AN OPEN CLINICAL EVALUATION ON "SAGANA VATHAM (CERVICAL SPONDYLOSIS)" WITH SIDDHA TRIAL DRUG "POORANATHI CHOORANAM"(INT), "VALI KUTHALUKU ULLI ENNAI"(EXT) AND "VEPPAM PINNAKKU OTTRADAM"

(EXTERNAL THERAPY).

The dissertation Submitted by

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Submitted to

THE TAMILNADU Dr. MGR MEDICAL UNIVERSITY

CHENNAI-600032

For the partial fulfillment of the Requirement to the Degree of

DOCTOR OF MEDICINE (SIDDHA)

BRANCH-III-SIRAPPU MARUTHUVAM

POST GRADUATE DEPARTMENT OF SIRAPPU MARUTHUVAM

THE GOVERNMENT SIDDHA MEDICAL COLLEGE

CHENNAI -600106

OCTOBER 2019

GOVT. SIDDHA MEDICAL COLLEGE, CHENNAI 106

DECLARATION BY THE CANDIDATE

I hereby declare that this dissertation entitled **An open clinical evaluation on "saganavatham" (Cervical spondylosis) with siddha trial drug "Pooranathi Chooranam"(internal), "Vali Kuthaluku Ulli Ennai"(external) and "Veppam Pinnakku Ottradam" (External therapy)** is a bonafide and genuine research work carried out by me under the guidance of Lecturer **Dr.G. SEKAR M.D(S).,** Head of the Department, Post Graduate Department of Pura Maruthuvam, Govt. Siddha Medical College, Arumbakkam, Chennai- 600106 and the dissertation has not formed the basis for the award of any Degree, Diploma, Fellowship or other similar title.

Date: **Signature of the Candidate**

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CERTIFICATE BY THE GUIDE

This is to certify that the dissertation entitled **An open clinical evaluation on "Saganavatham" (Cervical spond,ylosis) with siddha trial drug "Pooranathi Chooranam" (internal), "Vali Kuthaluku Ulli Ennai" (external) and "Veppam Pinnakku Ottradam" (External therapy),** is submitted to the Tamilnadu Dr. M. G. R. Medical University in partial fulfillment of the requirements for the award of degree of M.D (Siddha) is the bonafide and genuine research work done by **Dr.R. KALAIVANI** under my supervision and guidance. The dissertation has not formed the basis for the award of any Degree, Diploma, and Associate ship, Fellowship or other similar title.

Date: **Seal & Signature of the Guide**

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ENDORSEMENT BY THE HOD, PRINCIPAL/HEAD OF THEINSTITUTION

This is to certify that the dissertation entitled **An open clinical evaluation on "Saganavatham" (Cervical spondylosis) with siddha trial drug "Pooranathi Chooranam" (internal), "Vali Kuthaluku Ulli Ennai"(external) and "Veppam Pinnakku Ottradam" (External therapy)** is a bonafide work carried out by **Dr..R.Kalaivani** during the year 2016-2019 under the guidance of Lecturer **Dr. G. SEKAR M.D(S).,** Head of the Department, Post Graduate Department of Pura Maruthuvam, Government. Siddha Medical College, Chennai - 600106.

Seal & Signature of the HOD **Seal & Signature of the Principal**

Date: **Date:**

Place: Chennai **Place:** Chennai

ACKNOWLEDGEMENT

First of all, I would like to thank God without whom nothing is possible. Then I would like to thank Siddhars for giving me the strength, knowledge, ability and opportunity to undertake this research study and to persevere and complete it satisfactorily with his blessings in every phase of my life.

It is a time for me to express my gratitude to the **Vice - Chancellor**. The Tamilnadu Dr.M.G.R Medical University, Guindy, Chennai .

I express my profoundgratitude to our Professor. **Dr.R.Meenakumari MD(S)**, Principal, Government Siddha Medical College, Chennai who provided me an opportunity and all facilities to carry out this work successfully.

I would like to express my sincere gratitude to my advisor Professor, **Dr. M. Mohamed Musthafa MD(S)**, Head of the Department, Post graduate Department of Sirappu Maruthuvam, For his patience, motivation, enthusiasm and immense knowledge.

I express my cordial thank to my guide **Dr. G. Sekar M.D(S)**, Head of the Department, Post graduate Department of Pura Maruthuvam. for accepting as his student. His guidance helped me in all time of research and writing of thesis. I am really grateful for his motivation & warm encouragement

It is my gratitude to **Dr.K.Saibudeen M.D(S)**, Head of the Department, Post graduate Department of Siddhar Yogam Maruthuvam, for his support in this study.

I owe my deepest gratitude to **Dr. T. R. Siddique Ali M.D(S),** PG Department ofVarmamaruthuvam for his support and valuable suggestions to improve my clinical study.

I would like to gratefully acknowledge **Dr.Saravanadevi M.D(S)**, HOD of Gunapadam, GSMC, Chennai for their guidance and support in authentication of minerals

I express my deep sense of gratitude to **the Chairman and members ofInstitutional Ethics Committee(IEC)**, GSMC, Chennai for giving their approval to my clinical study.

I wish to express my sincere thanks to **Dr. P. Muralidharan**, the pharmacologist and the **members of Institutional Animal Ethics Committee (IAEC),** C. L. Baid Metha College of

Pharmacy, Thoraipakkam, Chennai-97 for giving their approval and their guidance in my toxicological study.

It is an honor for me to thank **Noble Research Solutions**, Chennai for their guidance and support in doing Organaoleptic characters, Physico-chemical analysis, Heavy metal analysis, TLC & HPTLC analysis and Sterility method in my clinical trial medicine.

I wish to express my appreciation to **Dr. Manivasagam**, **B.S.M.S, M.Sc** Epidemiology for helping me to do Biostatical analysis.

I thank to our librarian Mr.V.Dhandayuthapani, M.Com, M.Libsc, librarian, Dr. Ambedkar library GSMC, Chennai-106, for his help, in literature collection.

I express my hearted appreciation to **Laboratary staff** of GSMC attached with Arignar Anna Govt Hospital,Arumbakkam, Chennai for providing the valuable lab results.

It's my bounded duty to thank my **Patients** for their kind co-operation and patience which helps to complete my clinical study successfully.

I heartedly thank to all my **Seniors& Juniors** especially **Dr.R. Rasakumar MD(S), Dr. Kumudha MD(S), Dr. Kalaimani MD(S), Dr.Srisaranya MD(S), Dr.P.Mangaiarkarasi, Dr.G.Nivetha, Dr.R.Kaniyamudhan** for their moralsupport and words of encouragement to complete this clinical research.

Many people, especially **my friends Dr.T.Priyanga, Dr.B.Janani, Dr.T.Pappa Evangeline, Dr.M.Srisakthilogisha, Dr.D.Suganya, Dr.K.Thirugnanam, Dr.K.Dhivya Lakshmi**, **Dr.P.Elamathi** have made valuable comments suggestions on my clinical study which gave me an inspiration to improve the quality of thesis.

Last but not least, I would like to thanks to **my family Mr.S.Rajasekaran, Mrs.R.Latha, R.Mirunalini, Mr.S.Gurumurthi.** They really prayed the way to success.

I am also grateful to my family relatives who helped me directly or indirectly in the completion of my dissertation work.

Thankyou all

CONTENTS

INTRODUCTION

Siddha is one of the oldest systems of medicine originating in ancient Tamilakam (Tamil Nadu) in South India and Sri Lanka. The Siddha system of medicine deals with physical, psychological, social and spiritual well-being of an individual. Diet and lifestyle play a major role not only in maintaining health but also in curing diseases.

Siddha system believed to be originated from AGATHIYAR to Siddhars, from Siddhars this system of medicine gifted to mankind. The ultimate aim of Siddhars is to attain external bliss. For attaining external bliss, human body is considered to be a media. They held that the body is the only instrument with which one could attain success in spiritual evolution and thereby get rid of diseases, decay & death.

"IRAI MAATRU IRUAI". IRAI means food, food is the basic material which the body need for it survival for healthy life one should consume a healthy food. If there is any altered in health the same food can be given in other form (i.e MAATRU IRAI) like kudineer, chooranam, etc,

The advantage and unique features of Siddha systems is the removal of the root cause of the disease and provide perfect remedy for mind and soul.

The monumental Tamil composition "Thirukkural" gives a synoptic account of the base of medical theory and practice in ten extremely condensed two-line verses.

"Diagnose the illness, seek out its cause,
Study the way of cure and treat it right". (948)

"Patient's condition, severity of illness and duration known for sure
Let the physician versed in his lore prescribed the remedy". (949)

"Patient, physician, medicine and nurse
Are the four bearing on the art of healing". (950)

This chapter on medicine apart, Thirukkural on the whole has the words noy and pini (disease) referred to in as many as 50 places. Beside, cause of diseases, mental illness, allergy, environmental pollution, burns, scar, wounds, ulcer, pustules, etc., have contexts of occurrence in this work, along with an implicit emphasis on healthy mind in healthy body.

In Siddha system of medicine, the disease "SAGANA VADHAM" are brought under the types of vadha diseases. And it is correlated with "Cervical spondylosis". Cervical spondylosis is defined as "ARTHROSIS" Of the posterior intervertebral joints in the cervical vertebrae.

In India, More than 10 millions of cases per year are affected by cervical spondylosis. The prevalence of cervical spondylosis is similar for both sex. The incidence of neck pain in adult is approximately 20-50% per year. 60% of the population older than 45 years of age and 80% older than 65 years of age account for the case of cervical spondylosis reported.

The pain management is the upcoming strategic in this era. Treatment for cervical spondylosis is steroids and NSAIDS. There is no satisfactory and permanent cure for cervical spondylosis in allopathic system of medicine. So the world is looking forward for an alternative treatment. The need is development of effective and safe analgesic drug in traditional way.

So the need of the hour is to search an effective drug and therapy to treat cervical spondylosis with less or no adverse effects. So i have ventured to compare the efficacy of poly herbal drug "POORANATHI CHOORANAM" (Internal) and "VALI KUTHALUKU ULLI ENNAI" (External) with supporting therapy "OTTRADAM" for the management of saganavatham (cervical spondylosis).

AIM & OBJECTIVES

AIM:

To evaluate the therapeutic efficacy of siddha trail drugs " Pooranathi Chooranam "(internal), "ValiKuthaluku Ulli Ennai" (External) and with supporting therapy "Ottradam" on saganavatham (Cerviacl spondylosis)

OBJECTIVES:

PRIMARY OBJECTIVE:

To evaluate the therapeutic efficacy of siddha trail drugs " Pooranathi Chooranam" (internal), "Vali Kuthaluku Ulli Ennai" (External) and with supporting therapy "Ottradam" on saganavatham (Cervical spondylosis)

SECONDARY OBJECTIVE:

- To standardize the standard operating procedure for both siddha trail drugs. Standardization through both traditional modern analytical techniques
- Evaluation of acute and sub- acute toxicity studies for the trail drug "Pooranathi Chooranam"
- To evaluate the pharmacological activity Anti-inflammatory and analgesic activity of the trail drug "Pooranathi Chooranam" in animal model
- To evaluate the safety of the trail drug Pooranathi Chooranamin saganavatham patients before and after treatment
- To have clinical trial drugs "Pooranathi Chooranam" (int) and "Vali Kuthaluku Ulli Ennai" (ext) in the treatment of "saganavatham"
- To demonstrate the methodology of Ottradam therapy in treating of Saganavatham
- To create a knowledge about the siddha medicine and prove the efficacy of siddha drug for the disease of Saganavatham (Cervical spondylosis)

3.REVIEW OF LITERATURES

3.1 SIDDHA LITERATURE REVIEW:

Siddha system surmise that the human body is composed of 96 thathuvam and 72000 blood vessles and nerves beyond these, there are 10 naadi, 10 vaayu, and 14vegangal. All of them play vital roles in various functions of the body. That 10 Naadifurther divided into 3 humors i.e Vatham, Pitham, Kabam and these are also called as Uyir Thathu, which is most important for the formation and maintenance of the body, if any disturbance in their equilibrium leads to ill health.

Based on vatha, pitha, kapha theory.Vatha diseases get a major role among that. The literature of "Yugi Vaidhiya Chinthamani 800", classified the vatha disease into 84 types. Saganavatham is one of the vathadisease. Before reviewing the specific signs and symptoms of saganavatham, the details of vatham is described under the following headings.

VATHAM:

- Vaatham is formed by Aahaayam and Vaayu, controls the nervous action thatconstitute movement, activity, sensation, etc.
- Vatham predominates in the bone.
- It isresponsible for the production implementation of thoughts to action.
- Generally, itsfunction is more related to cerebral activities like, thinking and action.
- Vatham predominates in first one third of life when activity, growth, sharpness of function of sense, is greater.
- However Vadham represents Vayu, Mind, Dryness, Pain, Flatulence, Sensitive, Lightness

LOCATIONS OF VATHAM:

Seats of vatham : Below the naval

Generally, vatham lives in

1. Abanan
2. Edakalai
3. Kaamakodi
4. Undhiyinkeezhmoolam
5. Muscles
6. Bones
7. Hair follicles
8. Nerves
9. Skin
10. Joints
11. Stools

Physiologically, vatham which has no alteration lives GI track, bones, ear, thigh, hip and skin.

NATURAL PROPERTIES OF VATHAM:

1. Giving briskness
2. Expiration and inspiration
3. Functioning the seven udalkattugal, uniformly
4. Functioning the mind, thoughts and body
5. Regulation of 14 physiological reflexes
6. Protection and strengthening of the five sensory organs.

IMBALANCE OF VATHAM:

1. Body ache
2. Tearing pain
3. Pricking pain
4. Nerve weakness
5. Dryness
6. Movements
7. Shivering
8. Mental distress
9. Weakness

10. Traumatic pain
11. Joint pain
12. Dislocation of joints of upper & lower limbs
13. Weakness of organs
14. Pilo-erection
15. Paralysis of the limbs
16. Polydipsia
17. Bony pricking pain
18. Severe pain in calf and thigh muscles
19. Anuria and constipation
20. Unable to do flexion and extension of limbs
21. All tastes to be like astringent
22. Astringent salivation
23. Darkness of skin, eye and urine.

QUALITIES OF VATHAM:

OWN QUALITIES:

1. Kadinam – hardness
2. Varatchi – dryness
3. Elesu – lightness
4. Kulirchi – coolness
5. Asaidhal – mobility
6. Anuthuvam – subtleness

OPPOSITE QUALITIES:

1. Miruthu – soft
2. Parumai – unctuous
3. Paluvu – heavy
4. Akkini – hot
5. Sthiram – stable
6. Katti– solid

RELATION WITH FIVE ELEMENTS & SIX TASTES:

Vatham –Vaayu + Aahaayam

If vaayu and aahaayam or any of them is decreased or increased from the normal level, it will surely lead to pathological state of vatham.

Regarding diet, bitter, pungent and astringent tastes contain vali (vaayu) and bitter alone contains aahaayam. So if these are consumed in large amounts this results in the vitiation of vatham and eventually vatha diseases.

DESCRIPTION OF VATHAM:

The siddha classical texts divide the general principles of vatham into ten subsidiary forms that differ from one another by their localization in the body and by their particular functions. They are,

1. PRANAN (Uyirkaal):

It corresponds to the cardiac plexus and refers to the chest. It regulates the respiratory system and helps the digestive system. It's derangement causes respiratory disorders.

2. ABANAN (Kizhnokkumkaal):

It corresponds to the pelvic plexus and expels fecal matter and urine. It constrict the anal sphincter. It helps to spread the digestive food all over the body. It is also responsible for the expulsion of sperm and menstrual flow. Its derangement leads to diseases of the bladder, rectum and reproductive system.

3. VIYANAN (Paravukaal):

It corresponds to the vaso-ciliary at the root of the nose and base of the skull and contents will. Vyanan spreads over the body in all endings and causes constriction and relaxation of both voluntary and involuntary muscles. This is responsible for the movements of the body and sensory perceptions.

It causes flow of fluids, flow of sweat, opening and closing of eyes etc., it is responsible for taking the absorbed essence of the food to the different parts of the body. The neurological problems of the body are basically because of the derangement of vyanan.

4. UDHANAN (Melnokkumkaal):

It corresponds to the pharyngeal in the throat region and regulates the higher functions of brain like speech. Its derangement causes symptoms of upper gastro intestinal tract diseases, problems in speech etc. it is also responsible for the physiological reflex actions like vomiting, hiccup, cough, sneezing etc.

5. SAMANAN (Nadukkal):

It corresponds to the solar plexus in the naval region and controls digestion. It act as a neutralizing air for the upward and downward air (abana & udhana). Its derangement will cause gastrointestinal symptoms and neurological, repiratory symptoms as this vayu is the neutralizing force for the other four vayus.

6. NAGAN:

Nagan is responsible for the intelligence of an individual. It causes opening and closing of eyelids. Its derangement causes impaired memory and lack of coherent.

7. KOORMAN:

This causes yawning and closure of eyelids. This is responsible for vision lacrimal secretion is also attributed to koorman. It gives energy to the body and helps in body building.

8. KIRUGARAN:

This lies in the tongue, salivary glands, nasal secretion, hunger, concentration of the mind on one particular thing, sneezing, cough are all attributed to kirugaran

9. DEVADHATHAN:

Laziness is attributed to this vayu. The ocular movements, human passions like anger are attributed to this vayu.

10. THANANJEYAN:

It produces swelling all over the body and leaves from the body by blowing of the cranium only on the third day after death. This vayu is responsible for decay of the body after death.

VATHA NOI

DEFINITION: (IYAL)

Vatha is the principle of motion in the body and mind. When Vatham is healthy, the movement of the body are graceful, unimpeded and yet controlled. When out of balance the movements become erratic, excessive, decreased, or blocked and manifest the clinical symptoms of pricking pain, stabbing pain, and severe pain and atlost, paralysis may occur Symptoms manifested due to raise of Vatham and cause Vatha disease. In vatha diseases, the one and more symptoms can be seen.

1. Having Astringest taste in the mouth
2. Thirst
3. Dryness
4. Constipation
5. Blackish discoloration of skin, eyes and faces
6. Numbness
7. Pain
8. Rigidity
9. Lack of movements
10. Internal bone pain
11. Inflammation of joints
12. Paralysis of limbs

AETIOLOGY OF VADHA DISEASES:

According to yugi vaithya cindhamani

"என்னவே வாதம்தா ணென்பதாகும்
இகத்திலே மனிதர்களுக்கு கெய்யுமாறு
பின்னவே பெண்தனையே சோரைஞ் செய்து
பெரியோர்கள் பிராமணரை தூறணித்தும்
வன்னவேவச் சொத்திற் சோரஞ் செய்து
மாதாபிதா குருவைம றந்தபேர்க்கும்
கன்னவே வேதத்தை நிந்தை செய்தால்
காயத்திற் கலந்திடுமே வாதந்தானே"

"தானென்ற கசப்போடுதுவர்ப்பு றைப்பு
சாதகமாய் மிஞ்சுகிலுந் சமைத்தவண்ண
ஆனென்ற வாறினது பொசித்தாலும்
ஆகாயத் தேறலது குடித்தலாலும்
பானென்ற பகலுறக்க மிராவிழிப்பு
பட்டினிய மிகவுறுதல் பாரமெய்தல்
தேனென்ற மொழியார் மேற் சந்தையாதல்
சீக்கிரமாய் வாதமது செனிக்குந்தானே".

- Excessive sexual indulgence
- Over consumption of bitters, astringents and rancid foods.
- Drinking rainwater
- Day time sleep
- Night timework
- Starvation
- Lifting overweight
- Will initiate and aggravate vali

As per KonganavarVadhaKaviyam

"ஆச்சப்பா யிதங்கூறை நலதாய்ச் சொன்னோம்
ஆகாகா யிந்நூல்தான் காவியகாண்டத்தில்
வச்சப்பா வாதத்தின் கூறைச் சொன்னோம்
வாதமதின் வாயுனிலை மயங்கிப்போகும்
காச்சப்பா கலங்கியது தியங்கிப்போகும்
கண்மணியே வதுக்குமத்திபந்தான் கேளு
மச்சப்பா மக்கினிதான் மதுவோடொக்க
மார்க்கமதாய் கூடிவிளை யாடும்பார்"

வாதம்தோன்றுதல்:

"வெய்யிலில் நடக்கை யாலும் மிகதண்ணீர் குடிக்கை யாலும்
பையவே உண்கை யாலும் பாகற்காய் தின்கை யாலும்
தையலே வாத ரோகஞ் சனிக்குமென்றறிந்து கொள்ளே"

- Excessive exposure to the sun
- Excessive intake of water
- Postponed of proper intake of food
- Excessive intake of bitter gourd

According to AgathiyarKanmaKaandam

"நூலென்ற வாதம் வந்த வகை தானேது
நுண்மையாய்க் கன்மத்தின் வகையை கேளு
காலிலே தோன்றியது கடுப்ப தேது
கைகாலிலே முடக்கியது வீக்கமது
கோலிலே படுக்கின்றவிருட்சமான
குழந்தை மரந்தனை வெட்டி மேல்தோசீவல்
நானிலே சீவசெந்து கால் முறித்தல் நலித்தல் காணே"

- cutting trees and barks
- Breaking the legs of living animals
- cutting the leaves of living trees

According to Agathiyar Gunavagadam,

"அம்புவியில் வாதனோய் வருகும் நேர்மை
அப்பனே சொல்லி கிறேன்றி வாய்க்கேளு
அறுகுமடா மாமிசத்தின் வியாதி யாலும்
அப்பனே சூதகத்தின் பெருக்காலும்
குடிகெடுத்த வாதமது உண்டா மப்பா"

- Muscular diseases
- Menorrhagia
- Consumption of improper preparation of metallic compounds like mercury and lead will cause vadha diseases

CHARACTERISTIC FEATURES OF VATHA DISEASE:

1. **As per TheraiyarVaagadam:**

"வாதவீறு அன்னமிறங்காது கடுப்புண்டாம் வண்ணமுண்டாம்
மோது கட்டுரோகம் கரமுண்டா மிருமலுமா முறங்கா தென்றும்
ஓது சூரிய வாதமனலாகு நடுக்கமுண்டாம் பொருள்களாய்த்
தீதெனவே நரம்பிசித்து சந்துகள்தோறும் கடுக்குந் தின்முந்தானே"

- Loss of appetite
- Pain and redness
- Fever and cough
- Insomnia
- Shivering
- Hyperpyrexia

"சந்திரவாத முடம்பு குளிர்த்தெழுந்தே நடுக்குங் சீதவாய்வாம்
முந்திய குத்திவாஞ் சந்துகள் தோறுங் குடைந்து மொளிகள் வீங்கும்
வந்திய தொந்தவாதம் நரம்புகளெல்லா மிசித்துவலம் வீடாது
அந்து அவ்வாகு வாதம் வீக்கமுண்டா முடற்றிமி ருண்டாமே"

- Chillness of the body
- Rigor and spasm
- Pain and tenderness of joints
- Swelling of thejoints.

In AaviyalikkumAmuthamuraiSurukkam

"சொல்லவே வாதமது மீறிற்றானால்
சொர்வடைந்து வாயுவால் தேகமெங்கும்
மெல்லவே கைகால்களசதி யுண்டாம்
மெய் முடங்கும் நிமிர வெண்ணா திமிருண்டாகும்
வெல்லவே வுடல் பொருமும் வயிருளைக்கும்
விரும்பி யன்னஞ்செல்லாது விந்துநட்டம்
சொல்லவே நாப்புளிக்கும் கழிச்சல் உண்டாகும்
கூறினார் மலையமுனி கூறினாரே"

- Fatigue, tiredness
- Nausea
- Loss of appetite
- Pricking sensation all over the body
- Pain all over the joints.
- Diarrhoea
- Azoospermia
- Incontinence of urine
- Difficulty in flexion and extension
- Constipation

Agathiyar 2000

"வாதத்தின் குணமேதன்னில் மயக்குந்தியங்கும் மலர்சிவக்கும்
பாதங்குளிர்ந்து சருவாங்கம்பற்றி நடக்குமுகங் கடுக்குஞ்
சீதத்துடனே வயிறு புண்ணாஞ் சிரிப்பித் தகுந்தெறி மூச்சாம்
போதத் தண்ணீர்தான் வாங்கும்புகழும் பஞ்சகுணமே"

- Giddiness
- Redness of eyes
- Stabbing pain in the face
- Abdominal distension

- Joint pain in upper and lower limbs
- Oliguria
- Drowsiness
- Chillness of the body

வாதமிகுதலின் இயல்பு

"தக்க வாயு கோபித்தால் சந்து வுளைந்து தலைநோவா
மிக்க மூரி கொட்டாவி விட்டங் கெரியு மலங்கட்டும்
ஒக்க நரம்பு தான்முடங்கும் முலர்ந்துவாய்நீ ரூறிவரும்
மிக்க குளிரும் நடுக்கமுமாம் மேனி குன்றி வருங்காணே"

- Pain in the joints
- Headache
- Excessive yawning
- Constipation
- Burning sensation of the body
- Paralysis
- Excessive salivation
- Chillness and tremor

SAGANA VAADHAM:
DEFINITION:

A vaadha disease, which is formed due to the compression of cervical spine nerves, Which are passing along the two sides of cervical vertebrae and the adjacent arteries."Sganavaadham" is one of the vaadha diseases, which is describe in " Yoogi munivar vaidiya sindhamani perunool-800", T.V. Sambasivampillai says in his agarathi. It is a condition which deals with the involvement of upper back of pain in the neck, radiating pain in upper limb, feeling heaviness of body, mental depression, giddiness and burning sensation of the eye and constipation**.**

கேளுமே கழுத்தின்கீ ழரைக்கு மேலுங்
கெடியான கரமிரண்ய்டு மிகவே நொந்து
வாளுமே சரீரமெலாங் கனத்தி ருக்கும்
வாலிபர்க்கு மனங்கண்ணு மயக்க மாகும்
ஏளுமே யிரண்டுகண்ணு மெரிச்ச லுண்டா
மேற்றமாய் சலந்தானு மிறுகிக் காணூந்
தேளுமே கொட்டினது போற்க டுக்கும்
சகனவா தத்தினிட தீர்க்கந் தானே.

1. Pain in the neck.
2. Radiating pain to the shoulder and upper limb,
3. Heaviness of body
4. Mental depression
5. Giddiness
6. Burning sensation of the eyes
7. Constipation
8. Tingling sensation and numbness of the upper limb.

PINIYARI MURAIMAI (DIAGNOSIS):

It is very important part of the treatment; it is helpful to select the correct line of treatment and good prognosis. It is based upon the following diagnosis methods.

1. PORIAAL ARITHAL:

The physician should examine the patient's porigal by his porigal.

1. Mei – For Feeling touch sensation
2. Vaai –For knowing taste
3. Kan – For vision
4. Mookku – For knowing the smell
5. Sevi – For hearing

2. PULANAAL ARIDHAL:

The physician should examine the patient's pulangal by his pulangal

1. Ooru -Touch (perception of sensation)
2. Osai -Sound (perception of sound)
3. Suvai -Taste (perception of taste)
4. Oli -Vision (Perception of vision)
5. Naatram -Smell (Perception of smell)

3. VINAADHAL:

The physician should interrogate about the patients name, age, occupation, native, socio-economic status, dietic habits, prone to any allergens, complains, history of previous illness, history of present illness, family history, habits and frequency of attacks, if the patient is in the stage of unability to speak or a `child, physician should interrogate the details with his immediate relatives who are taking care of him.

4. ENN VAGAI THERVUGAL:

The prime method adopted to diagnose the disease is by mean of ennvagai thervugal. The value of Ennvagai thervugal is very important for diagnosing purpose, which is the unique and special method describing in Siddha system of medicine. Hence the diagnosis is made by the following

1. NAADI (PULSE):

The study of naadi is the important factor in Envagai thervugal which gives almost the correct diagnosis, Naadi may studied at 10 points which are Heel, Genital organ, Abdomen, Chest, Ear, Nose, Neck, Hand, Eyebrow and Vertex. But the study of naadi at hand is the best because the radial artery is located here superficially. The unique factor which pertaining the soul in the body is known Naadi.

Naadi must be studied in right hand for men and left hand for women. After the age of fifty, it is reversible that means left hand for men and right hand for women. This may due to senile changes.

The three uyirthaadukkal are formed by combination of

Edakalai + Abanan =>Vaadham

Pinkalai+ Piranan =>Piththam

Suhummunai + Samanan =>Kabam

They can be felt one which below wrist on the radial side by means of palpation with tips of the index, middle and ring fingers corresponding of vaadham, piththam, kabam respectively, The three humours exists in the ratio of 1: ½: ¼ normally, Derangements of this ratio leads to various diseases.

Cases of vaadha diseases the following stages of naadi are seen.

1. Exaggeration of vaadham
2. Vaadha pitha thondha naadi
3. Vaadha kaba thondha naadi
4. Kaba vaadha thondha naadi
5. Kaba pitha thondha naadi

2. SPARISAM (PALPATION):

By sparisam, the temperature of skin (hot and cold), smoothness or roughness, sweat, dryness, hard patches, swelling, growth, of abdominal organ, tenderness, nourishment can be felt.

3.NAA (TOUNGE):

By the examination of tongue, its colour, coating, dryness, deviation, movements, variation in taste and gums can be noted.

4. NIRAM (COLOUR):

By the examination of niram the type of dhegam (Body), cyanosis, redness, pallor and yellowish discoloration can be noted.

1. Vaadhadhegi – Dark colour
2. Pithadhegi – Yellow or Red colour
3. Kabadhegi – White or Yellow colour

5. MOZHI (SPEECH OR VOICE):

In the examination of mozhi the pitch of voice (low or high) action of slurring and speech hallucination can be noted.

6. VIZHI (EYE):

By the examination of vizhi, pallor, redness, yellowishness, dryness, lacrimation, sharpness of vision must be noted.

7. MALAM (STOOLS):

By the examination of malam, It's nature, colour, quantity, presence of blood or mucous can be noted.

8. MOOTHIRAM (URINE):

The examination of urine is classified in to two type

a) NEERKURI:

It includes examination of colour, odour, deposits, quantity and frothy nature.

b) NEIKURI :

Preparation of patient:

Prior to the day of urine examination for neikuri and neerkuri, the patient is advised to take the balanced diet and quantity of food must be proportionated into his appetite. He should have a good sleep.

METHOD - After waking up in the early morning urine collected in the glass container must be examined within 1 ½ hours, a drops of gingili oil is added through the side of vitreous without any disturbing. The nature of neikuri should notice in direct sunlight.

OBSERVATION:-

If the drop of oil,

1. Lengthens like a snake – vaadhaneer
2. Spreads like ring – pithaneer
3. Appears like pearl – kabaneer

4. Spreads like snake in ring, ring in pearl, snake in pearl – thondhaneer

Besides Ennvagaithervugal, a disease can also be diagnosed by means of other methods namely thinaigal, paruvakaalangal, uyirthaadhukkal, udalthaadhukkal, gnaanendhiryangal and kanmendhiriyangal, hence through a knowledge about the disease can be studied out systematically and properly in Siddha system of medicine.

5. UYIR THAATHUKKAL

Uyirthaathukkal means "Life force" Vatham, Pitham, Kabam, which are the humours responsible for the creation, preservation, and desdruction of human body and health. When they are in the state of equilibrium in the ratio (1:1/2:1/4) in which they exit our body remains in a healthy state, but in case of any disturbance in this ratio leads to diseased conditions.

VATHAM

Vatham represents the elements Air & Space.It is responsible for all movements of mind, and body. Motor and sensory activities are governed by vatham.

S.No.	Vatham	Physiological function	Features in Saganavatham
1	Pranan	Inspiration and expiration responsible for sneezing coughing and belching	Not affected
2	Abanan	Act with downward movement	Affected constipation present.
3	Viyanan	Helps in various movements of body, responsible for sensation	Affected Restricted neck movements radiating pain in shoulder and arm with tingling sensation.
4	Udhanan	Regulates the higher functions of brain. Responsible for physiological reactions like hiccough and vomiting	Not affected
5	Samanan	Regulates all other vayus	Affected Due to others types of vatham
6	Nagan	Responsible for intelligence helps in opening and closing of eyes	Affected in aged pateints. Acuity of vision is deminished.
7	Koorman	Responsible for lacrimation. Helps in visualization of all things of world.	Affected in aged patients. Acuity of vision is deminished.

8	Kirukaran	Increase salivation in oral cavity and mucosa secretion in nasal cavity, Increase appetite and helps in concentration.	Affected (Lack of concentration)
9	Thevathathan	Responsible for laziness. Rotation of eyeballs.	Affected (Sleeplessness present due to pain).
10	Thananjeyan	Responsible for tinnitus oedema.	

PITHAM:

Pitham is located in urinary bladder, heart, head, umbilicus, pinkalai, piraanan, abdomen, stomach, sweat, blood, eye and skin.

It is classified in to five type. They are

S.No.	Pitham	Physiological function	Features in Saganavatham
1.	Anarpitham	Digests all the ingested particles.	Affected (Indigesion present)
2.	Ranjagapitham	Increases the blood and gives blood colour	Affected (Anaemia present)
3.	Saathagapitham	Makes the work to complete what mind thinks to do	Affected neck pain and restricted movement
4.	Prasagapitham	Gives colours to skin	Not affected
5.	Aalosagapitham	Responsible for clear vision	Affected in old age peoples.

KABAM:

Kabam is located is samaanan, semen, fat, bonemarrow, nose, chest, bones, brain, large intestine, stomach and pancreas.

It is divided into five types they are

S.No.	Kabam	Physiological function	Features in Saganavatham
1.	Avalambagam	Controls other 4 types of kabam	Affected (santhigam affected)
2.	Klethagam	Moistens the food	Not affected
3.	Pothagam	Helps to know the taste	Not affected
4.	Tharpagam	Gives cooling effect to the eyes	Affected (burning sensation of eye present)
5.	Santhigam	Gives lubrication to joints	Affected (pain in cervical region)

6. UDAL THAADHUKKAL:-

There are seven udal thaadhukkal in human body they are:

1. Saaram - it strengthens the body and mind
2. Seneer - it gives power, knowledge and boldness to the mankind
3. Oon - it gives a structure and shape to the body and is responsible for the movement of the body
4. Kozhuppu - it lubricates the joints and facilitates their functions
5. Enbu - it protects the all internal organs and gives structure to the body
6. Moolai - it is present in the bones and gives strength
7. Sukkilamor Suronidham - mean for reproduction

7. GNAANENCHIRIYANGL:-

The five gnnaanenchiriyangal are:-

1. Mei – feels all types of sensations
2. Vai – for knowing taste
3. Kan– meant for vision
4. Mookku– for knowing the smell
5. Sevi – for hearing

8. KANMEN DHIRIYANGAL:-

The five kanmendhiriyangal are:

1. Kai – majority of normal noses done by kal
2. Kaal – for walking
3. Vaai– for speaking
4. Eruvaai – for defecation
5. Karuvaai – for reproduction

9. THINAIGAL:-

Study five lands is very much needed, as some diseases are common in the particular lands.

1. Kurinji – mountain and its surroundings, kabanoigal and liver diseases are common.
2. Mullai – forest and its surroundings,pithanoigal, vaadhanoigal, liver diseases are Common.
3. Marudham – field and its surroundings, safest place to maintain good health.
4. Neidhal – sea and its surroundings, vaadha diseases and liver enlargement are common.
5. Paalai – desert and its surroundings, vaadha, pitha, kabanoigal are common.

10. PARUVANKAALANGAL:-

A year is classified into six seasons, each constituting two months

They are,

1. Kaarkaalam – aavani and purattasi
2. Koodhirkaalam – iyppasi and kaarththigai
3. Mupanikaalam – maargazhi and thai
4. Pinpanikaalam – maasi and panguni
5. Elavenirkaalam – chithirai and vaigaasi
6. Mudhuvenirkaalam – Aani and Aadi

Some of the diseases, during a particular season are commonly prevalent and study of it will also be much useful to diagnose. The final diagnosis is confirmed by summarizing all the clinical findings observed by the above methods.

DIFFERENTIAL DIAGNOSIS

These are certain other vatha disease which resembles the clinical signs and symptoms of ceganavatham. ceganavatham must be differentiated from such disease. They are

1. Kumbavatham
2. Kandakiragavatham
3. Paanikambavatham

1.KUMBA VATHAM:

"நவிலவே தோள்மீங் கரத்தின் மீது
நலிந்து மெத்தவாகியே நசவுண்டாகும்
கவிலவே கன்னமொடு நயனந் தானுகங்
கடுத்துமே விறுவிறுப்பு மெரிவுங் காணும்
துவிலவே துடிப்பாகுஞ்ச் சிரசு தன்னிற்
சுழற்றியே நாபிக்கீழ் வலியு முண்டாம்
அவிலவே யடிநாக்கி லழன்று காணு
மலருமே வருகும்ப வாதந் தானே".

-யூகி வைத்திய சிந்தாமணி

The clinical features are

1. Pain in shoulder and upper limbs,
2. Burning sensation in the chest and eyes,
3. Twitching over the region of scalp,
4. Lower abdominal pain
5. Glossitis

2. KANDAKIRAGA VATHAM

"வாகையாள குரலதனைப் பற்றி நொந்து
மார்போடு பிடரிதனில் வலியுண்டாகி
நுகரான சரீரமெல்லாம் நொந்த ழலாற்றி
நுணக்கமாய்சுவாசமதுபுறப்படாமல்
முகையான நாவாலே மூச்சு மாறி
முகத்திலே வியர்வாகி விலாதோ வுண்டாம்
பகையான வன்னத்தைப் பருகொட்டாது
பரிய கண்ட கிராகத்ன் பண்பு தானே".

-யூகி வைத்திய சிந்தாமணி

The clinical features are,

1. Pain in the throat, chest and occipital region
2. Breathing through mouth, backache, sweating on face.

3. PAANIKAMBA VATHAM:

"மார்க்கமாய் வாய்வுமாய் மெய்நிறைந்து
வயிறுதனிற் பசியிலா தூணுமற்று
நார்க்கமாய் ஞாலத்து நடக்கையற்று
நடுக்கமா யுறக்கமில்லா துணாச்சி யற்று
ஊக்கமா யுறக்கமில்லா துணர்ச்சி யற்றி
உதற்யே சரீர மெங்கு முலர்ந்து காணுந்
பார்க்கமாய் வாய்வட்டு அலர்த்தலாகும்
பாணிக்கம்ப வாதத்தின் பாங்குதானே".

-யூகி வைத்திய சிந்தாமணி

The clinical features are

1. Anorexia
2. Tingling sensation and numbness of upper limbs
3. Tremors found in upper limbs
4. Sleeplessness
5. Dryness all over the body

MUKKUTRA VERUPAADUGAL (PATHOGENESIS):

1) Any one or other aetiological factors vitiate vaadha vitiated first.
2) Then paitham and kabam are also affected which are in three Dhosha equilibrium.
3) And then vaayus, udalkattugal and other structures are also affected. When vaadham is vitiated, body weakness, constipation, Diminution of Immunity Giddiness and sleeping disturbances are appeared.
4) In pitham

   Apitham-Anorexia, Ranjagapitham-low haemoglobin level, Alosagapitham-Diminished vision, Saadhagapitham-Difficulty to use the neck and upper limbs are affected.
5) In kabam

   Avalambagam- Cough, disturbances of the kabams, Tharpagam- Burning sensation of the eyes Sandhigam- Pain in neck and shoulder joint are affected.
6) In vaayus

   Praanan- cough, Abaanan- constipation, Udhaanan- cough, Viyaanan- Numbness, tingling sensation, pain and stiffness in neck, pain upper limbs, Samaanan-Disturbances of other vaayus, Naagan- Diminished vision, Kirugaran- Sleeping disturbances are affected.
7) In udal kattugal

   Saaram- Tiredness, anorexia, mental depression, Senner- Anorexia, lowhaemoglobin level, Oon- Pain and stiffness in neck , muscle wasting, pain in upper limbs, Kozhuppu- Immobilisation and crepitation of neck, difficulty to raise the upper limbs, Enbu- Osteophytic formation, pain in neck and upper limb, Moolai- Tiredness heaviness of the body are affected.

8) In other structures

Nerves - Pain in neck and upper limb

Arteries - Giddiness, mental depression and other connective tissues are also affected.

LINE OF TREATMENT:

- The anti vaatha drugs both internal and external application is given to relieve the symptoms and strengthen the affected parts.
- Theraiyar processes like kizhi, ottradam and thattudhal are also applied with above medications for better and quick response.
- **INTERNAL MEDICINE:**

  Pooranathi chooranam (800mg-1000mg) (twice daily) for 48 days
- **EXTERNAL MEDICINE:**

  Vali kuthaluku ulli ennai (external application only)
- **OTTRADAM:**

  Ottradam is one of the supporting therapy for pain management.

3.2. REVIEW OF LITERATURE -MODERN ASPECT

THE ANATOMY

Vertebral column:

Our body skeletal system is divided into axial and appendicular skeleton sections. Cranium, vertebral column, ribs and sternum constitutes the axial skeleton.

The vertebral column forms back bone of the body. It is made up of 33 pieces of vertebrae and intervening intervertebral disc. Length is about 60-70 cm. The vertebral columns which lodges and protect the spinal cord, its meanings in a canal within it is called as vertebral canal. It supports the body weight and transmits it to the ground through the lower limbs.

The segments can be divided into

Cervical	-	07
Thoracic	-	12
Lumbar	-	05
Sacral	-	05
Coccygeal	-	04

The general features of the vertebrae:

The Vertebrae can be divided into two parts. Vertebral body (ventral part), Vertebral arch (dorsal part).

Vertebral bodies are cylindrical and large in size. The vertebral arch has two pedicles, seven processes and two lamina. The lamina are vertical plate like structures fuses together to form spinnus process. The articular processes are four in number, bearing the articular facts and articulate with the adjacent vertebrae. Transverse processes project laterally from the junction of pedicle and laminae. In thoracic region they articulate with ribs.

Intervertebral discs:

Intervertebral disc are fibro cartilaginous in nature. The central part is avascular. They are thicker in lumbar region.

The intervertebral disc acts as

- As a shock absorber.
- As a spacer: It maintains its height which allows the segmental nerve roots to exits each spinal level without compression.
- As a hydraulic cylinder: Annular fibers serve a containment function to prevent the nucleus from bulging or herniating.
- As a motion unit: The elasticity of the disc allows motion coupling. So that the spinal segment can flex, rotate and bend all side.

Cervical vertebrae:

- The cervical segment of vertebral column contains 7 vertebrae.
- The first second and the seventh are atypical and the third to sixth are typical.
- They are smaller and delicate than the thoracic and lumbar vertebrae.
- All the cervical vertebrae have a foramen in the transverse process known as foramen transversarium.

Features of Typical cervical vertebrae:

Body:

It is small and oval. Its superior surface is can care transversely with upward projecting lips on each side and its inferior surface is saddle shaped.

Vertebral foramen:

It is larger than the body and triangular.

Vertebral Arch:

1) Spine:

It is short and bifid.

II) Laminae:

These are long and narrow being thinner above than below.

III) Pedicles:

These are short and directed downwards from the middle of posterolateral Parts of the body.

IV) Articular facets:

The superior and inferior articular processes project laterlly at the junction of the pedicle and the lamina.

V) Transverse process:

The transverse process lies laterally from the junction of pedicle and laminae to end in posterior tubercle.

The Atypical Cervical vertebrae:

1. **Atlas**:

It is the first cervical vertebrae it support the heads. It has no body and spine. It has anterior and posterior arch, right and left lateral mass and transverse processes.

The Posterior aspect bears an oval facet which articulate with dens. Its anterior arch bears an anterior tubercle in the anterior aspect. The posterior surface of the posterior arch has a median posterior tubercle. The two lateral masses bear an elongated superior articular facet for atlanto – occipital joint and an inferior articular facet for atlanto – axial joint.

2. **Axis:**

The axis has a tooth – like process projecting from the body is known as the dens or odontoid process. It has circular facet anteriorly articulating with atlas. There are two articular facet on either side of the dens on the upper surface of the body. The laminae are thick. The spine is large and bifid terminating in two rough tubercle. The transverse process is small and represents the true posterior tubercles only.

3. **The seventh cervical vertebrae**:

It is also known as the vertebral prominence. The transverse process does not possess anterior tubercle. The foramen transversarium is small or absent. It transmits accessory vertebral vein only. The spine is long and non-bifid.

Joints of the Neck:

1. **Atlanto – occipital joint:**

It is a synovial joint of the condyloid variety.

Movements:

Flexion, Extension, lateral bending.

2. Atlanto – axial Joint:

It comprises three joints.

(i) A Pair of lateral atlanto – axial joints.

(ii) Median atlanto – axial joint.

Movement:

Rotatory movements around a vertical axis occur in this joint.

3. The unco vertebral Joint: (LUSCHKA'S JOINT)

Luschka's Joints are not true synovial Joint. Which develop as a result of degenerative changes in the edges of the disc in early adult. Luschka's Joints are important because

(a) They are important site of osteophyte formation.

(b) The ostrophytes may compress the cervical nerves.

Blood supply of the Vertebral column:

The vertebrae and longitudinal muscles attached to them are supplied by segmental arteries. The arteries give multiple small branches to the vertebral bodies. The extensor muscles of the neck are supplied by the occipital the deep cervical and the transverse cervical arteries.

Venous drainage:

The internal vertebral venous plexus lies within the vertebral canal, but outside the spinal dura. It received tributaries from

(i) The Vertebrae through the basilo vertebral veins.

(ii) The meninges and the spinal cord.

Palpable parts of cervical vertebrae:

i. The transverse process of C1 through the anterior border of sternocleidomastoid immediately below the tip of the mastoid process.

ii. The spine of C2 is in the nape of the neck 5cm below the external occipital protuberance.

iii. The spine of C7 Where the collor bone crosses the posterior medium line of the neck.

Movements of the Vertebral column:

The greater thickness of the disc in the cervical region compared with thoracic region is associated with the greater individual range of movements occurring in those regions.

Flexion, Extension, lateral flexion and rotation are possible in vertebral column.

MUSCLE AND NERVE SUPPLY INVOLVED IN MOVEMENTS:

Movements	Muscles	Nerve Supply
Flexion	Sternocleidomastoid	Accessory ventral rami of cervical spinal nerves C2, C3, C4
	Longus Capitis	Cervical Ventral rami C1-C3
	Longus coli	Cervical ventral rami C2-C6
	Rectus Capitis anterior	C1 Ventral Ramus
Extension	Trapezius	Accessory Nerve
	Erector spinae	Dorsal rami
	Rectus Capitis posterior major and minor	Dorsal Rami C1
	Oblique capitis superior	C1 – Dorsal ramus
Lateral flexion and rotation	Scalene	Cervical ventral rami C3-C8
	Sternocleidomastoid	Acessory, ventral rami of cervical spinal nerves C2,C3,C4.
	Rectus Capitis	C1 – ventral ramus
	Splenius	Cervical dorsal ramus.
	Longus coli	Cervical ventral rami C3-C8
	Levator scapulae	Cervical ventral rami C3,C4,C5
	Longismus Obliques Capitis superior and inferior	C1 Dorsal ramus

CERVICAL SPONDYLOSIS

DEFINITION

Cervical spondylosis is a disorder characterised by degenerative changes in intervertebral disc, with subsequent changes in the bones and soft tissues. Spondylosis is usually asymptomatic. Symptoms are usually manifested of encroachment of local neural elements such as cervical nerve roots, spinal cord, vertebral artery (or) sympathetic nerves

EPIDEMIOLOGY

Cervical spondylosis is the most frequent cause of spinal cord disturbance in patients older than 55 years.

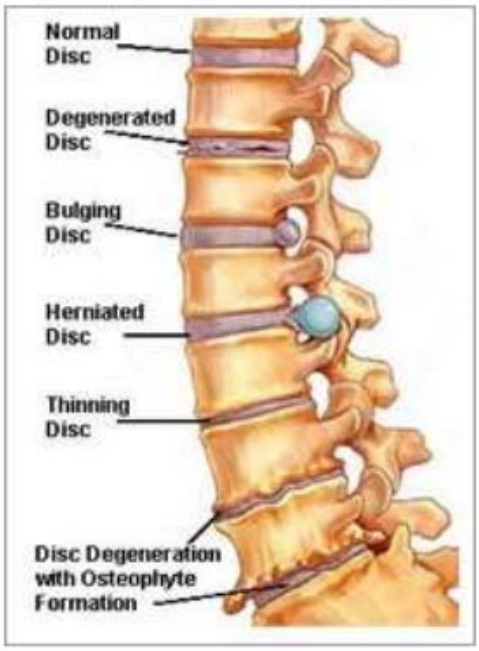
On the basis of radiological findings, 90% of men older than 50 years and 90% of women older than 60 years have evidence of degenerative changes in the cervical spine.

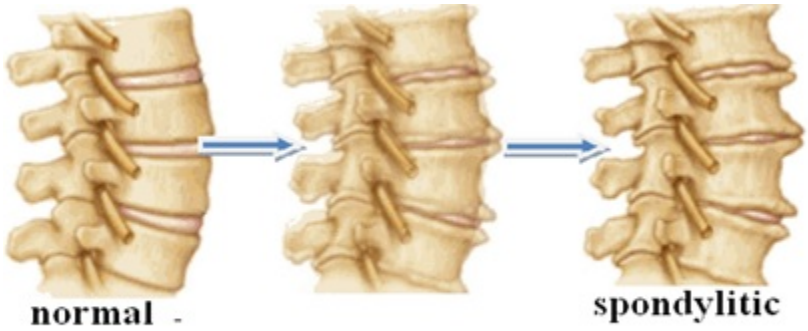
Both sex are affected equally. Cervical spondylosis usually starts earlier in men than women.

LOCATION:

Generally the C5 & C6 roots are most commonly affected by cervical spondylosis as a result of increased mobility at the **C_5 - C_6 & C_6 – C_7** levels.

Acute disc lesions are seen most often at the C7 level followed by C6 level.





Cervical Spondylosis

AETIOLOGY

1. Degenerative Causes

There are primary and secondary.

a) Primary –Senility

- Genetic factors
- Metabolic factors
- Manual Labour

b) Secondary – Osteo arthritis

- Rheumatoid arthritis
- Metastatic carcinoma
- Lymphoma of spine
- TB spine

2. Trauma

- Automobile accident with whiplash injury
- Atheletic injury
- Sudden jerk on the arms during falling down
- Disc prolaps or previous injury

3. Occupational cause

4. Hereditary factors

- Congenital narrowing of the cervical spinal canal.
- Segmental defets – Hemi vertebra, Fushed Vertebrae.

5. Acquired narrowing of cervical spinal canal due to

- Osteophytes
- Ossified posterior longitudinal ligament.
- Facet joint hypertrophy (results foraminal stenosis and compression of root of radicular artery).
- Hypertrophied ligamentum flavum (compress the cord during extension).

PATHOPHYSIOLOGY

- Intervertebral discs lose hydration and elasticity with age and these leads to cracks and fissures. The surrounding ligaments also lose their elastic properties and develop traction spurs. As the disc space narrows, the annulus bulges and facet override. This change, in turn, increase motion at that spinal segment and further hastens the damage to the disc, annulus fissures and herniation may occur. Acute disc herniation may complicate chronic spondylotic changes.
- As the annulus bulges, the cross sectional area of the canal is narrowed. This effect may be accentuated by hypertrophy of the facet joints (posterioly) and of the ligamentum flavum, which becomes thick with age.

Neck extension causes the ligaments to fold inward, reducing the unterioposterior (AP) diameter of the spinal canal.

- As disc degeneration occurs, the uncinate process ovverrides and hypertrophies compromising the ventrolateral portion of the foramen. Facet hypertrophy decreases the dorsolateral aspect of the foramen. This change contributes to the radiculopathy that is associated with cervical spondylosis. Marginal osteophytes begin to develop.

PATHOLOGY

The early changes to be erosion and flaking of cartilaginous surface with advance of disease. Cleft appear within the cartilage at the right angles to the surface, these claft may penetrate to the subchondral bone producing cartilage fibrillation. Sometimes fragment of cartilage break off to create joint mice. This result is growth of blood vessels from the subchondral bone which is dense, smooth, glittering, to ivory. This is known as eburnation. The loss cartilage accounts for the thinning of joint space which is seen radio graphically.

Osteophyte development from margin of articular cartilage may extend to ligament and capsular attachments. These are called “Bony spurs” of OA. These bony spurs accounts for nodules known as Heberden’s nodes.

Common clinical syndromes associated with cervical spondylosis include the following:-

1. HEAD ACHE

Head ache is a common symptom. It’s usually located in occipital region.

2. CERVICAL PAIN

- Chronic sub occipital head ache may be present.
- Pain may radiate to the occipital, shoulder, scapula (or) arm.
- The pain, which is worse when the patient is in certain position, can interfere with sleep.

3. AUTONOMIC SYMPTOMS

Vertigo, flushing, tinnitus, visual blurring are present. These are mediated by sympathetic disturbance to the sinuvertebral nerves from stellate ganglion.

4. CERVICAL RADICULOPATHY

Compression of Cervical nerve roots leads to ischemic changes that cause sensory dysfunction (Radicular pain) and motor dysfunction (weakness). Radiculopathy most commonly occurs in persons aged 40-50yrs. An acute herniated disc or chronic spondylotic changes can cause cervical radiculopathy and myelopathy. The C6 root is the most commonly affected one because of the predominant degeneration of the C5-C6 interspace. The next common sites are at C6-C7. There is also referred pain and tenderness along the medial border of the scapula.

5. CERVICAL MYELOPATHY

It may be precipitated by a large central disc herniation but is more commonly the result of spondylotic changes superimposed on a congenitally narrowed canal. Dorsomedial herniation of disc and the development of transverse bony bars or posterior osteophytes may results alone or in combination with pressure on the spinal cord or the anterior spinal artery which supplies the anterior 2/3 of the cord.

It has an insidious onset, which typically becomes apparent in persons aged 50-60 years.

- Upper motor neuron signs develop in the limbs with spasticity of the legs.
- Sensory loss in the upper limbs is common.
- Tingling and numbness with progressive clumsiness.
- Involvement of the sphincter is unusual at presentation.

THE SITE OF SENSORY DISTURBANCES WITH INDIVIDUAL ROOT

Nerve root	Disc level	Symptoms
C3	C2-C3	Pain and numbness in the back of the neck mastoid process, and pinna of ear.
C4	C3-C4	Pain and numbness in the back of the neck, levator scapulae and anterior chest.
C5	C4-C5	Pain in the neck, Tip of the shoulder, anterior arm, numbness over middle of the body, deltoid muscle.
C6	C5-C6	Pain in the neck, shoulder, medial border of the scapula, lateral arm, dorsal forearm, numbness in tip of thumb or on dorsum of hand over first dorsal interosseus muscle.
C7	C6-C7	Pain in the neck, shoulder, medial border of scapula, lateral arm, dorsal forearm, sensory change in index and middle finger.
C8	C7-T1	Pain in the neck, medial border of scapula, medial aspects of arm and forearm. Sensory change in the ring and little fingers.

THE MOTOR SYMPTOMS AND SIGNS

(INCLUDING REFLEXES)

Nerve Root	Disc level	Weakness-Reflex change
C3	C2-C3	Not readily detectable weakness or reflex change except by EMG.
C4	C3-C4	Not readily detectable weakness or reflex change except by EMG.
C5	C4-C5	Weakness of extension of arm and shoulder particularly above 90^{o},wasting of deltoid muscle ,no reflex change.
C6	C5-C6	Weakness of biceps muscle, diminished triceps reflex.
C7	C6-C7	Weakness of triceps muscle, diminished triceps reflex.
C8	C7-T1	Weakness of triceps and small muscles of hand. No reflex change.

PHYSICAL EXAMINATION

1. Spurling sign

Radicular pain is exacerbated by extension and lateral bending of the neck toward the side of the lesion. Which result in further foraminal compromise.

2. Lhermitte's sign

The generalized electric shock sensation is associated with neck extension.

3. The elbow flexion test

Fully flex the elbow and observe for ulnar nerve distribution.

4. Shoulder abduction test

Relief of cervical radiculopathy by abduction.

5. Phalynx wrist flexion test

Full passive flexion of the patient's wrist for 30-60 seconds and looking for reproduction or worsening of worsening of finger dysthesiasis

6. Adson's test

Turns his head to the involved side raises the chin and holds a deep inspiration and while the ipsilateral radial pulse is palpated with the arm slightly abducted from the side if pulse diminishes test positive for thoracic outlet syndrome.

7. Roo's test

The patient is asked to abduct the shoulder 90^0, flex the elbow 90^0 and open & close the hands slowly for 3 minutes.

i) Hand pallor

ii) Diminished pulse

iii) Ulnar dysthesias

If these are positive suggest thoracic outlet syndrome.

Complications

1. Pseudo arthrosis
2. Graft displacement.
3. Neurological injury

PATHOLOGIES THAT MIMIC CERVICAL SPONDYLOSIS

1. Hereditary spastic paralysis
2. Amyotropic lateral sclerosis
3. Intrinsic & Extrinsic neoplasia
4. Multiple neoplasia
5. Spinal infarction
6. Thoracic outlet syndrome
7. Vitamin B12 deficiency

INVESTIGATION:

1. Plain – x ray of cervical spine antero posterior and lateral views. Intervertebral disc space narrowing

- Osteophytic changes
- Altered Lordosis
- Degeneration in facet and vertebral joints.
- Foraminal stenosis, central stenosis.
- Sclerosis in the vertebrae.

2. MRI - (MAGNETIC RESONANCE IMAGING:

To asses cervical canal diameter, to find out severity of the compression

3. **CT – SCAN (Computerized Tomography)**
   - Confirms degenerative changes
   - May demonstrate posterior osteophytes and disc herniation.
4. **CT – MYELOGRAPHY:**

   Useful for localization of cord compression
5. **EXAMINATION OF CSF**

   Very high level of protein.

INSTRUCTION:

- Do not getting look down to read (or do any other work). Bring the reading materials to the eye level.
- All the neck movements can be performed with practice, by using trunk movements.
- While lying on sides, head should be in neutral position.

  Use low level pillow supporting the head and neck. Pillow line up to the shoulders level.

TREATMENT

The treatment includes

1. Physiotherapy with short wave diathermy to the neck,
2. Graded cervical traction may help to relieve pressure on the nerve roots
3. Analgesics.
4. When the pain is controlled the patient is taught shoulder bracing and neck exercises.
5. In the acute painful stage, a cervical collar is prescribed.
6. If definite bony ridges are demonstrable in cases with cord compression surgery to relieve pressure is indicated.

3.3. REVIEW OF LITERATURE -DRUG REVIEW

INTERNAL MEDICINE

The drug taken for the present study is "POORANATHI CHOORANAM" *(PC)* from the Siddha literature *AGATHIYAR 2000 3rd PART*. Following is the review about the drugs used in this formulation.

The literature poem of the drug POORANATHI CHOORANAM is given below,

சாறணைவேர் பதினாறு பல மாட்டுப்பால் நாழி

தனித்தபொடு தலைச்சாறீராழி வெந்து

வீறுடனெடுத்ததனை வெயிலதில் வைத்து

வேறுகழல் கொடிபல மொன்பது பெருஞ்சட்டி வைத்த

கூறுடன்மேல் சட்டிமூடி மண்செய்த

குருகவே புடமிட்டு வெடித்த பின்னெடுத்து

தேறனையத் தோல்தள்ளி பருப்பது எடுத்து

திரிகடுகு டனிருசீரக மிந்துப்பே

இந்துப்பெருங் காயங்கரு வேப்பின் தண்டு

யிதனுடனே மங்கடுக்காய் வகைக்கிரு கழஞ்சு

முந்திய மருந்துகள் கலந்து பொடிகொண்டு

முதர்வாத வுடல்தேனில் நெய்யிலிடுபித்து

வந்தவுடல் சேத்தும் தெண்ணெயனு பானம்

வாங்குவெரு கடியளவுநீங்கிடு நோயெல்லாம்

விந்தமலர் கின்றபூரண வாதிதின்ன

விளங்குமெய் யுடலங்கள்வ ளங்களிடு மேற்றே

INGREDIENTS

GROUP I:

1. **சாரணைவேர்** **(*Trianthemaportulacastrum*)**
2. **ஆட்டுப்பால்** **(*Goat's milk*)**
3. **பொடுதலைவேர்சாறு** **(*Phyla nodiflora)***

GROUP II:

1. **கழற்சிக்காய்** **(*Caesalpiniabonduc*)**
2. **சுக்கு** **(*Zingiberofficinale*)**
3. **மிளகு** **(*Piper nigrum*)**
4. **திப்பிலி** **(*Piper longum*)**
5. **பெருஞ்சீரகம்** **(*Pimpinellaanisum*)**
6. **சீரகம்** **(*Cuminumcyminum*)**
7. **பெருங்காயம்** **(*Ferula asafoetida*)**
8. **ஓமம்** **(*Trachyspermumammi*)**
9. **கறிவேப்பிலைஈர்க்கு** **(*Murrayakoenigi*)**
10. **கடுக்காய்தோல்** **(*Terminaliachebula)***
11. **இந்துப்பு** ***(Rock salt)***

INTERNAL MEDICINE

1.சாரணைவேர்:

GENERAL PROPERTIES OF SAARANAI:

KINGDOM **:** Plantae

DIVISION **:** Angiosperms

CLASS **:** Dicotyledons

SUBCLASS **:** Caryophyllidae

ORDER **:** Caryophyllales

FAMILY **:** Aizoaceae

GENUS **:** Trianthema

SPECIES **:** T.portulacastrum

BOTANICAL NAME **:** ***Trianthema protulacastum***

ENGLISH NAME **:** Horse purslane

PART USED **:** Roots, leaves

CHEMICAL CONSTITUENT : Trianthenol, methoxybenzaldehyde

ACTION **:** Alexiteric, Analgesic, Laxative

SUVAI-THANMAI-PIRIVU : Kaipu- Veppam- Kaarpu

USES : The root is administrated for Jaundice, Dropsy, Ascites, Rhehematism

2. ஆட்டுப்பால்

பொதுகுணம்

"வெள்ளாட்டு பாலுக்கு மேவியநற் றீபனமாந்
தள்ளாடு வாதபித்தஞ் சாந்தமாம் - உள்ளிரைப்புச்
சீதமதி சாரஞ் சிலேஷ்மமமறும் புண்ணாறும்
வாத சிலேஷ்மமுப்போ மாய்ந்து."

KINGDOM : Animalia

PHYLUM : Chordata

CLASS : Mammalia

ORDER : Artiodactyla

FAMILY : Bovidae

GENUS : Capra

SCIENTIFIC NAME : *Capra aegagrushircus*

ENGLISH NAME : Goat

CHEMICAL CONSTITUENTS : Calcium, iron, magnesium and phosphorus

ACTION: Immuno - modulatory, anti-inflammatory

MEDICINAL USES:

1. Goat's milk can help to build bone density, boost immunity against diseases and protect against allergies.
2. It help support healthy digestion, lower risk of diabetes, support weight, prevent fat loss and reduce high blood pressure.

3.பொடுதலை:

பொதுகுணம்::

"பொடுதலையின் பேருரைத்தால் போராமப் போக்கும்

அடுதலைசெய் காசம் அடங்கும் - கடுகிவரு

பேதியொடு சூலைநோய் பேசரிய வெண்மேகம்

வாதமும்போ மெய்யுரக்கும் வாழ்த்து".

-அகத்தியர் குணவாகடம்

GENERAL PROPERTIES OF PODUTHALAI:

KINGDOM **:** Plantae

DIVISION **:** Angiosperms

CLASS **:** Dicotyledons

SUBCLASS **:** Asteridae

ORDER **:** Lamiales

FAMILY **:** Verbenaceae

GENUS **:** Phla

SPECIES **:** P.nodiflora

BOTANICAL NAME : ***Phlanodiflora***

ENGLISH NAME **:** Purple lippa, Turkey tangle frog fruit.

PART USED **:** Leaves, fruits, roots

CHEMICAL CONSTITUENT : Lippoflorin A, Nodifloridin A, Tannin

ACTION **:** Demulcent, Deodrant, Diuretics, Astringent, Tonic

SUVAI-THANMAI-PIRIVU : Kaippu, Veppam, Kaarpu

USES: Hook worm infestation, used to relieve fever, cough and cold.

4.கழற்சிக்காய்:

பொதுகுணம்:

"விரைவாதஞ் சூனலயறும் வெட்டையான லேகும்

நிரசேர்ந்த குன்மம் நிலையா- துரைசேர்

அழற்சி விலகும் அருந்திற் கசப்பாங்

கழற்சியிலை யென்ரறுரைக்குங் கால்".

-அகத்தியர் குணவாகடம்

GENERAL PROPERTIES OF KAZHARCHI KAI:

KINGDOM **:** Plantae

DIVISION **:** Angiosperms

CLASS **:** Magnoliopsida

SUBCLASS **:** Rosidae

ORDER **:** Fabales

FAMILY **:** Fabaceae

GENUS **:** Caesalpinia

SPECIES **:** C.bonduc

BOTANICAL NAME : ***Caesalpinia bonduc***

ENGLISH NAME : Bonduc- Nut, Moloucca Bean, Physic nut

PART USED: Seed, leaves, bark, root

CHEMICAL CONSTITUENT : Caesalpinianone, methylcaesalpinianone, hematoxylol, stereochenol A, acetylloganic acid

ACTION **:** Deobstruent, emmenagogue

SUVAI-THANMAI-PIRIVU: Kaippu- Veppam- Karppu

USES: It is used to cure fever, headache and chest pain

Used as a tonic for jaundice, diarrhoea and skin eruption

5.சுக்கு:

பொதுகுணம்::

"சூலைமந்தம் நெஞ்செரிப்பு தோடமேப் பம்மழலை
மூலம் இரைப்பிருமல் மூக்குநீர் - வாலகப
தோடமதி சாரந் தொடர்வாத குன்மநீர்த்
தோடம்ஆ மம்போக்குஞ்சுக்கு"

-அகத்தியர் குணவாகடம்

GENERAL PROPERTIES OF CHUKKU:

KINGDOM **:** Plantae

DIVISION **:** Angiosperms

CLASS **:** Monocots

SUB CLASS **:** Commelinids

ORDER **:** Zingiberales

FAMILY **:** Zingiberaceae

GENUS **:** Zingiber

SPECIES **:** Z .offcinale

BOTANICAL NAME: ***Zingiber officinale***

PARTS USED : Root

CHEMICALCONSTITUENT: zingerone, shogaols and gingerols with[6]-gingerol(1-[4'-hydroxy-3'-methoxyphenyl]-5- hydroxy-3-decanone

ACTION **:** Stimulant, Stomachic,Carminative**.**

SUVAI-THANMAI-PIRIVU : Karpu**–** Veppam**–** Karppu

USES:

Nausea, heart burning, bloating or pain associated with various ailments.

6.மிளகு:

பொதுகுணம்:

"சீதகரம் பாண்டு சிலேத்மங் கிராணிகுன்மம்
வாதம் அருசிபித்தம் மாமூலம்- ஒதுசன்னி
யாசமபஸ் மாரம் அடன்மேகம் காசமிவை
நாசங் கறிமிளகினால்".

-அகத்தியர் குணவாகடம்

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

-தேரையர் குணவாகடம்

GENERAL PROPERTIES OF MILLAGU:

KINGDOM **:** Plantae

DIVISION **:** Angiosperms

CLASS **:** Magnoliids

SUBCLASS : Magnoliidae

ORDER : Piperales

FAMILY : Piperaceae

GENUS : Piper

SPECIES : P. nigrum

BOTANICAL NAME : ***Piper nigrum***

ENGLISH NAME : Black pepper

PART USED : Seed, creeper

CHEMICAL CONSTITUENTS: A volatile alkaloid piperine or pipirine 5-9%, piperidine or piperidin 5%, abalsamic volatile essential 1-2%, fat7%Mesocarp contains chavicin, a balsamic volatile oil, starch, gum.

SUVAI- THANMAI- PIRIVI : Kaippu, kaarppu- Veppam- Kaarpu

ACTIONS: Carminative , Pungent, Antiperiodic , Analgesic , Anti inflammatory, Anti – oxidant.

USES: It is useful in dyspepsia and flatulence in doses of 10-15 grains of the powder and in haemorrhoids in form of confection. It is a useful ingredient in tooth powder. .

7.திப்பிலி

பொதுகுணம்:

"கட்டி யெதிர்நின்று கடுநோயெல் லாம்பணியும்

திட்டி வினையகலும் தேகமெத்த - புட்டியாம்

மாமனுக்கு மாமனென மற்றவர்க்கு மற்றவனாய்ங்

காமமெனுந் திப்பிலிக்கும் கை"..

-தேரன் வெண்பா

GENERAL PROPERTIES OF THIPPILI:

KINGDOM **:** Plantae

DIVISION **:** Angiosperms

CLASS **:** Magnolids

ORDER **:** Piperales

FAMILY **:** Piperaceae

GENUS **:** *Piper*

SPECIES **:** *P.longum*

BOTANICAL NAME **:** ***Piper longum***

ENGLISH NAME **:** Long pepper

PART USED **:** Fruits and roots

CHEMICAL CONSTITUENTS : Guineensine, Pipernonaline, Pellitorine, Piperine, Pipermonaline, Brachyamide A and B from fruits and Piperlongumine and Sesamine from roots.

ACTIONS: Analgesic, Carminative, Stimulant Immunomodulator, Anti – oxidant, Anti – inflammatory

SUVAI-THANMAI-PIRIVU: Enippu, Veppam, Enippu

USES: Root and fruit decoction used for treating gonorrhoea, menstrual pain, RTI, TB, sciatica, hemiplegia, arthritis.

8.பெருஞ்சீரகம்

பொதுகுணம்:

"யோனிநோய் குன்மம் உருட்சைமந் தம்பொருமல்

பேனமுறு காசம் பீலிகமிரைப் - பீனஉரை

சேர்க்கின்ற வாதமுபோஞ் சீர்பெரிய சீரகத்தால்

மூக்குநோ யில்லை மொழி".

-அகத்தியர் குணவாகடம்.

GENERAL PROPERTIES OF PERUNJCHIRAKAM:

KINGDOM **:** Plantae

DIVISION **:** Angiosperms

CLASS **:** Eudicots

SUBCLASS **:** Asterids

ORDER **:** Apiales

FAMILY **:** Apiaceae

GENUS **:** Foeniculum

SPECIES **:** F.vulgare

BOTANICAL NAME **:** ***Foeniculum vulgare***

ENGLISH NAME **:** Fennel, Anise seed

PART USED **:** Seed, flower, Root

CHEMICAL CONSTITUENT: Methylchavicol, anisaldehyde, estragole, trans-anethole

ACTION: Carminative, expectorant

SUVAI-THANMAI-PIRIVU: Manamutankudiyakarppu, Enippu-veppam-karppu

USES: It make it a natural choice to alleviate flatulence and mouthwashes.

When it mixed with other oil, aniseed oil provides a good antiseptic.

9.சீரகம்:

பொதுகுணம்:

பித்தமெனு மந்திரியைப் பின்னப் படுத்தியவன்
சத்துருவை யுந்துறனந்து சாதித்து- மத்தனெனும்
ராசனையு மீவென்று நண்பைப் பலப்படுத்தி
போசனகு டாரிசெயும் போர்.

-தேரன் வெண்பா

GENERAL PROPERTIES OF CHIRAKAM:

KINGDOM **:** Plantae

DIVISION **:** Angiosperms

CLASS **:** Eudicots

SUBCLASS **:** Asterids

ORDER **:** Apiales

FAMILY **:** Apiaceae

GENUS **:** Cuminum

SPECIES **:** C.cyminum

BOTANICAL NAME **:** ***Cuminum cyminum***

ENGLISH NAME **:** Cumin seed

PART USED **:** Seed

CHEMICAL CONSTITUENT : α-Pinene, limonene,linalyl acetate

ACTION: Carminative, stimulant, stomachic, astringent

SUVAI-THANMAI-PIRIVU : Karppu, enippu- thatppam- enippu

USES: It is used for diarrhea, colic abdominal pain, bowel spasm, menstrual problem.

10.பெருங்காயம்

பொதுகுணம்:

"தந்தவே தந்த மூலததெழும்பிணி
சருவகாளம் விருசசி கங்கீடம்மா
மந்தம்வாதம் உதாவர்த்தம் அல்குல்நோய்
மார்பணஙகட்ட குன்மம்மகோதரம்
உந்துகெர்ப்பத்தின் வித்திரஞ்சூலைச்சூர்
உதிரப்பூசசி சிலேத்துமத்துறும்வலி
வந்தமெய்க்கடுப் போடிவைமுற்றுமே
மாயுநாறுநற் காயங்கிடைக்கினே"

-தேரையர் குணவாகடம்

GENERAL PROPERTIES OF PERUNGAYAM:

KINGDOM : Plantae

DIVISION : Angiosperms

CLASS : Eudicots

SUBCLASS : Asterids

ORDER : Apiales

FAMILY : Apiaceae

GENUS : *Ferula*

SPECIES : *F.asafoetida*

BOTANICAL NAME : ***Ferula asafoetida***

ENGLISH NAME : Asafoetida

PART USED : Oleo – gum resin

CHEMICAL CONSTITUENTS: Disulfides, Tri – and Tetrasulfides, Glucuronic acid, Galactose, Arabinose, Umbelliferone, Foetidin, Coumarin

ACTIONS: Sedative, Anti – spasmodic, Anthelmintic, Emmenogogue, Expectorant, Carminative.

SUVAI-THANMAI-PIRIVU: Kaippu, Kara karappu- Veppam, Kaarppu

USES: * It has been used as the remedy for abdominal pain and constipation.

* Resin used in the treatment for nervous disorders and spasmodic disorders.

* Asafoetida used in sterility, unwanted abortion, premature labour, excessive menstruation, leucorrhoea.

11.ஓமம்:

பொதுகுணம்:

"சீதசுரங் காசஞ் செரியாமந் தம்பொருமல்
பேதியிச்சல் சலகடுப்பு பேராமம் – ஓதிருமல்
பல்லொடுபல் மூலம் பகமிவைநோ யென்செயுமோ?
சொல்லொடுபோம் ஓமமென சொல்"

-அகத்தியர் குணவாகடம்

GENERAL PROPERTIES OF OMAM

KINGDOM : Plantae

DIVISION : Angiosperms

CLASS : Eudicots

SUBCLASS : Asterids

ORDER : Apiales

FAMILY : Apiaceae

GENUS : *Trachyspermum*

SPECIES : *T.ammi*

BOTANICAL NAME : ***Trachyspermum ammi***

ENGLISH NAME : Bishops weed

PART USED : Seeds

CHEMICAL CONSTITUENTS: Essential oil, Thymol, Carvacrol, α and β – pinene, Camphene, Threonine

ACTIONS: Diuretic, Carminative, Anti – vomiting, Anti – hypertensive, Anti – spasmodic Anti – oxidant, Anti – inflammatory

SUVAI-THANMAI-PIRIVU : Kaarpu, Veppam, Kaarpu

USES: The seed decoction used in the cases of asthma, anti – dyspnoeic effect, cutaneousdisorders, neural and UTI disorders.

12. கறிவேப்பிலை:

பொதுகுணம்:

"வாயினருசி வயிரற்றுளைகச்ச னீடுசுரம்
பாயுகின்ற பித்தமுமென் பண்ணுங்கான்- தூய
மருவேறு காந்தளங்கை மாதே! உலகிற்
கருவேப்பிலையருந்திக்காண்".

-அகத்தியர் குணவாகடம்

GENERAL PROPERTIES OF KARIVEPPILAI:

KINGDOM : Plantae

DIVISION : Magnoliophyta

CLASS : Dicotyledons

SUBCLASS : Rosidae

ORDER : Sapindales

FAMILY : Rutaceae

GENUS : Murraya

SPECIES : M. koenigii

BOTANICAL NAME : ***Murraya koenigii***

ENGLISH NAME : Curry leaves, Sweet neam

PART USED : Leaves, Rib of the leaves (Erkku), Bark, Root.

CHEMICAL CONSTITUENT : Cinnamaldehyde, Carbazolealkaloids,Mahanimbine, Girinimbine

ACTION: Tonic, Stomachic

SUVAI-THANMAI-PIRIVU : Sirukaarppu- veppam- kaarppu

USES: The leaves, barks, roots used in digestive problem, it has been shown that the leaves increases digestive secretion and relieve nausea, vomiting and indigestion.

13.கடுக்காய்:

பொதுகுணம்:

"கடுக்காயுங் தாயுங் கருதிலொன்றான்றாலும்
கடுக்காய் தாய்கதிகங் கண்நீ - கடுக்காய்நோய்
ஒட்டி யுடற்றோற்றும் உற்றவன்னை யேசுவைகள்
ஊட்டியுடற் றோற்று முவந்து"

"தாடை கழுத்தக்கி தாலு குறியிவிடப்
பீடை சீலிபதமுற் பேதிமுடன் - ஆடையோட்ட
தூலமிடி புண்வாத சோணிகா மலையிரண
டாலமிடி போம்வரிக்காயால்"

அகத்தியர் குணவாகடம்

GENERAL PROPERTIES OF KADUKKAI:

KINGDOM : Plantae

DIVISION : Angiosperms

CLASS : Eudicots

SUBCLASS : Rosids

ORDER : Myrtales

FAMILY : Combretaceae

GENUS : *Terminalia*

SPECIES : *T.chebula*

BOTANICAL NAME : ***Terminalia chebula***

ENGLISH NAME : ChebulicMyrobalan, Ink nut

PART USED : Unriped fruit and Galls

CHEMICAL CONSTITUENTS: Gallic acid, Chebupentol, Chebulagic acid, Terminoic acid, p-coumaric acid, Tannin(30-32%), Arjunolic acid

ACTIONS: Astringent, Alterative, Carminative, Anti septic, Anti – inflammatory, Anti – arthritic, Anti – oxidant

SUVAI-THANMAI-PIRIVU : Kaarpu-Veppam- Enippu

USES:

- The powdered fruit act as an astringent and is used in haemorrhoids, dentrifice inloose gums, bleeding and ulceration in gums.
- Fruit decoction used in curing diarrhoea and dysentery.
- Fruit powder has Anti-ageing activity.

14.இந்துப்பு

பொதுகுணம்:

"அட்டகுன்ம மந்தம் அசிர்க்கரஞ்சூர் சீதபித்தந்
துட்டவையம் நாடிப்புண் தோடங்கள் – கெலட்டமலக்
கட்டுவிட விந்தையக் காயநோய் வன்கரப்பான்
விட்டுவிட விந்துப்பை விள்"

"சென்னிக்கண்ணா பற்றூர் செவிகவுள்கண்டம்பகநோய்
சந்நியா சங்காசந் தாகமிரைப் – புன்னிரத்த
மூலஞ் சிலந்திநளி மூடிகநஞ் சூதை வலி
சூலஞ் சிதையுமிந்தாற் சொல் "

- குணபாடம் தாது சீவ வகுப்பு

GENERAL PROPERTIES OF ROCK SALT

CATEGORY : Hallide mineral

FORMULA : Nacl

CRYSTAL SYSTEM : Cubic

CRYSTAL CLASS : Hexoctahedral

IDENIFICATION

FORMULA MASS : 58.433 g/mol

COLOR : Colorless or White

CRYSTAL HABIT : Predominantly cubes but also Granular, Fibrous and Compact

FRACTURE : Conchoidal

TENACITY : Brittle

LUSTER : Vitreous

STREAK : White

SPECIFIC GRAVITY : 2.17

OPTICAL PROPERTIES : Isotropic

REFRACTIVE INDEX : n=1.544

SOLUBILITY : Water soluble

ACTIONS: Carminative, Diuretic, Stimulant, Laxative

USES : It is used in the treatment for gastritis, indigestion, dental and genital disorders, venous ulcers.

DRUG REVIEW -EXTERNAL MEDICINE

1.ஈருள்ளி:

பொதுகுணம்:

"வெப்பமூ லங்கிரந்தி வீறூரத்த பித்தமுடன்
செப்புநா அக்கரந்தி ராத்தாகம்- வெப்புக்
கடுப்பறுமந் தஞ்சந்நி காசம்வயிற் றுப்பல்
தடிப்பேறும் வெங்காயத்தால்" .

-அகத்தியர் குணவாகடம்

GENERAL PROPERTIES OF ERULLI:

KINGDOM : Plantae

DIVISION : Angiosperms

CLASS : Monocots

SUBCLASS : Liliidae

ORDER : Liliales

FAMILY : Lilliaceae

GENUS : Allium

SPECIES : A. cepa

BOTANICAL NAME : ***Allium cepa***

ENGLISH NAME : Onion

PART USED : Green leaves, bulbs, flower, seed

CHEMICAL CONSTITUENT : Quercetin, fructose, quercetin-3-glucoside, xylose, flavonoids, selenium.

ACTION: Stimulant, diuretic, expectorant, emmenagogue, rubefacient, demulcent, aphrodisiac

SUVAI-THANMAI-PIRIVU : Kaippu- veppam- karppu

USES : It improves ocular ailments, aid in sleep, heal everything from oral sores, lumbago, dysentery.

2.வசம்பு:

பொதுகுணம்:

"பாம்பாதி நஞ்சற் புதப்புண் வலிவிடபாகங் குன்மம்
சூம்பா ரிரத்தபித் தம்முக நாற்றம்வன் சூலைசன்னி
வீம்பாம்பை காசம் பிலீகஞ் சிலிபதம் வீறிருமல்
தாம்பாங் கிருமி யிவையேகு மாசிவ சம்பினையே".

-தேரையர் குணவாகடம்

GENERAL PROPERTIES OF VASAMBU:

KINGDOM	**:**	Plantae
DIVISION	:	Tracheophyta
CLASS	**:**	Magnoliophytina
ORDER	**:**	Acorales
FAMILY	**:**	Acoraceae
GENUS	**:**	Acours
SPECIES	:	A calamus
BOTANICALNAME	:	***Acorus calamus***
ENGLISHNAME	:	Sweet flag
CHEMICALCONSTITUENT	:	Teuclatriol,beta-sitosterol, methychavicol, Cadinane.
PARTUSED	**:**	Root

ACTION : Germicide, Antihistaminic, Anti-muscarinic, Disinfectant

SUVAI-THANMAI-PIRIVU : Karppu- veppamkarppu

USES: Fever, asthma, bronchitis, digestive problems

3.நொச்சிவேர்:

பொதுகுணம்:

"நோயா கலியை நொடிக்கு ளருந்தவெம்ம

யோயா மணாளு முயர்த்துதலுக்- காய

வந்தமுதல் நண்பாகி வாதத்தை யேயுறவாற்

சிந்துவா ரங்கனகலுந் தீ".

-தேரன் வெண்பா

GENERAL PROPERTIES OF NOCHI:

KINGDOM **:** Plantae

DIVISION **:** Angiosperms

CLASS : Eudicots

SUB CLASS **:** Asteroids

ORDER **:** Lamiales

FAMILY **:** Lamiaceae

GENUS **:** Vitex

SPECIES : V . negundo

BOTANICALNAME **:** ***Vitex negundo***

ENGLISH NAME **:** Five leafs chaste tree

PARTS USED **:** Root

CHEMICALCONSTITUENT : Casticin, Isoorientin, Chrysopheno l D, Luteolin, P-hydroxybenzoic acid and D-fructose.

ACTION: Febrifuge, Expectorant, Diuretic.

SUVAI-THANMAIPIRIVU: Kaippu, Thuvarppu – Veppam – Karppu

USES: Roots and leaves are used in eczema, ringworm and other skin diseases, liver disorders, spleen enlargement, rheumatic pain, gout, abscess, backache.

4.தழுதாழை வேர்:

பொதுகுணம்:

"சேர்ந்த சொறிசிரங்குஞ் சேர்வாதம் எண்பதும் போம்
ஆய்ந்திடிற் பித்தம் அதிகரிக்கும்- மாந்தமறும்
ஐயின் கரந்தணியும் ஆதைழு தாழைக்கு
மெய்யின் கடுப்பும் போம் விள்".

-அகத்தியர் குணவாகடம்

GENERAL PROPERTIES OF THAZHUTHAZHAI:

KINGDOM : Plantae

DIVISION : Angiosperms

CLASS : Eudicots

SUBCLASS : Asterids

ORDER : Lamiales

FAMILY : Lamiaceae

GENUS : Clerodendrum

SPECIES : C.phlomidis

BOTANICAL NAME : ***Clerodendrm phlomidis***

ENGLISH NAME : Wind killer

PART USED : Root, Leaves

CHEMICAL CONSTITUENT : Flavonoids, glycosides, pectolinaingenin, D-glucopyranoside

ACTION : Alterative, Astringent

SUVAI-THANMAI-PIRIVU : Kaippu, Thuvarppu- veppam - karppu

USES: * The pulp obtained from the crushing of the leaves is applied externally on swelling.
* Root is used to improve body vigor and maintain good health.

5.வேப்பெண்ணெய்:

பொதுகுணம்:

"வாதம்போம் பித்தமிகும் மாறாக்கி ரத்தியொடு
மோதுகரப் பான்சிரங்கு முன்னிசிவும்- ஒதுடலின்
நாப்ப ணுறுசுரமு நாடுசன்னி யுந்தொலையும்
வேப்பநெய் யென்றொருக்கால் விள்ளு".

-அகத்தியர் குணவாகடம்

GENERAL PROPERTIES OF VEMBU:

KINGDOM : Plantae

DIVISION : Angiosperms

CLASS : Magnoliopsida

SUBCLASS : Rosidae

ORDER : Spindales

FAMILY : Meliaceae

GENUS : Azadirachta

SPECIES : A. indica

BOTANICAL NAME : ***Azadirachta indica***

ENGLISH NAME : Neem tree, Margosa tree

PART USED : Seed oil, leaves, bark, fruit, root, gum, neem cake

CHEMICAL CONSTITUENT : Azadirachtin and Nimbin along with triglycerides, Stigmasterol, Campesterol, beta-sitosterol. This oil also contains fatty acids, namely Omega-6, Omega-9, stearic acid and palmitic acid.

ACTION : Stimulant, Antiseptic, Insecticide, Anthelmintic, Anti inflammatory

SUVAI-THANMAI-PIRIVU : Kaippu- Veppam- Karppu

USES: It is used to be antibacterial, antifungal, antidiabetic, anthelmintic.

6.ஆமணக்கு எண்ணெய்:

பொதுகுணம்:

"ஆமணக்கு நெய்யால் நலமுண்டாம் யாவர்க்கும்
பூமணக்கு மேனி புரிகுழலே- வாய்மணக்கக்
கொள்ளில் வயிறுவிடுங் கோரமுள்ள வாயுவறும்
உள்ளில்வரு குன்மம்போ மோது".

அகத்தியர் குணவாகடம்

GENERAL PROPERTIES OF AAMANUKU:

KINGDOM : Plantae

DIVISION : Angiosperms

CLASS : Eudicots

SUBCLASS : Rosids

ORDER : Malpighiales

FAMILY : Euphorrbiaceae

GENUS : Ricinus

SPECIES : R communis

BOTANICAL NAME : ***Ricinus communis***

ENGLISH NAME : Castor oil plant

CHEMICAL COSTITUENTS : Curcin, ricinine (0.55%) and N-demethylricinine flavones glycosides kaempferol-3-O kaempferol-3-O-β-D-glucopyranoside,

PART USED : leaves, seeds, root

ACTION: Anti vadha,Galactagogue, anti-oxidant, antihistamic, antiasthmatic, antiulcer, immunemodulatory, Antidiabetic, hepatoprotective, Antifertility, anti inflammatory, antimicrobial,

SUVAI – PIRIVU – VIBAVAM Kaippu- Veppam-Karppu

USES: It is used from ancient time to cure rheumatism, worm infestation, sever constipation and abdominal disorders.

7. ey;nyz;nza;:

பொதுகுணம்:

"புத்திநயனக்குளிரச் சி பூரிப்பு மெய்ப்புளகஞ்
சத்துவங் கந்தி தனியிளமை – மெத்தவுண்டாங்
கண்ணோய் செவிநோய் கபாலழல் காசநோய்
புண்ணோய்போ மெண்ணெய்யாற் போற்று"

- அகத்தியர் குணவாகடம்

GENERAL PROPERTIES OF ELLU:

KINGDOM : Plantae

DIVISION : Angiosperms

CLASS : Eudicots

SUBCLASS : Asterids

ORDER : Lamiales

FAMILY : Pedaliaceae

GENUS : *Sesamum*

SPECIES : *S.indicum*

BOTANICAL NAME : ***Sesamum indicum***

ENGLISH NAME : Gingeli oil

PART USED : Seed oil

CHEMICAL CONSTITUENTS : Lignanssesamolin, Sesamin, Pinoresinol, Lariciresinol

ACTIONS : Demulcent, Emollient, Laxative, Nutritive

SUVAI-THANMAI-PIRIVU : Inippu, Veppam, Inippu

MEDICINAL USES: * Calcium, zinc, copper minerals in oil plays an important role in growth of bone, healing, regrowth of bone and prevent osteoporosis.

* It can help to reduce the inflammation and discomfort of various conditions such as gout and arthritis by reducing the swelling of joints.

4.MATERIALS AND METHODS

Approval of the Screening committee and Institutional ethical committee were obtained for undertaking the present study.

The study design and the underlying hypothesis and the rights to withdraw from the study at any time were informed orally and in writing to all the participants. A single center open clinical trial was undertaken.

STUDY PLACE **:** OPD & IPD of PG department of Varmam, Puramaruthuvam and Siddhar Yoga maruthuvam, Govt. Siddha medical college attached with Arignar Anna Hospital for Indian Medicine and homoeopathy,

STUDY PERIOD **:** 12 Months

SAMPLE SIZE **:** 40 patients

(20 - OP; 20 - IP -10 with trial medicines, 10 with Ottradamalong with trial medicine**.**

TRIAL DRUGS:

4.1 INTERNAL MEDICINE: "POORANATHI CHOORANAM"

(Reference : AGATHIYAR 2000 3rdPart)

SOURCE OF RAW DRUGS:

The required raw drugs were purchased from authorized centers.The raw drugs and Mineral drugs were authenticated by the PG Gunapadam & Department of Medicinal Botany, GSMC, Chennai. Then the medicine was purified and prepared in Gunapadam laboratory **of Government Siddha Medical College, Chennai-106.**

They were subjected to screening test and documented using screening Performa. 40 patients who fulfilled the inclusion criteria were subjected to protocol comprising selection criteria, clinical assessment, Siddha assessment, laboratory investigations, and diagnosis and treatment aspect.

LIST OF INGREDENTS:

GROUP 1:

1.சாரணைவேர் (*Trianthema portulacastrum*) - 16palam [560gm]

2.ஆட்டுப்பால் (*Goat's milk*) - 1 padi [1520ml]

3.பொடுதலைவேர்சாறு (*Phyla nodiflora)* - *2* padi[3040ml]

GROUP 2:

1. கழற்சிக்காய் (*Caesalpinia bonduc*) - 9 palam [315gms]
2. சுக்கு (*Zingiber officinale*) - 2kazhanju [10.2gms]
3. மிளகு (*Piper nigrum*) - 2kazhanju [10.2gms]
4. திப்பிலி (*Piper longum*) - 2kazhanju [10.2gms]
5. பெருஞ்சீரகம் (*Pimpinella anisum*) - 2kazhanju [10.2gms]
6. சீரகம் (*Cuminum cyminum*) - 2kazhanju [10.2gms]
7. பெருங்காயம் (*Ferula asafoetida*) - 2kazhanju [10.2gms]
8. ஓமம் (*Trachyspermum ammi*) - 2kazhanju [10.2gms]
9. கறிவேப்பிலைஈர்க்கு (*Murraya koenigi*) - 2kazhanju [10.2gms]
10. கடுக்காய்தோல் (*Terminalia chebula)* - 2kazhanju [10.2gms]
11. இந்துப்பு *(Rock salt)* - 2kazhanju [10.2gms]

MATERIALS REQUIRED:

GROUP I

சாரணை வேர்

(Trianthema portulacastrum)

பொடுதலை (*Phyla nodiflora)*

ஆட் டுப்பால் (*Goat's milk*)

GROUP II

கழற்சிக்காய்

(Caesalpinia bonduc)

சுக்கு (*Zingiber officinale*)

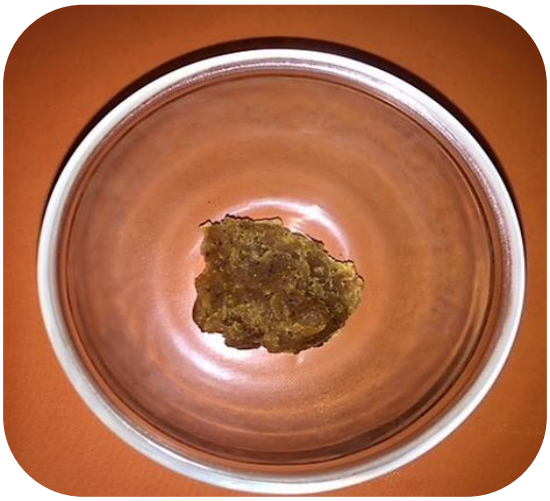
மிளகு (*Piper nigrum*)

திப்பிலி (*Piper longum*)

பெருஞ்சீரகம்

(*Pimpinella anisum*)

சீரகம் (*Cuminum cyminum*)



பெருங்காயம் (*Ferula asafoetida*)

ஓமம் (*Trachyspermum ammi*)

கறிவேப்பிலை ஈர்க்கு (*Murraya koenigi*)

கடுக்காய் தோல் (*Terminalia chebula)*

இந்துப்பு *(Rock salt)*

POORANATHI CHOORANAM

PREPARATION OF THE DRUG:

1. Procurement/collection of ingredients for the preparation of Pooranathi chooranam.
2. Purification of ingredients for the above (Agathiar sarakku suthi muraigal)
3. 560gms of saranaiver was taken and it is boiled in the goat's milk & podudhalaicharu, it was dried in the sunshade.
4. Then kalarchikai was placed in mud plate and closed with suitable another mud plate, seal it with a mud pasted cloth (sellai) and is taken to pudam with 25Nos cow dunk cake. After the pudam , remove the outer coat and collect the kalarchi seeds and then made in to fine powder.
5. Then the balance raw drugs were slightly fried and grind separately using a stone mortar and sieved by white cloth.
6. It was mixed well together with the above mentioned powder and stores it in an air tight container.

DOSAGE : Mooviralalavu (1 to 2 gm.) Twice daily for 48 days

ADJUVENT : Honey

4.2 EXTERNAL DRUG: VALI KUTHALUKU ULLI ENNAI

(Reference: Oorvasi Iravatha Sitkha Vaithiya Sitkha Pancharathinam**)**

INGREDIENTS:

1. Eerulli(*Allium cepa*)	-	2 palam (70gms)
2. Vasambu (*Acorus calamus*)	-	1palam (35gms)
3. Nochiver(*Vitex negundo*)	-	1/2palam (17.5gms)
4. Thazhuthazhaiver(*Clerodendrum phlomoidis*)	-	1/2palam(17.5gms)
5. Neem oil (*Azadirachta indica*)	-	2palam (70gms)
6. Castor oil (*Ricinus communis*)	-	2palam (70gms)
7. Gingelly oil (*Sesamum indicum*)	-	2palam (70gms)

ஈருள்ளி (*Allium cepa)*

வசம்பு (*Acorus calamus)*

நொச்சி வேர்

(*Vitex negundo)*

தழுதாழை வேர்

(*Clerodendrm phlomidis)*

Ntg;ngz;nza;

(*Azadirachta indica)*

ஆமணக்கெண்ணெய்

(*Ricinus communis)*

ey;nyz;nza; : *Sesamum indicum*

VALI KUTHALUKU ULLI ENNAI

METHOD OF PREPARATION:

1. Procurement/collection of ingredients for the preparation of Pooranathi chooranam.
2. Purification of ingredients for the above (Agathiar sarakku suthi muraigal) and make in to a Karkam.
3. This karkam were mixed with the above oils and heat until attains its consistency.
4. Then the end products is filtered and oil were collected in a dry, clean airtight container.

INDICATION:

Sagalavali (All type of pain), kuththal, kudaichal**.**

4.3.THERAPY - OTTRADAM

DEFINITION:

The required plant parts, grains and others are put in a container, fried or boiled or heated and then tied in a cloth bag. The bag is put on the affected areas and then gently compressed and released in a rhythemic manner for few minutes or till the heat subsides. It is also called as Otral. Cold paste can also be used as otral.

Bronze, Iron, Rod, Sand, Cloth, Mud vessel are also heated and used for fomentation to give relief from pain.

PROCEDURE:

- Dried Neemcake are pounded using a stone mortar and powdered.
- It is slightly fried and tied using a cotton cloth.
- Then fomentation over the affected area. Repeat the process for 7 times.

INDICATION:

Valinoi, Mupini, Thalaivali, Iyyanoi

REFERENCES:

Gunapadam Mooligai

METHODOLOGY OF TREATMENT:

STUDY ENROLLMENT:

Patients reporting at the OPD/IPD with clinical features of pain in nape radiating to upper limbs, stiffness are chosen for enrollment based on the inclusion criteria.

The patients who are enrolled will be informed (Form VI) about the study, trial drug, possible outcomes and the objectives of the study in the language and terms understandable to them and theinformed consent would be obtained in writing from them in the consent form (Form VI).

All these patients will be given unique registration card in which the patients Registration number of the study, Address, Phone number and Doctors phonenumber etc. will be given, so as to report easily should any complications arise.

Complete clinical history, complaints, duration, examination findings and laboratory investigations -- will be recorded in the prescribed Proforma.

Screening Form- I will be filled up: Form –II and Form –III will be used for recording the patients history, clinical examination of symptoms, signs and laboratory investigations respectively. Patients will be advised to take the trial drug and appropriate dietary advice would be given according to the patients' perfect understanding.

CONDUCT OF THE STUDY:

For out-patients, the trial drug Pooranathi Chooranam (Int), Vali kuthalukuulliennai (Ext) and Ottradam (Therapy) will be given in the Out-patient Department of Varma Maruthuvam, Pura Maruthuvam & Yoga Maruthuvam of GSMC attached with AAGHIM. The out-patients will be asked to have a regular follow-up in the OP Department once in 7 days. In each and every visit, the clinical assessment will be recorded in the prescribed proforma. For IPD patients, trial drug was dispensed daily till they get discharge. The laboratory investigations will be done before and after treatment and recorded in the prescribed format. At the end of the trial the patients are advised to have follow-up for 2 more months for observing any recurrence. Defaulters will not be allowed to continue and will be withdrawn from the study**.**

DATA COLLECTION FORMS:

Required information will be collected from each patient by using following forms:

FORM I **:** Screening and selection proforma

FORM lI **:** History proforma on enrollment

FORM llI **:** Clinical assessment proforma

FORM lV **:** Laboratory investigations proforma

FORM V **:** Consent form

FORM VI **:** Withdrawal form

FORM VII **:** Patient information sheet

FORM VIII **:** Dietary advice form

FORM IX **:** Adverse reaction form

INCLUTION CRITERIA:

- Age : between 20-60 years
- Sex : Both male and female
- Muscle spasms in neck and shoulders
- Complaint about pain behind the neck in the area of trapezius

- Radiating pain to the upper limbs
- Numbness and weakness in arms, hands and fingers
- Giddiness

EXCLUSION CRITERIA:

- Cervical rib
- Trauma
- Spina bifida
- Cardiac disease
- Fracture
- Ankylosingspondylosis
- Malignancy
- Pregnancy and Lactation
- Tuberculosis in spine
- Adhesive capsulitis
- Carpal tunnel syndrome
- Patient with any other serious systemic illness.

WITHDRAWAL CRITERIA

- Intolerance to the drug and development of any serious adverse effect during the period of drug trial.
- Patient turned unwilling to continue in the course of Clinical trial with any other systemic illness.

ADR REPORTING:-

If ADR is reported , patients will be referred to SCRI (Peripheral Pharmacovigilance Centre) then the patient is directed to nearest Govt. hospital.

THE CLINICAL ASSESSMENT AND OUTCOME WERE ASSESSED BASED ON THE FOLLOWING:

TESTS AND ASSESMENTS

1. Clinical assessment

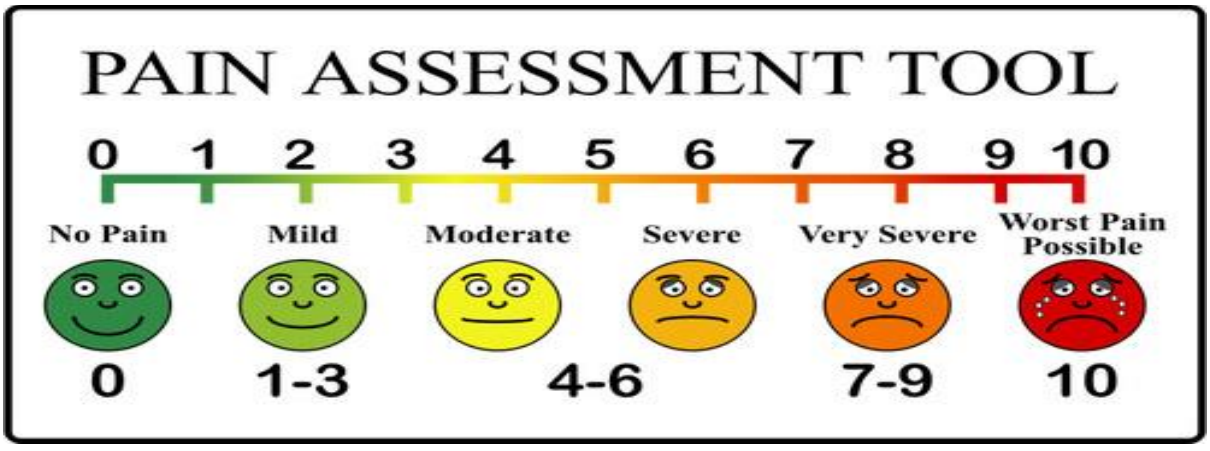
2. Routine investigations

3. Specific investigations

1.CLINICAL ASSESSMENT

- Stiffness of neck
- Pain in nape of the neck
- Radiating pain in upper limbs upto the fingers
- Tenderness
- Numbness
- Restriction of movements of neck
- Giddiness

Pain assessment scale-visual analog scale



Grade 0 **:** No Pain

Grade 1 -3 **:** Mild pain

Grade 4-6 **:** Moderate pain

Grade 7-10 **:** Severe pain

GRADATION:

1. Grade 1 - Fit for all activities and to do the works without support (Normal).

2. Grade 2 - Mild pain and mild restriction of movements.

3. Grade 3 - Moderate pain with or without radiation to upper limbs and moderate restriction of movements.

4. Grade 4 - Severe pain with or without radiation to upper limbs and severe restriction of movements.

2. ROUTINE TESTS AND INVESTIGATION:

INVESTIGATIONS BASED ON SIDDHA SYSTEM

ENVAGAI THERVU:

The cases were regarded in a prescribed Proforma prepared on the basis of siddha methodology. An individual case sheet was maintained for each case in the outpatient& inpatient department.

BLOOD:

Complete blood routine test.

- TC, DC, ESR, HB and BS(R)

Renal function test:

- Blood urea, Serum creatinine

Liver function test:

- S.Bilurubin, Alkaline Phosphatase, SGOT, SGPT

URINE ANALYSIS:

Albumin, Sugar, Deposit

SPECIFIC INVESTIGATIONS:

X- Ray: Cervical spine – AP &Lat view

4.4 STANDARDIZATION PARAMETERS

ORGANOLEPTIC CHARACTERS:

STATE	Solid
APPEARANCE	Pale Greenish
NATURE	Fine powder
ODOR	Characteristic odor
FLOW PROPERTY	Dry Free flowing

PHYSICOCHEMICAL EVALUATION:

Percentage Loss on Drying

Test drug was accurately weighed in evaporating dish .The sample was dried at 105^{o}C for 5 hours and then weighed.

Determination of Total Ash

Test drug was accurately weighed in silica dish and incinerated at the furnace a temperature 400 ºC until it turns white in color which indicates absence of carbon. Percentage of total ash will be calculated with reference to the weight of air-dried drug.

Determination of Acid Insoluble Ash

The ash obtained by total ash test will be boiled with 25 ml of dilute hydrochloric acid for 6mins. Then the insoluble matter is collected in crucible and will be washed with hot water and ignited to constant weight. Percentage of acid insoluble ash will be calculated with reference to the weight of air-dried ash.

Determination of Water Soluble Ash

The ash obtained by total ash test will be boiled with 25 ml of water for 5 mins. The insoluble matter is collected in crucible and will be washed with hot water, and ignite for 15mins at a temperature not exceeding 450ºC. Weight of the insoluble matter will be subtracted from the weight of the ash; the difference in weight represents the water soluble ash. Calculate the percentage of water-soluble ash with reference to the air-dried drug.

Determination of Alcohol Soluble Extractive

Test sample was macerated with 100 ml of Alcohol in a closed flask for twenty-four hours, shaking frequently during six hours and allowing to stand for eighteen hours. Filter rapidly, taking precautions against loss of solvent, evaporate 25 ml of the filtrate to dryness in a tared flat bottomed shallow dish, and dry at 105ºC, to constant weight and weigh. Calculate the percentage of alcohol-soluble extractive with reference to the air-dried drug.

Determination of Water Soluble Extractive

Test sample was macerated with 100 ml of chloroform water in a closed flask for twenty-four hours, shaking frequently during six hours and allowing to stand and for eighteen hours. Filter rapidly, taking precautions against loss of solvent, evaporate 25 ml of the filtrate to dryness in a tared flat bottomed shallow dish, and dry at 105ºC, to constant weight and weigh. Calculate the percentage of water-soluble extractive with reference to the air-dried drug.

HEAVY METAL ANALYSIS BY AAS

Standard: Hg, As, Pb and Cd – Sigma

Methodology

Atomic Absorption Spectrometry (AAS) is a very common and reliable technique for detecting metals and metalloids in environmental samples. The total heavy metal content of the sample was performed by Atomic Absorption Spectrometry (AAS) Model AA 240 Series. In order to determination the heavy metals such as mercury, arsenic, lead and cadmium concentrations in the test item.

Sample Digestion

Test sample was digested with 1mol/L HCl for determination of arsenic and mercury.

Similarly for the determination of lead and cadmium the sample were digested with 1mol/L of HNO3.

Standard reparation

As & Hg- 100 ppm sample in 1mol/L HCl

Cd &Pb- 100 ppm sample in 1mol/L HNO_3

TLC AND HPTLC ANALYSIS:

TLC Analysis:

Test sample was subjected to thin layer chromatography (TLC) as per conventional one dimensional ascending method using silica gel 60F254, 7X6 cm (Merck) were cut with ordinary household scissors. Plate markings were made with soft pencil. Micro pipette were used to spot the sample for TLC applied sample volume 10-micro liter by using pipette at distance of 1 cm at 5 tracks. In the twin trough chamber with the specified solvent system After the run plates are dried and was observed using visible light Short-wave UV light 254nm and light long-wave UV light 365 nm

High Performance Thin Layer Chromatography Analysis

HPTLC method is a modern sophisticated and automated separation technique derived from TLC. Pre-coated HPTLC graded plates and auto sampler was used to achieve precision, sensitive, significant separation both qualitatively and quantitatively. High performance thin layer chromatography (HPTLC) is a valuable quality assessment tool for the evaluation of botanical materials efficiently and cost effectively. HPTLC method offers high degree of selectivity, sensitivity and rapidity combined with single-step sample preparation. In addition it is a reliable method for the quantitation of nano grams level of samples. Thus this method can be conveniently adopted for routine quality control analysis. It provides chromatographic fingerprint of phytochemicals which is suitable for confirming the identity and purity of medicinal plant raw materials.

Chromatogram Development

It was carried out in CAMAG Twin Trough chambers. Sample elution was carried out according to the adsorption capability of the component to be analysed. After elution, plates were taken out of the chamber and dried.

Scanning

Plates were scanned under UV at 366nm. The data obtained from scanning were brought into integration through CAMAG software. Chromatographic finger print was developed for the detection of phytoconstituents present in each extract and Rf values were tabulated.

PHYTOCHEMICAL ANALYSIS

Test for alkaloids:

Mayer's Test: To the test sample, 2ml of mayer's reagent was added, a dull white precipitate revealed the presence of alkaloids.

Test for coumarins:

To the test sample, 1 ml of 10% sodium hydroxide was added. The presence of coumarins is indicated by the formation of yellow color.

Test for saponins:

To the test sample, 5 ml of water was added and the tube was shaken vigorously. Copious lather formation indicates the presence of Saponins.

Test for tannins:

To the test sample, ferric chloride was added, formation of a dark blue or greenish black color showed the presence of tannins.

Test for glycosides- Borntrager's Test

Test drug is hydrolysed with concentrated hydrochloric acid for 2 hours on a water bath, filtered and the hydrolysate is subjected to the following tests. To 2 ml of filtered hydrolysate, 3 ml of choloroform is added and shaken, choloroform layer is separated and 10% ammomia solution is added to it. Pink colour indicates presence of glycosides.

Test for flavonoids:

To the test sample about 5 ml of dilute ammonia solution were been added followed by addition of few drops of conc. Sulfuric acid. Appearance of yellow color indicates the presence of Flavonoids.

Test for phenols:

Lead acetate test: To the test sample; 3 ml of 10% lead acetate solution was added. A bulky white precipitate indicated the presence of phenolic compounds.

Test for steroids:

To the test sample, 2ml of chloroform was added with few drops of conc. Sulphuric acid (3ml), and shaken well. The upper layer in the test tube was turns into red and sulphuric acid layer showed yellow with green fluorescence. It showed the presence of steroids.

Triterpenoids

Liebermann–Burchard test: To the chloroform solution, few drops of acetic anhydride was added then mixed well. 1 ml concentrated sulphuric acid was added from the sides of the test tube, appearance of red ring indicates the presence of triterpenoids.

Test for Cyanins

A. Aanthocyanin:

To the test sample, 1 ml of 2N sodium hydroxide was added and heated for 5 min at 100^{o}C. Formation of bluish green colour indicates the presence of anthocyanin.

Test for Carbohydrates - Benedict's test

To the test sample about 0.5 ml of Benedic's reagent is added. The mixture is heated on a boiling water bath for 2 minutes. A characteristic coloured precipitate indicates the presence of sugar.

Proteins (Biuret Test)

To extracts 1% solution of copper sulphate was added followed by 5% solution of sodium hydroxide, formation of violet purple colour indicates the presence of proteins.

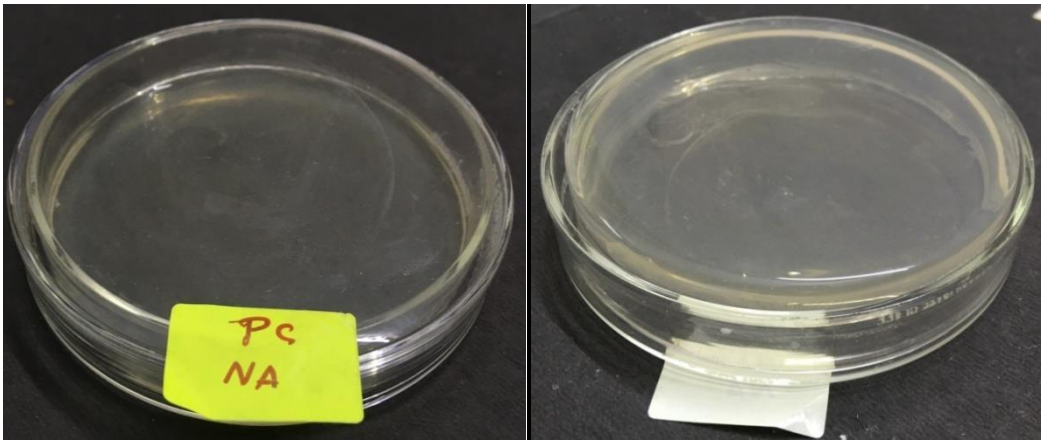
STERILITY TEST BY POUR PLATE METHOD:

Objective

The pour plate techniques were adopted to determine the sterility of the product. Contaminated / un sterile sample (formulation) when come in contact with the nutrition rich medium it promotes the growth of the organism and after stipulated period of incubation the growth of the organism was identified by characteristic pattern of colonies. The colonies are referred to as Colony Forming Units (CFUs).

Methodology

Test sample was admixed with sterile distilled water and the mixture were been used for the sterility evaluation. About 1ml of the test sample was inoculated in sterile petri dish to which about 15 mL of molten agar 45^{o}C were added. Agar and sample were mixed thoroughly by tilting and swirling the dish. Agar was allowed to completely gel without disturbing it. (about 10 minutes). Plates were then inverted and incubated at 37^{o} C for 24-48 hours. Grown colonies of organism was then counted and calculated for CFU.



Observation

No growth was observed after incubation period. Reveals the absence of specific pathogen

TOXICOLOGICAL STUDY

ACUTE ORAL TOXICITY STUDY OF POORANATHI CHOORANAM

(OECD GUIDELINE – 423)

Introduction:

- The acute toxic class method is a stepwise procedure with the use of 3 animals of a single sex per step.
- Depending on the mortality and/or the moribund status of the animals, on average 2-4 steps may be necessary to allow judgement on the acute toxicity of the test substance.
- This procedure is reproducible, uses very few animals and is able to rank substances in a similar manner to the other acute toxicity testing methods.
- The acute toxic class method is based on biometric evaluations with fixed doses, adequately separated to enable a substance to be ranked for classification purposes and hazard assessment.
- In principle, the method is not intended to allow the calculation of a precise LD50, but does allow for the determination of defined exposure ranges where lethality is expected since death of a proportion of the animals is still the major endpoint of this test.
- The method allows for the determination of an LD50 value only when at least two doses result in mortality higher than 0% and lower than 100%.
- The use of a selection of pre-defined doses, regardless of test substance, with classification explicitly tied to number of animals observed in different states improves the opportunity for laboratory to laboratory reporting consistency and repeatability.

Principle of the Test:

It is the principle of the test that based on a stepwise procedure with the use of a minimum number of animals per step, sufficient information is obtained on the acute

toxicity of the test substance to enable its classification. The substance is administered orally to a group of experimental animals at one of the defined doses. The substance is tested using a stepwise procedure, each step using three animals of a single sex. Absence or presence of compound-related mortality of the animals dosed at one step will determine the next step, i.e.

− no further testing is needed

− dosing of three additional animals, with the same dose

− dosing of three additional animals at the next higher or the next lower dose level. The method will enable a judgment with respect to classifying the test substance to one of a series of toxicity classes.

Methodology:

Selection of Animal Species

The preferred rodent species is the wistar albino rat, although other rodent species may be used. Healthy young adult animals are commonly used laboratory strains should be employed. Females should be nulliparous and non-pregnant. Each animal, at the commencement of its dosing, should be between 6 to 8 weeks old and the weight (150-200gm) should fall in an interval within±20 % of the mean weight of any previously dosed animals.

Housing and Feeding Conditions

The temperature in the experimental animal room should be 22ºC ± 3ºC. Although the relative humidity should be at least 30% and preferably not exceed 70% other than during room cleaning the aim should be 50-60%. Lighting should be artificial, the sequence being 12 hours light, 12 hours dark. For feeding, conventional laboratory

diets may be used with an unlimited supply of drinking water. Animals may be group-caged by dose, but the number of animals per cage must not interfere with clear observations of each animal.

Preparation of animals:

The animals are randomly selected, marked to permit individual identification, and kept in their cages for at least 7 days prior to dosing to allow for acclimatization to the laboratory conditions

Test Animals and Test Conditions:

Sexually mature Female Wistar albino rats (150-200gm) were obtained from kings institute, Chennai. All the animals were kept under standard environmental condition (22±3°C). The animals had free access to water and standard pellet diet (Saimeera foods, Bangalore).

Preparation of animals: The animals are randomly selected, marked to permit individual identification, and kept in their cages for at least 7 days prior to dosing to allow for acclimatization to the laboratory conditions

Preparation for Acute Toxicity Studies

Rats were deprived of food overnight (but not water 16-18 h) prior to administration of the, **POORANATHI CHOORANAM**

The principles of laboratory animal care were followed and the Institutional Animal Ethical Committee approved the use of the animals and the study design

IAEC No: LV/04/CLBMCP/2018

Test Substance	: **POORANATHI CHOORANAM**
Animal Source	: Kings institute, Chennai.
Animals	: Wister Albino Rats (Female-3+3)
Age	**:** >6 weeks
Body Weight on Day 0	**:**180-300 gm.
Acclimatization	**:** Seven days prior to dosing.
Veterinary examination	**:** Prior and at the end of the acclimatization period.

Identification of animals **:** By cage number, animal number and individual marking by using Picric acid.

Numberofanimals : 3 Female/group,

Route of administration : Oral

Diet **:** Pellet feed supplied by Saimeera foods Pvt Ltd, Bangalore

Water **:** Aqua guard portable water in polypropylene bottles.

Housing & Environment **:** The animals were housed in Polypropylene cages provided with bedding of husk.

Housing temperature **:** between 22ºC $\pm$3ºC.

Relative humidity **:** between 30% and 70%,

Air changes **:** 10 to 15 per hour and

Dark and light cycle **:** 12**:**12 hours.

Duration of the study **:** 14 Days

Administration of Doses:

POORANATHI CHOORANAM was suspended in water and administered to the groups of wistar albino rats in a single oral dose by gavage using a feeding needle. The control group received an equal volume of the vehicle. Animals were fasted 12 hours prior to dosing. Following the period of fasting, the animals were weighed and then the test substance was administered. Three Female animals are used for each group. The dose level of 5, 50, 250 and 500 mg/kg body weight was administered stepwise. After the substance has been administered, food was withheld for a further 3-4 hours. The principle of laboratory animal care was followed. Observations were made and recorded systematically and continuously as per the guideline after substance administration. The visual observations included skin changes, mobility, aggressively, sensitivity to sound and pain, as well as respiratory movements. Finally, the number of survivors was noted

after 24 hrs and these animals were then monitered for a further 14 days and observations made daily. The toxicological effect was assessed on the basis of mortality.

Observations:

Animals are observed individually after dosing at least once during the first 30 minutes, periodically during the first 24 hours, with special attention given during the first 4 hours, and daily thereafter, for a total of 14 days, except where they need to be removed from the study and humanely killed for animal welfare reasons or are found dead. It should be determined by the toxic reactions, time of onset and length of recovery period, and may thus be extended when considered necessary. The times at which signs of toxicity appear and disappear are important, especially if there is a tendency for toxic signs to be delayed. All observations are systematically recorded with individual records being maintained for each animal.

Observations include changes in skin and fur, eyes and mucous membranes, and also respiratory, circulatory, autonomic and central nervous systems, and somatomotor activity and behavior pattern. Attention was directed to observations of tremors, convulsions, salivation, diarrhea, lethargy, sleep and coma. The principles and criteria summarized in the Humane Endpoints Guidance Document taken into consideration. Animals found in a moribund condition and animals showing severe pain or enduring signs of severe distress was humanly killed. When animals are killed for human reasons or found dead, the time of death was recorded.

REPEATED DOSE 28-DAY ORAL TOXICITY STUDY OF POORANATHI CHOORANAM

Test Substance : **POORANATHI CHOORANAM**

Animal Source : Kings institute, Chennai.

Animals : Wister Albino Rats (Male -24, and Female-24)

Age **:** >6 weeks

Body Weight **:**180-300 gm.

Acclimatization **:** Seven days prior to dose.

Veterinary examination **:** Prior and at the end of the acclimatization period.

Identification of animals **:**By cage number, animal number and individual marking by using Picric acid

Diet **:** Pellet feed supplied by Saimeera foods Pvt Ltd, Bangalore

Water **:** Aqua guard portable water in polypropylene bottles.

Housing & Environment **:** The animals were housed in Polypropylene cages provided with bedding of husk.

Housing temperature **:** between 22ºC $\pm$3ºC.

Relative humidity **:** between 30% and 70%,

Air changes **:** 10 to 15 per hour

Dark and light cycle **:** 12**:**12 hours.

Duration of the study **: 28 Days.**

TABLE:

Groups	**No of Rats**
Group I Vehicle control	12(6male,6 female)
Group II POORANATHI CHOORANAM 50mg/kg	12 (6male,6 female)
Group III POORANATHI CHOORANAM250mg/kg	12 (6male,6female)
Group IV POORANATHI CHOORANAM500mg/kg	12(6male,6female)

Methodology

Randomization, Numbering and Grouping of Animals:

48 Wistar Albino Rats (24M + 24F) were selected and divided into 4 groups. Each group consist of 12 animals (Male -6, and Female-6). First group treated as a control and other three group were treated with test drug (low, mid, high) for 28 days. Animals were allowed acclimatization period of 7 days to laboratory conditions prior to the initiation of treatment. Each animal was marked with picric acid. The females were nulliparous and non-pregnant.

Justification for Dose Selection:

As per OECD guideline three dose levels were selected for the study. They are low dose (50 mg/kg), mid dose dose (250 mg/kg), high dose (500 mg/kg). X is calculated by multiplying the therapeutic dose of human (3000mg/kg) and the body surface area of the rat (0.018). i.e X dose is 50 mg/kg/animal, 5X mid dose is 250 mg/kg, 10 X high dose is 500 mg/kg.

Preparation and Administration of Dose:

POORANATHI CHOORANAM is suspended with water, It was administered to animals at the dose levels of 50, 250 and 500 mg/kg. The test substance suspensions were

freshly prepared every two days once for 28 days. The control animals were administered vehicle only. The drug was administered orally by using oral gavage once daily for 28 consecutive days.

Observations:

Experimental animals were kept under observation throughout the course of study for the following:

Body Weight:

Weight of each rat was recorded on day 0, at weekly intervals throughout the course of study.

Food and water Consumption:

Food and water consumed per animal was calculated for control and the treated dose groups.

Clinical signs:

All animals were observed daily for clinical signs. The time of onset, intensity and duration of these symptoms, if any, were recorded.

Mortality:

All animals were observed twice daily for mortality during entire course of study.

Necropsy:

All the animals were sacrificed by excessive anesthesia on day 29. Necropsy of all animals was carried out.

Laboratory Investigations:

Following laboratory investigations were carried out on day 29 in animals fasted over-night. Blood samples were collected from orbital sinus using sodium heparin (200IU/ml) for Bio chemistry and potassium EDTA (1.5 mg/ml) for Hematology as anticoagulant. Blood samples were centrifuged at 3000 r.p.m. for 10 minutes.

Hematological Investigations:

Hematological parameters were determined using Haematology analyzer.

Biochemical Investigations:

Biochemical parameters were determined using auto-analyzer.

Histopathology:

Control and highest dose group animals will be initially subjected to histopathological investigations. If any abnormality found in the highest dose group than the low, then the mid dose group will also be examined. Organs will be collected from all animals and preserved in 10% buffered neutral formalin for 24 h and washed in running water for 24 h. The organ sliced 5 or 6µm sections and were dehydrated in an auto

technicon and then cleared in benzene to remove absolute alcohol. Embedding was done by passing the cleared samples through three cups containing molten paraffin at 50°C and then in a cubical block of paraffin made by the "L" moulds. It was followed by microtome and the slides were stained with Haematoxylin-eosin red.

Statistical analysis:

Findings such as body weight changes, water and food consumption, hematology and blood chemistry were subjected to One-way ANOVA followed by dunett test using a computer software programme – Graph pad version 5.0 .All data were summarized in tabular form, (Table-6 to 12)

PHARMACOLOGICAL STUDY:

ANTI-INFLAMMATORY STUDIES USING POORANATHI CHOORANAM (PCM)

For the experiment, the animals were divided into 5 groups with 6 animals in each group.

- Group-I (control) received 3% gum acacia 10 ml/kg p.o.
- Group-II (Carageenan) received 0.1ml of 1% w/v suspension of carrageenan S.C
- Group-III (standard) received Indomethacin 40 mg/kg p.o.
- Group-IV(Test-1) received PCM 100mg/kg p.o.
- Group-V(Test-2) received PCM 200mg/kg p.o.

All the drugs were administered orally and the volume of medicaments kept constant at 10 ml/kg body weight of the animals it was administered orally to rats 1 hr before subcutaneous injection of carrageenan. After 1 hr 0.1ml of 1% w/v suspension of carrageenan was injected into sub-plantar region of the left hind paw to all the groups. The paw volume was measured at 1, 2, 3, 4, and 5 hr using plethysmometer (Model 7150 UGO Basile, Italy) Edema was expressed as the mean increase in paw volume relative to control animals.

ANALGESIC ACTIVITY

Eddy's Hot Plate Test

The hot plate test Eddy and Leimbach (1953) is a simple behavioral screen used for estimating the effects of analgesics on the threshold for detecting pain. It is based on the principle that when rodents are placed onto a hot surface they will initially demonstrate the aversive effects of the thermal stimulus by licking their paws and, ultimately, by overt attempts to escape the environment (jumping). Substances that alter nociceptive threshold either increase the latency to licking/jumping (analgesic effect)

5. RESULTS AND OBSERVATIONS

ORGANOLEPTIC CHARACTERS:

Table –5.1: Organoleptic character of PC

STATE	Solid
APPEARANCE	Pale Greenish
NATURE	Fine powder
ODOR	Characteristic odor
FLOW PROPERTY	Dry Free flowing

PHYSICOCHEMICAL EVALUATION:

Table – 5.2: Physicochemical evaluation of PC

S.No	Parameter	Mean (n=3) SD
1.	***Loss on Drying at 105 °C (%)***	2.133 ± 0.12
2.	***Total Ash (%)***	8.61 ± 0.87
3.	***Acid insoluble Ash (%)***	0.29 ± 0.07
4.	***Alcohol Soluble Extractive (%)***	13.07 ± 0.65
5.	***Water soluble Extractive (%)***	16.57 ± 1.745

HEAVY METAL ANALYSIS BY AAS

Table –5.3: Heavy Metal Analysis of PC

Name of the Heavy Metal	Absorption Max Λ max	Result Analysis	Maximum Limit
Mercury	253.7 nm	BDL	1 ppm
Lead	217.0 nm	0.18	10 ppm
Arsenic	193.7 nm	0.05	3 ppm
Cadmium	228.8 nm	0.44	0.3 ppm

BDL- Below Detection Limit

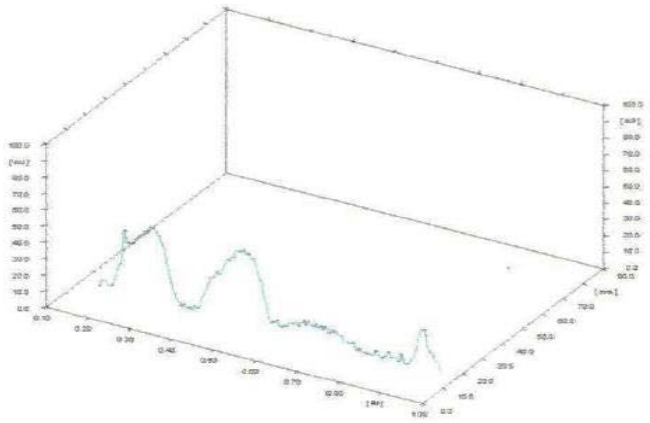
Report and Inference

- Results of the present investigation have clearly shows that the sample has no traces of Mercury. Further the results show the presence of Lead, Arsenic and cadmium at 0.18, 0.05 and 0.44 ppm level.
- The reported heavy metal seems very low when compare to the allowed recommendedlimit.

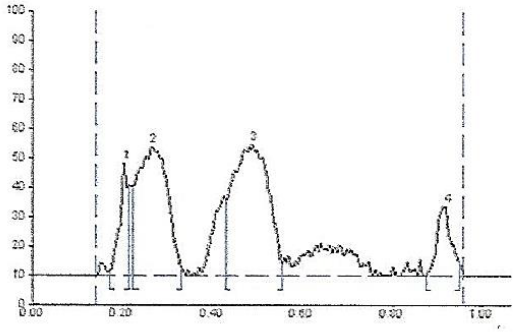
TLC AND HPTLC ANALYSIS

TLC Analysis at 366 nm

Track at All Wavelength



HPTLC finger printing of Sample PC



Peak Table

Table5.4

Peak	Start Rf	Start Height	Max Rf	Max Height	Max %	End Rf	End Height	Area	Area %
1	0.17	2.2	0.21	38.3	25.39	0.22	31.1	632.5	9.16
2	0.23	31.0	0.27	43.9	29.06	0.33	2.7	2503.0	36.26
3	0.43	25.8	0.49	45.0	29.80	0.56	3.8	3114.2	45.11
4	0.88	0.1	0.92	23.8	15.75	0.95	5.0	654.0	9.47

REPORT

HPTLC finger printing analysis of the sample PC reveals the presence of four prominent peakscorresponds to presence of four versatile phytocomponents present with in it. Rf value of the peaks rangesfrom 0.17 to 0.88. Further the peak 2 and 3 occupies the major percentage of area of 36.26 and 45.11 %which denotes the abundant existence of such compound. Followed by this peak 1 and 4 occupies thepercentage area of 9.16 and 9.47 %.

PHYTOCHEMICAL ANALYSIS

RESULT

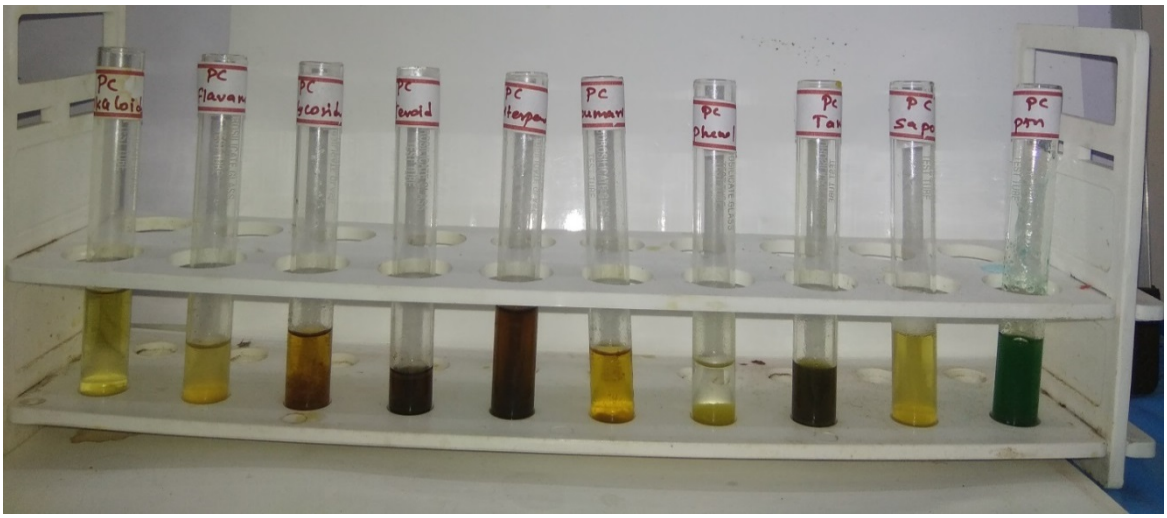
Table 5.5 Phytochemical analysis of PC

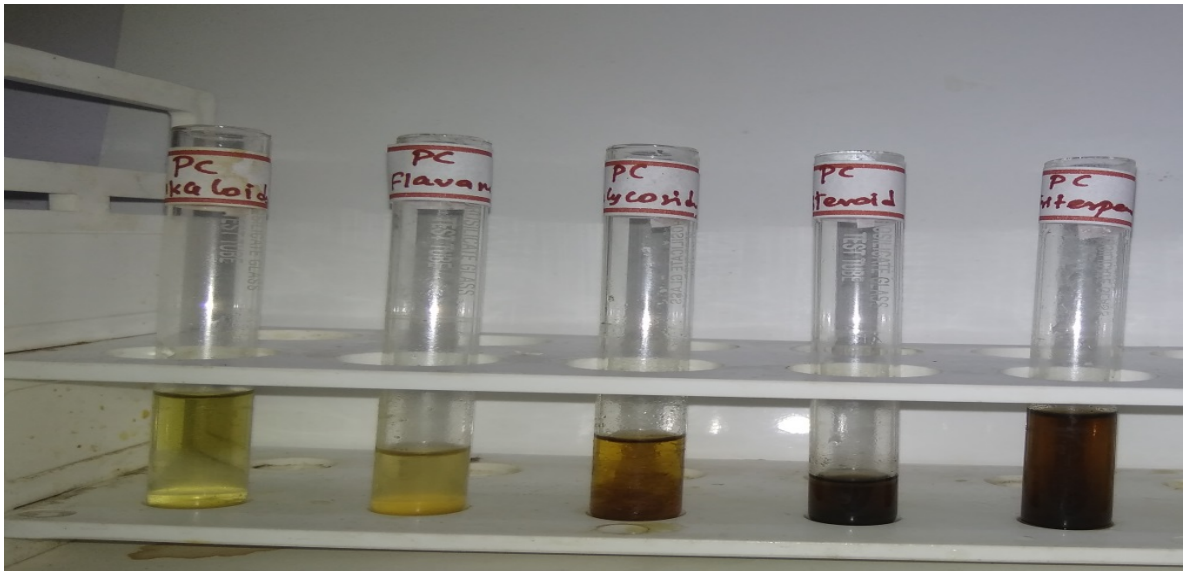
S.NO	TEST	OBSERVATION
1	Alkaloids	-
2	Flavanoids	+
3	Glycosides	+
4	Steroids	+
5	Triterpenoids	-
6	Coumarin	-
7	Phenols	+
8	Tanin	+
9	Protein	-
10	Saponins	+
11	Sugar	+
12	Anthocyanin	-
13	Betacyanin	-

+ indicates Presence and - indicates Absence of the Phytocomponents

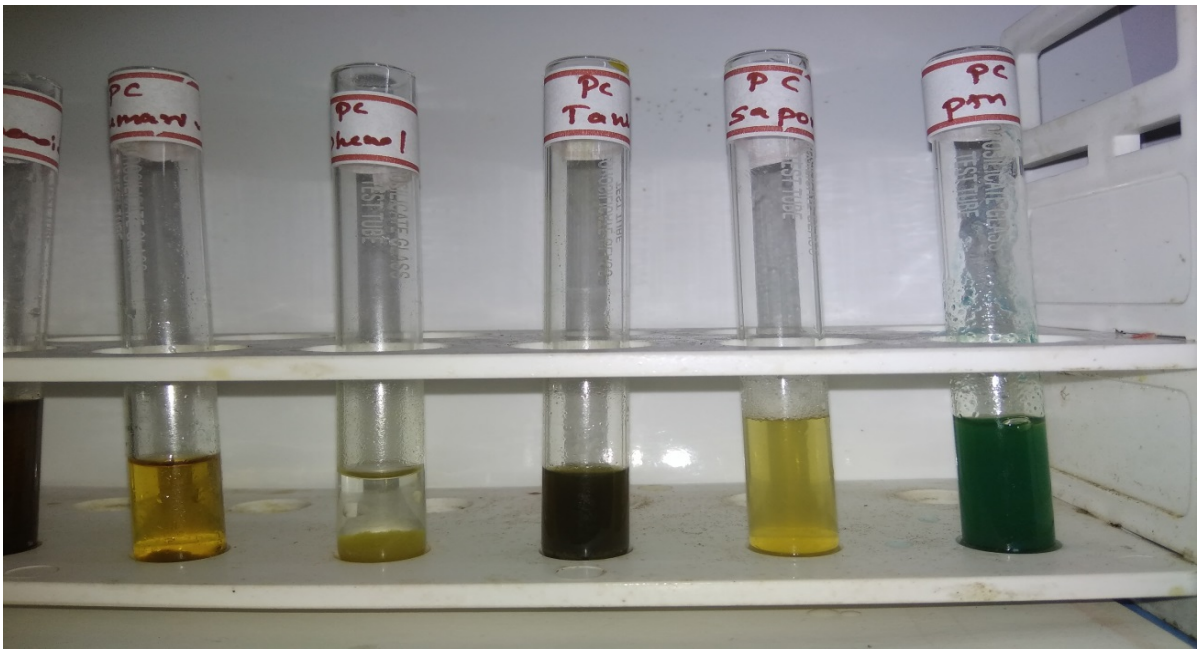
TESTS DONE FOR:

Test for Alkaloids, Flavonoids, Glycosides, Steroids and Triterpenoids



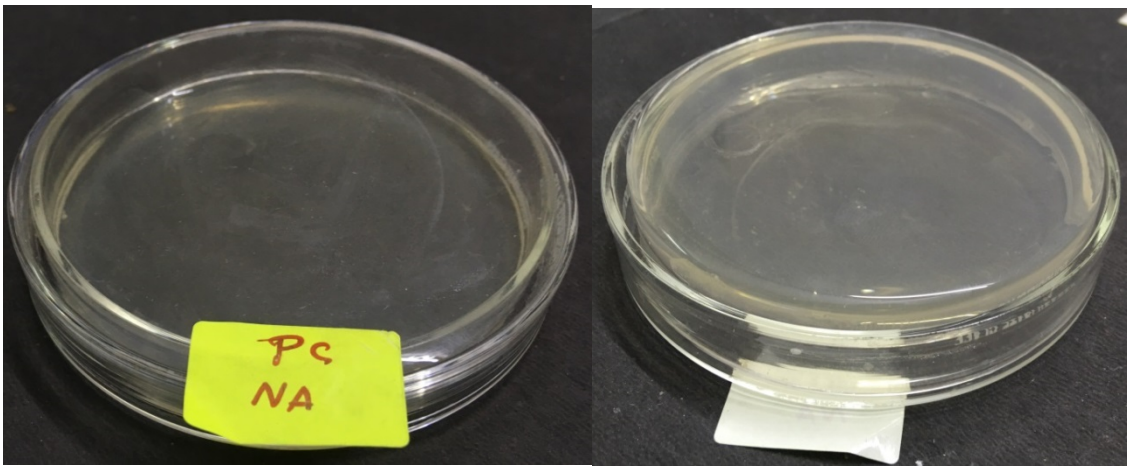


Test for Coumarins, Phenol, Tanins, Saponin, Proteins



Test for AnthoCyanin and Carbohydrates

STERILITY TEST BY POUR PLATE METHOD



Observation

No growth was observed after incubation period. Reveals the absence of specific pathogen

Result

No growth / colonies were observed in any of the plates inoculates with the test sample

Table 5.6 STERILITY TEST BY POUR PLATE METHOD

Test	Result	Specification	As per AYUSH/WHO
Total Bacterial Count	Absent	NMT 10^5CFU/g	As per AYUSH specification
Total Fungal Count	Absent	NMT 10^3CFU/g	

TOXICOLOGICAL STUDY

Acute oral toxicity study of POORANATHI CHOORANAM

Observation done:

Table 5.7 Dose finding experiment and its behavioral Signs of acute oral Toxicity

SL	Group CONTROL	Observation	SL	Group TEST GROUP	Observation
1	Body weight	Normal	1	Body weight	Normally increased
2	Assessments of posture	Normal	2	Assessments of posture	Normal
3	Signs of Convulsion Limb paralysis	Normal	3	Signs of Convulsion	Absence of sign (-)
4	Body tone	Normal	4	Body tone	Normal
5	Lacrimation	Normal	5	Lacrimation	Absence
6	Salivation	Normal	6	Salivation	Absence
7	Change in skin color	No significant color change	7	Change in skin color	No significant color change
8	Piloerection	Normal	8	Piloerection	Normal
9	Defecation	Normal	9	Defecation	Normal
10	Sensitivity response	Normal	10	Sensitivity response	Normal
11	Locomotion	Normal	11	Locomotion	Normal
12	Muscle gripness	Normal	12	Muscle gripness	Normal
13	Rearing	Mild	13	Rearing	Mild
14	Urination	Normal	14	Urination	Normal

Behaviour:

The animals will be observed closely for behaviour in the first four hours which includes abnormal gait, aggressiveness, exophthalmos, ptosis, akinesia, catalepsy, convolusion, excitation, head twitches, lacrimation, loss of corneal reflex, loss of traction, piloerection reactivity of touch, salivation, scratching, sedation, chewing, head movements, sniffing, straub, tremor and writhes, diarrhea, leathery, sleep and coma.

Body Weight:

Individual weight of animals was determined before the test substance was administered and weights will be recorded at day 1, 7, and 14 of the study. Weight changes were calculated and recorded. At the end of the test, surviving animals were weighed and humanly killed.

Food and water Consumption:

Food and water consumed per animal was calculated for control and the treated dose groups.

Mortality:

Animals were observed for mortality throughout the entire period.

Results:

All data were summarized in tabular form, (Table-1-4) showing for each test group the number of animals used, the number of animals displaying signs of toxicity, the number of animals found dead during the test, description of toxic symptoms,, weight changes, food and water intake.

No of animals in each group:3

Table 5.8 (Observational study Results)

No	Dose mg/kg	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1.	**Control**	+	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.	**500 mg/kg**	+	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-

1..Alertness 2. Aggressiveness 3. Pile erection 4. Grooming 5. Gripping 6. Touch Response 7. Decreased Motor Activity 8.Tremors 9.Convulsions 10. Muscle Spasm 11. Catatonia 12. Muscle relaxant 13. Hypnosis 14.Analgesia 15.Lacrimation 16.Exophthalmos 17.Diarrhea 18.Writhing 19.Respiration 20.Mortality.

(+ Present, - Absent)

Table 5.9(Body weight Observation)

DOSE	DAYS		
	1	7	14
CONTROL	186.6± 2.75	189.2± 3.87	194.2 ± 7.62
500 mg/kg	182.5± 4.08	184.2± 2.16	187.4 ± 2.67
P value (p)*	NS	NS	NS

Table 5.10Water intake (ml/day) of Wistar albino rats group exposed to (POORANATHI CHOORANAM *):*

DOSE	DAYS		
	1	6	14
CONTROL	28.5 ± 2.74	30.0± 9.13	32.4± 3.13
500 mg/kg	30.4±2.33	36.6±1.11	38.9± 2.19
P value (p)*	NS	NS	NS

N.S- Not Significant,**($p > 0.01$), *($p > 0.05$), n = 10 values are mean ± S.D

(One way ANOVA followed by Dunnett's test)

Table 5.11: Food intake (gm/day) of Wistar albino rats group exposed to *POORANATHI CHOORANAM*

DOSE	DAYS		
	1	7	14
CONTROL	23.56±3.36	28.60±2.42	31.61±5.46
500 mg/kg	22.42±1.64	29.31±1.22	32.22±3.24
P value (p)*	NS	NS	NS

SUB ACUTE TOXICITY

Repeated Dose 28- day oral toxic study of POORANATHI CHOORANAM

Table 5.12: Body weight of wistar albino rats group exposed to PCM

DOSE	DAYS				
	1	7	14	21	28
CONTROL	165.6± 2.76	166.4 ± 3.42	167.7 ± 3.26	169.2 ± 3.73	170.7 ± 1.31
LOW DOSE	160.2 ± 2.12	162.7 ± 3.64	164.4± 1.51	165.2 ± 1.66	166.42± 2.76
MID DOSE	166.6± 1.64	167.3 ± 2.74	159.4 ± 8.12	162.1 ± 3.36	163.7 ± 3.11
HIGH DOSE	167.4± 6.74	169.6 ± 3.72	162.6 ± 2.46	167 ± 6.81	161.92 ± 2.49
P value (p)*	NS	NS	NS	NS	NS

NS- Not Significant, **(p > 0.01),*(p >0.05), n = 10 values are mean ± S.D (One way ANOVA followed by Dunnett's test)

Table 5.13: Water intake (ml/day) of Wistar albino rats group exposed to PCM

DOSE	DAYS				
	1	6	14	21	28
CONTROL	31.5 ± 8.95	32.0 ±6.23	28.5±6.23	29.12±8.19	31.5±3.96
LOW DOSE	21.5±3.28	21.4±3.22	21.7±3.02	21.2±3.29	24.9±3.11
MID DOSE	26.7±4.33	26.3±2.11	27.1±2.43	28.4±2.11	32.4±2.34
HIGH DOSE	20.1±1.32	20.2±2.13	22.7±2.13	25.2±1.73	28.4±2.65
P value (p)*	NS	NS	NS	NS	NS

N.S- Not Significant, **($p > 0.01$), *($p > 0.05$), n = 10 values are mean ± S.D (One way ANOVA followed by Dunnett's test)

Table 5.14:Food intake (gm/day) of Wistar albino rats group exposed to PCM

DOSE	DAYS				
	2	7	23	22	28
CONTROL	37.12 ±5.37	38.5±3.22	39.5±3.37	38.5±3.37	37.12±3.12
LOW DOSE	43.7±2.68	44.3±1.12	44.1±1.18	44.4±2.12	44.6±2.42
MID DOSE	46.2±3.75	45.2±3.60	45.2±4.25	45.4±2.68	47.2±2.44
HIGH DOSE	47.2±2.34	47.2±2.64	48.6±2.66	49.2±3.20	49.0±3.62
P value (p)*	NS	NS	NS	NS	NS

N.S- Not Significant, **($p > 0.01$), *($p > 0.05$), n = 10 values are mean ± S.D (One way ANOVA followed by Dunnett's test

Table 5.15: Haematological parameters of Wistar albino rats group exposed to PCM

Category	Control	Low dose	Mid dose	High dose	P value (p)*
Haemoglobin(g/dl)	14.8±1.88	13.88±1.66	14.94±0.66	15.28±0.96	N.S
Total WBC ($\times 10^3$ l)	10.91±2.59	11.25±3.73	11.48±3.91	12.20±3.17	N.S
Neutrophils(%)	32.65±1.06	33.23±2.14	35.61±1.36	35.40±2.20	N.S
lymphocyte (%)	69.34±2.48	72.12±3.12	72.48±2.66	73.10±3.16	N.S
Monocyte (%)	0.78±0.17	0.79±0.09	0.82±0.03	0.84±0.06	N.S
Eosinohil(%)	0.64±0.09	0.68±0.02	0.70±0.06	0.72±0.04	N.S
Platelets cells10^3/µl	687.17±8.76	702.71±8.16	725.18±9.0	726.16±9.74	N.S
Total RBC 10^6/µl	7.99±0.12	7.82±0.57	8.82±0.59	8.38±0.72	N.S
PCV%	37.79±0.6	43.35±1.13	45.2±1.68	46.82±2.54	N.S
MCHC g/dL	33.6±2.23	35.09±1.29	35.98±1.22	36.03±1.24	N.S
MCV fL(µm^3)	49.17±3.64	50.20±1.22	52.28±1.24	53.24±1.44	N.S

N.S- Not Significant, **($p > 0.01$), *($p > 0.05$), n = 10 values are mean ± S.D (One way ANOVA followed by Dunnett's test)

Table 5.16 :Biochemical Parameters of Wistar albino rats group exposed to PCM

BIOCHEMICAL PARAMETERS	CONTROL	LOW DOSE	MID DOSE	HIGH DOSE	P Value (p)*
GLUCOSE (R) (mg/dl)	76.45±13.4	78.16±8.44	78.26±11.20	78.42±11.6	N.S
T.CHOLOSTEROL(mg/dl)	115.26±1.83	115.45±1.83	116.42±1.78	116.22±1.73	N.S
TRIGLY(mg/dl)	46.35±1.48	46.32±1.48	44.58±1.30	45.66±1.33*	N.S
LDL	72.81±2.13	71.24±2.14	72.8±2.14	71.64±4.32	NS
VLDL	15.2±2.44	15.42±4.64	15.44±6.64	15.64±4.36	NS
HDL	26.66±6.88	26.86±2.24	26.68±4.66	31.78±2.22	NS
Ratio 1(T.CHO/HDL)	4.42±2.44	4.16±3.14	4.34±8.44	4.46±2.22	NS
Ratio 2(LDL/HDL)	2.83±4.22	2.84±2.22	2.86±2.20	2.96±6.02	NS
Albumin(g/dL)	3.63±0.17	3.43±0.12	3.14±2.02	3.24±6.86	NS

NS- Not Significant, **(p > 0.01), * (p >0.05), n = 10 values are mean ± S.D (One way ANOVA followed by Dunnett's test)

Table 5.17: Renal function test of ofWistar albino rats group exposed to PCM

PARAMETERS	CONTROL	LOW DOSE	MID DOSE	HIGH DOSE	P Value (p)*
UREA (mg/dl)	13.35±0.99	14.31±0.16	13.06±1.08	13.48±1.12	N.S
CREATININE(mg/dl)	0.28±0.08	0.36±0.06	0.52±0.04	0.66±0.02	N.S
BUN(mg/dL)	15.02±0.10	16.10±0.60	16.22±0.44	18.10±2.12	NS
URIC ACID(mg/dl)	5.17±0.35	5.31±0.43	5.72±1.25*	5.58±0.23	S

NS- Not Significant, **(p > 0.01), * (p >0.05) , n = 10 values are mean ± S.D (One way ANOVA followed by Dunnett's test)

Table 5.18: Liver Function Test of ofWistar albino rats group exposed to PCM

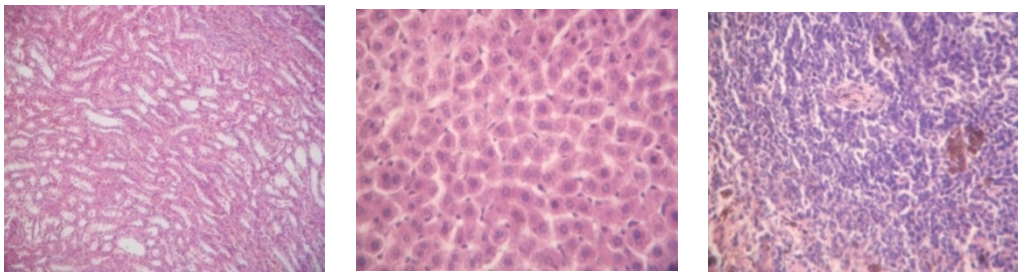
PARAMETERS	CONTROL	LOW DOSE	MID DOSE	HIGH DOSE	P Value (p)*
T BILIRUBIN(mg/dl).	0.48±0.07	0.53±0.06	0.51±0.08	0.48±0.05	N.S
SGOT/AST(U/L)	79.95±1.39	78.35±0.51	76.01±1.53	81.55±1.03	N.S
SGPT/ALT(U/L)	31.23±1.28	30.91±1.59	28.34±1.48	34.32±0.68	N.S
ALP(U/L)	143.25±8.70	142±16.17	147.16±24.07*	149.33±14.65*	S
T.PROTEIN(g/dL)	5.32±0.38	6.48±0.34	7.01±0.23	7.53±0.46	N.S

NS- Not Significant, **(p > 0.01), * (p >0.05), n = 10 values are mean ± S.D (One way ANOVA followed by Dunnett's test)

HISTO PATHOLOGY

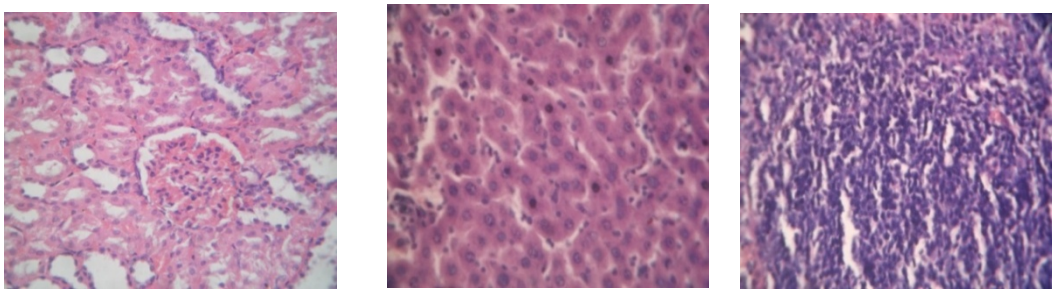
CONTROL GROUP

Kidney Liver Spleen



TEST GROUP (HIGH DOSE)

Kidney Liver Spleen



PHARMACOLOGICAL STUDY:

ANTI-INFLAMMATORY STUDIES USING POORANATHI CHOORANAM (PCM)

Table: 5.19 PAW EDEMA VOLUME

Group	Dose	Initial paw volume	Change in paw edema mm at different time intervals				
		0hr	1 hr	2hr	3hr	4hr	5hr
I	Control	1.20 ± 0.14	1.20±0.14	1.20±0.14	1.20±0.14	1.20±.14	1.20±0.14
II	Carrageenan	1.21± 0.17	1.91 ± 0.21	2.27 ± 0.02	2.37 ± 0.14	2.48 ± 0.18	2.62 ± 0.17**
III	Indomethacin	1.01± 0.06	2.10 ± 0.26	1.56 ± 0.15	1.47 ± 0.05	1.34 ± 0.18	1.15 ± 0.16**
IV	Low dose	1.34 ± 0.11	1.46 ± 0.32	1.52 ± 0.18	1.64 ± 0.22	1.53 ± 0.22	1.58 ± 0.24**
V	High dose	1.24±0.42	1.98 ± 0.22	1.82 ± 0.23	1.66 ± 0.44	1.62 ± 0.18	1.20 ± 0.12**

The paw volume up to the tribiotural articulation was measured at 0, 1, 2, 3, 4, 5 hrs

Table: 5.20

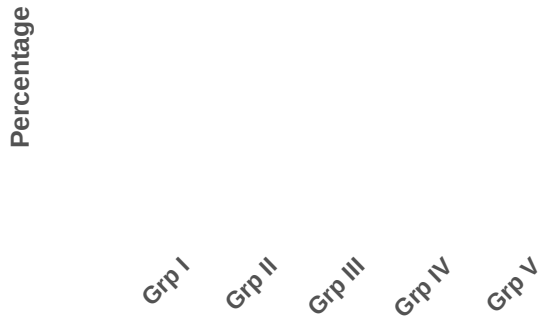
Group	Initial paw volume	5 hr in mm	Difference in paw volume	Percentage protection
I	1.20 ± 0.14	1.20±0.14	0.00	100
II	1.21± 0.17	2.82 ± 0.17	1.61	15.62
III	1.01± 0.06	1.15 ± 0.16	0.14	96.68
IV	1.44 ± 0.13	1.69 ± 0.32	0.25	41.42
	1.32 ±0.44	1.46 ± 0.12	0.14	75.45

Percentage protection is calculated by the formulae: (T_2---T_1/T_2) x 100

T_1----normal control

T_2 ----drug treated test

Chart 5.1 Percentage protection of PC in inflammation



ANALGESIC ACTIVITY

Eddy's Hot Plate Test

Table 5.21 Effect of Pooranathichooranam on Eddys hot plate method

Group	Dose	Pretreatment	Reaction time in seconds			
			0.5 hr	1hr	2hr	4hr
Control		3.7±0.20	3.3±0.30	4.2±0.22	4.4±0.34	4.0±0.48
Pentazocine		3.9±0.26	6.4±0.27	7.1±0.62*	7.6±0.26*	7.1±0.36*
Test drug	200mg	3.5±0.32	6.2±0.28	6.9±0.54*	7.1±0.36*	6.8±0.29
Test drug	400mg	3.8±0.42	6.8±0.56	7.4±0.46*	7.8±0.40*	7.1±0.32

One way ANOVA followed by Dunnetts test, Values are Mean ± SEM, n=6

P<0.05*

Chart 5.2: Effect of Pooranathichooranam on Eddys hot plate method

Response time

Results of the study were observed with respect to the following criteria

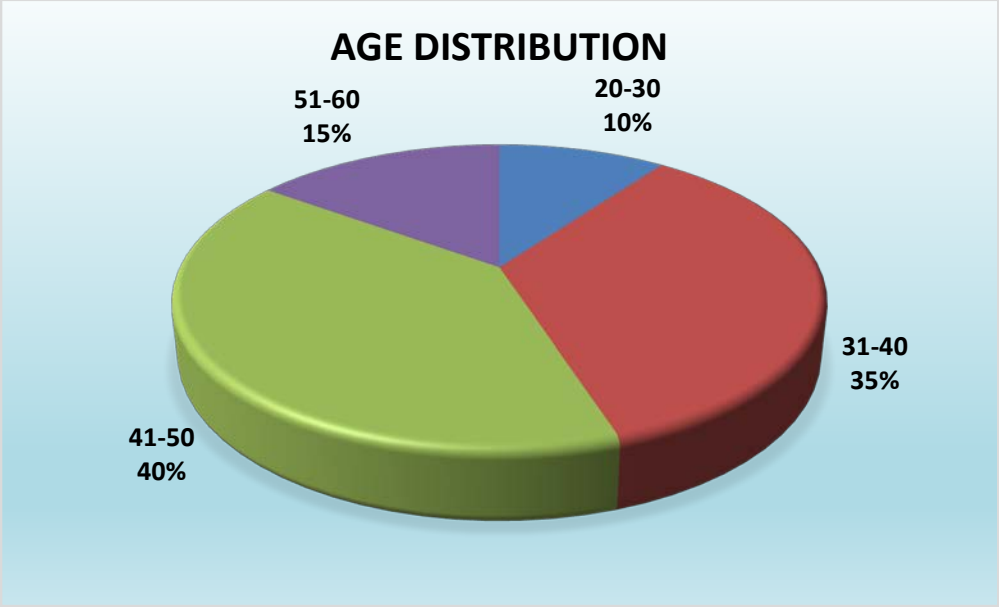
1. Age distribution
2. Gender distribution
3. Occupational distribution
4. Socio-economic status
5. Diet
6. Duration of illness
7. Paruvakalangal
8. Thinaigal.
9. ParuvaKaalam (Season)
10. Disturbances in Vali
11. Disturbances in Azhal
12. Disturbances in Iyyam
13. Envagaithervugal
14. Neikkuri
15. Naadi
16. Clinical Prognosis
    - Group I
    - Group II

AGE DISTRIBUTION

Table: 5.22Age Distribution

S.No	Age	No of cases	Percentage
1	20-30	4	10%
2	31-40	14	35%
3	41-50	16	40%
4	51-60	6	15%

Chart 5.3: Age Distribution



INFERENCE:

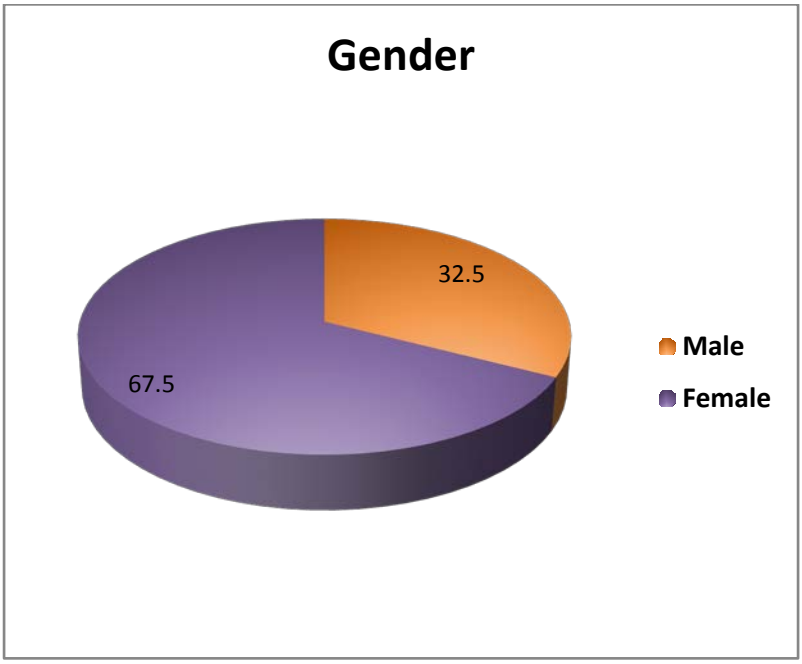
Among 40 cases, 10% of cases were in the 20-30 age group. 35%, 40 % and 15% of cases were in the age of 31-40, 41-50 and 51-60 respectively

GENDER

TABLE 5.23: Gender

S.No	Gender	No of Cases	Percentage
1.	Male	13	32.5 %
2.	Female	27	67.5 %

Chart 5.4: Gender



INFERENCE:

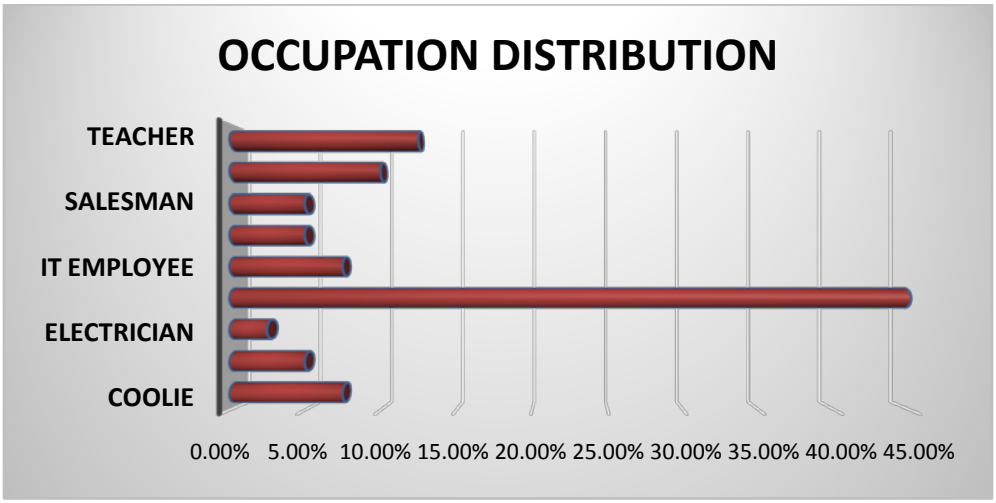
Among 40 cases, 13% of cases were Males and 67.5% of patients were females.

OCCUPATIONAL DISTRIBUTION

Table 5.24: Occupational Distribution

Occupation	No of cases	Percentage
Coolie	3	7.5%
Driver	2	5%
Electrician	1	2.5%
House wife	18	45%
IT Employee	3	7.5%
Painter	2	5%
Salesman	2	5%
Tailor	4	10%
Teacher	5	12.5%

Chart 5.5: Occupational Distribution



INFERENCE:

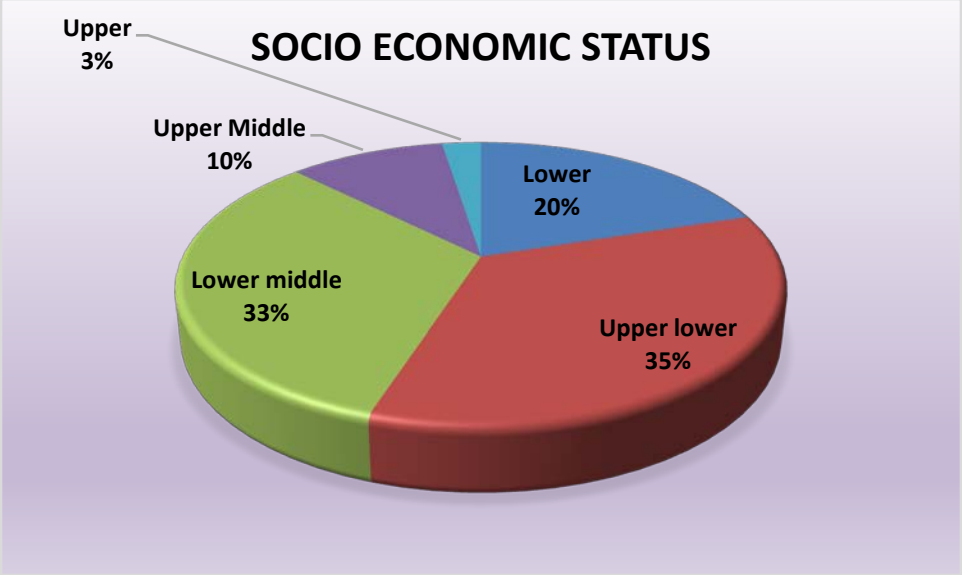
Among 40 cases, 45% of cases were House wives, 12.5% of cases were Teachers, 10% were Tailor, 7.5% of cases were IT employees And Coolies. Painters, Salesmans & Drivers were 5% each. Electricians were 2.5% each.

SOCIO ECONOMIC STATUS

Table 5.25: Socio Economic Status

Socio economic status	No of Patients	Percentage
Lower	8	20%
Upper lower	14	35%
Lower middle	13	32.5%
Upper middle	4	10%
Upper	1	2.5%

Chart 5.6: Socio Economic Statu



INFERENCE:

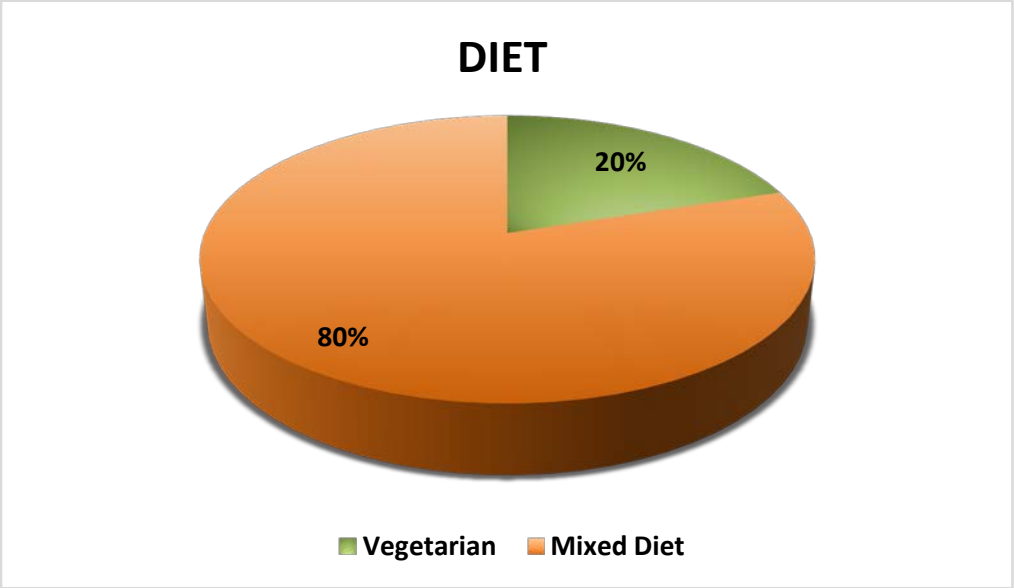
Among 40 cases, 20% of cases were Lower, 35% of cases were upper lower, 32.5% were Lower middle, 10% of cases were Upper middle And 2.5% cases were Upper group.

DISTRIBUTION OF DIET

Table 5.26: Distribution Of Diet

Diet	No of Patients	Percentage
Vegetarian	8	20%
Mixed Diet	32	80%

Chart 5.7: Distribution Of Diet



INFERENCE

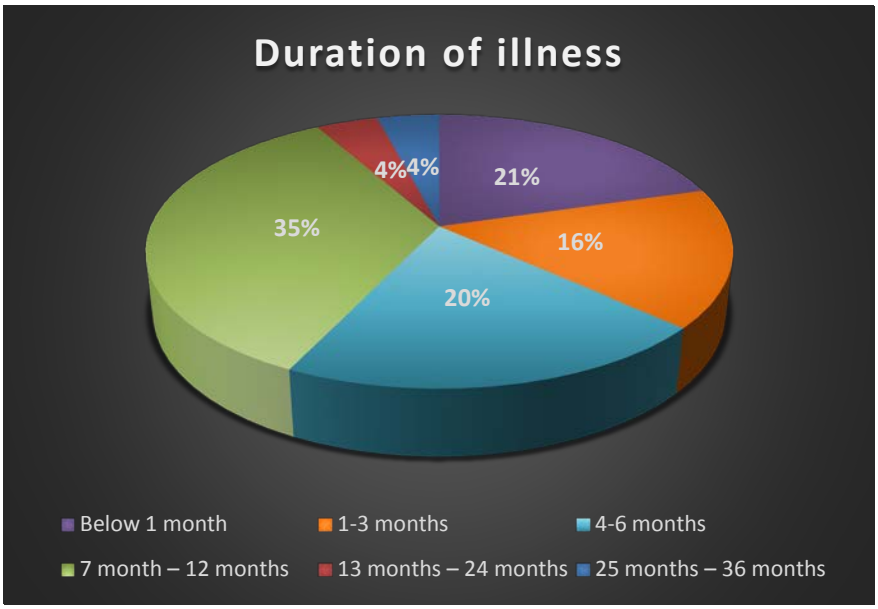
Among 40 cases, 80% of cases were consuming mixed diet and 20% were Vegetarian

DURATION OF ILLNESS

Table 5.27: Duration Of Illness

Duration of illness	No of Patients	Percentage
Below 1 month	1	25%
1-3 months	8	20%
4-6 months	10	25%
7 month – 12 months	17	42.5%
13 months – 24 months	2	5%
25 months – 36 months	2	5%

Chart 5.8: Duration Of Illness



INFERENCE:

Out of 40 patients subjected in the present study, 25% belonged to less than 1 month of illness and others were 20% in 1-3 months, 25% in 4-6 months, 42.5% in 7 months-12 month, 5% in13-24 months and 25-36 months of illness.

DISTRIBUTION AMONG PARUVAKAALANGAL

Table 5.28: Distribution Among Paruvakaalangal

S.No	Paruvakaalam	No of cases	Percentage
1.	Kaarkaalam	5	12.5%
2.	Koothirkaalam	8	20%
3.	Munpanikaalam	0	0%
4.	Pinpanikaalam	1	2.5%
5.	Ilavenilkaalam	12	30%
6.	Muthuvenilkaalam	14	35%

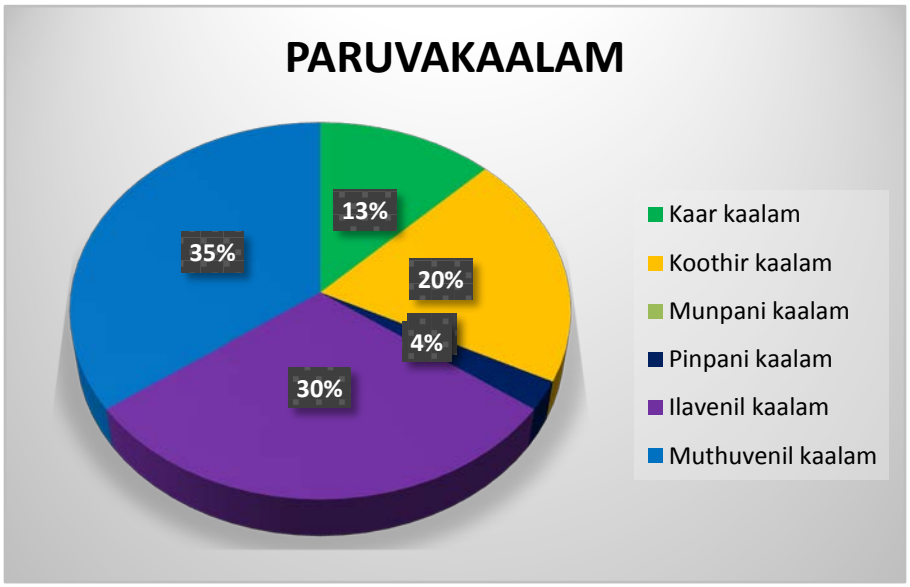


Chart 5.9: Distribution AmongParuvakaalangal

INFERENCE:

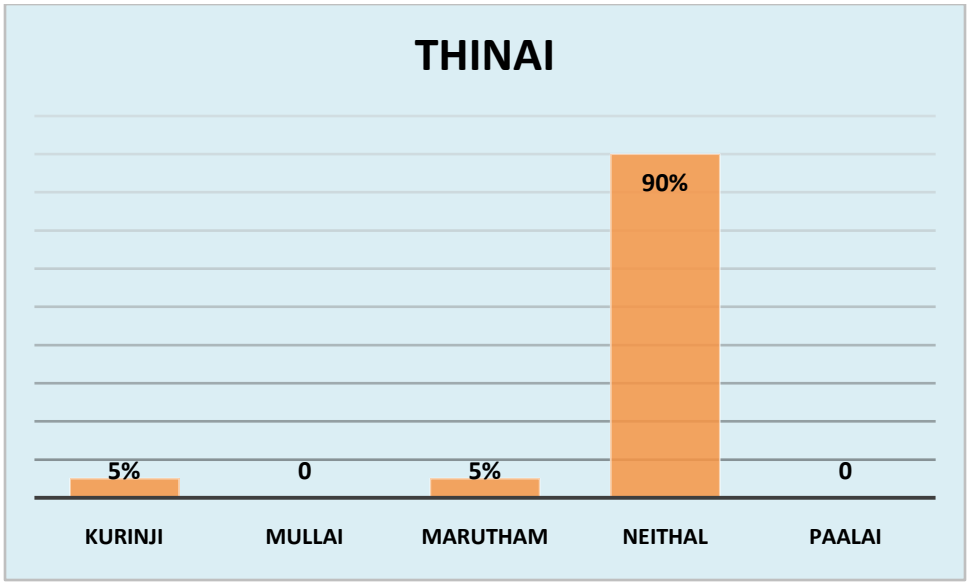
Among 40 patients, 12.5%, 20%, 2.5% , 30% and 35% of patients came in Kaar, koothir, Pinpani, Ilavenil and Muthuvenilkaalam. No cases were came in Munpanikaalam.

DISTRIBUTION AMONG THINAI

Table 5.29: Distribution Among Thinai

S.No	Thinai	No of Patients	Percentage
1	Kurinji	2	5%
2	Mullai	0	0
3	Marutham	2	5%
4	Neithal	36	90%
5	Paalai	0	0

Chart 5.10: Distribution Among Thinai



INFERENCE:

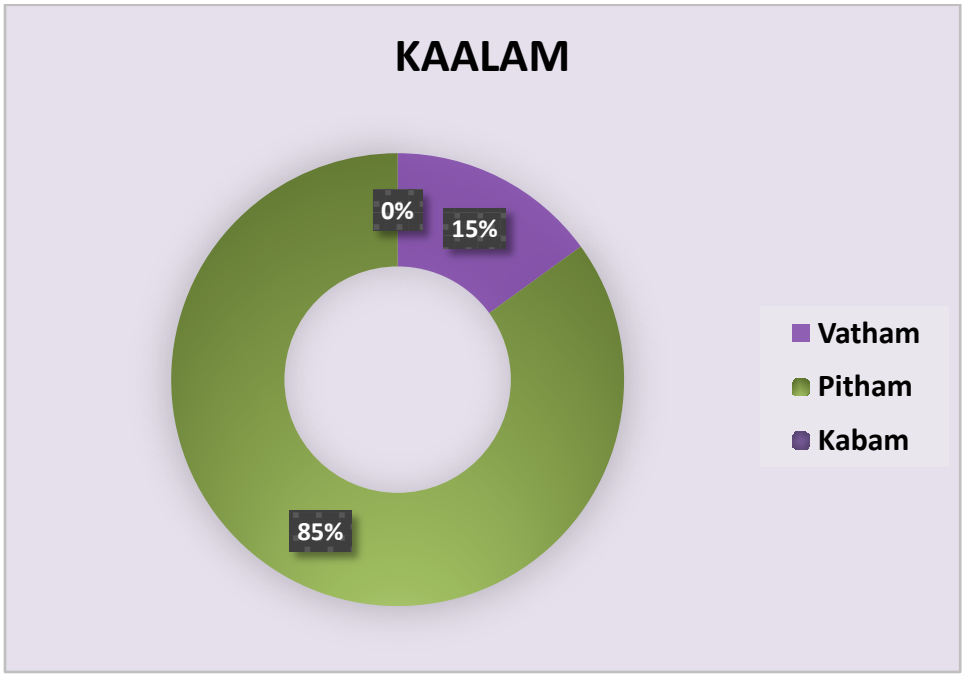
Out of 40 patients, 90% of patients belongs to Neithal Nilam and 5% of patients belong to Marutha & Kurinji Nilam

DISTRIBUTION AMONG KAALAM

Table 5.30: Distribution Among Kaalam

S.No	Kaalam	No of patients	Percentage
1	Vatham	6	15%
2	Pitham	34	85%
3	Kabam	0	0

Chart 5.11: Distribution AmongKaalam



INFERENCE:

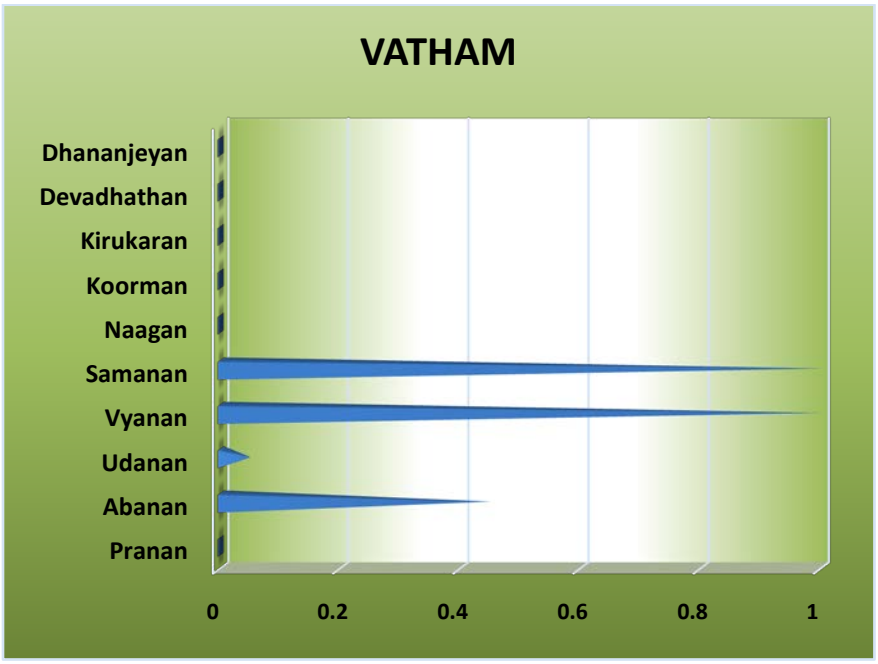
Out of 40 patients, 15% of patients were belonged Vathakaalam and 85% belonged to Pithakaalam

DISTRIBUTION OF VATHAM

Table 5.31: Distribution Of Vatham

Vatham	No of Patients	Percentage
Pranan	0	0
Abanan	18	45%
Udanan	2	5%
Vyanan	40	100%
Samanan	40	100%
Naagan	0	0
Koorman	0	0
Kirukaran	0	0
Devadhathan	0	0
Dhananjeyan	-	-

Chart 5.12: Distribution Of Vatham



INFERENCE:

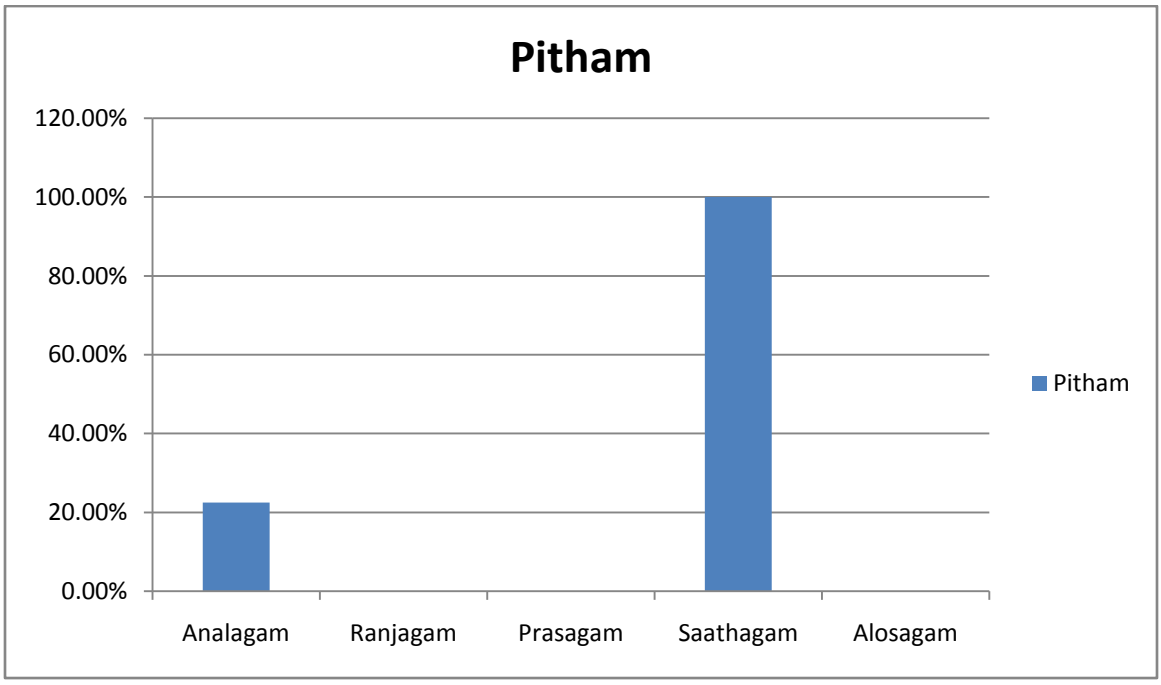
Out of 40 Patients, Vyanan and Samanan were affected in all the patients. Abanan and udanan were affected in 45% and 5% of patients respectively.

DISTRIBUTION OF PITHAM

Table5.32: Distribution Of Pitham

S.No	Pitham	No of Patients	Percentage
1	Analagam	9	22.5%
2	Ranjagam	0	0
3	Prasagam	0	0
4	Saathagam	40	100%
5	Alosagam	0	0

Chart 5.13: Distribution Of Pitham



INFERENCE:

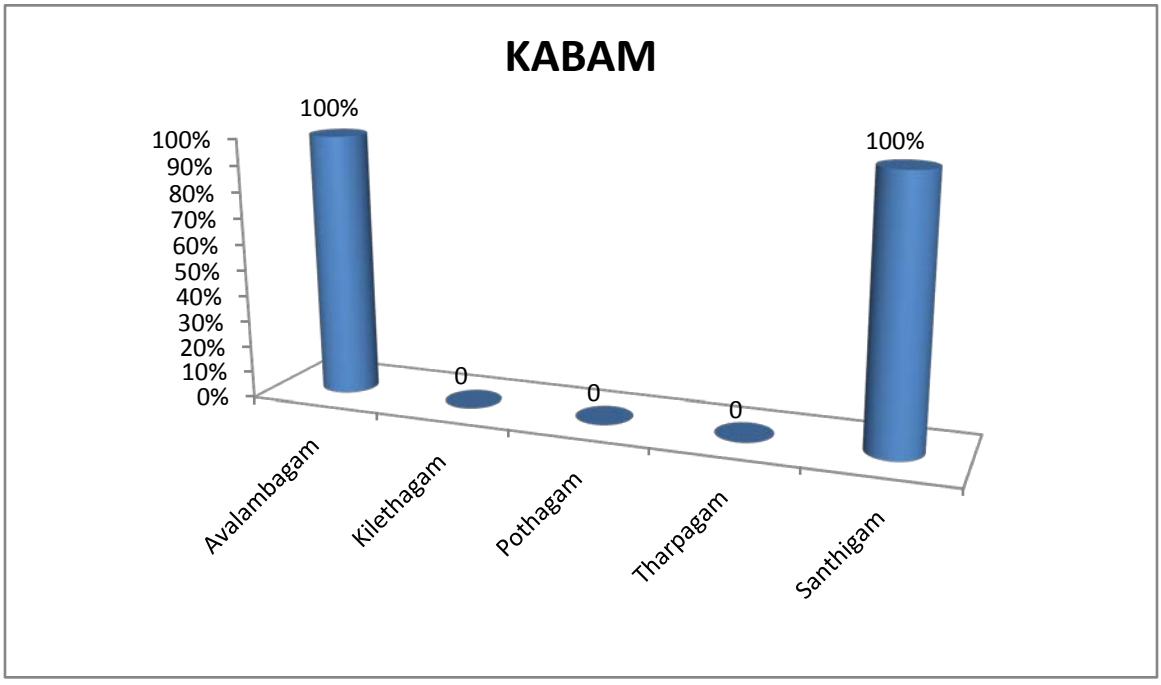
Out of 40 patients, Anarpitham was affected in 22.5% of patients and Saathagapitham was affected in all the patients (100%).

DISTRIBUTION OF KABAM

Table 5.33: Distribution Of Kabam

S.No	Kabam	No of Patients	Percentage
1	Avalambagam	40	100%
2	Kilethagam	0	0
3	Pothagam	0	0
4	Tharpagam	0	0
5	Santhigam	40	100%

Chart 5.14: Distribution Of Kabam



INFERENCE:

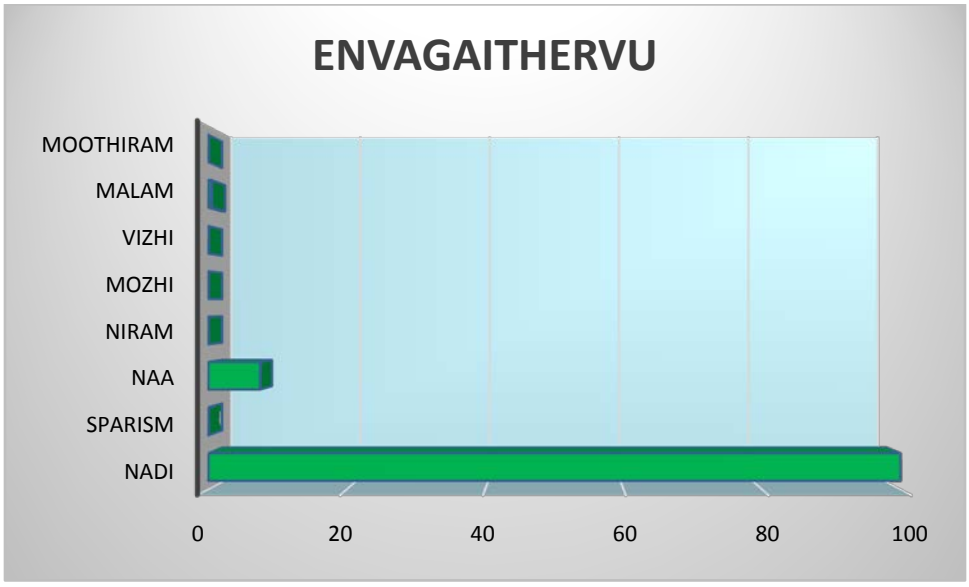
Out of 40 patients, Avalambakam, Santhigam was affected in all patients (100%).

DISTRIBUTION OF ENVAGAI THERVU

Table 5.34: Distribution Of EnvagaiThervu

S.No	Envagaithervu	No of Patients	Percentage
1	Nadi	40	100
2	Sparism	0	0
3	Naa	3	7.5
4	Niram	0	0
5	Mozhi	0	0
6	Vizhi	0	0
7	Malam	18	45%
8	Moothiram	0	0

Chart 5.15: Distribution Of EnvagaiThervu



INFERENCE:

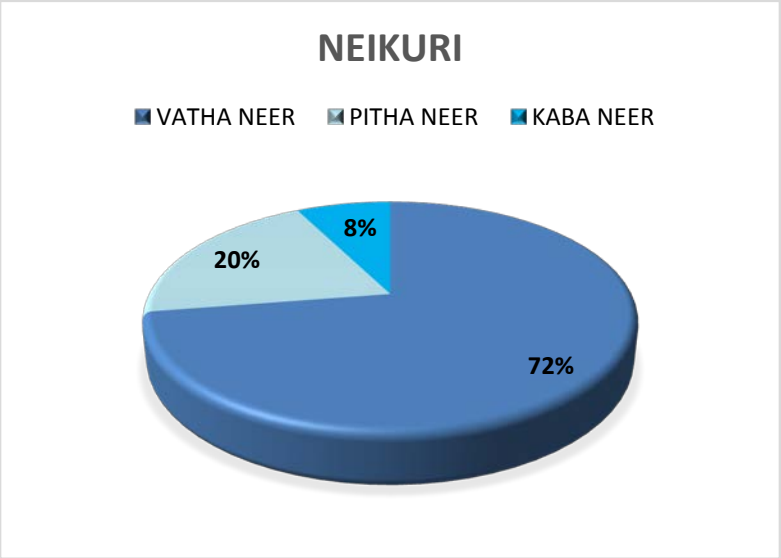
Out of 40 patients, Nadi was affected in100% of patients, Naa was affected in 7.5% of patients and Malam was affected in45% of patients.

NEIKKURI

Table 5.35: Neikkuri

S.No	Neikkuri	No of Cases	Percentage
1	VathaNeer	29	72..5%
2	PithaNeer	8	20%
3	KabaNeer	3	7.5%

Chart 5.16: Neikkuri



INFERENCE:

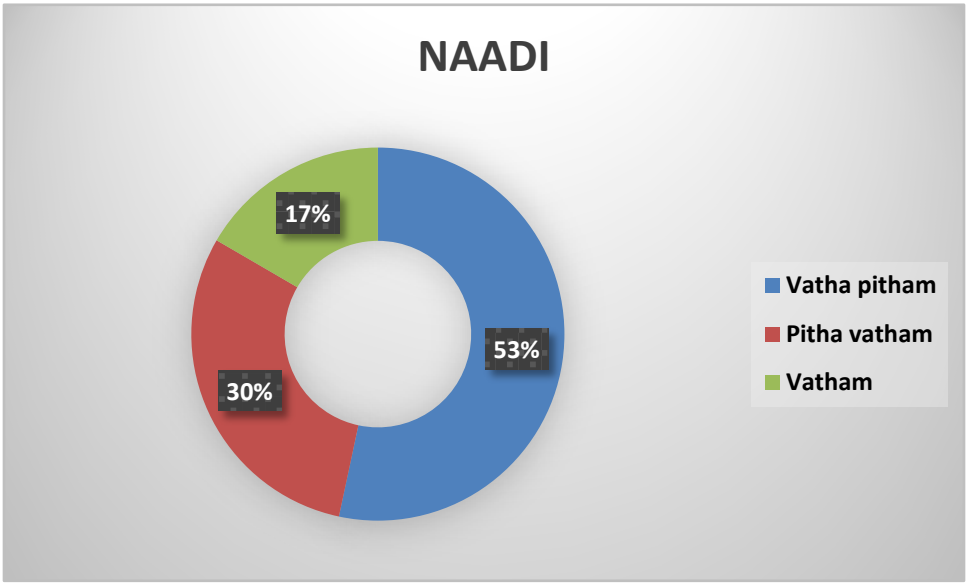
Out of 40 patient's urine sample vathaneer was present in 72.5% of patient's urine sample, Pithaneer was present in 20% of patient's urine sample and Kabaneer was present in 7.5% of urine sample.

DISTRIBUTION OF NADI

Table 5.36: Distribution Of Nadi

S.No	Nadi	No of cases	Percentage
1	Vathapitham	32	53.4
2	Pithavatham	18	30
3	Vatham	10	16.6

Chart 5.17: Distribution Of Nadi



INFERENCE:

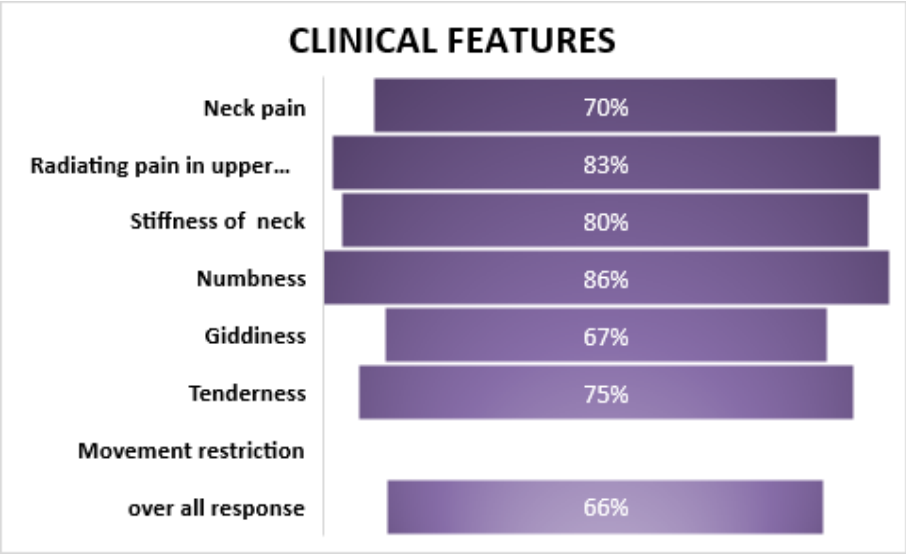
Out of 40 patients, Vathapithanadi, Pithavathanadi and vathanadi were present in 54.3%, 30% and 16.6% of patients.

IMPROVEMENT IN SUBJECTS TREATED WITH INTERNAL MEDICINE (GROUP I)

Table: 5.37 Improvement in subjects treated with Internal medicine (Group I)

S.No	Clinical features	Before Treatment	After Treatment	Percentage of Response
1.	Neck pain	20	6	70%
2.	Radiating pain in upper limbs	12	2	83%
3.	Stiffness of neck	5	1	80%
4.	Numbness	7	1	86%
5.	Giddiness	3	1	67%
6.	Tenderness	4	1	75%
7.	Movement restriction	1	1	0%
8.	Overall response			66%

Chart 5.18: Improvement in subjects treated with Internal medicine (Group I)



INFERENCE:

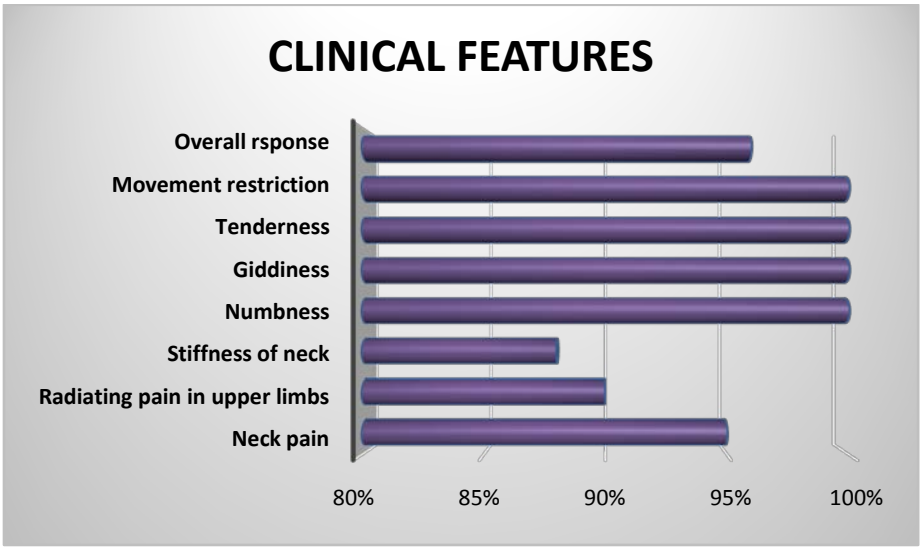
70% of patients were relieved from Neck pain completely, 83%, of patients were relieved from Radiating pain in upper limbs. 80%, 86%, 67%, 75% and 0% of patients were relieved from Neck stiffness, Numbness, Numbness, Giddiness, Tenderness and Movement restriction respectively.

IMPROVEMENT IN SUBJECTS TREATED WITH INTERNAL, EXTERNAL MEDICINE AND OTTRADAM (GROUP 2)

Table: 5.38 Improvement in subjects treated with Internal, External Medicine and Ottradam(Group 2)

S.No	Clinical features	Before Treatment	After Treatment	Percentage of Response
1.	Neck pain	20	1	95%
2.	Radiating pain in upper limbs	10	1	90%
3.	Stiffness of neck	9	1	88%
4.	Numbness	7	0	100%
5.	Giddiness	4	0	100%
6.	Tenderness	3	0	100%
7.	Movement restriction	1	0	100%
8.	Overall response			96%

Chart 5.19: Improvement in subjects treated with Internal, External Medicine and Ottradam(Group 2)



INFERENCE:

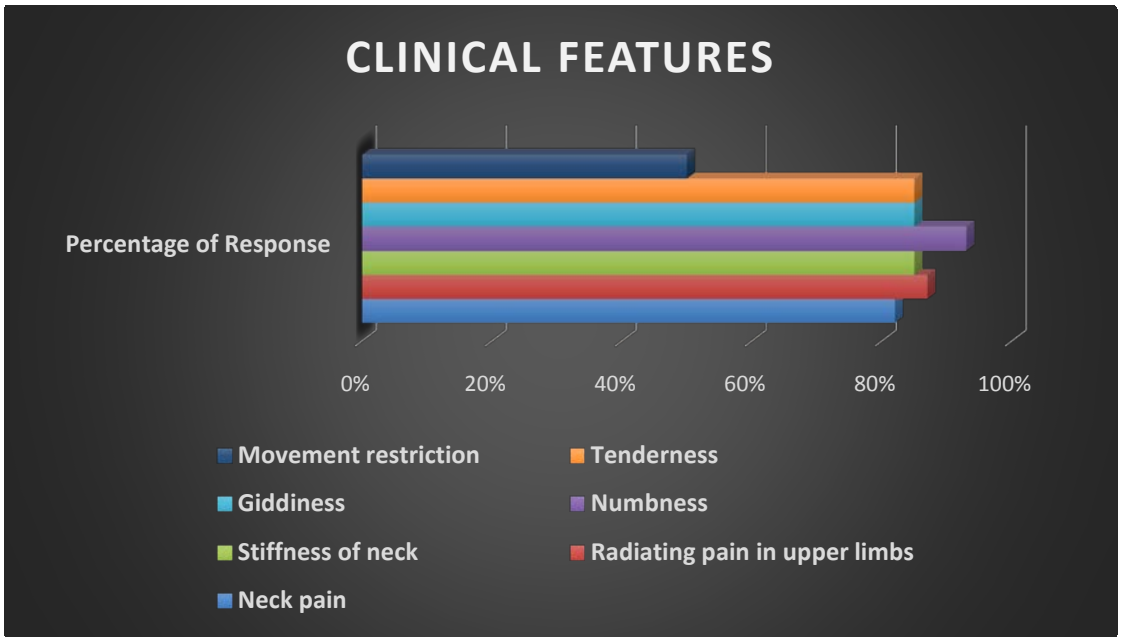
100% of patients were relieved from Numbness, Giddiness, Tenderness and Movement restriction. 95% of Patients were relieved from Neck Pain. Radiating pain and Neck stiffness was relieved for 90 % of patients.

CLINICAL PROGNOSIS BASED ON SYMPTOMS (ALL GROUPS)

Table: 5.39 Clinical prognosis based on Symptoms (All Groups)

S.No	Clinical features	Before Treatment	After Treatment	Percentage of Response
1.	Neck pain	40	7	82%
2.	Radiating pain in upper limbs	22	3	87%
3.	Stiffness of neck	14	2	85%
4.	Numbness	14	1	93%
5.	Giddiness	7	1	85%
6.	Tenderness	7	1	85%
7.	Movement restriction	2	1	50%

Chart 5.20: Clinical prognosis based on Symptoms (All Groups)



INFERENCE:

82% of patients were relieved from Neck pain completely, 87%, of patients were relieved from Radiating pain in upper limbs. 85%, 93%, 85%, 85% and 50% of patients were relieved fromNeck stiffness, Numbness, Numbness, Giddiness, Tenderness and Movement restriction respectively.

PAIN ASSESSMENT BASED ON VISUAL ANALOG SCALE –GROUP I

Table 5.40: Pain Assessment Based On Visual Analog Scale –Group I

S.No	BT	AT	Difference	Prognosis
1	6	0	6	Good
2	8	6	2	Mild
3	6	0	6	Good
4	6	0	6	Good
5	10	8	2	Mild
6	8	0	8	Good
7	6	0	6	Good
8	4	0	4	Moderate
9	6	0	6	Good
10	7	5	2	Mild
11	8	2	6	Good
12	9	5	4	Moderate
13	10	7	3	Moderate
14	8	0	8	Good
15	6	6	0	No
16	6	0	6	Good
17	9	0	9	Good
18	8	4	4	Moderate
19	6	0	6	Good
20	7	0	7	Good

Note:

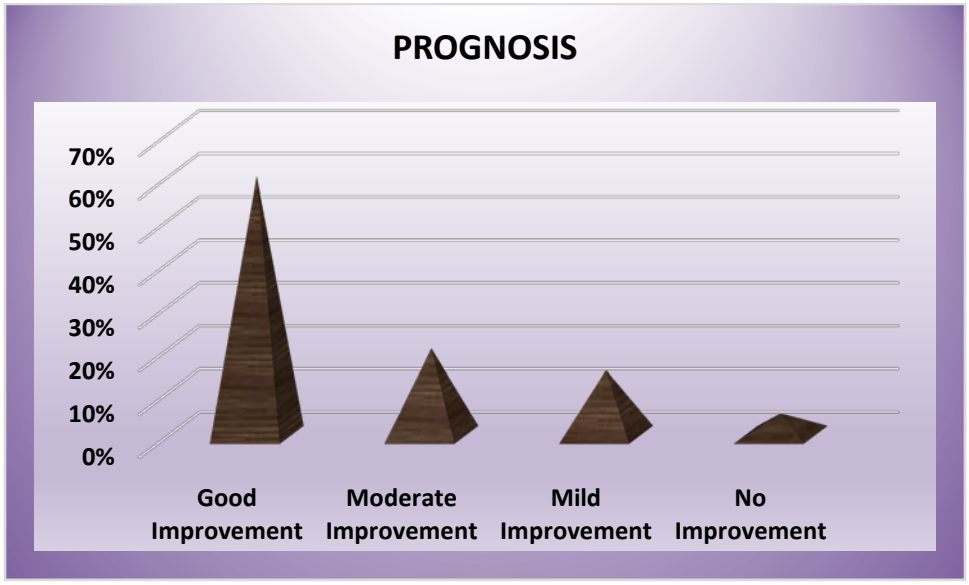
Improvement	**Change of points in VAS**
Good improvement	: > 5 points
Moderate improvement	: 3-5 points
Mild improvement	: 1-2 points
No improvement	: 0 points

RESULTS BASED ON VISUAL ANALOG SCALE - GROUP I

Table 5.41: Results Based On Visual Analog Scale - Group I

Prognosis	No of Patients	Percentage
Good Improvement	12	60%
Moderate Improvement	4	20%
Mild Improvement	3	15%
No Improvement	1	5%

Chart 5.21: Results Based On Visual Analog Scale - Group I



Inference:

In Group I, 60% of patients had Good improvement, 20% of patients had moderate and 15% mild improvement and 5% of patients had No improvement.

PAIN ASSESSMENT BASED ON VISUAL ANALOG SCALE – GROUP II

Table: 5.42: Pain Assessment Based On Visual Analog Scale – Group II

S. No	BT	AT	Difference	Prognosis
01	6	0	6	Good
02	8	0	8	Good
03	9	0	9	Good
04	9	0	9	Good
05	6	0	6	Good
06	8	0	8	Good
07	9	0	9	Good
08	4	0	4	Moderate
09	6	0	6	Good
10	8	0	8	Good
11	10	0	10	Good
12	8	0	8	Good
13	9	0	9	Good
14	7	0	7	Good
15	6	0	6	Good
16	9	0	9	Good
17	8	0	8	Good
18	6	0	6	Good
19	9	0	9	Good
20	6	0	6	Good

Note:

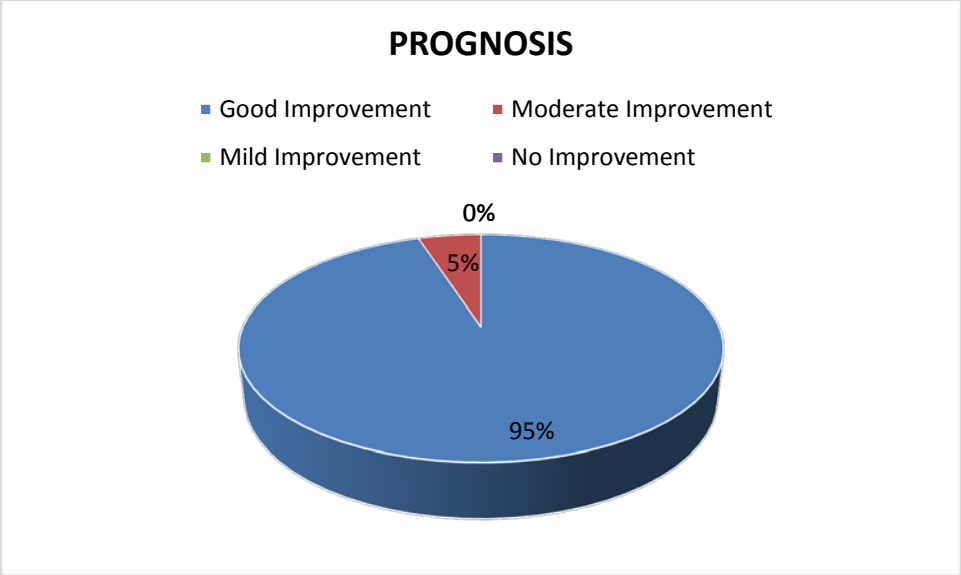
Improvement	**Change of points in VAS**
Good improvement	: > 5 points
Moderate improvement	: 3-5 points
Mild improvement	: 1-2 points
No improvement	: 0 points

RESULTS BASED ON VISUAL ANALOG SCALE GROUP II

Table 5.43: Pain Assessment Based On Visual Analog Scale – Group II

Prognosis	No of Patients	Percentage
Good Improvement	19	95%
Moderate Improvement	1	5%
Mild Improvement	0	0%
No Improvement	0	0%

Chart 5.22: Pain Assessment Based On Visual Analog Scale – Group II



Inference:

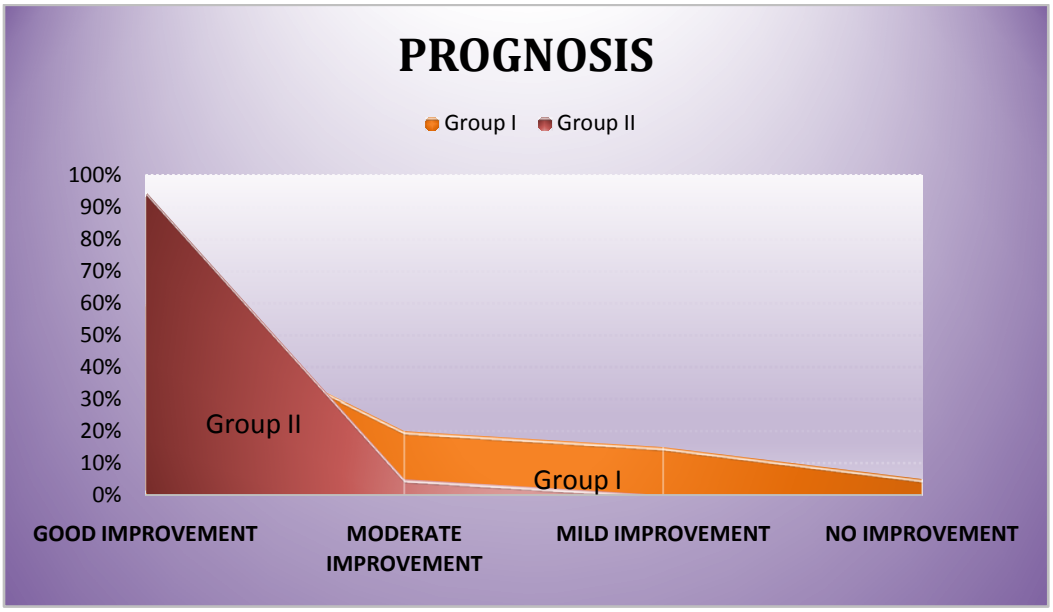
In Group II, 95% of patients had Good improvement, 5% of patients had moderate improvement. None of the patients showed Mild and No improvement.

COMPARISION OF PROGNOSIS OF THREE TREATMENT GROUPS BASED ON VISUAL ANALOG SCALE

Table 5.44: ComparisionOf Prognosis Of Three Treatment Groups Based On Visual Analog Scale

Prognosis	Group I	Group II
Good Improvement	60%	95%
Moderate Improvement	20%	5%
Mild Improvement	15%	0%
No Improvement	5%	0%

Chart 5.23: ComparisionOf Prognosis Of Three Treatment Groups Based On Visual Analog Scale



INFERENCE:

On comparing the two treatment groups Group II had shown better prognosis with 95% Good improvement and 5% Moderate improvement than the other treatment groups.

Table 5.45: Treatment details of Subjective parameters of Group 1:

S.NO	OP NO/ IP NO	Name	Age/ Sex	Occupation	Duration of illness	Date of starting treatment	Date of withdrawal treatment	Results
01	5262	MUTHUKANI	48/F	Teacher	2 Months	15.5.2018	27.6.2018	Good Improvement
02	5297	MALLIGA	55/F	House wife	36 Years	9.5.2018	1.7.2018	Mild Improvement
03	5387	MANNAR MANNAN	46/M	Painter	3Months	14.5.2018	6.7.2018	Good Improvement
04	8543	KANNAN	39/M	Driver	1 Month	25.5.2018	11.7.2018	Good Improvement
05	9456	RAMADOSS	43/M	Salesman	6 Month	29.5.2018	15.7.2018	Mild Improvement
06	9639	HEMANADHAN	50/M	Teacher	2 Month	30.5.2018	16.7.2018	Good Improvement
07	9770	CHELLAMMAL	39/F	House wife	1 Month	30.5.2018	16.7.2018	Good Improvement
08	3496	SUMATHI	39/F	Teacher	5 Month	14.6.2018	31.7.2018	Moderate Improvement
09	3747	PAZHANI RAJ	39/M	Coolie	1 Year	15.6.2018	1.8.2018	Good Improvement
10	4323	BILLIAMMA	38/F	House wife	9 Months	19.6.2018	6.8.2018	Mild Improvement
11	1185 /360	UMA	47/F	House wife	7 Months	1.6.2018	16.6.2018	Good Improvement
12	1198 /795	SELVAKUMAR	36/M	IT	5 Months	4.6.2018	4.7.2018	Moderate Improvement
13	1203 /886	GOWRI	48/F	House wife	1 Year	4.6.2018	5.7.2018	Moderate Improvement
14	1238 /1979	RASAPPA	37/M	Painter	9 Months	8.6.2018	23.7.2018	Good Improvement
15	1302 /4372	ARUNA	27/F	Teacher	2 Years	18.6.2018	7.8.2018	Moderate Improvement
16	1316 /4776	BRINDHA	26/F	IT	2 Months	19.6.2018	5.8.2018	Good Improvement
17	1462 /632	DHANSHERA	40/F	IT	6 Months	10.7.2018	19.3.2018	Good Improvement
18	1465 /2829	LAKSHMI BAI	53/F	House wife	1 Year	12.7.2018	28.8.2018	No Improvement
19	1511 /2793	RAMANI	20/F	Tailor	1 Year	17.7.2018	23.7.2018	Good Improvement
20	1517 /2775	KAMATCHI	50/F	House wife	8Months	17.7.2018	26.7.2018	Good Improvement

Table 5.46: Treatment details of Subjective parameters of Group II:

S.NO	OP NO /IPNO	Name	Age/ Sex	Occupation	Duration of illness	Date of starting treatment	Date of withdrawal treatment	Results
01	5947	SAJID IBRAHIM	20/M	Electrician	1 Month	23.6.2018	10.8.2018	Good Improvement
02	7710	KOLAVIZHI	32/F	Tailor	4 Months	29.6.2018	16.8.2018	Good Improvement
03	9029	MEERA	45/F	House wife	6 Months	5.7.2018	18.7.2018	Good Improvement
04	9572	SARATHA	37/F	Tailor	5 Months	6.7.2018	19.7.2018	Good Improvement
05	5639	POONKUZHALI	34/F	House wife	3 Months	16.7.2018	29.8.2018	Good Improvement
06	6405	THENAVAN	52/F	Coolie	4 Months	30.7.2018	12.9.2018	Good Improvement
07	6419	TAMIL SELVI	45/F	House wife	9 Months	1.11.2018	18.12.2018	Good Improvement
08	2654	DEEPA	33/F	Teacher	1 yesr	20.11.2018	6.1.2018	Moderate Improvement
09	3601	NAGAVALLI	35/F	House wife	8 Months	23.11.2018	9.1.2018	Good Improvement
10	8898	KALAIVANI	47/F	House wife	10 Months	6.12.2018	22.1.2018	Good Improvement
11	1735 /961	KATHAVARAYAN	49/F	Coolie	2 Years	17.8.2018	2.9.2018	Good Improvement
12	182 /4768	MALLIGA	55/F	House wife	1 Year	30.8.2018	12.9.2018	Good Improvement
13	1836 /5595	KOMALA DEVI	45/F	House wife	1 Year	3.9.2018	22.9.2018	Good Improvement
14	1939 /460	AGAMATH ALI	44/M	Sales man	3 Months	12.9.2018	28.12.2018	Good Improvement
15	1993 /2304	PRABHU	39/M	Driver	6 Months	19.9.2018	23.9.2018	Good Improvement
16	2279 /5876	AMUDHAVALLI	50/F	House wife	8 Months	30.10.2018	17012.2018	Good Improvement
17	2337 /9287	JAYANTHI	50/F	House wife	2 years	12.11.2018	15.11.2018	Good Improvement
18	2341 /9396	BHUVANESWARI	57/F	House wife	9 Months	12.11.2018	28.11.2018	Good Improvement
19	2476 /6035	VIJAYARANI	54/F	House wife	1 Month	29.11.2018	11.12.2018	Good Improvement
20	3093 /7483	SASIKUMAR	40/M	Tailor	6 Months	26.2.2019	10.5.2019	Good Improvement

GROUP I SUBJECT: LAB INVESTIGATION

S.NO	OP.NO & IP.NO	NAME	AGE/SEX	TC (Cells/ Cu.mm)		DC (%)										ESR (mm/ Hr)				Hb (gm%)		Blood Sugar	
				BT	AT	N		B		E		M		L		½ hr		1 hr		BT	AT	Random (mg/dl)	
						BT	AT	BT	AT	BT	AT	BT	AT	BT	AT	BT	AT	BT	AT			BT	AT
1	5262	MUTHUKANI	48/F	9000	9100	60	62	0	0	3	2	0	0	37	36	26	25	43	40	10.3	10.5	132	124
2	5297	MALLIGA	55/F	7300	7200	64	60	2	0	5	4	2	1	27	35	16	15	31	30	9.6	10.5	154	167
3	5387	MANNAR MANNAN	46/M	8900	9600	76	62	0	0	3	3	0	0	21	24	21	17	65	48	10.8	11.2	157	140
4	8543	KANNAN	39/M	6500	8200	53	68	0	0	7	6	0	0	40	26	7	18	7	16	11.2	11.3	104	98
5	9456	RAMADOSS	43/M	8800	9800	67	70	0	0	7	3	0	0	26	27	20	39	18	34	9.2	9.3	136	125
6	9639	HEMANADHAN	50/M	8800	9100	63	61	0	0	6	5	0	0	31	34	5	12	5	10	13.2	13.2	190	170
7	9770	CHELLAMMAL	39/F	9000	9500	60	67	0	0	5	3	0	0	35	40	8	7	16	15	10.5	11	146	129
8	3496	SUMATHI	39/F	7700	8000	66	70	0	0	4	3	0	0	30	32	19	15	40	33	10	11	32	160
9	3747	PAZHANI RAJ	39/M	8500	8900	70	72	0	0	4	2	0	0	28	32	17	33	22	45	13.5	13	132	135
10	4323	BILLIAMMA	38/F	9200	9600	52	56	0	0	6	4	0	0	42	40	7	8	15	16	12.4	12	145	126
11	1185 /360	UMA	47/F	7000	7300	62	65	0	0	5	2	0	0	28	32	15	12	31	30	11	12	112	100
12	1198 /795	SELVAKUMAR	36/M	8600	8100	61	60	0	0	5	4	4	0	30	36	12	11	27	26	10.4	11	117	98
13	1203 /886	GOWRI	48/F	8300	8500	52	56	1	0	5	4	4	0	40	40	12	11	22	26	12.3	13	140	156
14	1238 /1979	RASAPPA	37/M	9400	9600	65	65	1	0	5	5	3	1	26	29	14	13	33	30	10.3	11	160	167
15	1302 /4372	ARUNA	27/F	6900	6700	50	52	0	0	2	2	0	0	48	46	8	7	16	15	112	12.2	130	110
16	1316 /4776	BRINDHA	26/F	8400	8800	60	54	0	0	2	0	0	0	40	44	6	12	14	24	11.5	12.5	98	104
17	1462 /632	DHANSHERA	40/F	8100	8000	70	65	0	0	5	5	0	0	25	30	14	13	29	26	11.2	11	160	148
18	1465 /2829	LAKSHMI BAI	53/F	7800	8000	67	64	0	0	8	5	0	0	29	31	10	5	17	13	11.8	12.4	127	136
19	1511 /2793	RAMANI	20/F	7600	7900	66	63	0	0	9	7	0	0	20	25	22	19	45	38	10.6	13	159	154
20	1517 /2775	KAMATCHI	50/F	9400	9440	65	64	0	0	7	6	1	0	27	30	25	25	43	40	10.4	11	139	129

GROUP II SUBJECT: LAB INVESTIGATION

S.NO	OP.NO & IP.NO	NAME	AGE/SEX	TC (Cells/ Cu.mm)		DC (%)										ESR (mm/ Hr)				Hb (gm%)		Blood Sugar	
				BT	AT	N		B		E		M		L		½ hr		1 hr		BT	AT	Random(mg/dl)	
						BT	AT	BT	AT	BT	AT	BT	AT	BT	AT	BT	AT	BT	AT			BT	AT
1	5947	SAJID IBRAHIM	20/M	7700	8200	49	60	1	0	6	5	4	0	40	35	9	10	17	19	10.5	12	160	150
2	7710	KOLAVIZHI	32/F	7500	8600	50	64	0	0	9	6	0	0	41	30	12	10	20	22	12.5	12.6	126	147
3	9029	MEERA	45/F	6100	6700	58	63	0	1	4	1	3	1	35	32	30	22	61	46	11.2	12	120	90
4	9572	SARATHA	37/F	7200	8000	47	55	1	0	7	5	4	2	41	38	12	10	36	25	9.7	10.5	84	82
5	5639	POONKUZHALI	34/F	9800	10000	71	70	0	0	2	2	5	3	22	25	9	9	24	25	11	11.5	93	104
6	6405	THENAVAN	52/F	8600	9000	68	59	0	0	7	4	0	2	25	35	10	9	22	18	15	14	104	110
7	6419	TAMIL SELVI	45/F	8100	8100	55	59	0	1	6	5	3	3	36	32	17	16	23	24	11	12	108	140
8	2654	DEEPA	33/F	8700	9200	75	71	0	0	8	6	0	1	17	22	18	14	42	37	11.4	13	140	130
9	3601	NAGAVALLI	35/F	7700	8000	58	59	0	0	7	5	0	0	35	36	8	7	16	13	11.2	11.5	98	94
10	8898	KALAIVANI	47/F	9250	9500	67	65	0	1	3	3	4	3	26	28	16	15	37	35	12.6	13	95	84
11	1735 /961	KATHAVARAYAN	49/F	9400	9440	65	64	0	0	7	6	1	0	27	30	25	25	43	40	11.4	12	115	116
12	1826 /4768	MALLIGA	55/F	9200	9100	63	59	1	0	7	8	2	0	27	33	7	9	16	18	11	12	100	95
13	1836 /5595	KOMALA DEVI	45/F	9300	9100	65	65	1	0	5	5	3	1	26	29	14	13	33	30	10.3	11	108	120
14	1939 /460	AGAMATH ALI	44/M	7300	7200	64	60	0	0	7	6	1	0	27	30	25	25	43	40	10.4	11	160	152
15	1993 /2304	PRABHU	39/M	6000	6300	55	52	0	0	5	5	0	0	38	40	5	7	25	16	12	13	140	139
16	2279 /5876	AMUDHAVALLI	50/F	8200	8200	58	60	0	0	1	0	0	0	41	40	9	17	18	24	11	11.4	120	135
17	2337 /9287	JAYANTHI	50/F	8600	8900	55	60	0	0	5	4	0	0	15	16	8	15	7	15	9	12	167	147
18	2341 /9396	BHUVANESWARI	57/F	8100	8500	79	73	0	0	2	2	0	0	19	25	10	9	22	22	10.2	11	152	129
19	2476 /6035	VIJAYARANI	54/F	8700	9200	75	71	0	0	8	6	0	1	17	22	18	14	42	37	11.2	13	87	107
20	3093 /7483	SASIKUMAR	40/M	6400	6200	68	68	0	0	5	5	2	1	25	26	30	29	60	54	12	12.5	130	126

UP I SUBJECT : LAB INVESTIGATION

S. NO	OP/IP NO	NAME	LIVER FUNCTION TEST								RENAL FUNCTION TEST				URINE ANALYSIS					
			S.Bilurubin (mg/dl)		Alkaline Phosphatase (U/L)		SGOT (U/L)		SGPT (U/L)		UREA (mg/dl)		CREATININE (mg/dl)		Albumin		Sugar		Deposits	
			BT	AT	BT	AT	BT	AT	BT	AT	BT	AT	BT	AT	BT	AT	BT	AT	BT	AT
1	5262	MUTHUKANI	0.8	0.6	94	93	20	19	46	47	15	14	0.4	0.3	NIL	NIL	NIL	NIL	1-2 epi cells	1-2 epi cells
2	5297	MALLIGA	0.6	0.2	67	60	23	21	19	16	13	12	0.7	0.7	NIL	NIL	NIL	NIL	2-3- epi cells	1-2 epi cells
3	5387	MANNAR MANNAN	0.2	0.1	77	74	34	32	23	21	9	8	0.8	0.7	NIL	NIL	NIL	NIL	1-2 pus cells	1-2 pus cells
4	8543	KANNAN	0.4	0.2	49	48	12	10	08	09	17	16	1.2	1.1	NIL	NIL	NIL	NIL	2-3- epi cells	1-2 epi cells
5	9456	RAMADOSS	0.3	0.1	80	84	14	14	24	23	13	12	0.7	0.8	NIL	NIL	NIL	NIL	0-1 epi cells	1-2 pus cells
6	9639	HEMANADHAN	0.5	0.4	138	139	24	21	36	36	19	18	0.8	0.8	NIL	NIL	NIL	NIL	1-2 pus cells	1-2 pus cells
7	9770	CHELLAMMAL	0.4	0.4	126	122	38	36	45	41	12	12	0.6	0.6	NIL	NIL	NIL	NIL	1-2 epi cells	1-2 epi cells
8	3496	SUMATHI	0.6	0.5	148	139	26	24	52	52	8	9	0.8	0.6	NIL	NIL	NIL	NIL	2-3- epi cells	1-2 epi cells
9	3747	PAZHANI RAJ	0.2	0.2	90	95	8	7	12	11	8	8	0.6	0.4	NIL	NIL	NIL	NIL	1-2 pus cells	0-1 pus cell
10	4323	BILLIAMMA	0.6	0.6	78	76	15	16	13	13	16	15	1.0	1.0	NIL	NIL	NIL	NIL	0-1 epi cells	0-1 epi cells
11	1185 /360	UMA	0.2	0.1	65	62	7	6	43	41	18	16	0.8	0.7	NIL	NIL	NIL	NIL	1-2 pus cells	1-2 pus cells
12	1198 /795	SELVAKUMAR	0.8	0.6	137	138	12	12	39	35	11	10	0.6	0.6	NIL	NIL	NIL	NIL	2-3- epi cells	1-2 epi cells
13	1203 /886	GOWRI	0.6	0.4	127	127	10	10	27	26	15	14	0.9	0.8	NIL	NIL	NIL	NIL	2-3 pus cells	1-2 pus cells
14	1238 /1979	RASAPPA	0.2	0.2	134	119	25	23	26	27	7	6	0.4	0.3	NIL	NIL	NIL	NIL	1-2 epi cells	1-2 epi cells
15	1302 /4372	ARUNA	0.4	0.5	132	127	39	31	17	16	9	8	0.6	0.5	NIL	NIL	NIL	NIL	2-3- epi cells	1-2 epi cells
16	1316 /4776	BRINDHA	0.6	0.4	90	92	41	37	37	37	15	14	0.6	0.7	NIL	NIL	NIL	NIL	1-2 pus cells	0-1 pus cells
17	1462 /632	DHANSHERA	0.2	0.2	86	82	30	29	34	32	16	15	0.6	0.6	NIL	NIL	NIL	NIL	1-2 pus cells	0-1 pus cell
18	1465 /2829	LAKSHMI BAI	0.6	0.7	79	72	12	13	48	47	12	12	1.2	1.1	NIL	NIL	NIL	NIL	0-1 epi cells	0-1 epi cells
19	1511 /2793	RAMANI	0.2	0.1	59	47	14	12	23	24	16	16	0.6	0.6	NIL	NIL	NIL	NIL	1-2 pus cells	0-1 pus cells
20	1517 /2775	KAMATCHI	0.1	0.1	78	68	21	17	22	22	13	12	0.7	0.6	NIL	NIL	NIL	NIL	1-2 pus cells	1-2 pus cells

GROUP II SUBJECT : LAB INVESTIGATION

S. NO	OP NO /IPNO	NAME	LIVER FUNCTION TEST								RENAL FUNCTION TEST				URINE ANALYSIS					
			S.Bilurubin (mg/dl)		Alkaline Phosphatase (U/L)		SGOT (U/L)		SGPT (U/L)		UREA (mg/dl)		CREATININE (mg/dl)		Albumin		Sugar		Deposits	
			BT	AT	BT	AT	BT	AT	BT	AT	BT	AT	BT	AT	BT	AT	BT	AT	BT	AT
1	5947	SAJID IBRAHIM	0.4	0.3	80	87	23	21	37	36	13	14	0.8	0.8	NIL	NIL	NIL	NIL	2-3 epi cells	2-3 epi cells
2	7710	KOLAVIZHI	0.7	0.6	138	148	41	35	29	27	19	15	0.6	0.5	NIL	NIL	NIL	NIL	1-2 epi cells	1-2 epi cells
3	9029	MEERA	0.2	0.2	126	122	6	5	44	46	12	15	0.9	0.9	NIL	NIL	NIL	NIL	2-3- epi cells	1-2 epi cells
4	9572	SARATHA	0.1	0.1	148	130	8	7	14	13	8	11	1.4	1.2	NIL	NIL	NIL	NIL	1-2 pus cells	0-1 pus cell
5	5639	POONKUZHALI	0.3	0.2	90	98	17	13	37	37	13	12	0.3	0.3	NIL	NIL	NIL	NIL	0-1 epi cells	0-1 epi cells
6	6405	THENAVAN	0.7	0.6	78	79	16	14	19	19	8	7	0.8	0.7	NIL	NIL	NIL	NIL	1-3 epi cells	1-4 epi cells
7	6419	TAMIL SELVI	0.6	0.2	65	67	8	8	22	22	17	16	0.6	0.6	NIL	NIL	NIL	NIL	1-2 epi cells	1-2 epi cells
8	2654	DEEPA	0.8	0.1	137	138	24	21	39	39	16	16	0.9	0.8	NIL	NIL	NIL	NIL	1-2 pus cells	0-1 pus cell
9	3601	NAGAVALLI	0.6	0.6	148	139	38	36	40	37	19	18	0.4	0.3	NIL	NIL	NIL	NIL	0-1 epi cells	0-1 epi cells
10	8898	KALAIVANI	0.2	0.3	78	76	26	24	51	49	12	12	0.6	0.6	NIL	NIL	NIL	NIL	1-2 pus cells	1-2 pus cells
11	1735 /961	KATHAVARAYAN	0.4	0.1	65	62	8	7	19	18	11	9	0.6	0.7	NIL	NIL	NIL	NIL	2-3- epi cells	1-2 epi cells
12	1826 /4768	MALLIGA	0.3	0.4	137	138	15	16	23	22	09	08	0.9	0.8	NIL	NIL	NIL	NIL	0-1 epi cells	1-2 pus cells
13	1836 /5595	KOMALA DEVI	0.3	0.4	78	68	17	15	08	08	10	12	0.8	0.8	NIL	NIL	NIL	NIL	1-2 pus cells	1-2 pus cells
14	1939 /460	AGAMATH ALI	0.4	0.5	135	107	9	7	24	23	08	06	1.2	1.2	NIL	NIL	NIL	NIL	1-2 epi cells	1-2 epi cells
15	1993 /2304	PRABHU	0.5	0.2	146	139	13	11	36	36	14	13	1.1	1.0	NIL	NIL	NIL	NIL	2-3 epi cells	1-2 epi cells
16	2279 /5876	AMUDHAVALLI	0.6	0.5	98	72	42	37	45	44	19	16	0.9	0.8	NIL	NIL	NIL	NIL	1-2 epi cells	1-2 pus cells
17	2337 /9287	JAYANTHI	0.6	0.6	69	57	28	29	52	51	13	11	0.8	0.6	NIL	NIL	NIL	NIL	1-2 epi cells	1-2 epi cells
18	2341 /9396	BHUVANESWARI	0.2	0.2	132	134	37	33	36	36	12	09	0.7	0.7	NIL	NIL	NIL	NIL	2-3- epi cells	1-2 epi cells
19	2476 /6035	VIJAYARANI	0.6	0.5	104	101	22	18	17	16	13	12	0.6	0.7	NIL	NIL	NIL	NIL	1-2 pus cells	1-2 pus cells
20	3093 /7483	SASIKUMAR	0.2	0.3	98	91	26	27	09	09	14	14	0.9	0.9	NIL	NIL	NIL	NIL	2-4 pus cells	1-2 pus cells

BIOSTATISTICS REPORTS

CLINICAL PROGNOSIS- TREATMENT FOR SAGANA VATHAM

IMPROVEMENT IN PATIENTS TREATED WITH POORANATHI CHOORANAM (INT) - GROUP I PATIENTS

The most popular non parametric statistical tool, namely, Mc Nemar Test analysis has been employed to analyses the effectiveness with the help of a hypothesis.

IMPROVEMENT OF GROUP I SUBJECTS:

S. No	Clinical features	Before Treatment	After Treatment
		n%	n%
1.	Neck pain	20(100)	6(30)**
2.	Radiating pain in upper limbs	12(60)	2(10)**
3.	Stiffness of neck	5(25)	1(5)*
4.	Numbness	7(35)	1(5)**
5.	Giddiness	3(15)	1(5)*
6.	Tenderness	4(20)	1(5)*
7.	Movement restriction	1(5)	1(5)

McNemat test, C.I: 95%, *P<0.05; **P<0.01

Software: spss17 version

Number of cases: 20

Inference:

Since the p value is significant in all clinical features except movement restriction. So there is significant reducing of clinical features among the patients for the treatment of Saganavadham (Cervical spondylosis). Hence it is concluded that the treatment was effective and **significant**

GROUP II PATIENTS - IMPROVEMENT IN PATIENTS TREATED WITH "POORANATHI CHOORANAM" (Int), "VALLI KUTHALUKU ULLI ENNAI " (Ext), and "OTTRADAM " (Therapy).

The most popular non parametric statistical tool, namely, Mc Nemar Test analysis has been employed to analyses the effectiveness with the help of a hypothesis.

IMPROVE MENT OF GROUP II SUBJECTS:

S. No	Clinical features	Before Treatment	After Treatment
		n%	n%
1.	Neck pain	20(100)	1(5)**
2.	Radiating pain in upper limbs	10(50)	1(5)**
3.	Stiffness of neck	9(45)	1(5)**
4.	Numbness	7(35)	0(0)**
5.	Giddiness	4(20)	0(0)**
6.	Tenderness	3(15)	0(0)**
7.	Movement restriction	1(5)	0(0)*

McNemat test, C.I: 95%, *P<0.05; **P<0.01

Software: spss17 version

Number of cases: 20

Inference:

Since the p value is significant in all clinical features. So there is significant reducing of clinical features among the patients for the treatment of Saganavadham (Cervical spondylosis).Hence it is concluded that the treatment was effective and **significant.**

GROUP I SUBJECTS: LIVER FUNCTION TEST

S.No.	Investigations	Before Treatment Mean±SD n= 20	After Treatment Mean±SD n= 20	P value
1	SGOT	21.25±10.71	19.50±9.50	**<0.05**
2	SGPT	29.70±13.07	28.80±12.82	**<0.05**
3	Alkaline Phosphatase	96.70±30.65	93.20±30.94	**<0.05**
4	T.Bilirubin	0.42±0.21	0.33±0.20	**<0.05**

C.I: 95%; Paired samples t test. Where p<0.001, p<0.05 represents statistically significant.

GROUP II SUBJECTS : LIVER FUNCTION TEST

S.No.	Investigations	Before Treatment Mean±SD n= 20	After Treatment Mean±SD n= 20	P value
1	SGOT	21.20±11.54	19.20±10.66	**<0.001**
2	SGPT	30.05±13.45	29.40±13.36	**<0.05**
3	Alkaline Phosphatase	107.50±30.85	102.65±30.90	**<0.05**
4	T.Bilirubin	0.43±0.20	0.34±0.18	**0.061**

C.I: 95%; Paired samples t test. Where p<0.001, p<0.05 represents statistically significant.

GROUP I SUBJECTS : RFT

S.No.	Investigations	Before Treatment Mean±SD n= 20	After Treatment Mean±SD n= 20	P value
1	Urea	13.10±3.55	12.35±3.31	**<0.001**
2	Creatinine	0.73±0.22	0.67±0.22	**<0.05**

C.I: 95%; Paired samples t test. Where p<0.001, p<0.05 represents statistically significant.

GROUP II SUBJECTS :RFT

S.No.	Investigations	Before Treatment Mean±SD n= 20	After Treatment Mean±SD n= 20	P value
1	Urea	13.00±3.56	12.30±3.29	**0.110**
2	Creatinine	0.79±0.26	0.74±0.23	**<0.05**

C.I: 95%; Paired samples t test. Where p<0.001, p<0.05 represents statistically significant.

GROUP I SUBJECTS:BLOOD INVESTIGATION

S.No.	Investigations	Before Treatment Mean±SD n= 20	After Treatment Mean±SD n= 20	P value
1	Hb	11.07±1.12	11.60±1.04	**<0.05**

C.I: 95%; Paired samples t test. Where p<0.001, p<0.05 represents statistically significant.

GROUP II SUBJECTS:BLOOD INVESTIGATION

S.No.	Investigations	Before Treatment Mean±SD n= 20	After Treatment Mean±SD n= 20	P value
1	Hb	11.23±1.24	12.05±0.87	**<0.001**

C.I: 95%; Paired samples t test. Where p<0.001, p<0.05 represents statistically significant.

PAIN ASSESSMENT BASED ON VISUAL ANALOG SCALE

GROUP I SUBJECTS

S.No.	Investigations	Before Treatment Mean±SD n= 20	After Treatment Mean±SD n= 20	P value
1	PAIN Scale	7.20±1.57	2.15±2.92	**<0.001**

C.I: 95%; Paired samples t test. Where p<0.001, p<0.05 represents statistically significant.

GROUP II SUBJECTS:

S.No.	Investigations	Before Treatment Mean±SD n= 20	After Treatment Mean±SD n= 20	P value
1	PAIN Scale	7.55±1.57	0.00±0.00	**<0.001**

C.I: 95%; Paired samples t test. Where p<0.001, p<0.05 represents statistically significant.

Since the P value is highly significant (<0.001) in 2 groups. So there is significant reducing of PAIN Scale among the patients for the treatment of Saganavadham (Cervical spondylosis).Hence it is concluded that the treatment was effective **and significant.**

6. DISCUSSION

In Siddha system of medicine, the disease “SAGANA VATHAM” is brought under the types of vadha diseases. And it is correlated with “Cervical spondylosis”. Cervical spondylosis is defined as “ARTHROSIS” Of the posterior intervertebral joints in the cervical vertebrae.It is common in the middle aged and in the elderly particularly in those whose occupation involves a posture of prolonged neck flexion. This is characterised by pain in nape of the neck (local /referred pain),radiating pain in upper limbs, tenderness, Numbness, Stiffness of neck, Restriction of movements of neck, Giddiness, Sensory loss & paraesthesia in the corresponding dermatomes (due to sensory root involvement), Weakness of muscles supplied (due to motor root involvement).

The present study was conducted to evaluate the safety and therapeutic efficacy of “Pooranathi Chooranam”(Internal medicine) and “Vali kuthaluku ulli ennai” (External medicine) and to compare along with the effect of “Veppam Pinnakku Ottradam” (External therapy) in Sagana vatham at OPD& IPD of PG Department of Varmam, Pura maruthuvam and Yoga maruthuvam, GSMC attached with Aringnar Anna Government Hospital of Indian medicine and Homoeopathy.

In the present study 40 patients between the age group of 20-60 years as per inclusion criteria as mentioned above were categorized into three groups. The study period was 1 year. The groups were designated as G1 was subjected to Pooranathi chooranamalone, G2 was subjected to Pooranathi chooranam (Int), &Vali kuthaluku ulli ennai (Ext), “Veppam Pinnakku Ottradam” (External therapy) Observation period was fixed at 48 days.

Progress of the patients was followed and documented regularly. Various criterialike Distribution of Gender, Age, Diet, Occupational & Socio-Economic status wereassessed. Clinical manifestation and assessment of the enhancement in the prognosis of the disease Saganavadham with the trial drugs along with ottradam were taken into account for evaluating the efficacy of the trial drugs.

AGE DISTRIBUTION

Among 40 cases, 10% of cases were in the 20-30 age group. 35%, 40 % and 15% of cases were in the age of 31-40, 41-50 and 51-60 respectively

GENDER

Among 40 cases, 13% of cases were Males and 67.5% of patients were females.

OCCUPATIONAL DISTRIBUTION

Among 40 cases, 45% of cases were House wives, 12.5% of cases were Teachers, 10% were Tailor, 7.5% of cases were IT employees And Coolies. Painters, Salesmans & Drivers were 5% each. Electricians were 2.5% each.

SOCIO ECONOMIC STATUS

Among 40 cases, 20% of cases were Lower, 35% of cases were upper lower, 32.5% were Lower middle, 10% of cases were Upper middle And 2.5% cases were Upper group.

DISTRIBUTION OF DIET

Among 40 cases, 80% of cases were consuming mixed diet and 20% were Vegetarian

DURATION OF ILLNESS

Out of 40 patients subjected in the present study, 25% belonged to less than 1 month of illness and others were 20% in 1-3 months, 25% in 4-6 months, 42.5% in 7 months-12 month, 5% in 13-24 months and 25-36 months of illness.

DISTRIBUTION AMONG PARUVAKAALANGAL

Among 40 patients, 12.5%, 20%, 2.5% , 30% and 35% of patients came in Kaar, koothir, Pinpani, Ilavenil and Muthuvenil kaalam. No cases were came in Munpani kaalam.

DISTRIBUTION AMONG THINAI

Out of 40 patients, 90% of patients belongs to NeithalNilam and 5% of patients belong to Marutha & Kurinji Nilam

DISTRIBUTION AMONG KAALAM

Out of 40 patients, 15% of patients were belonged Vathakaalam and 85% belonged to Pithakaalam

DISTRIBUTION OF VATHAM

Out of 40 Patients, Vyanan and Samanan were affected in all the patients. Abanan and udanan were affected in 45% and 5% of patients respectively.

DISTRIBUTION OF PITHAM

Out of 40 patients, Anarpitham was affected in 22.5% of patients and Saathagapitham was affected in all the patients (100%).

DISTRIBUTION OF KABAM

Out of 40 patients, Santhigam was affected in all patients (100%).

DISTRIBUTION OF ENVAGAI THERVU

Out of 40 patients, Nadi was affected in100% of patients, Naa was affected in 7.5% of patients and Malam was affected in45% of patients.

NEIKKURI

Out of 40 patient's urine sample vathaneer was present in 72.5% of patient's urine sample, Pithaneer was present in 20% of patient's urine sample and Kabaneer was present in 7.5% of urine sample.

DISTRIBUTION OF NADI

Out of 40 patients, Vathapithanadi, Pithavathanadi and vathanadi were present in 54.3%, 30% and 16.6% of patients.

TREATMENT OUTCOME:

The clinical study of *Pooranathi chooranam* alone, *Pooranathi chooranam, Vali kuthaluku ulli ennai* (ext) combined therapy with *Ottradam* was done in two groups each comprising 20 patients. The patient's response to *Pooranathi chooranam* alone (G1), Vali kuthaluku ulli ennai (Ext), *"Veppam Pinnakku Ottradam"* (External therapy) (G2) was tried on 40 patients in two groups of 20 each the following inferences were made on the basis of **Visual analog scale.**

In Group I, 60% of patients had Good improvement, 20% of patients had moderate and 15% mild improvement and 5% of patients had No improvement.

In Group II, 95% of patients had Good improvement, 5% of patients had moderate improvement. None of the patients showed Mild and No improvement.

The result of subjective parameters had revealed that Group 2 have shown significant improvement than Group I in reducing all symptoms of *Saganavatham* which is 95% respectively.

Thus, on comparing the two Groups, Group 3 which was given the combined therapy of *Pooranathi chooranam, Vali kuthaluku ulli ennai* (ext) combined therapy with *"Veppam Pinnakku Ottradam"* had shown significant improvement with symptomatic management in Saganavatham.

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7. SUMMARY

40 cases with Saganavadham were diagnosed clinically based on yugi 800 and admitted in the inpatient ward and outpatient ward of post graduate department of Varmammaruthuvam, Pura maruthuvam & Yoga maruthuvam, GSMC attached with Aringar Anna Hospital for Indian medicine and Homeopathy, Chennai and treated by the trial medicines

The aim of the study is to evaluate the safety and efficacy of "Pooranathi Chooranam" (Int) and "Valik uthaluku ulli ennai" (Ext) and to compare along with the effect of *"Veppam Pinnakku Ottradam"* therapy intervention for saganavatham.

The study was started after analyzing the internal and external medicine along with ottradam therapy has been approved by IEC committee (GSMC-CH-ME-2/011/2017). The clinical trial is also registered in Clinical Trial Registry of India (CTRI/2018/05/013642). Acute toxicity study was carried out to confirm the safety of the drug by IAEC Committee (LV/04/CLBMCP/2018). Standardization and Quality Evaluation of the drug was done.

Before conducting the clinical trial, the details about the trial drug and my study was informed to the patients in their vernacular language and their signature were obtained in the consent forms. Separate Proforma was maintained for each and every patient.

The clinical study of Pooranathi chooranam alone (Group1) and Pooranathi Chooranam and Vali kuthaluku ulli ennai and "Veppam Pinnakku Ottradam" (Group 2) was done in three groups each comprising 20 patients. The inferences were made. All two groups shown statistically significant improvement.

Primary outcome was assessed by Visual Analog Scale (Universal Pain Assessment Scale). Secondary outcome i.e reduction in clinical parameters was also assessed. Among the three groups Group 2 shown better improvement. Statistical analysis was performed to assess the significance of the clinical trial.

8. CONCLUSION

Siddha Polyherbal preparation Pooranathi Chooranam was chosen for studying its efficacy on Saganavatham as internal medicine.

Heavy metal analysis of PC reveals that within permitted limit.

Phytochemical study shown that the trial drug PC has Alkaloids, saponins, tanins, glycosides, flavonoids, phenols, steroids, carbohydrates and proteins.

The acute & Sub acute toxicity study reveals that the trial drugs PC is safe, Sub acute toxicity study two doses were administrated orally for 28 days. Animals were observed for physiological and behavioural changes food and water, intake body, weight, mortality. All the animals were sacrificed, the changes in organ weight and histology were examined no mortality were observed and no treatment related changes seen. Hence the siddha trial drugs PC is safe in animal models.

Pharmacological study shown that the drug Pooranathi chooranam has significant Anti-inflammatory and Analgesic activity

In Group I, 60% of patients had Good improvement, 20% of patients had moderate and 15% of patient mild improvement and 5% of patients had No improvement.

In Group II, 95% of patients had Good improvement, 5% of patients had moderate improvement. None of the patients showed Mild and No improvement.

Group II had shown better results over the other two groups.

During the course of treatment there were no adverse effects or unwanted drug reactions in GIT,CVS, RS & Excretory systems.

Hence it is concluded that the combined therapy of *Pooranathi chooranam* (Int), *Vali kuthaluku ulli ennai* (ext) combined therapy with *"Veppam Pinnakku Ottradam"* gives significant improvement in the treatment of Saganavatham (Cervical Spondylosis) shows perceived effectiveness, safety &lower cost.

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GOVERNMENT SIDDHA MEDICAL COLLEGE
Arumbakkam, Chennai-106

Communication Of The Decision Of Institutional Ethics Committee (IEC)

IEC No: GSMC-CH-ME-2/011/2017

Protocol title:An open comparative clinical evaluation on SAGANA VATHAM(Cervical spondylosis) with Siddha trial drug 'POORANATHI CHOORANAM' [INT], 'VALI KUTHALUKU ULLI ENNAI' [EXT] and OTTRADAM [Therapy]
Principal Investigator: Dr. R.KALAIVANI
Name & Address of Institution: Government Siddha Medical College, Arumbakkam, Chennai-106
☑ New Review ☐ Revised Review ☐ Expedited Review
Date of review (DD/MM/YY): 06-04-2017 Date of Previous Review, If Revised Application:
Decision of the IEC ☐ Recommended ☑ Recommended with suggestions ☐ Revision ☐ Rejected
Suggestions / Reasons / Remarks: 1.Change the dosage as 1-2 gm. 2.Add straight cervical spine in exclusion criteria.
Recommended for a period of 1 year From date of completion of preclinical studies :

Please Note:

- Inform IEC immediately in case of any adverse events/serious drug reaction.
- Seek IEC approval in case of any change in the study procedure, site and investigator
- This approval is valid only for period mentioned above
- IEC member have the right to review the trial with prior intimation.

Dr.P.Jeyaprakashnarayanan
Chairman

Dr.K.Kanakavalli
Member Secretary

INSTITUTIONAL ETHICS COMMITTEE

Date : 06.04.2017
Sub : IEC Review of research proposals
Ref : Your letter dated

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6.4.17
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This Certificate is awarded to Dr/~~Mr~~/~~Mrs~~.....R. KALAIVANI.....

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

"RESEARCH METHODOLOGY & BIOSTATISTICS"

*For **AYUSH Post Graduates & Researchers***

Organized by the Department of Siddha

The Tamil Nadu Dr. M.G.R. Medical University From 24th to 28th April 2017.

Dr.N.KABILAN, M.D.(S),Ph.D.,
PROF & HEAD DEPT.OF SIDDHA

Prof.**Dr.T.BALASUBRAMANIAN,** M.D.,D.L,O.,
REGISTRAR..

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Tamil Nadu 600106.

AUTHENTICATION CERTIFICATE

Based upon the organoleptic/macroscopic/microscopic examination of fresh/market sample, it is certified that the specimen given to Dr. R. Kalaivani B.S.M.S. doing M.D. (S) in department of Sirappu Maruthuvam at Government Siddha Medical College, Arumbakkam, Chennai-106 is identified below as

Tamil name	Binomial name	Family	Voucher Specimen No
Saranai ver	*Trianthema portulacastrum*	Aizoaceae	GSMC/MB-166/18
Potuthalai	*Phyla nodiflora*	Verbenaceae	GSMC/MB-167/18
Katukkai	*Terminalia chebula*	Combretaceae	GSMC/MB-168/18
Kazharchikkai	*Caesalpinia bonduc*	Ceasalpinoidea	GSMC/MB-169/18
Sukku	*Zingiber officinale*	Zingiberaceae	GSMC/MB-170/18
Thippili	*Piper longum*	Piperaceae	GSMC/MB-17118
Milagu	*Piper nigrum*	Piperaceae	GSMC/MB-172/18
Perunjiragam	*Pimpinella anisum*	Apiaceae	GSMC/MB-173/18
Seeragam	*Cuminumcyminum*	Apiaceae	GSMC/MB-174/18
Perungayam	*Ferula asafoetida*	Apiaceae	GSMC/MB-175/18
Karuveppilai	*Murraya koenigii*	Rutaceae	GSMC/MB-176/18
Omum	*Trachyspermum ammi*	Apiaceae	GSMC/MB-177/18

References: Flora of Presidency, Gamble, J. S

Date: 29.01.2018

29/1/2018

Dr. S. Sankaranarayanan M.Sc., M.Phil., Ph.D.,
Head
Dept. of Maruthuva Thavaraiyal
(Medicinal Botany and Pharmacognosy)
Govt. Siddha Medical College,
Arumbakkam, Chennai - 600 106.

Central Council for Research in Siddha (CCRS)

MANIPAL UNIVERSITY

Central Council for Research in Siddha (CCRS), Ministry of AYUSH, Govt. of India, Arumbakkam, Chennai-600106
Centre for Integrative Medicine and Research (CIMR), Manipal University
Department of Pharmacology, Melaka Manipal Medical College, Manipal University

CERTIFICATE

This is to certify that Dr./~~Mr./Ms~~ R. Kalaivani

participated in the Seminar cum Workshop on "Management of dermatological disorders and cancer –moving towards an integrative (Siddha & Modern) approach" held during 11-12 February 2017 at Manipal University, Manipal - 576104.

Dr. Vishaal Bhat
Coordinator
CIMR, MU

Dr. Vasudha Devi
Head, Dept. of Pharmacology
MMMC, MU

Prof. Dr. R. S. Ramaswamy
Director General
CCRS, Chennai

Government Siddha Medical College

Arumbakkam, Chennai – 600 106

CERTIFICATE

Certified that the samples submitted for identification by Dr R.Kalaivani, PG Scholar, Department of Sirappu maruthuvam, Government Siddha Medical College, Arumbakkam, Chennai-600 106, were identified as:

1. INTHUPPU - SODIUM CHLORIDE IMPURA (Rock salt)

Date: 29.01.2018

Place: Chennai

HEAD OF THE DEPARTMENT

PG Department of Gunapadam

Head of the Department
Gunapadam
Govt. Siddha Medical College,
CHENNAI-600 106.

Central Council for Research in Siddha (CCRS)

MANIPAL UNIVERSITY

Central Council for Research in Siddha (CCRS), Ministry of AYUSH, Govt. of India, Arumbakkam, Chennai-600106
Centre for Integrative Medicine and Research (CIMR), Manipal University
Department of Pharmacology, Melaka Manipal Medical College, Manipal University

CERTIFICATE

This is to certify that Dr./Mr./Ms R. KALAIVANI presented a poster in the Seminar cum Workshop on "Management of dermatological disorders and cancer —moving towards an integrative (Siddha & Modern) approach" held during 11-12 February 2017 at Manipal University, Manipal - 576104.

Dr. Vishaal Bhat
Coordinator
CIMR, MU

Dr. Vasudha Devi
Head, Dept. of Pharmacology
MMMC, MU

Prof. Dr. R. S. Ramaswamy
Director General
CCRS, Chennai

தேசிய கருத்தரங்கம்

சித்த மருத்துவத்தில் புற மருத்துவ முறைகள்

SIDDHA REGIONAL RESEARCH INSTITUTE

(Under Central Council for Research in Siddha, Chennai.
Ministry of Ayush, Government of India)

Kuyavarpalayam, Puducherry - 605 013.

Certificate No : SRRI/NCPM/2017/ 165

Certificate

This is to certify that Dr./Sh./Km./Smt. **Dr. R. KALAIVANI**

has participated in the National Conference on Pura Maruthuvam - External Therapies in Siddha System of Medicine organized by Siddha Regional Research Institute, Puducherry, held on 9th & 10th December , 2017 at Dr. APJ Abdul kalam JIPMER Auditorium, Puducherry.

Organising Secretary **Convenor** **Chairman**

International Day of Yoga
Yoga for Harmony & Peace

Individualized
Clinical Yoga Therapy
ICYTTRF

Certificate

This is to certify that

Dr. R. KALAIVANI

has successfully completed 3 days Residential **CLINICAL YOGA THERAPY** Workshop conducted by **ICYTTRF** - Individualized Clinical Yoga Therapy Training and Research Foundation from **29th JUNE 2018 to 1st JULY 2018** at **Sterling Resorts,** Yercaud, Salem.

Mr. K. ANANDARANGA
Chairman, **ICYTTRF**

Dr R. VETRIVENDAN
Program Convenor, **ICYTTRF**

Prof. SUBRAMANIAN ANANTHA VENKATA
Adhyatma Yoga Foundation, Bangalore

LOYOLA COLLEGE

(Autonomous, Affiliated to University of Madras)
College of Excellence, NAAC Acredited A++, Chennai - 600 034. Tamil Nadu.

National Conference on

Biochemistry and Therapeutics of Diabetes and Cancer Treatment & Challenges

(BTDCTC - 2019)

February 28 & March 1, 2019

Organised by

Ethnopharmacology and Microbial Biotechnology Lab,
Department of Plant Biology and Biotechnology

Certificate

This is to certify that ~~Mr./Ms.~~/Dr. R. Kalaivani of Govt. Siddha Medical College, Chennai has participated / ~~presented~~ a paper (Oral/Poster) in the National Conference on Biochemistry and Therapeutics of Diabetes and Cancer Treatment & Challenges (BTDCTC-2019) held on February 28 & March 1, 2019.

P. Agastian
Dr. P. AGASTIAN
CONVENOR, BTDCTC-2019
Dept. of Plant Biology & Biotechnology

Rev. Dr. F. ANDREW, S.J
PRINCIPAL
Loyola College

International Conference on

"Sports Medicine, Yoga, Fitness Therapy & Rehabilitation"

SYFTR-2019

Date: 11th and 12th March 2019

CERTIFICATE

This is to certify that Mr/Ms/Dr/Prof R. KALAIVANI, GSMC has participated/Chaired a session in the International conference, organized by Research and Development wing, Sree Balaji Medical College & Hospital, Chromepet, Chennai, Tamil Nadu, India. He/she has presented a Paper entitled on_____ and the CME Points Awarded_____

Prof. S. Benjamin Prakash
German University of Physical Education & Sports Sciences Cologne,Germany

Prof. Senthamil R. Selvan
Principal Scientist, Biomarker Strategies Rockville, MD,USA

Prof.W.M.S. Johnson
Dean -Incharge
SBMCH

Prof. P. Ramasamy
Director -Research
SBMCH

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We Trust in Quality and Ethics

Noble Research Solutions

We Trust in Quality and ethics

E-mail : nobleresearchsolutions@gmail.com
info@nobleresearchsolutions.com
Contact : 9710437419, Admin : 044 - 42691289

CERTIFICATE

Date: 31 MAR 2018

To,

Dr.R.Kalaivani
Government Siddha Medical College,
Arumbakkam, Chennai 600 106,Tamil Nadu, India

Project Id: **NRS/AS/0204/01/2019**

This is to certify that Dr.R.Kalaivani from Govt Siddha Medical College, Arumbakkam, Chennai, has carried out the following activity at our facility for the trial drug *Pooranathi Chooranam (PC)*

S.No	Study Description	Annexure no
1.	Standardization and Physicochemical Evaluation of study drug *Pooranathi Chooranam (PC)*	I - VI

Note:

- *Annexures was attached as a separate enclosure along with this report.*

NOBLE RESEARCH SOLUTIONS ★ CHENNAI ★ TAMIL NADU, INDIA

GOVERNMENT SIDDHA MEDICAL COLLEGE

ARIGNAR ANNA GOVERNMENT HOSPITAL OF INDIAN MEDICINE

CHENNAI – 600 106

POST- GRADUATE DEPARTMENT OF SIRAPPU MARUTHUVAM

AN OPEN CLINICAL EVALUTION ON SAGANAVATHAM (CERVICAL SPONDYLOSIS) WITH THE SIDDHA TRIAL DRUG "POORANATHI CHOORANAM" (INTERNAL), "VALI KUTHALUKU ULLI ENNAI" (EXTERNAL) AND "VEPPAM PINNAKKU OTTRADAM" (EXTERNAL THERAPY).

FORM l - SCREENING AND SELECTION PROFORMA

1. **OP NO**
2. **NAME:**
3. **AGE:** **4. GENDER:**
5. **OCCUPATION:** **6. INCOME**
7. **ADDRESS:**
8. **CONTACT NO:**

INCLUSION CRITERIA

- Age : between 20-60 years YES/NO
- Sex : Both male and female YES/NO
- Muscle spasms in neck and shoulders YES/NO
- Complaint about pain behind the neck in the area of trapezius YES/NO
- Radiating pain to the upper limbs upto the fingers. YES/NO
- Numbness and weakness in arms, hands and fingers YES/NO
- Limitation of movements YES/NO
- Giddiness YES/NO
- Willing to sign the consent form YES/NO

EXCLUSION CRITERIA

(History of)

- Cervical rib
- Trauma
- Spina bifida
- Cardiac disease
- Fracture
- Ankylosing spondylitis
- Malignancy
- Pregnancy and Lactation
- Tuberculosis in spine
- Adhesive capsulitis
- Carpal tunnel syndrome
- Straight cervical spine
- Patient with any other serious systemic illness.

ADMITTED TO TRIAL:

YES **NO**

If yes, **OPD/IPD**

Date:

Signature of the Guide:

Station:

Signature of the Investigator:

GOVERNMENT SIDDHA MEDICAL COLLEGE

ARIGNAR ANNA GOVERNMENT HOSPITAL OF INDIAN MEDICINE

CHENNAI – 600 106

POST- GRADUATE DEPARTMENT OF SIRAPPU MARUTHUVAM

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FORM lI -HISTORY TAKING PROFORMA

1. SERIAL NO OF THE CASE: ……. 2.OP/IP NO: .....

3. NAME: …… 4. AGE: …….. 5. GENDER: ……..

5. OCCUPATION: …… 6. INCOME: …….....

7. COMPLAINTS & DURATION:

8. CHIEF COMPLAINTS WITH DURATION

9. HISTORY OF PRESENT ILLNESS

1. Onset of disease	**:**	Acute	Insidious
2. Duration of disease	**:**		
3. Treatment given so far	**:**	Ayurvedic medicine	Modern Medicine
		Unani	Homeopathy

10. PERSONAL HISTORY:

PERSONAL HABITS	**YES**	**NO**	**IF YES, SPECIFY DURATION/QUANTITY**
Smoking			
Tobacco Chewing			
Alcoholism			
Narcotic drugs			

11. DRUG HISTORY:

12. HISTORY OF PREVIOUS ILLNESS/PELVIC SURGERY:

13. DIETARY HABIT:

1. Vegetarian
2. Non-vegetarian

14. FAMILY HISTORY:

Whether this problem runs in family?

1. Yes 2.No

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

History of previous investigations if any ----------

15. MENSTURAL HISTORY:

Date: Signature of the Guide:

Station: Signature of the Investigator:

Signature of the Investigator:

GOVERNMENT SIDDHA MEDICAL COLLEGE

ARIGNAR ANNA GOVERNMENT HOSPITAL OF INDIAN MEDICINE

CHENNAI – 600 106

POST- GRADUATE DEPARTMENT OF SIRAPPU MARUTHUVAM

AN OPEN CLINICAL EVALUTION ON SAGANAVATHAM (CERVICAL SPONDYLOSIS) WITH THE SIDDHA TRIAL DRUG "POORANATHI CHOORANAM" (INTERNAL), " VALI KUTHALUKU ULLI ENNAI" (EXTERNAL) AND "VEPPAM PINNAKKU OTTRADAM" (EXTERNAL THERAPY).

FORM III - CLINICAL ASSESSMENT ON ENROLLMENT AND ON VISITS

1. SI NO: -------- 2. OP NO: ---------- 3. IP NO:---------- 4.BED NO:---------

5. NAME :----------

6. RELIGION : H / C / M / O

7. AGE/GENDER :---------- 8. OCCUPATION: ----------

9. CONTACT NUM: ----------

10. DATE OF INITIAL ASSESSEMENT: ----------

SIDDHA SYSTEM OF EXAMINATION

1. THEGI (BODY CONSTITUTION):

1. Vatha udal ☐
2. Pitha udal ☐
3. Kaba udal ☐
4. Thontha udal ☐

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

1. Kurinji ☐
2. Mullai ☐
3. Marutham ☐
4. Neithal ☐
5. Paalai ☐

3. KAALAM:

1. Kaar kaalam (Aavani-Puratasi) ☐
2. Koothir kaalam (Ippasi-Kaarthigai) ☐
3. Munpani kaalam (Maargazhi-Tai) ☐
4. Pinpani kaalam (Maasi-Panguni) ☐
5. Ilavenil kaalam (Chithirai-Vaigasi) ☐
6. Muthuvenil kaalam (Aani-Aadi) ☐

4. GUNAM:

1. Sathuvam ☐
2. Rasatham ☐
3. Thamasam ☐

5. PORI PULANGAL (SENSORY ORGANS):

	Normal	**Affected**	
1. Mei	☐	☐	.....
2. Vaai (Naaku)	☐	☐	.....
3. Kan	☐	☐	.....
4. Mookku	☐	☐	.....
5. Sevi	☐	☐	.....

6. KANMENDRIYAM (MOTOR ORGANS) :

	Normal	Affected	
1. Vaai	☐	☐	.....
2. Kaal	☐	☐	.....
3. Kai	☐	☐	.....
4. Eruvaai	☐	☐	.....
5. Karuvaai	☐	☐	.....

7. KOSANGAL (SHEATH):

	Normal	Affected	
1. Annamaya kosam	☐	☐	.....
2. Pranamaya kosam	☐	☐	.....
3. Manomaya kosam	☐	☐	.....
4. Vignanamaya kosam	☐	☐	.....
5. Anandhamaya kosam	☐	☐	.....

8. UYIR THATHUKKAL (THREE HUMOURS):

8a.VALI:	**Normal**	**Affected**	
1. Praanan	☐	☐	.....
2. Abaanan	☐	☐	.....
3. Viyaanan	☐	☐	.....
4. Uthaanan	☐	☐	.....
5. Samaanan	☐	☐	.....
6. Naagan	☐	☐	.....
7. Koorman	☐	☐	.....
8. Kirukaran	☐	☐	.....
9. Devathathan	☐	☐	.....
10. Dhananjayan	☐	☐	.....

8b. AZHAL: **Normal** **Affected**

1. Analam ☐ ☐ .....
2. Ranjagam ☐ ☐ .....
3. Saathagam ☐ ☐ .....
4. Aalosagam ☐ ☐ .....
5. Praasagam ☐ ☐ .....

8c.IYAM: **Normal** **Affected**

1. Avalambagam ☐ ☐ .....
2. Kilethagam ☐ ☐ .....
3. Pothagam ☐ ☐ .....
4. Tharpagam ☐ ☐ .....
5. Santhigam ☐ ☐ .....

9. EN VAGAI THERVU (EIGHT FOLDS OF EXAMINATION):

1.Naadi : **…….....**

2.Parisam : **…….....**

3.Naa : **.....…….....**

4.Niram : **.....…….....**

5.Mozhi : **.....…….....**

6.Vizhi : **.....**

7.Malam : **.....**

8. Moothiram : **…….**

8a.Neerkuri:

Niram : 1.Whitish ☐ 2. Yellowish ☐
3.Straw coloured ☐ 4. Crystal clear ☐

Edai : 1.Present ☐ 2.Absent ☐

Manam : 1.Nil ☐ 2.Reduced ☐ 3. Increased ☐

Nurai : 1. Normal ☐ 2. Increased ☐ 3. Decreased ☐

Enjal :

8b: Neerkuri (Oil –in urine sign):

Vatha Neer ☐ Pitha Neer ☐ Kaba Neer ☐

10. SEVEN UDAL THAATHUKKAL (SEVEN SOMATIC COMPONENTS):

	Normal	**Affected**	
1. Saaram	☐	☐	.....
2. Senneer	☐	☐	.....
3. Oon	☐	☐	.....
4. Kozhuppu	☐	☐	.....
5. Enbu	☐	☐	…….....
6.Moolai	☐	☐	.....
7. Sukkilam / Suronitham	☐	☐	.....

GENERAL EXAMINATION:

1. Body weight [Kg] :
2. Height [cm] :
3. Body Temperature [F] :
4. Blood Pressure (mmHg) :
5. Pulse Rate /min. :
6. Heart Rate / min. :
7. Respiratory Rate /min. :

	Yes	No
8. Pallor :	☐	☐
9. Jaundice :	☐	☐
10. Clubbing :	☐	☐
11. Cyanosis :	☐	☐
12. Pedal Oedema :	☐	☐
13. Lymphadenopathy :	☐	☐
14. Jugular venous pulsation :	☐	☐

VITAL ORGAN EXAMINATION:

	Normal	Abnormal
1. Heart	☐	☐
2. Lungs	☐	☐
3. Brain	☐	☐
4. Liver	☐	☐
5. Kidney	☐	☐
6. Spleen	☐	☐
7. Stomach	☐	☐

SYSTEMIC EXAMINATION:

	Normal	Abnormal
1. Cardio-vascular system	☐	☐
2. Respiratory system	☐	☐
3. Gastro intestinal system	☐	☐
4. Central nervous system	☐	☐
5. Genital urinary system	☐	☐
6. Endocrine system	☐	☐

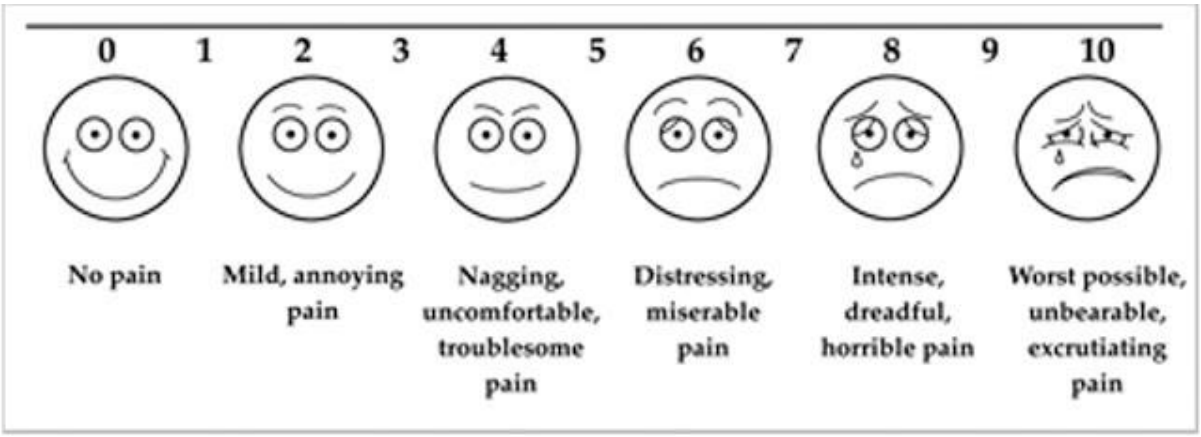
CLINICAL ASSESSMENT:

COMPLAINTS	0^{th} day	7^{th} day	14^{th} day	21^{st} day
Pain in neck				
Pain in shoulder				
Nature of pain				
Onset of pain				
Radiating pain in right upper limb				
Radiating pain in left upper limb				
Numbness				
Tenderness				
Restriction of movements				
Burning sensation				
Giddiness				

COMPLAINTS	28th day	35th day	42nd day	49th day
Pain in neck				
Pain in shoulder				
Nature of pain				
Onset of pain				
Radiating pain in right upper limb				
Radiating pain in left upper limb				
Numbness				
Tenderness				
Restriction of movements				
Burning sensation				
Giddiness				

PAIN ASSESMENT: VISUAL ANALOGUE SCALE:

0 – nil ; + - mild ; ++ - moderate ; +++ - severe



CLINICAL EXAMINATION:

I. INSPECTION

	0^{th} day	7^{th} day	14^{th} day	21^{st} day	28^{th} day	35^{th} day	42^{nd} day	49^{th} day
ATTITUDE								
MUSCLE WASTING								
SWELLING								

II PALPATION:

	0^{th} day	7^{th} day	14^{th} day	21^{st} day	28^{th} day	35^{th} day	42^{nd} day	49^{th} day
Tenderness								
Muscle spasm								
Local heat								
Local lymphadenopathy								
Pitting oedema								
Joint stiffness								

III. MOVEMENTS:

	0^{th} day	7^{th} day	14^{th} day	21^{st} day	28^{th} day	35^{th} day	42^{nd} day	49^{th} day
Stiffness								
Restriction of movements:								
Rotation								
Flexion								
Extension								
Lateral bending								

Date:

Signature of the guide:

Station:

Signature of the Investigator:

GOVERNMENT SIDDHA MEDICAL COLLEGE

ARIGNAR ANNA GOVERNMENT HOSPITAL OF INDIAN MEDICINE
CHENNAI 106

POST- GRADUATE DEPARTMENT OF SIRAPPU MARUTHUVAM

FORM IV : LABORATORY INVESTIGATIONS PROFORMA

AN OPEN CLINICAL EVALUTION ON SAGANAVATHAM (CERVICAL SPONDYLOSIS) WITH THE SIDDHA TRIAL DRUG "POORANATHI CHOORANAM" (INTERNAL), "VALI KUTHALUKU ULLI ENNAI" (EXTERNAL) AND "VEPPAM PINNAKKU OTTRADAM" (EXTERNAL THERAPY).

1. SERIAL NO OF THE CASE: ……

2. OP / IP NO: .....

3. NAME: …… 4.AGE: …… 5.GENDER: .....

A) BLOOD INVESTIGATIONS:

BLOOD INVESTIGATIONS		**NORMAL VALUES**	**BEFORE TREATMENT**	**AFTER TREATMENT**
Hb (gms/dL)		**M:12-15** **F:11.5-14**		
T.RBC (millions cells / Cu.mm)		**M:4.0-5.5** **F:3.5-4.5**		
ESR (mm)	½ hr.	**M:6-12** **F:7-18**		
	1 hrs.			
T.WBC (Cells / Cu.mm)		**4000-11000**		
Differential Count (%)	Polymorphs	**40-75**		
	Lymphocytes	**20-40**		
	Monocytes	**2-10**		
	Eosinophil	**1-6**		
	Basophils	**0-1**		

BLOOD INVESTIGATIONS		NORMAL VALUES	BEFORE TREATMENT	AFTER TREATMENT
Blood glucose (mg/dl)	Fasting	**70-110**		
	PP	**80-140**		
	Random	**80-160**		
Serum calcium mg/dl		**8.5-10.2**		
Renal Function Test(mg/dl)	Blood urea	**16-50**		
	Serum creatinine	**0.6-1.2**		
Liver function test(mg/dl)	Total bilirubin	**0.2-1.2**		
	Direct bilirubin	**0.1-1.2**		
	.Indirect bilirubin	**0.2-0.7**		
	SGOT	**0-40**		
	SGPT	**0-35**		
	Alkaline phosphatase	**80-290**		

B) URINE INVESTIGATIONS:

URINE INVESTIGATIONS	BEFORE TREATMENT	AFTER TREATMENT
Albumin		
Sugar		
Deposits		

Date:

Station: Signature of the Guide:

Signature of the Investigator:

GOVERNMENT SIDDHA MEDICAL COLLEGE

ARIGNAR ANNA GOVERNMENT HOSPITAL OF INDIAN MEDICINE

CHENNAI – 600106

POST- GRADUATE DEPARTMENT OF SIRAPPU MARUTHUVAM

AN OPEN CLINICAL EVALUTION ON SAGANAVATHAM (CERVICAL SPONDYLOSIS) WITH THE SIDDHA TRIAL DRUG "POORANATHI CHOORANAM" (INTERNAL), " VALI KUTHALUKU ULLI ENNAI" (EXTERNAL) AND "VEPPAM PINNAKKU OTTRADAM" (EXTERNAL THERAPY).

FORM V: INFORMED CONSENT FORM

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

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

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

Date:

Signature of the participant:

In case of illiterate participant:

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

Date:

Signature of a witness: Left thumb Impression of the Participant

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

Date: **Signature of the participant:**

Station: **Signature of the Investigator:**

Signature of the Guide:

அரசு சித்தமருத்துவக் கல்லூரி

அறிஞர் அண்ணா மருத்துவமனை, சென்னை-600 106

சகனவாதம் நோய்க்கான சித்தமருந்தின் பூரணாதிச் சூரணம், வலிக்குத்தலுக்கு உள்ளி யெண்ணை மற்றும் ஒற்றடம்.

பரிகரிப்புத் திறனைக் கண்டறியும் மருத்துவ ஆய்விற்கான தகவல் படிவம்:

நான் இந்த ஆய்வை குறித்த அனைத்து விபரங்களையும் நோயாளிக்கும் புரியும் வகையில் எடுத்துரைத்தேன் என உறுதியளிக்கிறேன்.

தேதி: **பெயர்**

இடம்: **கையெப்பம்:**

நோயாளியின் ஒப்புதல் படிவம்

என்னிடம் இந்த மருத்துவ ஆய்வின் காரணத்தையும், மருந்தின் தன்மை மற்றும் மருத்துவ வழி முறை பற்றியும் தொடர்ந்து எனது உடல் இயக்கத்தை கண்காணிக்கவும், அதனை பாதுகாக்கவும் பயன்படும் மருத்துவ ஆய்வுக்கூட பரிசோதனைகள் பற்றி திருப்தி அளிக்கும் வகையில் ஆய்வுமருத்துவரால் விளக்கிக் கூறப்பட்டது.

நான் இந்த மருத்துவ ஆய்வின் போது காரணம் எதுவும் கூறாமல் எப்பொழுது வேண்டுமானாலும் இந்த ஆய்விலிருந்து என்னை விடுவித்து கொள்ளும் உரிமையைக் கொண்டு சகனவாதம் நோய்க்கான பூரணதிச் சூரணம், மற்றும் ஒற்றடம் மருந்தின் பரிகரிப்பு வலிக்குத்தலுக்கு உள்ளி யெண்ணைத் திறனைக் கண்டறியும் மருந்தின் ஆய்விற்க்கு என்னை உட்படுத்த ஒப்புதல் அளிக்கிறேன்.

சாட்சிக்காரர் கையொப்பம்: **நோயாளியின் கையொப்பம்:**

தேதி:

இடம்: **ஆராய்ச்சியாளர் கையொப்பம்:**

துறைத்தலைவர் கையொப்பம்:

GOVERNMENT SIDDHA MEDICAL COLLEGE,

ARIGNAR ANNA GOVERNMENT HOSPITAL OF INDIAN MEDICINE

CHENNAI 106

POST- GRADUATE DEPARTMENT OF SIRAPPU MARUTHUVAM

AN OPEN CLINICAL EVALUTION ON SAGANAVATHAM (CERVICAL SPONDYLOSIS) WITH THE SIDDHA TRIAL DRUG "POORANATHI CHOORANAM" (INTERNAL), "VALI KUTHALUKU ULLI ENNAI" (EXTERNAL) AND "VEPPAM PINNAKKU OTTRADAM" (EXTERNAL THERAPY).

FORM VI - WITHDRAWAL FORM

SI NO :

OP NO :

NAME :

AGE / GENDER:

DATE OF TRIAL COMMENCEMENT:

DATE OF WITHDRAWAL FROM TRIAL:

REASONS FOR WITHDRAWAL:

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

Date:

Station:

Signature of the Guide:

Signature of Investigator:

GOVERNMENT SIDDHA MEDICAL COLLEGE

ARIGNAR ANNA GOVERNMENT HOSPITAL OF INDIAN MEDICINE

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FORM VII – PATIENT INFORMATION SHEET

Name of Investigator : Dr.R.KALAIVANI

Name of the college : Govt. Siddha Medical College

Arumbakkam

Chennai-106.

INFORMATION SHEET FOR PATIENTS PARTICIPATING IN THE OPEN CLINICAL TRIAL.

R.KALAIVANI studying M.D (Siddha) at Govt.Siddha Medical College, Chennai, is doing a clinical trial on ''SAGANA VATHAM" (CERVICAL SPONDYLOSIS). It is becoming a most common disease, occurring throughout the world. In this regard, I am in need to ask you few questions. I will maintain confidentiality of your comments and data obtained. There will be no risk of disclosing your identity and no physical, psychological or professional risk is involved by taking part in this study. Taking part in this study is voluntary. No compensation will be paid to you for taking part in this study.

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

If you agree to be a participant in this study, you will be included in the study primarily by signing the consent form and then you will be given the internal medicine "POORANATHI CHOORANAM" 1gm with honey twice a day for 48 days, external medicine vali kuthaluku ulli ennai and otradam for external therapy.

The information I am collecting in this study will remain between you and the Co- investigator (myself). I will ask you few questions through a questionnaire. I will not write your name on this form. I will use a code instead.

The questionnaire will take approximately 20 minutes of your time.

If you wish to find out more about this study before taking part, you can ask me all the questions you want or contact R.KALAIVANI, PG Scholar cum Co-investigator of this study, attached to Govt. Siddha Medical College, Chennai-106. You can also contact the Member-secretary of Ethics committee, Govt. Siddha Medical College, Chennai.

அரசு சித்தமருத்துவக் கல்லூரி

அறிஞர் அண்ணா மருத்துவமனை, சென்னை-600 106

சகனவாதம் நோய்க்கான சித்தமருந்தின் பூரணாதிச் சூரணம், வலிக்குத்தலுக்கு உள்ளி யெண்ணை மற்றும் ஒற்றடம்.பரிகரிப்புத் திறனைக் கண்டறியும் மருத்துவ ஆய்விற்கான தகவல் படிவம்.

ஆராய்ச்சியாளர் பெயர்: மருத்துவர்.இரா.கலைவாணி,

நிறுவனத்தின் பெயர்; அரசு சித்தமருத்துவக் கல்லூரி, அரும்பாக்கம், சென்னை-600 106

அரசு சித்த மருத்துவக் கல்லூரியில் பட்டமேற்படிப்பு பயின்றுவரும் நான் மருத்துவர் இரா.கலைவாணி, சகனவாதம் என்னும் நோயில் மருத்துவ ஆரய்ச்சியில் ஈடுபட்டுள்ளேன்.

சகனவாதம்-இது பரவக்கூடிய நோய் அல்ல. இந்த ஆரய்ச்சி சம்பந்தமாக சில கேள்விகளைக் கேட்கவும், தேவையான ஆய்வுப் பரிசோதனைக்கு தங்களை உட்படுத்தவும் உள்ளேன்.

இந்த ஆராய்ச்சிக்கு தங்கள் விருப்பத்தின் பேரில் உட்படும் பட்சத்தில் உள் மருந்தாக பூரணாதிச் சூரணம் 1 கிராம் தேனில் இருவேளை காலை மாலை உணவுக்கு பின் 48 நாட்கள் உட்கொள்ள வேண்டும் மற்றும் வெளிப்பிரயோகமாக உள்ளி எண்ணெய் வெளிநோயாளர்கள் 7 நாட்களுக்கு ஒரு முறை மருத்துவமனைக்கு வரவேண்டும். இந்த மருந்து சகனவாத நோய்க்கான அகத்தியர் 2000 மூன்றாம் பாகம் மற்றும் ஊர்வசிஇரசவாத சிட்கா-வைத்திய சிட்கா பஞ்ச ரத்தினம் என்ற நூலில் கூறப்பட்டுள்ளது.

இந்த ஆரய்ச்சியில் தங்களை அனுமதித்த பிறகு உங்களுக்கு விருப்பம் இல்லையெனில் எப்போது வேண்டுமானாலும் ஆராய்ச்சியில் இருந்து விலகிக் கொள்ள உரிமை உள்ளது.

இந்த ஆராய்ச்சி சம்பந்தமாக நோயின் தன்மை பற்றியும் மற்ற விபரங்களுக்கும் ஆராய்ச்சியாளரான மருத்துவர் இரா.கலைவாணி (பட்டமேற் படிப்பாளர் சிறப்பு மருத்துவத் துறை) அவர்களை எந்த நேரத்திலும் தொடர்பு கொள்ளலாம். கைப்பேசி எண்: 9445885820. மேலும் இந்த ஆரய்ச்சிக்கு தக்க அனுமதிச் சான்று (IEC) பெறப்படுகிறது.

இந்த மருந்து முற்றிலும் பாதுக்காப்பான மூலிகை காரசார பொருட்களை கொண்டு தயாரிக்கப்பட்டுள்ளது. பக்க விளைவுகளை ஏற்படுத்தாது. மேலும் உணவுமுறையில் மருத்துவரால் கூறப்படும் பத்தியம் காக்குமாறு அறிவுறுத்தப்படுகிறது.

இது சம்பந்தமாக அனைத்து விவரங்களையும் ரகசியமாக வைக்கப்படும் என உறுதி அளிக்கிறேன்.இதில் பயணப்படி முதலிய எந்தவித உதவித் தொகையும் வழங்கப்படமாட்டது.

இந்த ஆராய்ச்சியின் போது உடலுக்கு வேறு பாதிப்பு ஏற்படும் பட்சத்தில் அறிஞர் அண்ணா மருத்துவமனையில் தக்க சிகிச்சை அளிக்கப்படும்.

இந்த மருந்து சிறப்பாக சகனவாதம் நோய்க்காக அங்கீகரிக்கப்பட்ட சித்த மருத்துவ நூலில் கூறப்பட்டுள்ளது. ஏற்கனவே உபயோகத்தில் உள்ள இதுபோன்ற மருந்து இதுவரை நோயளிகளிடம் எந்தவித பக்கவிளைவுகளை ஏற்படுத்தவில்லை.

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FORM VIII

DIETARY ADVICE FORM

சேர்க்க கூடிய உணவுகள்:

- **காய்கள்:** கத்திரி பிஞ்சு, முருங்கை பிஞ்சு, அவரை பிஞ்சு ஆகியவை சேர்க்க வேண்டும்.
- **கீரைகள்:** கரிசாலை, பொன்னாங்கண்ணி, மணத்தக்காளி, முருங்கைகீரை, பசலைகீரை, சிறுகீரை, கறிவேப்பிலை ஆகியவை சேர்க்க வேண்டும்.
- **பழங்கள்:** மாதுளை, ஆப்பிள், வாழை, பேரீச்சை, அத்தி, திராட்சை, கொய்யா, ஆரஞ்சு, எலுமிச்சை, நாவல், தக்காளி ஆகியவை சேர்க்க வேண்டும்.
- **தானியங்கள்:** கோதுமை, ஓட்ஸ், சோயாபீன்ஸ், பட்டாணி, கொண்டைகடலை, எள், பாதாம் ஆகியவை சேர்க்க வேண்டும்.
- **அசைவம்:** வெள்ளாட்டு கறி, ஈரல், எலும்பு மஜ்ஜை ஆகியவை சேர்க்க வேண்டும்.

சேர்க்க கூடாதவைகள்:

- மந்தப் பொருள்
- உருளைக் கிழங்கு
- அகத்திக் கீரை
- புளிப்பு
- புகையிலை
- மது அருந்துதல்

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FORM IX - ADVERSE REACTION FORM

SERIAL NO:

OP NO:

NAME:

AGE:

GENDER:

DATE OF TRIAL COMMENCEMENT:

DATE OF OCCURRENCE OF THE ADVERSE REACTION:

TIME:

DESCRIPTION OF ADVERSEREACTION:

Date: **Signature of the Guide:**

Station:

Signature of the Investigator: