td>
<td>100</td>
</tr>
</tbody>
</table>

Inference:

Out of 40 cases, 19 patients (47.5%) were admitted in Kaar Kaalam, 11 patients (27.5%) were admitted in koothir kalam and 10 patients (25%) were admitted in Muthuvenil Kaalam.
6. THINAI:

<table>
<thead>
<tr>
<th>THINAI</th>
<th>NO OF CASES</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kurinji (Hill Area)</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>Mullai (Forest Area)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Marutham (Fertile Land)</td>
<td>30</td>
<td>75</td>
</tr>
<tr>
<td>Neithal (Coastal Area)</td>
<td>9</td>
<td>22.5</td>
</tr>
<tr>
<td>Paalai (Desert Land)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>40</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Inference:

Among the 40 patients, 1 patient (2.5 %) was from Kurinji, 30 (75%) cases were from Marutham and 9 (22.5 %) cases were from Neithal thinai.
7. SOCIO- ECONOMIC STATUS:

<table>
<thead>
<tr>
<th>CLASS</th>
<th>NUMBER OF CASES</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower</td>
<td>31</td>
<td>77.5</td>
</tr>
<tr>
<td>Middle class</td>
<td>7</td>
<td>17.5</td>
</tr>
<tr>
<td>Rich</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>40</td>
<td>100</td>
</tr>
</tbody>
</table>

Inference: Out of 40 cases 77.5% of cases were lower class, 17.5 % cases were from middle class and the remaining 5% were rich.
8. DIETARY HABITS

<table>
<thead>
<tr>
<th>Dietary Habits</th>
<th>No of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vegetarian</td>
<td>3</td>
<td>7.5</td>
</tr>
<tr>
<td>Non vegetarian</td>
<td>37</td>
<td>92.5</td>
</tr>
</tbody>
</table>

Observation:
All the cases except three were mixed diet.
9. PRECIPITATING FACTORS:

<table>
<thead>
<tr>
<th>PRECIPITATING FACTORS</th>
<th>NO OF CASES</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obesity</td>
<td>5</td>
<td>12.5</td>
</tr>
<tr>
<td>Menopause</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Occupation related</td>
<td>23</td>
<td>57.5</td>
</tr>
<tr>
<td>(over use of the joint)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H/o trauma</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Hereditary</td>
<td>10</td>
<td>25</td>
</tr>
</tbody>
</table>

Inference:

Among the 40 patients, 5 of them (12.5%) were overweight, 23 of them (57.5%) had the history of over use of the joint and 7 (17.5%) of them were in the post menopausal stage.
## DURATION OF ILLNESS

<table>
<thead>
<tr>
<th>DURATION (MONTHS)</th>
<th>NO. OF CASES</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-3</td>
<td>14</td>
<td>35</td>
</tr>
<tr>
<td>3-6</td>
<td>11</td>
<td>27.5</td>
</tr>
<tr>
<td>6-12</td>
<td>9</td>
<td>22.5</td>
</tr>
<tr>
<td>12-24</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>Above 24</td>
<td>2</td>
<td>5</td>
</tr>
</tbody>
</table>

### Inference

Among the 40 cases most of them had the duration of illness – upto 1 year.
10. MODE OF ONSET:

<table>
<thead>
<tr>
<th>MODE OF ONSET</th>
<th>NO. OF CASES</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute</td>
<td>5</td>
<td>12.5</td>
</tr>
<tr>
<td>Gradual</td>
<td>35</td>
<td>87.5</td>
</tr>
</tbody>
</table>

Inference:
According to this study 87.5% of cases were reported gradual onset of disease.
11. CLINICAL FEATURES:

<table>
<thead>
<tr>
<th>CLINICAL FEATURES</th>
<th>NO. OF CASES</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain &amp; Tenderness</td>
<td>40</td>
<td>100</td>
</tr>
<tr>
<td>Swelling</td>
<td>29</td>
<td>72.5</td>
</tr>
<tr>
<td>Morning stiffness</td>
<td>15</td>
<td>37.5</td>
</tr>
<tr>
<td>Crepitations</td>
<td>40</td>
<td>100</td>
</tr>
<tr>
<td>Deformity</td>
<td>6</td>
<td>15</td>
</tr>
<tr>
<td>Restricted movements</td>
<td>38</td>
<td>95</td>
</tr>
<tr>
<td>Constipation</td>
<td>20</td>
<td>50</td>
</tr>
<tr>
<td>Sleeplessness</td>
<td>15</td>
<td>37.5</td>
</tr>
<tr>
<td>Muscle wasting</td>
<td>3</td>
<td>7.5</td>
</tr>
</tbody>
</table>

Inference:

Among the forty cases all of them had pain, tenderness, crepitations and restricted movements. 29 patients had swelling and 15 patients had morning stiffness.
# MEASUREMENTS OF THE KNEE JOINTS

<table>
<thead>
<tr>
<th>S.No</th>
<th>Patient Name</th>
<th>Age/sex</th>
<th>OP/IP No</th>
<th>Before treatment</th>
<th>After treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Right (cm)</td>
<td>Left (cm)</td>
</tr>
<tr>
<td>1</td>
<td>Mary</td>
<td>60/F</td>
<td>56197</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td>2</td>
<td>Senthil arumugam</td>
<td>59/F</td>
<td>69330</td>
<td>35</td>
<td>34.5</td>
</tr>
<tr>
<td>3</td>
<td>Gowri</td>
<td>52/F</td>
<td>71707</td>
<td>34</td>
<td>33</td>
</tr>
<tr>
<td>4</td>
<td>Saraswathi</td>
<td>60/F</td>
<td>65682</td>
<td>33</td>
<td>33.5</td>
</tr>
<tr>
<td>5</td>
<td>Pushpam</td>
<td>65/F</td>
<td>59255</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>6</td>
<td>Shanmugavel</td>
<td>62/M</td>
<td>73154</td>
<td>34</td>
<td>34.5</td>
</tr>
<tr>
<td>7</td>
<td>Servarayan</td>
<td>55/M</td>
<td>68070</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>8</td>
<td>Kallathiyan</td>
<td>63/M</td>
<td>58435</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>9</td>
<td>Komathi</td>
<td>60/F</td>
<td>66916</td>
<td>33</td>
<td>33.5</td>
</tr>
<tr>
<td>10</td>
<td>Shanmugavel</td>
<td>65/M</td>
<td>67915</td>
<td>34</td>
<td>34.5</td>
</tr>
<tr>
<td>11</td>
<td>Selvi</td>
<td>67/F</td>
<td>2405</td>
<td>34</td>
<td>34</td>
</tr>
<tr>
<td>12</td>
<td>Nachiyar</td>
<td>50/F</td>
<td>2332</td>
<td>33</td>
<td>35</td>
</tr>
<tr>
<td>13</td>
<td>Govindan</td>
<td>55/M</td>
<td>2794</td>
<td>39</td>
<td>40</td>
</tr>
<tr>
<td>14</td>
<td>Ramalakshmi</td>
<td>60/F</td>
<td>2965</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>15</td>
<td>Sathyia</td>
<td>68/M</td>
<td>3263</td>
<td>39</td>
<td>40</td>
</tr>
<tr>
<td>16</td>
<td>Ponnuthai</td>
<td>45/F</td>
<td>3103</td>
<td>35</td>
<td>34</td>
</tr>
<tr>
<td>17</td>
<td>Maryammal</td>
<td>55/F</td>
<td>3109</td>
<td>36</td>
<td>35</td>
</tr>
<tr>
<td>18</td>
<td>Pathlamuthi</td>
<td>57/M</td>
<td>4008</td>
<td>36</td>
<td>37</td>
</tr>
<tr>
<td>19</td>
<td>Nambi</td>
<td>70/M</td>
<td>3960</td>
<td>31</td>
<td>32</td>
</tr>
<tr>
<td>20</td>
<td>Muthu</td>
<td>56/M</td>
<td>4185</td>
<td>35</td>
<td>36</td>
</tr>
</tbody>
</table>
Inference:

Joint Space narrowed in 38 cases (95%), Osteophytes present in 30 cases (75%), Subchondral sclerosis present in 38 cases (95%), Osteoporosis present in 10 cases (25%).
14. TABLE SHOWING THE DERANGEMENT OF VATHAM:

<table>
<thead>
<tr>
<th>VATHAM</th>
<th>NO. OF CASES</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pranan</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>Abanan</td>
<td>35</td>
<td>87.5</td>
</tr>
<tr>
<td>Viyanan</td>
<td>40</td>
<td>100</td>
</tr>
<tr>
<td>Udhanan</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Samanan</td>
<td>40</td>
<td>100</td>
</tr>
<tr>
<td>Naagan</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Koorman</td>
<td>7</td>
<td>17.5</td>
</tr>
<tr>
<td>Kirukaran</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Devathathan</td>
<td>25</td>
<td>62.5</td>
</tr>
<tr>
<td>Dhananjeyan</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Inference:

Viyanan and Samanan were affected in all the 40 cases (100%), Abanan was affected in 35 cases (87.5%), Devathathan was affected in 24 cases (62.5%), Koorman was affected in 7 cases (17.5%) and pranan was affected in 1 cases (2.5%).
### 15. DISTURBANCES IN PITHAM:

<table>
<thead>
<tr>
<th>PITHAM</th>
<th>NO. OF CASES</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analapitham</td>
<td>10</td>
<td>25</td>
</tr>
<tr>
<td>Ranjagam</td>
<td>12</td>
<td>30</td>
</tr>
<tr>
<td>Saathagam</td>
<td>40</td>
<td>100</td>
</tr>
<tr>
<td>Prasagam</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Alosagam</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**Inference:**

Saathaga Pitham was affected in all 40 cases (100%), ranjaga pitham was affected in 12 cases (30%) and Analpitham was affected in 10 cases (25%).
16. TABLE SHOWING THE DERANGEMENT OF KABHAM:

<table>
<thead>
<tr>
<th>KABHAM</th>
<th>NO. OF CASES</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avalambagam</td>
<td>40</td>
<td>100</td>
</tr>
<tr>
<td>Kilethagam</td>
<td>10</td>
<td>25</td>
</tr>
<tr>
<td>Pothagam</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Tharpagam</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Santhigam</td>
<td>40</td>
<td>100</td>
</tr>
</tbody>
</table>

**Inference:**
In all the 40 cases (100%) Santhigam was affected and so Avalambagam was also affected. 10 cases kilethagam was affected.
17. TABLE SHOWING THE CONDITION OF UDAL KATTUGAL:

<table>
<thead>
<tr>
<th>UDAL KATTUGAL</th>
<th>NO. OF CASES</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saaram</td>
<td>40</td>
<td>100</td>
</tr>
<tr>
<td>Senneer</td>
<td>12</td>
<td>30</td>
</tr>
<tr>
<td>Oon</td>
<td>3</td>
<td>7.5</td>
</tr>
<tr>
<td>Kozhuppu</td>
<td>40</td>
<td>100</td>
</tr>
<tr>
<td>Enbu</td>
<td>40</td>
<td>100</td>
</tr>
<tr>
<td>Moolai</td>
<td>40</td>
<td>100</td>
</tr>
<tr>
<td>Venneer/suronitham</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Inference:

In all the cases Saaram, Kozhuppu and Enbu were affected (100%) and Senneer was affected in 12 cases (30%). Oon was affected in 3 cases (7.5%).
### 18. ENNVAGAI THERVUGAL:

<table>
<thead>
<tr>
<th>ENNVAGAI THERVUGAL</th>
<th>NO. OF CASES</th>
<th>PERCENTAGE</th>
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<tr>
<td>Sparisam</td>
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<tr>
<td>Niram</td>
<td>2</td>
<td>5</td>
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<tr>
<td>Mozhi</td>
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<td>Malam</td>
<td>35</td>
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<tr>
<td>Moothiram</td>
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</tr>
<tr>
<td>Naadi</td>
<td>40</td>
<td>100</td>
</tr>
</tbody>
</table>

**Naadi**
- Pitha Vatham 20 cases (50%)
- Vatha Pitham 15 cases (37.5%)
- Pitham Kabham 5 cases (12.5%)

**Neikuri**
- Snake in ring 15 (37.5%)
- Ring in snake 20 (50%)
- Ring in pearl 5 (12.5%)

### Inference:

Sparisam was affected in all the 40 cases, Naa was affected in 12 cases (30%), Malam was affected in 35 cases (87.5%). Niram was affected in 2 case (5%).
19. SELECTION OF PATIENTS:

<table>
<thead>
<tr>
<th>TREATMENT OPTIONS</th>
<th>NO OF PATIENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trial drugs only (Int &amp; Ext medicine)</td>
<td>20</td>
</tr>
<tr>
<td>Trial drugs + External therapies (Int &amp; Ext medicine)</td>
<td>10</td>
</tr>
<tr>
<td>External therapy only</td>
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</tbody>
</table>

Inference:

This Clinical study includes 40 Patients, i.e. 20 from IP ward and 20 Patients from OP ward. 20 OP patients were given both Internal and External medicines, 10 IP cases were given Internal, External medicine along with external therapy 10 IP cases, were given only External therapy.
20. ASSESSMENT OF RESULTS:

OUTCOME ASSESSMENT SCALE:

Clinical efficacy of the trial drugs were assessed by the following scales

Universal pain assessment scale (McCaffrey et al., 1993)

- a) 0 - No pain
- b) 1-3 - Mild Pain
- c) 4-6 - Moderate Pain
- d) 7-10 - Severe Pain
A). ASSESSMENT OF CURATIVE EFFECTS IN KNEE OSTEOARTHRITIS PATIENTS TREATED ONLY WITH TRIAL DRUGS:(INTERNAL AND EXTERNAL MEDICINES)

<table>
<thead>
<tr>
<th>SYMPTOMS</th>
<th>INITIAL READINGS</th>
<th>FINAL READINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NO OF PATIENTS</td>
<td>PERCENTAGE</td>
</tr>
<tr>
<td>No Pain</td>
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<tr>
<td>Mild</td>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td>Moderate</td>
<td>8</td>
<td>40</td>
</tr>
<tr>
<td>Severe</td>
<td>8</td>
<td>40</td>
</tr>
</tbody>
</table>

**Inference:**

Among the patients who were selected for treating alone with trial drugs, 8 of them had severe symptoms, 8 had moderate symptoms, and the remaining 4 patients had mild symptoms. But after treatment only 3 had severe symptoms, 3 had moderate symptoms, 8 had mild symptoms and 6 had no clinical manifestations.
B). EFFECT OF TRIAL DRUG ALONE:

Effect of therapy is assessed from the above tabulated data.

<table>
<thead>
<tr>
<th>Effect of the Therapy</th>
<th>No. of Patients</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good</td>
<td>6</td>
<td>30</td>
</tr>
<tr>
<td>Moderate</td>
<td>8</td>
<td>40</td>
</tr>
<tr>
<td>Mild</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>No</td>
<td>3</td>
<td>15</td>
</tr>
</tbody>
</table>

**Inference:**

By treating alone with trial drugs, 30% of patients had good improvement, 40% of patients had moderate improvement, 15% had mild improvement, and 15% had no improvement.
C). ASSESSMENT OF CURATIVE EFFECTS IN OSTEOARTHRITIS PATIENTS TREATED WITH TRIAL DRUGS ALONG WITH EXTERNAL THERAPIES.

<table>
<thead>
<tr>
<th>SYMPTOMS</th>
<th>INITIAL READINGS</th>
<th>FINAL READINGS</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>NO. OF PATIENTS</td>
<td>PERCENTAGE</td>
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<tr>
<td>No Pain</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Mild</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>Moderate</td>
<td>5</td>
<td>50</td>
</tr>
<tr>
<td>Severe</td>
<td>4</td>
<td>40</td>
</tr>
</tbody>
</table>

Inference:

Among the patients who were selected for treating both with trial drugs and external therapies, 4 of them had severe symptoms, 5 had moderate symptoms, and the remaining 1 patient had mild symptoms. But after treatment 5 had no clinical manifestations, 4 had only mild symptoms and the remaining 1 had moderate symptoms. No cases reported to have severe symptoms.
D). EFFECT OF TRIAL DRUG ALONG WITH EXTERNAL THERAPIES:

<table>
<thead>
<tr>
<th>EFFECT OF THERAPY</th>
<th>NO. OF PATIENTS</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good</td>
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<td>50</td>
</tr>
<tr>
<td>Moderate</td>
<td>4</td>
<td>40</td>
</tr>
<tr>
<td>Mild</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>No</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Inference:

By treating both with trial drugs and external therapies, 50% of patients had good improvement, 40% of patients had moderate improvement and 10% only had mild improvement. None were reported to have nil prognosis.
C). ASSESSMENT OF CURATIVE EFFECTS IN OSTEOARTHRITIS PATIENTS TREATED EXTERNAL THERAPIES ONLY.

<table>
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<th>INITIAL READINGS</th>
<th>FINAL READINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NO. OF PATIENTS</td>
<td>PERCENTAGE</td>
<td>NO. OF PATIENTS</td>
<td>PERCENTAGE</td>
</tr>
<tr>
<td>No Pain</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Mild</td>
<td>1</td>
<td>10</td>
<td>5</td>
<td>50</td>
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<tr>
<td>Moderate</td>
<td>5</td>
<td>50</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>Severe</td>
<td>4</td>
<td>40</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Among the patients who were selected for treating external therapies only, 4 of them had severe symptoms, 5 had moderate symptoms, and the remaining 1 patient had mild symptoms. But after treatment 4 had no clinical manifestations, 5 had only mild symptoms and the remaining 1 had moderate symptoms. No cases reported to have severe symptoms.
<table>
<thead>
<tr>
<th>EFFECT OF THERAPY</th>
<th>NO. OF PATIENTS</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good</td>
<td>4</td>
<td>40</td>
</tr>
<tr>
<td>Moderate</td>
<td>5</td>
<td>50</td>
</tr>
<tr>
<td>Mild</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>No</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

By treating external therapies only, 40% of patients had good improvement, 50% of patients had moderate improvement and 10% only had mild improvement. None were reported to have nil prognosis.
E). COMPARISON BETWEEN EFFECTIVE OF TRIAL DRUG AND TRIAL DRUG WITH COMPLEMENTARY THERAPIES:

![Bar chart showing comparison between different treatment groups]

F). OVERALL RESULTS AFTER TREATMENT:
Based on outcome, effects after treatment was classified into 4 grades as

**MARKED EFFECT:**
- No longer any clinical manifestations.
- Patient could work and live normally.
- No recurrence after some months.

**MODERATE EFFECT:**
- Moderate reduction of manifestations.
- Slight pain after movement.

**MILD EFFECT:**
- Slight reduction in the clinical manifestation.
- With relapse.

**NO EFFECT:**
- No reduction of pain and tenderness.
## Inference:

Out of 40 cases, marked improvement was observed in 37.5% patients, moderate improvement in 42.5% patients, mild improvement in 12.5% patients and no improvement was observed in 7.5% patients.
### OP AND IP CASES CLINICAL IMPROVEMENT

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>OP &amp; IP NO</th>
<th>NAME</th>
<th>AGE</th>
<th>SEX</th>
<th>DOA</th>
<th>DOD</th>
<th>TREATED DAYS</th>
<th>RESULT</th>
</tr>
</thead>
<tbody>
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<td>Jansi rani</td>
<td>58</td>
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<td>15/10/12</td>
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<td>25/09/12</td>
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<td>66</td>
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<td>DOD</td>
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# Bone mass density

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DISCUSSION

Osteoarthritis is a chronic degenerative disorder of multifactorial etiology characterized by loss of articular cartilage, hypertrophy of bone at the margins, etc., with the biochemical and morphological alterations of the synovial membrane and the joint capsule. Knee pain is most frequent and symptomatic medical problems above 40 years people. More than 45 years people report joint symptoms.

The signs and symptoms of Azhal keel vayu described in Siddha literature can be correlated with “Osteoarthritis of knee” in modern medicine. 40 cases were selected and the diagnosis was made with the help of siddha method along with modern methods. The various criteria and the results were discussed here under.

Age distribution:

According to this study, most of the patients were above the age of 50 which was already explained by modern science that degeneration due to ageing is important cause for osteoarthritis.

Sex Distribution:

Among the 40 cases, 18 (45%) were male and 22 (55%) were female patients.
Prevalence of affecting the joints:

In Azhal Keel Vayu the hallmark of involvements are articular joints, perdominantly Knee Joint (100%).

Duration of the illness:

According to this study the duration of the illness varied from 10 days to 5 years.

Socio – economic status:

Among the 40 cases selected for this study, 31 cases (77.5%) were poor class, 7 cases (17.5%) middle class and only 2 cases (5%) were from rich background.

Occupation status:

Occupation place the important role in the aetiology of Azhal Keel Vayu. Manual labour account for 37.5% cases. Agricultural labour 35% and home workers 27.5% were also affected by the diseases. The main cause for this is excessive repetitive joint loading.

Precipitating Factors:

Ageing is the common cause for Azhal Keel Vayu. Apart from that over use of joints due to their occupation in (57.5%) over weight in (12.5%) of cases.
Clinical Manifestation:

The major clinical symptom reported to be pain in the joints and tenderness along joint line and crepitation (100%) in the knee joints followed by 50% of them had constipation 37.5% of them had morning stiffness 95% had limited duration of movements and 72.5% had swelling in knee joint.

Paruva Kaalam:

Kaar Kalam (47.5%), Koothir Kalam as (27.5%), Muthuvenil kalam (25%)

Thinnai:

The incidence of Azhal Keelvayu is high in people from Marutha Nilam (75%) Neithal Nilam (22.5%) and kurinji Nilam (2.5%).

Generally in marutha nilam, all the three doshas are in physiological ratio, but for these 40 patients the occupation, age and Pollution alters the physiological ratio and cause the disease.

Diet:

Diet plays a major role in maintaining ideal body mass index. Majority of the people (92.56%) were non-vegetarian diet habits.
Clinical features

From the tabulated data, it was clear that all the patients had pain, tenderness, crepitations as their predominating symptoms. Limited movements (95%), swelling (72.5%) and morning stiffness (37.5) were found to be predominant next to the above symptoms.

Radiological findings

From the table data, joint space narrowing (95%), presence of osteophytes (75%), Subchondral sclerosis (95%) are their predominating findings.

Disturbance in Vatham:

In the 40 cases, in all of them (100%) Viyanan and Samanan were affected. Abanan was affected in 35 (87.5%) cases

Disturbance in Pitham:

According to this study, Sathagapitham was affected in all 40 cases 100%.

Disturbance in Kapham:

According to this study santhiga kapham was affected in all the cases (100%). Therefore Avalambagam also affected in 40 cases (100%). Kilethagam was affected in 10(25%) cases.
Udal Kattugal:

Among the Seven Udal Kattugal, Saaram, Kozhuppu, Enbu and Moolai were affected in all 40 (100%) cases. Senneer was affected in 12 (30%). Oon was affected in 3 cases (7.5%).

Derangement in eight parameters of our systems (Envagi thervugal):

Sparisam (swelling, warmth and crepitation) was found affected in all the 40 cases.

In naadi pitha vatha naadi (50%) and vatha pitha naadi (37.5%) predominates among the other naadi in the osteoarthritis patients.

Treatment:

The treatment of Siddha system primarily aimed to retain the deranged thosams and then providing relief from symptoms.

Each patient was advised for purgation by giving vellai ennai – 15ml with warm water early morning (single dose for first day treatment)

From 2nd day onwards Internal medicine – sagala vatha choor nam – 1.5gm three times/ day.

External medicine – Ilagu vadha Kesari thylam were given.

During treatment, the patient were advised particularly to avoid foods which increases vatham like potato, tuber and other roots and also advised
to take vitamin C containing foods and fruits. It is important in the
development of normal cartilage.

Out of 40 cases 10 cases were given only external therapy like
ottradam, thokkanam, varnam, leaf kattu and asana.

The result is mainly assessed by reduction in severity of joint pain,
stiffness and improvement of restricted movements. Universal pain
assessment scale was used to infer proper outcomes.

The swelling of knee joint marked reducing in lemon ottradam and
pain was reduced by Adathoda leaf kattu.
SUMMARY

The disease Azhal Keel vaayu was comparatively studied with the disease Osteoarthritis with reference to its etiology, pathogenesis and clinical features. **Sagalavatha Chooranam** as internal medicine and **Ilagu Vatha Kaesari Thylam** as external medicine was selected and a clinical trial in Govt. Siddha Medical College, Palayamkottai was conducted with these drugs. For this 40 cases were selected in which 20 were treated in OutPatient ward and remaining 20 in In Patient ward.

Pharmacological analysis of Sagalavatha Chooranam shows

- Analgesic action
- Moderate Acute anti inflammatory action

Pharmacological analysis of Ilagu vadha kesari thylam shows

- Significant acute anti inflammatory action

Since external therapies or manual therapies like massage, fomentation, leaf bandage, exercises plays a significant role in treating Osteoarthritis. Some of the external therapies from siddha system are manipulated along with trial drugs depending upon the severity of the disease.
Daily progress was observed to evaluate the efficacy. The results obtained were found to be auspicious. Particularly results by external therapies were found to be very auspicious.

During and after the course of treatment no side effects were reported.
CONCLUSION

In this clinical study SAGALA VADHA CHOORANAM ILAGAU VADHA KESARI THYLAM were taken as Internal and External drug respectively for treating the disease Azhal Keel Vayu.

In the pre clinical study pharmacological evaluation of the trial drug shows

→ Significant analgesic effect

→ Moderate Acute Anti Inflammatory effect (Internal medicine)

→ Significant Acute Anti- Inflammatory effect (External medicine)

The overall results of efficacy of the trial drugs along with external therapies by reducing the clinical signs and symptoms like pain, swelling, morning stiffness. This Clinical study were found to have marked effect in 37.5% cases, moderate effect in 42.5% cases, mild effect in 12.5% cases and no effect in 7.5%.

So the clinical effect of the trial drugs along with external therapies was found to be moderater in treating the disease azhal keel vayu.

The Trial drug Sagala Vadha Chooranam and Ilagu Vadha Kesari Thylam is purely herbal. No adverse effects were noticed during the treatment period. So the trial medicine is safe and easily preparable medicine.
STANDARD OPERATING PROCEDURE FOR PREPARATION OF SAGALA VADHA CHOORANAM (Internal) AND ILAGU VADHA KESARI THYLAM (External)

SOURCE OF RAW DRUGS:
The required drugs for preparation of SAGALA VADHA CHOORANAM (Internal) and ILAGU VADHA KESARI THYLAM (External) are purchased from a well reputed country shop and Raw drugs are Authenticated by Medical botanist of Govt. Siddha Medical College, Palayamkottai, then purified and the medicines are prepared in the Gunapadam laboratory of Govt. Siddha Medical College, Palayamkottai.

PREPARATION AND PROPERTIES OF TRIAL DRUG

Name of the medicine: SAGALA VADHA CHOORANAM

Reference: Athma Rakhsharmithamennnum Vaidhya Sara Sankiragam

INGREDIENTS OF TRIAL DRUG:
- Cithira moola verpattai (Plumbago zeylanica) - 175 gms
- Melakaranai verpattai (Toddalia asiatica) - 175 gms
- Nochi Verpattai (Vitex negundo) - 175 gms
PURIFICATION:

Chithira moola verpattai:
The root bark of plumbago zeylanica is powdered and its steamed with milk.

Other milakaranai and nochi verpattai are cleaned with water and allowed to dry.

Method of preparations:
The all ingredients are powdered, mixed together and taken.

Dose: 1.5gms (Thirikadi piramanam) given with water

Indication: All types of vatha disease

2. Name of the medicine: ILAGU VADHA KESARI THYLAM

Reference: Anubava vaidhya deva ragasiyam

INGREDIENTS OF TRIAL DRUG:
Sesamum oil (Juice of cleome viscosa) - 350ml
Poondu (Allium Sativa) - 100gms
Perungayam (Ferula asafoetida) - 17gms
Moosambaram (Aloe barbedensis) - 17gms

METHOD OF PREPARATION:
Perungayam and moosambaram are powdered. Then vellai poondu is added and mixed into a paste. The paste is then taken in a vessel along with herbal juices and oil and heated until contents become wax like consistency. It is filtered and used for external application.

Dose: 30 ml

Indication: Kai, kaal kudaichal, Vali, Veekam, Keel Vayu, Mega Soolai.
PROPERTIES OF TRIAL DRUG: (INTERNAL)

Botanical name: Plumbago zeylanica
Family: Plumbaginaceae
Parts used: Root bark

 Constituents:

It contain anti-oxidative property
Zeylaedon, chitradon, plumbagin, amino acid
2. **Botanical Name:** Toddalia asiatica  
**Family:** Rutaceae  
**Parts used:** Root bark

- **Kadi:** வேலைப்படு 
- **Kaliyam:** வேலைம 
- **Pithiyu:** வலம்பு 
- **Bhavamipperu:** தொட்டை சுத்தமரக் வேலை 
- **Net happening:** சுமார்க்கி (Tonic) 
- **Bhavamipperu:** (Diaphoretic) 
- **Net happening:** (Antiperiodic)

**Bhavakalam:**

- **Bhavam:** வேலைப்படு அரிதல் செய்யப்பட்டது   
- **Net happening:** சுமார்க்கி முறையியல் விளக்கமாக - சமாதந்த   
- **Net happening:** சுமார் விளக்கம், சுமார்க்கி, சுமார்க்கி, வேலைப்படு நுண்பார்க்கக்கு   
- **Net happening:** வேலைப்படு வலம்

**Bhavakalam:**

- Chelerythin, Oxyclerthin, Toddanin, Coumarin, Cyclohexylamine  
  Root bark contain a resin, essential oil, citri acid, pectin, starch, chief constituent is berberine.
### 3. भूषणकी

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Constituents:
Major - Negundoside, Nishindaside
Other - Viridiflorol, p – eudesmol, methyl heptanone, carophyllene, linatool, camphor geranoil
Pharmacology – vitex negudo extract showed anti-inflammatory activity and is used in arthritis and Rheumatic disorder.

It also showed analgesic and central nervous system depressant activity

Major therapeutic claims: Anti inflammatory, Antifertility, Antispasmodic, Anti bacterial, Analgesic, Hepato protective, Anti convulsant.

Very efficacious in dispelling inflammatory swelling of the joints.

*Indian Medicinal plants Vol – 3*

Properties of Trial drug: (External)

1. சுற்றினமண்டல

   Botanical name: Cleome viscosa
   Family: Capparidaceae
   Parts used: Whole plant

   மரம்: கையம்ப
   இலைகள்: மையம்ப
   பத்திரம்: காம்ப
   கல்லாலைப்: தாயால்குற்கு குற்ற புரசாணம்.
   வெள்ளக்கூறு: புற்றிகட்டர்பு (Anthelmintic)
   மினல்கலை (Antispasmodic)
   காழியுடைய (Diaphoretic)
Constituents: Cleomiscosin D, Coumarino - Lingam, Glucosinolates, Cleomeolide

Action: Anti-Inflammatory, Anti-oxidative

2. புளோதம்:

Botanical Name : Allium sativum
Family : Liliaceae
Parts used : Tuber

சிற்பமிருப்பி : டாக்குமி, கம்பம், தொம்போடுமாணிப்
சதுரம் : காப்பு
சிவில மரம் : ஒயப்பும்
மாய்குளம் : காப்பு
மரத்பரப்பு : சிற்பம் பொருள்வகுதியும் பொருள்வகுதியும் வெவ்வேறு புளோதம்

சந்தைக் : அக்கூறுப்பாலையும் (Carminative)
 வேதாதாரந்தம் (Tonic)

பயன்காட்டை:

காதலியை மூடி சிறுத்தியை கூடிய பயன்படுத்தும். தீயாக்கும் கூக்கியாக பயன்படுத்தும் - அங்கமும்
சிறுத்தியை கூடிய நோய்கள் இல்லையைச் செய்யும் போல்
சிறுத்தியை கூடிய நோய்கள் இல்லையைச் செய்யும்
Constituents:

Allicin, spirostanol, Analogue, Quarcitin, myscetin, luliolin.

It act as a good antispasmodic. Externally the juice used as a rubefacient acts very beneficial spasmodic affections & arthritis.

3. பக்காக்கம்:

Botanical Name: Ferula asafoetida
Family: Umbelliferae
Parts used: Oleogum resin

செய்வித்தை: மாவு, குத்தி, நூற்றாண்டங்காய்.
கீழ்: காட்சியுடன், காட்சிக்கு
காய்ச்சல்: கைப்பட்டி
பிலிக்கு: காட்சியுடன்

அச்சுப்: அச்சுப்பலகுக் கைப்பட்டி (Stimulant)
அச்சுப்பலகுக் கைப்பட்டி (Antispasmodic)

பாதுகாப்பு:

கூறுகள்: குறுக்குச்செய்வித்தைத் தயாரிப்பு
சதுரசுகளும் விலங்குகளின் பானை
மாவுப் பயிற்சியுடன் தனியுடையில் அமுக்குறிப்பிட்டு
னந்தவளிகள் தமிழ்விளக்கிகளில்
நான்தவளிகள் விளங்குவதற்காக
நான்தவளிகள் விளங்குவதற்காக

Constituents:

Presence of sulphur compounds like disulfides, Glucosonic acid, galactose, Grahenoise, umbelliferone, Coumarine, Foelidin.
4. முதல்வரும்:

Botanical Name : Aloe littoralis  
Family : Liliaceae  
Parts used : Latex

சார்பு: காம்பு  
சார்பு: காம்பு  
சார்பு: காம்பு  
சார்பு: காம்பு

தொடர்: தோமக்கி (Tonic)  
செம்பாசல்சாக்கி (Stimulant)

Constituents:

Used in areas around joint information and swelling.  
It inhibits production of Inflammatory prostaglandins.

5. மூன்றுமையிலும்:

Botanical Name : Sesamum indicum  
Family : Pedaliaceae  
Parts used : Seed

சார்பு: தோமக்கி (Demulcent)  
சார்பு: தோமக்கி (Nutritive)  
சார்பு: தோமக்கி (Emulcent)
Chemical Constituents:

Seeds contain Fixed oil, Protein, Carbohydrate
ANNEXURE - II

GOVT SIDDHA MEDICAL COLLEGE- PALAYAMKOTTAI

BIO – CHEMICAL ANALYSIS OF SAGALA VATHA CHOORANAM

PREPARATION OF THE EXTRACT:

5gms of the drug was weighed accurately and placed in a 250ml clean beaker. Then 50ml of distilled water added to it and dissolved well. Then it was boiled well for about 10 minutes. It was cooled and filtered in a 100ml volumetric flask and then it is made up to 100ml with distilled water. This fluid was taken for analysis.

**Qualitative Analysis**

<table>
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<th>S.No.</th>
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<th>Observation</th>
<th>Inference</th>
</tr>
</thead>
<tbody>
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<td>No white precipitate is formed.</td>
<td>Absence of calcium.</td>
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<tr>
<td></td>
<td>2ml of the above prepared extract is taken in a clean test tube. To this add 2 ml of 4% ammonium oxalate solution.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td><strong>Test for sulphate:</strong></td>
<td>A white precipitate is formed.</td>
<td>Indicates the presence of sulphate.</td>
</tr>
<tr>
<td></td>
<td>2ml of the extract is added to 5% barium chloride solution.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td><strong>Test for chloride</strong></td>
<td>A white precipitate is formed.</td>
<td>Indicates the presence of chloride.</td>
</tr>
<tr>
<td></td>
<td>The extract is treated with silver nitrate solution.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4. **Test for carbonate**  
The substance is treated with concentrated HCl.  
No brisk effervescence is formed.  
**Absence** of carbonate.

5. **Test for Starch**  
The extract is added with potassium ferro cyanide.  
Blue colour is formed  
Indicates the **presence** of Starch.

6. **Test for iron Ferric**  
The extract is treated with concentrated glacial acetic acid and potassium ferro cyanide.  
No blue colour is formed.  
**Absence** of ferric iron.

7. **Test for iron Ferrous:**  
The extract is treated with concentrated nitric acid and ammonium thio cyanate.  
Blood red colour is formed.  
Indicates the **presence** of ferrous iron.

8. **Test for phosphate**  
The extract is treated with ammonium molybdate and concentrated nitric acid.  
Yellow precipitate is formed.  
Indicates **trace amount** of phosphate is present.

9. **Test for albumin**  
The extract is treated with Esbach’s reagent.  
No yellow precipitate is formed.  
**Absence** of Albumin.

10. **Test for Tannic acid**  
The extract is treated with ferric chloride reagent.  
No Blue black precipitate is formed  
**Absence** of Tannic acid.
11. **Test for unsaturation**  
   Potassium permanganate solution is added to the extract.  
   It gets decolorized.  
   Indicates the presence of unsaturated compound.

12. **Test for the reducing sugar**  
   5ml of benedict’s qualitative solution is taken in a test tube and allowed to boil for 2 mts and added 8-10 drops of the extract and again boil it for 2 mts.  
   No Colour change occurs.  
   Absence of reducing sugar

13. **Test for amino acid:**  
   One or two drops of the extract are placed on a filter paper and dried it well. After drying, 1% ninhydrin is sprayed over the same and dried it well.  
   Violet colour is formed.  
   Indicates the presence of Amino acid.

14. **Test for zinc:**  
   The extract is treated with potassium ferrocyanide  
   No white precipitated is formed  
   Absence of zinc

**Result:**

The trial drug **SAGALA VATHA CHOORANAM contains**

1. Sulphate
2. Chloride
3. Starch
4. Ferrous iron
5. Phosphate
6. Unsaturated compound
7. Amino acid
Aim:

To study the analgesic effect on albino rats by tail flick method.

Preparation of the test Drug:

1 gram of Sagala vatha chooranam was suspended in 10ml of Hot Water as suspending agent. This 1 ml contained 100mg of the test drug.

Procedure:

Nine Male Healthy albino rats (weighing 80-100gms) were used for this study. The animals were allowed, free access to food and water until they brought for the experiment. The animals which showed the positive response to the stimulus (within a given time) were selected for the study. After the selection of animals which were responding to stimulus within 2 seconds, they were divided into three groups, each group consisting of three rats.

The hot water was maintained at 55°C. The tip of the tail was immersed into the water bath and the time was noted when the rat flicked the tail. First group was given 1ml of water and kept as control. Second group was administered with paracetamol at a dose of 20mg/100gm of body weight. Third group as given the dose of 100mg/100gm body weight of the animal. After the drug administration,
the reaction time of each rat after half an hour and one hour were noted in each
group (when a rat fails to flick the tail, it should not be continued beyond 8
seconds to avoid injury) and the average was calculated.

The results of control group, standard group and drug treated group were
tabulated and compared.
**STUDY OF ANALGESIC EFFECT USING THE DRUG SAGALA VATHA CHOORANAM**

<table>
<thead>
<tr>
<th>Name of the Groups</th>
<th>Dose/100 gram body weight</th>
<th>Initial reading</th>
<th>After drug administration</th>
<th>Mean difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>½ hr Average</td>
<td>1 hr Average</td>
</tr>
<tr>
<td>Control (Water)</td>
<td>2 ml</td>
<td>2.0 sec</td>
<td>2.0 sec</td>
<td>2.0 sec</td>
</tr>
<tr>
<td>Standard (Paracetamol)</td>
<td>2 mg</td>
<td>2.5 sec</td>
<td>4.5 sec</td>
<td>6.5 sec</td>
</tr>
<tr>
<td>Test drug (Sagala vatha chooranam)</td>
<td>100 mg</td>
<td>2.5 sec</td>
<td>4.0 sec</td>
<td>5.5 sec</td>
</tr>
</tbody>
</table>

**Inference:**

The trial drug had **significant analgesic action.**
STUDY OF ACUTE ANTI – INFLAMMATORY ACTIVITY IN RATS

USING THE DRUG

SAGALA VATHA CHOORANAM

BY HIND – PAW METHOD

Aim:

To demonstrate the acute anti-inflammatory activity of Sagala vatha choorananam in albino rats by Hind-paw method.

Procedure:

Nine healthy albino rats weighing 100-150 gm were taken and divided into three groups, each consisting of three rats.

First group was kept as control by giving distilled water orally 2ml/100gm body weight. The second group was given ibuprofen at a dose of 20mg /100gm body weight. The third group received the test drug at a dose 100mg /100g body weight.

Before administration of test drug, the hind-paw volumes of all rats were measured. This was done by dipping the hind-paw upto the tibio-tarsal junction into a mercury plethysmograph. While dipping the hind-paw, by pulling the syringe piston, the level of mercury in the centre small tube was made to coincide with red marking and reading was noted from the plethysmograph.
Soon after measurement, the drugs were administered orally. One hour later, a sub-cutaneous injection of 0.1ml of 1% (W/V) Carrageenan in water was made into plantar surface of both hind-paws of each rat. Three hours after carrageenan injection, the hind paw volume was measured once again. The difference between the initial and final volume was calculated and compared. This method is more suitable for studying the anti-inflammatory activity in acute inflammation. The values are tabulated.

**STUDY OF SAGALA VATHA CHOORANAM IN ACUTE ANTI – INFLAMMATORY ACTIVITIES**

<table>
<thead>
<tr>
<th>Group</th>
<th>Dose volume orally</th>
<th>Initial reading</th>
<th>Final reading</th>
<th>Mean difference</th>
<th>Percentage Inflammation</th>
<th>Percentage Inhibition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>Water 2 ml</td>
<td>0.55</td>
<td>1.4</td>
<td>0.85</td>
<td>100</td>
<td>-</td>
</tr>
<tr>
<td>Standard</td>
<td>Ibuprofen 20mg</td>
<td>0.55</td>
<td>0.75</td>
<td>0.20</td>
<td>23.2</td>
<td>76.5</td>
</tr>
<tr>
<td>Test drug</td>
<td>100mg</td>
<td>0.5</td>
<td>0.85</td>
<td>0.35</td>
<td>41.1</td>
<td>58.9</td>
</tr>
</tbody>
</table>

**Result:**

The drug has **moderate acute anti-inflammatory action.**
ACUTE ANTI-INFLAMMATORY STUDY ON ILAGU VATHA
KESARI THYLAM (EXTERNAL USE)
BY HIND-PAW METHOD IN ALBINO RATS

Aim:

To study the acute anti-inflammatory activity of the test drug ILAGU VATHA KESARI THYLAM

Preparation of the test drug:

The Ilagu vatha kesari thylam was prepared as per the preparation given in Anubava vaidhya deva ragasiyam.

Procedure:

Nine healthy albino rats weighing 100-150gm were taken and divided into three groups, each consisting of 3 rats.

First group was kept as control by giving distilled water of 2ml/100gm of body weight. The second group was kept as test group. The third group was given the standard drug.

Before application of the test drug the Hind-paw volume of all the rats were measured. This was done by dipping the Hind-paw up to the tibio-femoral junction into a mercury plethysmograph. While dipping the Hind-paw, by pulling the syringe piston, the level of mercury in the centre small tube was made to coincide with red marking and reading was noted from the plethysmograph.
One hour later, a sub-cutaneous injection of 0.1ml of 1%( w/r) Carrageenan water made into plantar surface of both Hind-paw of each rat. To the second (last) group *Ilagu vatha kesari thylam* was topically applied for three times over the inflammed surface in a thin layer for every 15mts for an hour.

To the contol group no drug was applied over the inflammed surface. To the standard group the standard drug Ibuprofen in a dose of 20mg/100gm body weight was given.

Three hour after injection the Hind-paw volume was measured once again. The difference between the initial and final volume would show the amount of inflammation. Taking the volume in the control group as 100% of inflammation, anti – inflammatory effect of the test group is calculated.
## EFFECT OF ILAGU VATHA KESARI THYLAM

<table>
<thead>
<tr>
<th>Group</th>
<th>Drugs</th>
<th>Dose 100 gm of body weight</th>
<th>Initial value</th>
<th>Final value</th>
<th>Difference</th>
<th>Percentage Inflammation</th>
<th>Percentage Inhibition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>Water</td>
<td>2ml</td>
<td>0.55</td>
<td>1.4</td>
<td>0.85</td>
<td>100</td>
<td>-</td>
</tr>
<tr>
<td>Standard</td>
<td>Ibuprofen</td>
<td>20mg</td>
<td>0.55</td>
<td>0.75</td>
<td>0.20</td>
<td>23.5</td>
<td>76.5</td>
</tr>
<tr>
<td>Test drug</td>
<td>IVKT</td>
<td>Ext</td>
<td>0.55</td>
<td>0.85</td>
<td>0.3</td>
<td>35.2</td>
<td>64.8</td>
</tr>
</tbody>
</table>

IVKT- ILAGU VATHA KESARI THYLAM

**Inference:** The test drug has significant anti-inflammatory action externally.
ANNEXURE – IV

ASSESSMENT FORMS

FORM I - SCREENING FORM
FORM II - CONSENT FORM
FORM III - CASE PROFORMA
FORM IV - LABORATORY INVESTIGATIONS
FORM V - CLINICAL ASSESSMENT
FORM VI - PATIENT WITHDRAWAL FORM
FORM VII - DRUG COMPLIANCE FORM
GOVERNMENT SIDDHA MEDICAL COLLEGE & HOSPITAL
PALAYAMKOTTAI.

POST-GRADUATE DEPARTMENT OF SIRAPPU MARUTHUVAM

AN OPEN CLINICAL TRIAL OF SAGALA VATHA CHOORANAM & ILAGU
VATHA KESARI THYLAM FOR AZHAL KEEL VAAYU (OSTEOARTHRITIS)

FORM I – SCREENING FORM

1. OP/ IP No: 2. BED No:

3. Sl. No: 4. NAME:

5. AGE: 6. GENDER:

7. OCCUPATION: 8. SOCIAL STATUS

9. DATE OF ADMISSION: 10. DATE OF DISCHARGE:

11. POSTAL ADDRESS:

I. INCLUSION CRITERIA:

1. Sex: Both Male and Female.

2. Pain and swelling present in knee joints.

3. Crepitations present in knee joints.

4. Early morning stiffness.

5. Tenderness
II. EXCLUSION CRITERIA:

1. Diabetes Mellitus
2. Hypertension
3. Cardiac diseases
4. Pregnancy and Lactation
5. Patients with any other serious illness
6. Peptic ulcer
7. Severe trauma
8. Any other systemic diseases

III. WITHDRAWAL CRITERIA:

1. Development of any adverse reaction (ADR)
2. Occurrence of any other systemic illness.
CERTIFICATE BY INVESTIGATOR

I certify that I have disclosed all the details about the study in the terms readily understood by the patient.

Signature…………………… Date……
Name……………………

CONSENT BY PATIENT

I have been informed to my satisfaction, by the attending physician, the purpose of the clinical trial, and the nature of drug treatment and follow-up including the laboratory investigations to be performed to monitor and safeguard my body functions.

I am aware of my right to opt out of the trial at any time during the course of the trial without having to give the reasons for doing so.

I, exercising my free power of choice, hereby give my consent to be included as a subject in the clinical trial of ‘SAGALA VATHA CHOORANAM (Internal drug & ILAGU VATHA KESARI THYLAM (External drug)’ for the treatment of ‘Azhal keel vaayu’ (osteoarthritis).

Signature…………………… Date………………
Name……………………
அரிசை சிறந்த முடிக்கும் கம்பனி பண்டை முறையுற்றுக்குத்,முதல் முறையுற்றுக்குத்
பண்டையுற்று முறையுற்றுக்குத்
“செயல்கொடுக்கும்” பண்டை “செய்யும் காத்து காத்து காத்து” திட்டும்நிறுத்தி
பிறகுப்புற்றுக்குத் கூட்டப்படும் பண்டையுற்று அறிய

அப்பட்டு கூட்டப்படும்

காச்சு திட்டு அப்பட்டு கூட்டப்படும் காச்சில் ஒருகுது பண்டையுற்று கூட்டப்படும்
பிறகுப்புற்றுக்குத் கூட்டப்பட்டிருக்கும் காச்சின் கூட்டப்படும் அறிய

எது: கூட்டப்பட்டிருக்கும்

அப்பட்டு கூட்டப்படும்

சரணாலயத்தில் திட்டு பண்டையுற்று கூட்டப்படும் முதலிலிடம் காச்சில்
பண்டையுற்று காச்சில் ஒருகுது பண்டையுற்று
எது: கூட்டப்படும்

அப்பட்டு கூட்டப்படும்

சரணாலய கூட்டப்பட்டிருக்கும் காச்சில் ஒருகுது பண்டையுற்று
எது: கூட்டப்படும்

அப்பட்டு கூட்டப்படும்

சரணாலய கூட்டப்பட்டிருக்கும் காச்சில் ஒருகுது பண்டையுcef
எது: கூட்டப்படும்

அப்பட்டு கூட்டப்படும்

சரணாலய கூட்டப்பட்டிருக்கும்
தற்போது தலைமையில் காண்டுகிறது வரும் ஊடாகம் ஒற்றுமையான விளக்கங்கள் அமைக்கிறன. உலக தலைமை விளக்கங்கள் “சர்வதேச காட்சிகள்” போன்றவை. “ஒன்று மத்தியுடைய நூற்றாண்டு” என்பவை பெரும்பாலும் குறிப்பிட்டு கூறப்பட்டுள்ளது நாங்கள் அப்படியாக விளக்கப்பட்டுள்ளது அவற்றிலிருந்து வெளிப்படுத்தியுள்ள கலந்துநோக்குப் பகுதியாக விளக்கம் நீங்கள் உண்டு.
GOVERNMENT SIDDHA MEDICAL COLLEGE AND HOSPITAL
PALAYAMKOTTAI.

POST-GRADUATE DEPARTMENT OF SIRAPPU MARUTHUVAM

AN OPEN CLINICAL TRIAL OF SAGALA VATHA CHOORANAM & ILAGU VATHA
KESARI THYLAM FOR AZHAL KEEL VAAYU (OSTEOARTHRITIS)

FORM III – CASE PROFORMA

1. OP/ IP No: 2. BED No: 3. Sl. No:

4. NAME: 5. AGE: 6. GENDER:

7. OCCUPATION: 8. SOCIAL STATUS

9. DATE OF ADMISSION: 10. DATE OF DISCHARGE:

11. POSTAL ADDRESS:

Lecturer HOD

---------------------------------------------------------------------------------------------------

12. COMPLAINTS & DURATION:

13. HISTORY OF PRESENT ILLNESS:

14. PAST HISTORY:

15. FAMILY HISTORY:
16. MENSTRUAL HISTORY (If applicable):

17. HABITS:  

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Smoker</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Alcoholic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Betel nut chewer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Non-Veg /Vegetarian</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Drug addiction</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

18. GENERAL EXAMINATION:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Body weight [Kg] :</td>
<td></td>
</tr>
<tr>
<td>2. Height [cm] :</td>
<td></td>
</tr>
<tr>
<td>3. Body Temperature [°F] :</td>
<td></td>
</tr>
<tr>
<td>4. Blood Pressure (mmHg) :</td>
<td></td>
</tr>
<tr>
<td>5. Pulse Rate /min. :</td>
<td></td>
</tr>
<tr>
<td>6. Heart Rate /min. :</td>
<td></td>
</tr>
<tr>
<td>7. Respiratory Rate /min. :</td>
<td></td>
</tr>
<tr>
<td>8. Pallor :</td>
<td></td>
</tr>
<tr>
<td>9. Jaundice :</td>
<td></td>
</tr>
<tr>
<td>10. Clubbing :</td>
<td></td>
</tr>
<tr>
<td>11. Cyanosis :</td>
<td></td>
</tr>
<tr>
<td>12. Pedal Oedema :</td>
<td></td>
</tr>
</tbody>
</table>
13. Lymphadenopathy : [Blank] [Blank]

14. Jugular venous pulsation: [Blank] [Blank]

19. CLINICAL EXAMINATION OF KNEE JOINT:

I. INSPECTION

<table>
<thead>
<tr>
<th>Present</th>
<th>Absent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Swelling</td>
<td>[Blank] [Blank]</td>
</tr>
</tbody>
</table>

| 2. Muscle wasting | [Blank] [Blank] | …………………………… |

| 3. Deformity | [Blank] [Blank] | …………………………… |

II. PALPATION:

<table>
<thead>
<tr>
<th>Present</th>
<th>Absent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Tenderness</td>
<td>[Blank] [Blank]</td>
</tr>
</tbody>
</table>

| 2. Swelling | [Blank] [Blank] | …………………………… |

| 3. Crepitations | [Blank] [Blank] | …………………………… |

| 4. Warmth | [Blank] [Blank] | …………………………… |

III. MOVEMENTS:

1. Restriction of Movements in the Knee joint: Full [Blank] Partial [Blank] No [Blank]
2. **KNEE: PAIN**  

<table>
<thead>
<tr>
<th>MUSCULAR SPASM ROM</th>
<th>Yes</th>
<th>No</th>
<th>Yes</th>
<th>No</th>
<th>Normal</th>
<th>Reduced</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. Flexion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ii. Extension</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. **NEUROLOGICAL EXAMINATION:**

<table>
<thead>
<tr>
<th>i. Sensation</th>
<th>Normal</th>
<th>Abnormal</th>
</tr>
</thead>
<tbody>
<tr>
<td>ii. Tone</td>
<td>Normal</td>
<td>Abnormal</td>
</tr>
<tr>
<td>iii. Power</td>
<td>Normal</td>
<td>Abnormal</td>
</tr>
<tr>
<td>iv. Muscle wasting</td>
<td>Present</td>
<td>Absent</td>
</tr>
</tbody>
</table>

4. **REFLEXES:**

<table>
<thead>
<tr>
<th>Normal</th>
<th>Exaggerated</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. Knee jerk</td>
<td></td>
</tr>
<tr>
<td>ii. Ankle jerk</td>
<td></td>
</tr>
</tbody>
</table>
20. CLINICAL ASSESSMENT:

I. PAIN:

A. Pain in the knee joints:  
<table>
<thead>
<tr>
<th>No</th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
</tr>
</thead>
</table>

   i. Onset    Sudden  Gradual  

   ii. Nature:  Local  Diffuse  Others  

B. Nature of pain  
   Shooting  Burning  Others  

C. Pain during movements  

YES  NO  

II. Morning stiffness  

III. Tenderness  

IV. Swelling  

IV. Restricted joint movements  

YES  NO
21. EXAMINATION OF OTHER SYSTEMS:

<table>
<thead>
<tr>
<th></th>
<th>Normal</th>
<th>Abnormal</th>
</tr>
</thead>
<tbody>
<tr>
<td>CVS</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>RS</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>CNS</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>ABDOMEN</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>GENITO-URINARY</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

SIDDHA ASPECTS

1. NILAM:


2. KAALAM:


3. YAAKKAI:


4. **GUNAM:**

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>1. Sathuvam</td>
<td>2. Rasatham</td>
<td>3. Thamasam</td>
<td></td>
</tr>
</tbody>
</table>

5. **IYMPORIGAL:** Normal Affected

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>1. Mei</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Vaai</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Kan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Mookku</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Sevi</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6. **KANMENDHIRIUM / KANMAVIDAYAM:**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Kai</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Kaal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Vaai</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Eruvaai</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Karuvaai</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
7. UYIR THATHUKKAL:

<table>
<thead>
<tr>
<th>I. VATHAM:</th>
<th>Normal</th>
<th>Affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Piraanan</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>2. Abaanan</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>3. Viyaanan</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>4. Uthaanan</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>5. Samaanan</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>6. Naagan</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>7. Koorman</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>8. Kirukaran</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>9. Devathathan</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>10. Dhananjeyan</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>
### II. PITHAM : Normal    Affected

1. Analam  ☐ ☐  ...........................................

2. Ranjagam  ☐ ☐  ...........................................

3. Saathagam  ☐ ☐  ...........................................

4. Aalosagam  ☐ ☐  ...........................................

5. Prasagam  ☐ ☐  ............................................

### III. KABAM: Normal    Affected

1. Avalambagam  ☐ ☐  ............................................

2. Kilethagam  ☐ ☐  ............................................

3. Pothagam  ☐ ☐  ............................................

4. Tharpagam  ☐ ☐  ............................................

5. Santhigam  ☐ ☐  ............................................

---

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8. UDAL THATHUKKAL: Normal  Affected

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Saaram</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Senneer</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Oon</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Kozhuppu</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Enbu</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Moolai</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Sukkilam/Suronitham</td>
<td></td>
</tr>
</tbody>
</table>

9. ENVAGAI THERVUGAL:

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Naadi</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Normal</th>
<th>Affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>Sparisam</td>
</tr>
<tr>
<td>3.</td>
<td>Naa</td>
</tr>
<tr>
<td>4.</td>
<td>Niram</td>
</tr>
<tr>
<td>5.</td>
<td>Mozhi</td>
</tr>
</tbody>
</table>
6. Vizhi □ □ ...........................................................

7. Malam
a. Niram □ □ .................................................. 

b. Nurai □ □ ..................................................

c. Kirumi □ □ ..................................................

d. Thanmai: i. Irugal □ ii. Ilagal □

8. Moothiram:

I. NEERKKURI Normal Affected
a. Niram □ □ ..................................................

b. Manam □ □ ..................................................

c. Edai □ □ ..................................................

d. Nurai □ □ ..................................................

e. Enjal □ □ ..................................................

II. NEIKKURI: ...................................................

Vatha Neer □ Pitha Neer □ Kaba Neer □
GOVERNMENT SIDDHA MEDICAL COLLEGE AND HOSPITAL

PALAYAMKOTTAI.

POST- GRADUATE DEPARTMENT OF SIRAPPU MARUTHUVAM

AN OPEN CLINICAL TRIAL OF SAGALA VATHA CHORANAM & ILAGU VATHA KESARI THYLAM FOR AZHAL KEEL VAAYU (OSTEOARTHRITIS)

Form IV - LABORATORY INVESTIGATIONS

1. OP/ IP No: 2. BED No: 3. Sl. No:
4. NAME: 5. AGE: 6. GENDER:
7. OCCUPATION: 8. SOCIAL STATUS
9. DATE OF ENROLMENT: 10. DATE OF DISCHARGE:
11. POSTAL ADDRESS:

Lecturer HOD

Date:

I. BLOOD:

1. TC: (Cells/Cumm)
2. DC (%): N L M E
3. ESR (mm): ½ hr 1 hr
4. Hb:

136
5. Total RBC:


7. Kidney function tests:
   - Blood urea: Serum creatinine:

8. Lipid profile:
   - HDL: LDL: VLDL:
   - Total Cholesterol: TGL:

9. Liver Function tests:
   - SGOT: SGPT: Alk. Phosphatase:
   - Albumin: Globulin: Total Protein:
   - Serum Bilirubin: Total Direct Indirect:

II. URINE:
1. Albumin :

2. Sugar :

3. Epithelial cells :

4. Pus cells :

5. Red blood cells :

6. Casts/Crystals :

III. MOTION:
1. Ova :

2. Cyst :

3. Occult blood :

4. Pus cells :

IV. X-RAY:
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POST-GRADUATE DEPARTMENT OF SIRAPPU MARUTHUVAM
AN OPEN CLINICAL TRIAL OF SAGALA VATHA CHOORANAM & ILAGU VATHA KESARI THYLAM FOR AZHAL KEEL VAAYU (OSTEOARTHRITIS)

FORM V – CLINICAL ASSESSMENT

1. OP/ IP No: 2. BED No: 3. Sl. No:
4. NAME: 5. AGE: 6. GENDER:
7. OCCUPATION: 8. SOCIAL STATUS
9. DATE OF ADMISSION: 10. DATE OF DISCHARGE:
11. POSTAL ADDRESS: 

Lecturer HOD

______________________________

CLINICAL EXAMINATION OF KNEE JOINT:

I. INSPECTION: Present Absent

1. Swelling ☐ ☐ .................................
2. Muscle wasting ☐ ☐ .................................
3. Deformity ☐ ☐ .................................
II. PALPATION:  

<table>
<thead>
<tr>
<th></th>
<th>Present</th>
<th>Absent</th>
<th>………………………</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Tenderness</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Swelling</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Crepitations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Warmth</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

III. MOVEMENTS:

1. Restriction of Movements in the Knee joint:  

<table>
<thead>
<tr>
<th></th>
<th>Full</th>
<th>Partial</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. KNEE: PAIN MUSCULAR SPASM ROM

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Yes</th>
<th>No</th>
<th>Normal</th>
<th>Reduced</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. Flexion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ii. Extension</td>
<td></td>
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</tr>
</tbody>
</table>

3. NEUROLOGICAL EXAMINATION:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Abnormal</th>
<th>…………..</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. Sensation:</td>
<td>Normal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ii. Tone</td>
<td>Normal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>iii. Power</td>
<td>Normal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>iv. Muscle wasting:</td>
<td>Present</td>
<td>Absent</td>
<td>…………..</td>
</tr>
</tbody>
</table>
4. REFLEXES: Normal Exaggerated
   i. Knee jerk
   ii. Ankle jerk

20. CLINICAL ASSESSMENT:

I. PAIN:

A. Pain in the knee joints: No Mild Moderate Severe
   i. Onset Sudden Gradual
   ii. Nature: Local Diffuse Others

B. Nature of pain Shooting Burning Others

Yes No

C. Pain during movements

II. Morning stiffness

III. Tenderness

III. Swelling

IV. Restricted joint movements
GOVERNMENT SIDDHA MEDICAL COLLEGE AND HOSPITAL
PALAYAMKOTTAI.

POST-GRADUATE DEPARTMENT OF SIRAPPU MARUTHUVAM

AN OPEN CLINICAL TRIAL OF SAGALA VATHA CHOORANAM & ILAGU VATHA
KESARI THYLAM FOR AZHAL KEEL VAAYU (OSTEOARTHRITIS)

FORM - VI PATIENT WITHDRAWAL FORM

1. OP / IP No .......... 2. S.No. ............... 3. Date: ..............

4. Name ................. 5. Age ............. 6. Gender ............

7. Postal address:

----------------------------------------------------------------------------------

Complaints and Duration:

Irregular treatment:

Other causes:
GOVERNMENT SIDDHA MEDICAL COLLEGE AND HOSPITAL
PALAYAMKOTTAI.

POST-GRADUATE DEPARTMENT OF SIRAPPU MARUTHUVAM

AN OPEN CLINICAL TRIAL OF SAGALA VATHA CHOORANAM & ILAGU VATHA KESARI THYLAM FOR AZHAL KEEL VAAYU (OSTEOARTHRITIS)

FORM VII - DRUG COMPLIANCE FORM

Name of the Drug: SAGALA VATHA CHOORANAM

Drugs issued: ...............(mgs/Grams)

Drugs returned: ...............(mgs/Grams)

<table>
<thead>
<tr>
<th>S.NO</th>
<th>DATE</th>
<th>DRUG TAKEN TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>MORNING/TIME</td>
</tr>
<tr>
<td>Day 1</td>
<td></td>
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<td>Day 2</td>
<td></td>
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<td>Day 3</td>
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<td>Day 4</td>
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<td>..</td>
<td></td>
<td></td>
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<tr>
<td>Up to day 48</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Date:

Station:

Signature of the Investigator:

Signature of the Lecturer: Signature of the HOD
BIBLIOGRAPHY

- Agathiyar gunavagadam
- Bogar vaithiyam 700
- Toxicology and clinical pharmacology of herbal products
- Indian Medicinal Plants
- Principles and practices of Therapeutic massage
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- Therayar Vagadam
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- Gunapadam Mooligai Vaguppu-Dr.C.S.Murugesamudhaliyar
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- Indian meteria medica vol i & ii-Dr.k.m.nadkarni
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Orthopaedic and Traumatology - G.S. Kulkarni

Pararasasegaram.

Pathartha guna chinthamani.

Sabapathy kaiyedu

Siddha maruthuvam (podhu) - Dr. Kuppusamy Mudaliyar, BIM.

Siddha Maruthuvam Sirappu - Dr. R. Thiyagarajan, BIM.

Siddha Maruthuvanka Churukkam - Dr. K. S. Uthamarayan, HPIM.

Siddha vaithiya thirattu

Siddhar aruvai maruthuvam - Dr. C. S. Uthamarayan.

T. V. Sambasivam Pillai Tamil English Dictionary.

Taxonomy of Angiosperms - Dr. S. Somasundaram, M.Sc., Ph.d.


Theraiyar vagadam.

Thirumoolanayanar seegicha rathnadeepam.

Thirumoolar thirumanthiram.

Thotra Kirama Araicheium Siddha Maruthuva Varalarum

Udal thathuvam.

Varma pulligalin irupidam - Dr. Kannan Rajaram, B.S.M.S.,

Yugi Vaithya Chinthamani 800.
ILAGU VADHA KESARI THYLAM – EXTERNAL MEDICINE
கோகாத்ரை இருந்து

மூலை முழுங்கு

புளோத்து பச்சை வாங்கும்
அக்கோல் (Foementation)

கன்றகால் படை அக்கோல்

இலைக்கை குரோமில்

[Images of lemon slices and hand applying cream on a leg]
(COMPRESS)
PATIENTS WITH SWELLING

I.P. No: 3109
Name: Mariammal Age: 55 Female

I.P. No: 3103
Name: Ponnuthai Age: 45 Female
O.P. No: 71707

Name: Gowri    Age: 52 Female

O.P. No: 69330

Name: Senthil Arumugam    Age: 59 Female
OSTEOARTHRITIS KNEE

Healthy knee joint

Hypertrophy and spurring of bone and erosion of cartilage

ADAM.
ANATOMY OF THE KNEE JOINT

- Quadriiceps muscle
- Quadriiceps tendon
- Femur (thighbone)
- Patellar ligament
- Articular cartilage
- Cruciate ligaments
- Bursa
- Meniscus
- Medial collateral ligament
- Tibial tubercle
- Lateral collateral ligament
- Tibia
- Fibula
EXERCISE FOR KNEE JOINT

1. Standing hamstring stretch
2. Resisted knee extension
3. Quadriceps stretch
4. Side-lying leg lift
5. Straight leg raise
6. Knee stabilization
7. Wall squat with a ball
8. Step-up
9. Quadriceps isometrics