A CLINICAL EVALUATION OF SIDDHA HERBAL FORMULATION AMALAKATHI KIRUTHAM IN THE TREATMENT OF ERIGUNMAM (ACID PEPTIC DISEASE)

Dissertation submitted by

Dr.V. ABINAYA ARULMALAR,

REG NO: 321911201

PG Scholar

Under the guidance of

Dr. H. NALINI SOFIA M.D(s), Ph.D.,

Associate Professor,

Department of Maruthuvam,

National Institute of Siddha, Chennai-600047.

Dissertation submitted to

THE TAMILNADU Dr.M.G.R. MEDICAL UNIVERSITY

Guindy, Chennai – 32.

In partial fulfillment of the requirements for the award of the degree of

DOCTOR OF MEDICINE (SIDDHA)

Department of Maruthuvam,

National Institute of Siddha,

Tambaram sanatorium, Chennai-600047.

2019-2022

BONAFIDE CERTIFICATE

This is to Certify that I have gone through the Dissertation "**A Clinical Evaluation of Siddha Herbal Formulation Amalakathi Kirutham in the treatment of Erigunmam (Acid Peptic Disease)"**submitted by Dr.V. Abinaya arul malar (Reg. No: 321911201), PG Scholar, Final year M.D(s), Branch-1, Department of Maruthuvam, National Institute of Siddha, Tambaram Sanatorium, Chennai-47 and the Dissertation work has been carried out by the individual only. This Dissertation does not represent or reproduce the dissertation submitted and approved earlier.

Place: Chennai- 600047.
Dtae:

Dr.H.Nalini Sofia, MD(s), Ph.D.,	**Dr.T.Lakshmikantham, MD(s), Ph.D**,
Name and Signature of the Guide	Name and Signature of the HOD (i/c)
Department of Maruthuvam,	Department of Maruthuvam
National Institute of Siddha,	National Institute of Siddha,
Tambaram Sanatorium, Chennai-47.	Tambaram Sanatorium, Chennai-47.

Prof. Dr. R. Meenakumari, MD(s).,

Name and Signature of the Director,

National Institute of Siddha,

Tambaram Sanatorium, Chennai-47.

DECLARATION BY THE CANDIDATE

I hereby declare that this Dissertation entitled "**A Clinical Evaluation of Siddha Herbal Formulation Amalakathi Kirutham in the treatment of Erigunmam (Acid Peptic Disease)"** under the Guidance of Dr. H. Nalini Sofia, MD(s). Ph.D., Associate professor, Department of Maruthuvam, National Institute of Siddha, Chennai-47 is done by me and the dissertation has not formed the basis for award of any Degree, Diploma, Fellowship or other similar title.

Place: Chennai-600047 Signature of Candidate

Date: (Dr. V. Abinaya arul malar)

ACKNOWLEDGEMENT

- ✓ First and Foremost I would like to Thank God and Siddhars for granting countless blessing and knowledge to undertake and accomplish this Dissertation.

- ✓ I take this opportunity to express my gratitude to the **Vice Chancellor**, The Tamil Nadu Dr.M.G.R Medical University, Chennai-42.

- ✓ I express my sincere thanks to our Director, **Prof. Dr.R. Meenakumari M.D(s)**, National Institute of Siddha, Chennai-47, for providing the necessary infrastructure for this work.

- ✓ I express my gratitude to **Prof. Dr.G.J.Christian M.D(s), Ph.D.,** Hospital superintendent(HS), Ayothidoss Pandithar Hospital, National Institute of Siddha, Chennai-47, National institute of Siddha, Chennai-47.

- ✓ I express my sincere thanks to **Dr.Lakshmi Kantham, M.D(s), Ph.D.,** Associate professor, HOD i/c, Head of the department, Department of Maruthuvam, National Institute of Siddha, Chennai-47 for hopeful support and guidance of my study.

- ✓ It is my genuine pleasure to express my deep sense of thanks and gratitude to my mentor, **Dr.H.Nalini Sofia, M.D(s), Ph.D.,** Associate Professor, Department of Maruthuvam, National Institute of Siddha, Chennai -47. I truly enjoyed working under her guidance that stimulates original thinking and initiative towards my work. Her timely advice with kindness, meticulous scrutiny, scholarly advice and scientific approach helped me to complete my dissertation.

- ✓ I would like to my sincere thanks to **Dr.H.Vetha Merlin Kumari M.D (s), Ph.D.,** Associate Professor, Department of Maruthuvam, National Institute of Siddha, Chennai-47 for hopeful support of my study

- ✓ I express my sincere thanks to **Dr.B. Anbarasan M.D (s) and Dr.C.Mary sharmila M.D (s),** Assistant Professor, Department of Maruthuvam, National Institute of Siddha, Chennai-47 for hopeful support and encouragement of my study.

- ✓ I would like to express my gratitude to **Dr.D.Aravind, MD(s), M.Sc** (Medicinal plants), Assistant Professor, Medicinal Botany, National Institute of Siddha, Chennai-47 for Identification and Authentication of Herbal Raw Drugs.

- ✓ I would like to express my gratitude to **Dr.S. Siva kumar MD(s), Ph.D.,** Associate Professor, Department of Gunapadam, National Institute of Siddha, Chennai-47 for Identification and Authentication of Metal Drugs and **Dr.A.Mariappan, MD(S), Ph.D.,** Associate Professor, Department of Gunapadam National Institute of Siddha, Chennai 47 for his guidance in trial drug preparation.

- ✓ I would like to express my thanks to **Dr.V.Muthuvel Ph.D.,** Assistant Professor, Biochemistry Laboratory (i/c), National Institute of Siddha, Chennai - 47 for his support in Bio chemical analysis of trial drug.

- ✓ I would like to express my credits to all **my patients** for their co-operation throughout the study period.

- ✓ I express my thanks to each and **every Faculties and Library** staffs of National Institute of Siddha, Chennai-47.

- ✓ I would like to express my thanks to **Dr.S. Valarmathi PhD** (Statistics), Senior research officer, and **Dr. G.Srinivas,** M.D., Professor and HOD, Depatment of Epidemiology, Dr. MGR Medical University, Chennai-42 for the guidance of data analysis.

- ✓ And finally many thanks to **My family, Seniors, Juniors, Friends** and **my well wishers** for their constant encouragement and support throughout the research work.

INDEX

INTRODUCTION

The Indian system of medicine has been play vital role in serving the public health in various part of india[1]. The Siddha system is one of the mother medicine in dravidians /Tamizhans in south India [2]. The Siddha system is mainly originated by 18 Siddhars. This system described about lifestyle methods in living healthy life and Siddhars described about Siddha anatomy, physiology, pathology, prevention and management of diseases.

The Siddha system is based on the 96 Thathuvams. The Fundamental principles of Siddha contains five elements both invisible and visible substances called Panchabootham. The Panchabootham are Nilam, Neer, Thee, Katru and Visumpu.

"அண்டத்தி லுள்ளதே பிண்டம்

பிண்டத்தி லுள்ளதே அண்டம்

அண்டமும் பிண்டமு மொன்றே

அறிந்துதான் பார்க்கும் போதே."

சட்ட முனி ஞானம்

According to Siddhars persumption five elements mixed together form logical state by the dynamic force. The resulted in the formation of universe. It same as in human body. This explained in oldest Tamil literature called as "தொல்காப்பியம்"

"நிலம் நீர்தீவளி விசும்போடைந்தும்,

கலந்தமயக் கமுலகம் இது"

-தொல்காப்பியம்[3]

The three vital elements namely Vaatham, Pitham and Kabam, which regulate the physical activities and keep the body healthy. The derangement of tridhosa occurr in human body which is explained in the oldest tamil literature is called "**Thirukural"** under the chapter.

" மருந்து"

"மிகினும் குறையினும் நோய்செய்யும் நூலோர்

வளிமுதலா எண்ணிய மூன்று."

-திருவள்ளுவர் (திருக்குறள்-941)

The meaning of Thirukural is increased or decreased of three humor, the disease is occur and more importance gives to food more than medicine.

"மருந்தென வேண்டாவாம் யாக்கைக்கு அருந்தியது

அற்றது போற்றி யுணின்"

-திருவள்ளுவர் (திருக்குறள்-942) [4]

According to Thirumoolar – 800 says **"Medicine means that which ensures physiotheraphy, psychotheraphy, preventive as well as constructive and the last but not the least, the conquest of death"**

"உடம்பார் அழியில் உயிரார் அழிவர்

திடம்பட மெய்ஞானம் சேரவும் மாட்டார்

உடம்பை வளர்க்கும் உபாயம் அறிந்தே

உடம்பை வளர்த்தேன் உயிர்வளர்த் தேனே."

-திருமூலர்- **800**[5]

In Siddha system, Yugimuni classified the disease into 4448. Yugimuni mentioned 8 types of Gunmam in the text of YugiVaidhiya Chinthamani-800. In which Erigunmam is one among them. Erigunmam affects both physical and mental health. The characteristic features of Erigunmam such as burning or gnawing sensation after meals, Headache, Increased salivation, Bloating, Abdominal flatulence, Diarrhoea, Burping, Sweating from hair follicles, Twisting pain in intestine. As per Sage Theriyar, Gunmam is mainly affected due to derangement of Vatham,

"தொடர் வாத பந்தமலாது குன்மம் வராது"

- தேரையர்[6]

The basic concept of Siddha is **"Food itself is a Medicine and Medicine itself is a Food".** The Siddha system of medicine educates on how our food choices affect our health and well being. Since the beginning of mankind, people have used foods to not only fill their stomachs, but also to heal their bodies.

Acid Peptic Disease (APD) is a major health problem, which can affect large number of populations in all geographical regions in developing countries like India. Acid Peptic Disease is a combination of Peptic Ulcer Disease (Gastric ulcer, Duodenal ulcer), Gastric Esophageal Reflux Disease (GERD), Gastritis, Zollinger Ellison syndrome, Meckle diverticulum[7].

APD is the result of peculiar but imbricate the pathogenic mechanism lead up to multiplication of acid secretion or decline mucosal defense.The pathogenesis of APD is not very clear [9] but between increased acid secretion and decreased mucosal defences.[8] The mechanism of APD is defect of mucosa expand into muscularis mucosa because of pepsin and gastrin secretion. APD is more common in stomach, proximal part of duodenum compared to distal part of duodenum and lower esophagus.[8]

The Prevalence of Acid Peptic Disease was **38.1 5 % (**Chavan MS et al) found from the India in the year between 2017 and 2018. The prevalence is associated with age, sex, social class, coffee use, tea use, smoking, alcohol and obesity. Life style modification is the risk factor to cause APD. These factors are habit to consumption of Tea, Coffee, Alcohol and Pain killers like NSAIDS. Above all these factors are increased incidence of APD. Apart from this, Stress is more common leads to cause APD **(**Chavan MS et al). Not all the patients having symptomatic.[10]

This much of cases reporting every year in Ayothidoss Pandithar Hospital. So I wanted to study in this particular disease. Acid Peptic Disease is correlated with Erigunmam clinical features and treated with Amalakathi Kirutham. Amalakathi kirutham is the effective treatment for Erigunmam. I have selected the authenticated sastric herbal formulation namely Amalakthi kirutham for the management of Erigunmam which is mentioned in Siddha literature "Chitcha rathina deepam – Part2[11]

2. AIM AND OBJECTIVES

AIM:

To document the evidence based siddha medicine Amalakathi kirutham in the management of Erigunmam (Acid Peptic Disease) in a scientific research.

PRIMARY OBJECTIVES:

To evaluate the therapeutic efficacy of the Siddha herbal formulation Amalakathi Kirutham (Internal) in the treatment of Erigunmam (Acid Peptic Disease).

SECONDARY OBJECTIVE:

To study the frequency of the disease associated with Age, Sex, Dietary habits, Socio economic status, Occupation, Personal habits etc.

3. REVIEW OF LITERATURE

3.1. SIDDHA ASPECTS- எரிகுன்மம்

SYNONYM:

Gulmam, Vaitru puralal [12,14]

DEFINITION:

Gunmam is clinically representation of which miserable both mind and body. So it is called as Gunmam. Gunmam is commonly known as **Gastro intestinal disorders**, associated with burning or gnawing sensation of stomach, nausea, flatulence, burping, increased salivation and abdominal pain etc.

நோய் வரும் வழி **(ETIOLOGY):**

A) According to Theraiyar pinianuga vithi [12]

"தொடர்வாத பந்தமலாது குன்மம் வராது"

According to the sage Theraiyar, the gunmam does not arise without derangement of Vaatha humour. Vaatha humour accumulate in large intestine, impaired the Pitha and Kabha humour leading to cause Gunmam.

B) According to Yugimuni Vaithiya Chinthamani Peru Nool-800[13]

The sage Yugi muni said two types of habits leads to cause Gunmam. These are, A) Personal Habits, B) Mental habits

செய்யான குன்மத்தினுற் பத்தி தன்னைச்
செப்பிடவே துவர்ப்பான புசிப்பி னாலும்
மையான மங்கையுடன் மார்க்கத் தாலும்
வகையாகு கிழங்குவகை யருந்த லாலும்
உய்யான மிளகுகா யுரைப்பி னாலும்
உறுபசியை யடக்கிடினு மந்தத் தாலும்
தையான சண்டாள கோபத் தாலும்
சலிப்பாலுங் குன்மம்வந்து தாக்கும் பாரே.

1.Excessive intake of astringent, 2. Excessive sexual intercourse, 3.Excessive intake of tubers, spicy foods, 4.Starvation, 5.Excessive anger.

பார்க்கவே குருநிந்தை பண்ணி னோர்க்கும்
பாலகரைச் சிசுவைபட் டினிவைத் தோர்க்கும்
மார்க்கமாம் மாதாவைப் பிதாவை நிந்தை
வஞ்சனைதான் செய்தோர்க்கும் மடந்தை தன்னைக்
கார்க்கவே கற்பழித்த காமு கர்க்கும்
கருதியே சிவநிந்தை பண்ணி னோர்க்கும்
ஆர்க்கவே யட்டகுன்ம மணுகு மென்று
அறன்சொல்லத் தேவிசொன்னா ளறிந்து பாரே.

1.Gulidy mindness, 2.Disobedience of teacher and parents, 3.Raping, 4.Starvation of young children.

C) According to Agasthiyar Vaithiya Kaviyam-1500[(14)]

ஆகிய மேகத் தானும்
அப்பனே இருபத் தொன்றாம்
ஏகிய குன்மத் தானும்
எழுந்ததோர் விதங்கள் சொல்வோம்
வாகிய பித்தத் தோடு
வாதமும் பரிந்து சேரில்
வாகிய வாய்நீர் ஊரும்
வாந்தியு மாகும் பாரே.

பாரப்பா வாயு வாதம்

பரிவுடன் அபானத் தோங்கில்

ஓரப்பா கும்பி தன்னில்

உருண்டுதான் மிகவே நோகும்

கோரப்பா நெஞ்சில் குத்தும்

குடலையு முறுக்கிக் கொண்டு

வாரப்பா வலிக்கும் மெத்த

வாதமாய் தழங்கும் வாயுவே.

வுழங்கிய அப்பு வோடு

வாதமும் ஒன்றே யானால்

தழங்கிய அன்ன சாரம்

சந்திக்க வொட்டா தப்பா

புழங்கிய நிதானந் தப்பிப்

பிடியன்னம் ஏறில் குத்தம்

உழங்கிய முறுக்கு மேறில்

உயிரையும் வதைக்கும் பாரே.

வதையுறு வாயு வோடு

மேகமு மருவு மாகில்

பதையுறு மலச லங்கள்

பரிவுடன் கட்டி கொள்ளும்

மதையுறும் இடது பக்கம்

மைந்தனே வலது பக்கம்

பிதையு முறுக்கிக் குத்தம்

பெருஞ் சூலைக் குன்ம மாமே.

குன்மமோர் இதுதான் நாலில்

கூறிலெண் விதமாம் பாரு

வன்னமாம் நோய்கட் கெல்லாம்

மகாநோய்தான் பொல்லாத தாகும்

கன்மமாஞ் சடத்துக் கெல்லாம்

காணுங்காண் இந்த ரோகம்

நன்மையாந் தன்மத் தோர்க்கு

நாட்டினும் நாடி டாதே.

The sage Agasthiyar said Pitham combines with Vaatham leads to cause Gunmam.

D) According to Peru Nool Vaithiya Kaviyam -1000[15]

உண்டியை மறுத்தாலும் உவட்ட நெஞ்செரிச்சலாலும்
மண்டிநின் றெதிரெடுத்து வயிற்றையே வலிகையாலும்
பண்டுமுன் பழமலத்தில் பயத்தியம் சேர்தலாலும்
விண்டுதான வலிக்கும் குன்மம்யிது வெனவிளம்பலாமே..

According to Peru Nool Vaithiya Kaviyam-1000, Refused to eat, burning sensation of chest, abdominal pain, constipation, psychological problems are basic cause of gunmam.

E) According to Siddha Maruthuvanga Surukkam[16]

வாதம் (அறுசிர் விருத்தம்)

"வாதத்தைத் தடைசெய் தாலோ
மார்பினோய் குன்ம வாயு
பேதித்த வுதர வாதம்
பெருகிடு முடம்பு நோதல்
வாதைகள் திரட்டும் வல்லை
மலசலங் கட்டுப் பட்டுப்
பேதையே! பசித்தீ மந்தம்
பெருகியே மலித லுண்டே."

விழிநீர் :

“விழியினில் நீர டக்கில்
விதமான இருத்து ரோகம்
வழியடு பீந சங்கள்
வந்திடும் நேத்ர ரோகம்
அழுகிடும் சிரசில் ரோகம்
அதனுடன் வாதங் கூடில்
பழுதுடல் பண்ணிக் குன்மம்
பற்றிடுஞ் குணமு முண்டே.”

காசம் இளைப்பு :

“காசத்தை யடக்கி னாலோ
கதித்திடு மிருமல் மெத்த
வாசமாஞ் சுவாச முண்டாம்;
மருவிடு மிருத்து நோயும்
பேசிய இளைப்ப டக்கில்
பெருத்திடு மேகங் குன்மம்;
நாசஞ்செய் மூர்ச்சை யோடு
நளிர்தும்மல் குணமு மண்டே.”

Prohibition of flatus, inappropriate respiration and repression of eye tears cause gunmam.

F) According to Agasthiyar Guru Naadi [(17)]

குன்மமது தானெழும்பும் விபரமென்னில்
குடல்தனிலே கல்லுமிக நெல்லுமூக்கும்
யின்னமுடன் வயிறுப்பிச் சோரைச்சார்ந்தாக்கால்
புரளுவது குடலோடே மாசுபற்றும்
அன்னுமத சொரிக்காது மாசினாலே
அதுவுயரம் வுமிமுக்குக் கிருமிபுக்கும்
வன்னமளைக்குயிலாளே குன்மரோகம்
மாசற்றால்குன்மமறு வகைதான்பாரே.

(பாடல் எண்: **99)**

The Sage Agasthiyar said food substance mixed with stone, hair and rice husk, indigestion and micro organism leading to cause gunmam.

CLASSIFICATION OF GUNMAM

A) According to Yugi Muni Classification [(18)]

செய்யவே யட்டகுன்ம செயலைக் கேளாய்
செயலான வாயுகுன்மம் வாதகுன்மம்
எய்யவே பித்தகுன்ம மெரிகுன்ம மாகும்
ஏலான வலிகுன்மஞ் சத்தி குன்மம்
தையவே சன்னிகுன்மஞ் சேட்ப குன்மம்
சாகமாங் குன்ம மெட்டு மாகும்
கொய்யவே யிதனுடைய குணங்க ளெல்லாம்
குறிப்பறிந்து ஒவ்வொன்றாய்க் கூர்ந்துபாரே.

1.Vaatha gunmam, 2. Pitha gunmam, 3.Sethuma gunmam, 4. Vaayu gunmam, 5. Erigunmam, 6. Vali gunmam, 7. Sathi gunmam, 8.Sanni gunmam.

B) **According to Thirumoolar classification**

Gunmam classified into 8 types

Due to derangement of Vaatham

1.Vaatha gunmam, 2. Soolai gunmam, 3. Vali gunmam.

Due to derangement of Pitham

1.Erigunmam, 2. Pitha gunmam, 3. Sathi gunmam.

Due to derangement of Kabam

1.Iya gunmam, 2. Sanni gunmam.

C) According to Thirukanda Munivar classification

1.Vaatha gunmam, 2. Pitha gunmam, 3.Kaba gunmam, 4. Vaatha pitha gunmam, 5. Vaatha kaba gunmam, 6. Pitha silethuma gunmam, 7. Thiridhosa gunmam, 8. Ratha gunmam.

D) **According to Vaithiya Sara Sankiragam** [19]

செப்பினேங்குன்மமெட்டுந் தெளியவேமானிடர்க்கு
ஒப்பிலாபல ஙாலாய்ந்து ஒழுங்குடன்பிணிகள் நீங்க
துப்புநப்பாகந்தாணுமந் துய்யவேசெய்யவென்று
மெப்புடன்முனிவர்தாமும் மேன்மையாயுரைத்திட்டாரே.

1.Vaatha gunmam, 2. Pitha gunmam, 3. Silethuma gunmam, 4. Vali gunmam, 5. Sakthi gunmam, 6. Eri gunmam, 7. Soolai gunmam, 8. Kabala gunmam.

E) **According to Dhanvathiri Vaithiyam** [20]

திருந்திய வுதரந்தன்னிற் சேரும்நோயொரு நூற்றெட்டிற்
பொருந்திய குன்மமெட்டின் பெயர்குணம் புகலலுற்றா
மருந்தினாற் றீருங் குன்மமொநான்கு மற்றநான்கு
மருந்திய மருந்தாற்றீராதசாத்திய மென்னலாமே.

Danvanthiri explained 108 diseases of abdomen including gunmam. In this following are the eight types of gunmam.

1. Vaatha gunmam, 2. Pitha gunmam, 3.Sethuma gunmam, 4. Kunma soolai, 5. Erigunmam, 6. Vali gunmam, 7. Sathi gunmam, 8.Soolai gunmam.

F) **According to T V Sambasivam Pillai Dicitionary** [21]

1. Erigunmam, 2. Vali gunmam, 3. Sathi gunmam, 4. Kasa gunmam, 5.Thontha gunmam, 6. Sanni gunmam, 7. Vaineer gunmam, 8. Purattu gunmam, 9. Pitha gunmam, 10. Vaatha gunmam, 11. Silethuma gunmam, 12. Kari gunmam, 13. Pulippu gunmam.

G) According to Agasthiyar-2000 [22]

1. Vaatha gunmam, 2. Pitha gunmam, 3. Kaba gunmam, 4. Sathi gunmam, 5.Erigunmam, 6. Vali gunmam, 7. Soolai gunmam, 8. Sanni gunmam.

H) According To Agasthiyar Kuruthirattu [23]

1. Vaatha gunmam, 2. Pitha gunmam, 3. Iya gunmam, 4. Sathi gunmam, 5.Vaineer gunmam, 6. Erigunmam, 7. Purattu gunmam, 8. Vali gunmam.

I) According to Peru Nool Vaithiya Kaviyam -1000 [24]

1. Vali gunmam, 2. Maha gunmam, 3. Pethi gunmam, 4. Vatha gunmam, 5.Soolai gunmam, 6.Pitha gunmam, 7. Erigunmam, 8. Sakthi gunmam, 9. Kabala gunmam, 10. Ratha gunmam, 11. Soorai gunmam.

ERIGUNMAM

CLINICAL FEATURES

1. Yugi Vaithiya Chinthamani Peru Nool-800 (24)

“திடுக்குமா மெரிகுன்மச் செயலைக் கேளாய்
சிறுவயிற்றிலெரிந்துமே குடல் குமுறும்
வடுக்கும்வாய் நீர்ச்சுரக்குந் தலைவ லிக்கும்
வயிறுப்பிக் கிறுகிறுத்தே ஏப்ப மாகும்
வெடுக்குமயிர் கால்தோறும் வியர்வை யாகும்
மிகப்பொருமி வயிறுகழிந் திரைச்ச லாகும்
எடுக்குமே குடலிளைக்கு மிரங்காத் தன்மை
எரியுமே யடலெங்கு மிரும லாமே.”

1. Burning sensation of stomach, 2.Colic pain, 3.Increased salivation, 4.Headache, 5.Sweating from hair follicles, 6. Diarrhea, 7.Flatulence, 8. Giddiness, 9. Burping.

2. Danvanthiri Vaithiyam (20)

வயிற்றையெரிக்குங் குடல்புரட்டிவாய்நீர்சுழற்றித் தலைகனமா
முயிர்ப்பையழிக்கக் கிறுகிறுக்குமோங்காரிக்குமேப்பமுண்டா
மயிர்க்கால் வழியேவியர்வும்பிவயிறுபொருமியகன்றிடுகி
லியற்றியெரிக்குங் குன்மமெனயிமையோர்சொன்னமுறையாமே.(24)

1. Burning sensation of stomach, 2. Nausea, 3. Increased salivation, 4.Heaviness of head, 5. Giddiness, 6.Belching, 7. Sweating from hair follicles, 8.Flatulence.

3. Agasthiyar 2000[22]

வயிற்றை யெரித்துக் குடல்புறட்டி வாய்நிர் கனத்துத்தலைகனத்து
உயிற்றையணையக் கிறுகிறுத்து ஒங்காரித்து ஏப்பமுண்டாய்
மயிற்கால்வழியே வியர்வாகிவயிறும் பொருமிக் கண்டிடுகி
லியிற்றைளரிக்குங் குன்மமென்ன இமையோர் சொன்ன குறியாமே.(15)

1. Burning sensation of stomach, 2.Nausea, 3.Increased salivation, 4.Giddiness**,** 5. Dizziness, 6. Recurgitation, 7. Sweating from hair follicles, 8.Flatulence.

4. **T V Sambasiva Pillai Dictionary** [25]

1. Burning sensation in the stomach functional disturbance of the large intestine, 2.Unusual secretion of saliva, 3. Vertigo, 4. Distension of the abdomen, 5.Rumbling noise in the stomach, 6. Sour belching, 7. Perspiration, 8. Diarrhea, 9.Emaciation, 10. Cough, 11.Loathting of food.

5. Chikitcha Rathina Deepam -2 Part Vaithiya Chinthamani [26]

1. Burning sensation in lower abdomen, 2. Nausea, 3. Increased salivation, 4.Headache, 5. Flatulence, 6. Burping, 7. Sweating, 8. Diarrhea, 9. Loss of weight, 10. Burning sensation, 11. Poor appetite, 12. Cough, 13. Dyscrasia.

6. Aathma Ratchamirtham Ennum Vaithiya Sara Sankiragam

1. Rumbling nose in stomach, 2.Abdominal distension, 3. Nausea, 4.Headache, 5.Giddiness, 6. Increased salivation.

MUKKUTRA VERUPADUGAL

Disease occur dueto derangement in

1. Udal Thathukkal
2. Uyir kattukal
3. Thinai
4. Kala marupadu
5. Udal vanmai

1.UDAL THATHUKKAL (MUKKUTRA IYAL):

The change of three thathus due to intrinsic and extrinsic factors.The standard ratio of three uyir thathu such as Vali, Azhal, Iyyam (1:1/2:1/4) .It is evaluated by the physician wrist and each naadi is separately estimated for its strength, speed and regularity.

Vali: Katrru+ Veli

Azhal : Thee

Iyyam : Neer+ Mann

FUNCTIONS OF VALI:

ஒழுங்குடன் தாதேழ் முச் சோங்கி இயங்க
எழுச்சிபெற எப்பணியுமாற்ற-எழுந்திரிய
வேகம் புலன்களுக்கு மேவச் சுறுசுறுப்பு
வாகளிக்கு மாந்தர்க்கு வாயு.

-மருத்துவ தனி பாடல்

According to physiological condition Vali classified into 10 types.They are

1. Pranan, 2. Abanan, 3. Viyanan, 4. Samanan, 5. Udhanan, 6. Nagan, 7. Koorman, 8. Kirukaran, 9. Devathathan and 10. Danaseiyan.

Table:1 Types of Vaayu

S. No	TYPES OF VAAYU	BASIC ELEMENTS	FUNCTIONS
1	PRANAN (uyir kaal)	Veli	This is the first type. It is accountable for respiration of the tissues, controlling knowledge, mind and five sense organs and also helpful for digestion.
2	ABANAN (Keel nookum kaal)	Vali	It is responsible for expulsion of stools and urine.It helps to nourish fluid reach out all over body.
3	VIYANAN (Paravumkaal)	Thee	It is accountable for all organs, sensation, absorption and protecting the body.
4	UDHANAN (Melnokku kaal)	Neer	It is accountable for absorption and distribution of body.
5	SAMANAN (Nadu kaal)	Mann	It is responsible to balance the other vaayus and also balance the food and water in the body.
6	NAAGAN		It accountable for the intellectual, movement of eyelid and opening of eye and shivering of hair.
7	KOORMAN		It is incharge of open and closure of eye, water discharge from eye and yawning and it also gives the strength to the body. It helps to visualize the things and causes lacrimal secretion.
8	KIRUKARAN		It is accountable for the secretions of tongue and nose, appetite, sneezing and

			cough.
9	DEVATHATHAN		It provokes the emotional behaviours like anger,fighting, squabbling, sustention. It is responsible for lethary after awake and laziness.
10	DHANAJAYAN		It responsible for bloating of the body and this air escape from the third day after the death.

AZHAL:

FUNCTIONS OF AZHAL:

பசித்தாகம் ஒங்கொளிகண் பார்வை பண்டத்து
ருத்தெரி சத்தி வெம்மை வீரம்-உசித
மதி கூர்த்த புத்திவனப் பளித்துக் காக்கும்
அதிகாரி யாங்கா னழல்.

-மருத்துவ தனிப்பாடல்

Azhal functionally divided in to 5 types. They are,

1. Anarpitham,
2. Ranjagam,
3. Sathagam,
4. Aalosagam,
5. Pirasagam

Table: 2 Types of Azhal:

S.NO	TYPES OF AZHAL	FUNCTIONS
1	**ANARPITHAM**	It responsible for the digestion and dries up the moist ingest substance.
2	**RANJAGAPITHAM**	It increases blood. It give red color to the chyme
3	**SATHAGAPITHAM**	It is helpful for the achievement of desired functions and responsiple for the intellectual actions.
4	**ALOSAGAPITHAM**	It helps to visualize the things.
5	**PIRASA PITHAM**	It give the complexion of skin.

IYYAM:

திடமீயு மென்பிணைப்புத் திண்மையுற்ற யாப்பும்
அடலேர் வழுவழுப்பும் ஆக்கைக் -கிடர்க்கு
வெருவாப் பொறுமையும் மேலான காப்பாம்
பெருமைத்தா மையமெனப் பேசு.

-மருத்துவ தனிப்பாடல்

Iyyam is functionally classified into 5 types.They are,

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

Table: 3 Types of Iyyam:

S.NO	TYPES OF IYYAM	FUNCTIONS
1	**AVALAMPAGAM**	It is the vital of all kabam and it controls all other kabam.
2	**KILATHAGAM**	It gives moisture and softness to the ingested food.
3	**POTHAGAM**	It responsible for the sensation of taste.
4	**THARPAGAM**	It gives cools to eye.
5	**SANTHIGAM**	It responsible for the actions of joints.

2. UDAL KATUKKAL (PHYSICIAL CONSTITUENTS)

The human body made up of seven physical constituents.The physical constituents derived from the five elements (Pancha bootham).

The seven physical constituents are,

1. Saram,
2. Seneer,
3. Oon ,
4. Kozhupu,
5. Enbu,
6. Moolai,
7. Sukilam/ Suronitham.

Table: 4 Types of Udal kattukal:

PHYSICAL CONSTITUENTS	BASIC ELEMENTS	FUNCTIONS
Saram (Nourish fluid)	Water	It is subsitence for Growth and development
Seneer (Blood)	Fire+ Water	It nourishes the muscles and other tissues, confers the color to the skin (complexion) and upgrade the intellect.
Oon (Muscle)	Earth +Water	It is incharge of the shape of the body
Kozhupu (Adipose tisse)	Water +Earth	It lubricates joints and maintain the balance.
Enpu (Bone)	Earth +Air	It supports the body structure and is accountable for the posture and movements.
Mulai (Bone marrow & Nervous tissue)	Water +Air	It communicate the strength and endurance to bone.
Sukkilam / Suronitham	Fire+ Air	It responsible for reproduction.

3. THINAI: Thinai divided into 5 types,

1. Kurunji :Mountain
2. Mullai : Forest
3. Marutham : Field
4. Neithal : Sea
5. Palai : Desert

4. **KALAM (AGE & DISTRIBUTION)**

According to our siddha text, human life divided into 3 periods. Three periods depend upon the 3 humors.

First stage	Vatha period	First 33 years and 4 months
Second stage	Pitha period	Second 33 years and 4 months
Third stage	Kaba period	Third 33 years and 4 months

Table:5 Types of Paruvakalam:

PARUVAKALAM	TAMIL MONTH	ENGLISH MONTH
Munpani Kaalam	Early winter season from Markazhi to thai	Dec16 to Feb15
Pinpani Kaalam	Latter winter season from Masi to panguni	Feb16 to Apr15
Elavenil Kaalam	Early summer season from Chithirai to vaikasi	Apr16-Jun15
Mudhuvenil Kaalam	Latter summer season from Aani to aadi	Jun16 to Aug15
Kaar Kaalam	Early rainy season from Aavani to puratassi	Aug16 to Oct15
Koothir Kaalam	Latter rainy season from Iypasi to karthigai	Oct to Dec15

The winter season gives good health to the man, early summer and latter rainy gives moderate health. Whereas early rainy and latter summer are more prone to diseases, that's why siddhars called it as Aanaga kalam

5. UDAL VANMAI:

UDAL VANMAI	
Iyarkai vanmai	Inherited immunity
Kala vanmai	Age, sex and time
Seyarkai vanmai	Improvements of 3 vitality obtained by diet, day to day habits and physicial exercise.

PINIYARI MURAIMAI (DIAGNOSIS)

It means the method of diagnosing the disease. The above poem describes that diagnosis is very important for the physician to treat the disease. Four steps are followed in diagnosing the disease. They are,

a. Poriyaal arithal

b. Pulaal therthal

c. Vinaathal

d. Envagai thervu

a. PORIYAAL ARITHAL

In this the physician should carefully observe the changes that occur in the five sensory organs (Porigal) of the patient.

b. PULANAL THERTHAL

The physician carefully applies his five senses of perception, smell, taste, vision, touch and sound to understand the condition of the patient.

c. VINAATHAL

The physician should interrogate about the patients name, age, occupation, socio economic status, food habits, history of past illness, history of present illness, family history, marital status, menstrual history and frequency of pain.

d. ENVAGAI THERVUKAL

Nowadays advanced diagnostic tools have been developed by modern bio-medical scientists. But Siddhars have given eight diagnostic methodological tools. They are called as Envagai thervu.

Eight Fold Systems of Clinical Assessments:

Siddhars have given eight diagnostic methodological tools. They are,

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

Table: 6 Types of Envagai thervu:

ENVAGAI THERVUKAL	GENERAL FINDINGS	ERIGUNMAM FINDINGS
NAA	Color, salivary secretion, ulcers, coating, inflammation, taste changes, and its nature were generally noted.	Pallor and dryness of the tongue with Sour / Bitter taste sensation were observed.
NIRAM	Vatham, Pitham and Kabam niram were noted.	Pale/Yellowish color of the body was observed.
MOZHI	Character of the speech is noted, mainly uratha olli (high pitched), thazhntha olli (low pitched), or resembles the sound of any instrument.	Thazhntha olli (Low and soft) was observed.

VIZHI	Character of the eye is noted. Color, warm, burning sensation, irritation, visual Perception.	The pale in colour and burning sensation of the eyes were observed.
MALAM	The stools are examined for Erugal(constipation), Elagal(Loose stools), Color (Niram) and Froth (Nurai).	Constipation, diarrhea was noted.
MOOTHIRAM	Vatha neer, Pitha neer and Kaba neer was observed.	Pitham and Vatha neer were observed.
SPARISAM	Migu vebam, Mitha vebam was observed.	Mitha vebam was observed

DIFFERENTIAL DIAGNOSIS:

- ✓ **வளி குன்மம்**
- ✓ **அழல் குன்மம்**
- ✓ **ஐய குன்மம்**

1. **வளி குன்மம்**

‘பிகுத்தமாய் வாதகுன்மம் விளம்பக் கேளாய்
மிகுத்தானு நடைகுறையும் மலம்வி டாது
உகுத்தமா முடல்தானு மிகக்க டுக்கும்
உறக்கமொடு தியக்கமா யுழலை யாகும்
தகுத்தமாஞ் சரீரமது கனத்துத் தோன்றும்
சங்கையா மசனமிகத் தானுஞ் செல்லா
பிகுத்தமாம் பலங்கேட்டால் கைகா லோயும்
பேசொணா நாவறளுந் தலையு நோமே.’

2. **அழல் குன்மம்**

நோம்பித்த குன்மத்தி னுட்பங் கேளாய்
நுனிமஞ்ச ணிறம்போல முகமு மாகும்
வாஞ்சத்தி வாந்தியுண்டாய் மனம றுக்கும்
மச்சுமாய் நெஞ்சுதனிற் கோழை கட்டும்
காம்நெருப்பாய்த் தானிருக்குங் கைகா லோயும்
சுடுவெய்யிற் கண்டவுடன் றலையுஞ் சுற்றும்
போ மூத்ரஞ் சிவந்திருக்குந் தாகங் காணும்
முக்கியே மலம்வீழும் மூச்சுண் டாமே.

3. ஐய குன்மம்

உண்டாகு வாய்நீர்தா னிலைப்புண்டாகும்

உடல்வற்றி கருத்தழிவு முறத்தி ரைக்கும்

வெண்டாகு பெலன்கெடுக்கு மசனந் தள்ளும்

மிக்கான தலையதுக்கும் வெளிறு மேனி

தொண்டாகு நெஞ்சுதனிற் புகைச்ச லுண்டாம்

திடுக்கிட்டு நடுக்கலுமாந் தேகந்தானும்

திண்டாகுந் தலையெடுங்கும் பார மாகும்

சிலேட்டுமமாங் குன்மமென்றே செப்ப லாமே.

நாடி:

வழங்கிய அப்பு வோடு

வாதமு மொன்றே யானால்

தழங்கிய அன்ன சாரம்

சந்திகக வொட்டா தப்பா

புழங்கிய நிதானந் தப்பி

புகவன்ன மேறில் குத்தம்

உழங்கிய முருக்கு மேற்றி

உயிரையும் வதைக்கும் பாரே.

வளி குன்ம நாடி

.....புரண்டால்

வாத குன்மத்தைப் பிறப்பிக்கும்

வாதந்தானும் தனிநிற்கில்

வலி குன்மம் வந்து சேரும்..

பித்த வாத நாடி

சிறப்பான பித்தத்தில் வாதநாடி சேரில்

.....குன்மம்.[18]

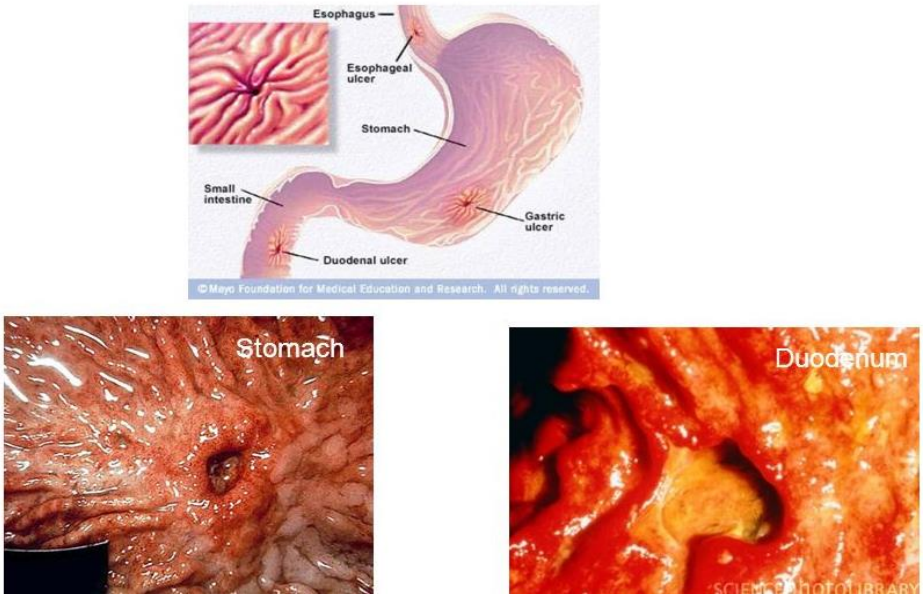
3.2 MODERN LITERATURE

ACID PEPTIC DISEASE (APD)

Acid Peptic Disease (APD) are the result of distinctive, but overlapping pathogenic mechanisms leading to either excessive acid secretion or diminished mucosal defense. Conditions such as acid reflux, damage the esophageal mucosa, and also potentially cause laryngeal tissue injury. A peptic ulcer is histologically defined as a mucosal defect that extends to or beyond the muscularis mucosa with mucosal damage due to pepsin and gastric acid secretion. Most ulcers occur in the stomach and proximal duodenum while less commonly in the lower esophagus, the distal duodenum or the jejunum.

Acid Peptic Disease is collective form of Gastro Esophageal Reflux Disease (GERD), Gastritis, Peptic Ulcer Disease (Gastric ulcer, Duodenal ulcer).

Figure: 1 Classes of Acid peptic disease



3.2.1. OESOPHAGEAL REFLUX DISEASE (GERD)

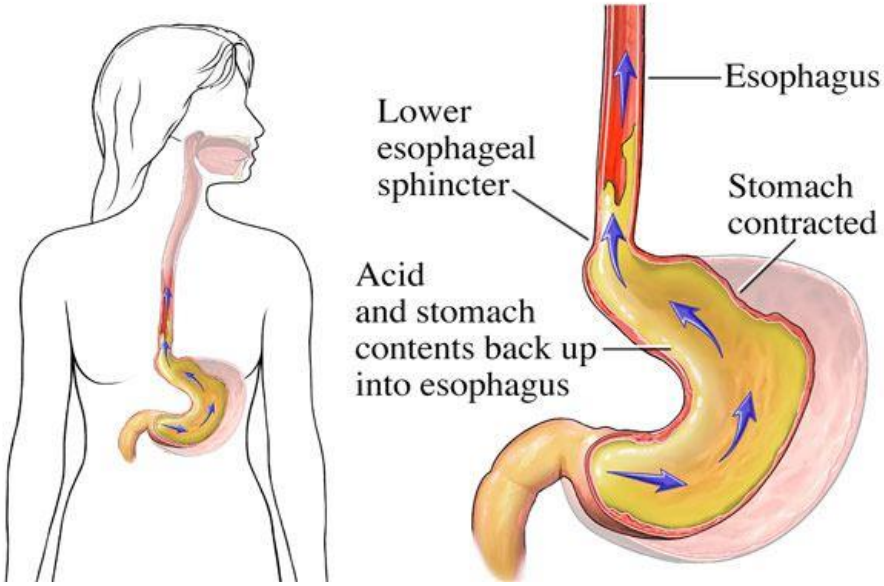


Figure: 2 Esophageal reflux disease

SYNONYMUS:

Reflux oesophagitis [27]

DEFINITION:

It is a syndrome resulting from oesophageal tissue damage as a result of regurgitation of gastric acid contents into the oesophagus.[27]

AETIOLOGY:

The following factors are important in the production of this disease:

- Incompetence of lower oesophageal sphincter
- Slow or Absent oesophageal clearance
- Delayed gastric evacuation
- Injurious effects of reflux
- Hiatus hernia [27]

PATHOPHYSIOLOGY:

Occasional episodes of gastro-oesophageal reflux are common in healthy individuals. Reflux is normally followed by oesophageal peristaltic waves that efficiently clear the gullet, alkaline saliva neutralises residual acid and symptoms do not occur Gastro oesophageal reflux disease develops when the oesophageal mucosa is exposed to gastro duodenal contents for prolonged periods of time resulting in symptoms and in a proportion of cases oesophagitis.

Abnormalities of the lower oesophageal sphincter

The lower oesophageal sphincter is tonically contracted under normal circumstances, relaxing only during swallowing. Some patients with GERD have reduced lower oesophageal sphincter tone, permitting reflux when intra-abdominal pressure rises. In others, basal sphincter tone is normal but reflux occurs in response to frequent episodes of inappropriate sphincter relaxation.

Hiatus hernia

Hiatus hernia causes reflux because the pressure gradient is lost between the abdominal and thoracic cavities, which normally pinches the hiatus. In addition, the oblique angle between the cardia and oesophagus disappears. Many patients who have large hiatus hernias develop reflux symptoms but the relationship between the presence of a hernia and symptoms is poor. Hiatus hernia is very common in individuals who have no symptoms, and some symptomatic patients have only a very small or no hernia. Nevertheless, almost all patients who develop oesophagitis, Barrett's oesophagus or peptic strictures have a hiatus hernia.

Delayed oesophageal clearance

Defective oesophageal peristaltic activity is commonly found in patients who have oesophagitis. It is a primary abnormality, since it persists after esophagitis has been healed by acid-suppressing drug therapy. Poor oesophageal clearance leads to increased acid exposure time.

Gastric contents

Gastric acid is the most important oesophageal irritant and there is a close relationship between acid exposure time and symptoms. Pepsin and bile also contribute to mucosal injury.

Defective gastric emptying

Gastric emptying is delayed in patients with gastro-oesophageal reflux disease. The reason is unknown.

Increased intra-abdominal pressure

Pregnancy and obesity are established predisposing causes. Weight loss may improve symptoms.

Dietary and environmental factors

Dietary fat, chocolate, alcohol, tea and coffee relax the lower oesophageal sphincter and may provoke symptoms. The foods that trigger symptoms vary widely between affected individuals.

Patient factors

Visceral sensitivity and patient vigilance play a role in determining symptom severity and consulting behaviour in individual patients.[29]

CLINICAL FEATURES

- ✓ The major symptoms are heart burn and regurgitation, often provoked by bending, straining or lying down. **'Waterbrash',** which is salivation due to reflex salivary gland stimulation as acid enters the gullet, is often present.
- ✓ The patient is often over weight. Some patients are woken at night by choking as refluxed fluid irritates the larynx.
- ✓ Others develop odynophagia or dysphagia. A variety of other features have been described, such as atypical chest pain that may be severe and can mimic angina: it may be due to reflux-induced oesophageal spasm.

- ✓ Others include hoarseness('acid laryngitis), recurrent chest infections, chronic cough and asthma. The true relationship of these features to gastro-oesophageal reflux disease remains unclear. [29]

SPECIAL INVESTIGATIONS:

- ✓ **Barium oesophagogram**
- ✓ **Upper GI endoscopy**

This is standard method of investigation and identification of mucosal injury and biopsy. Mucosal injury can be directly visible in about 50% to 70% cases.

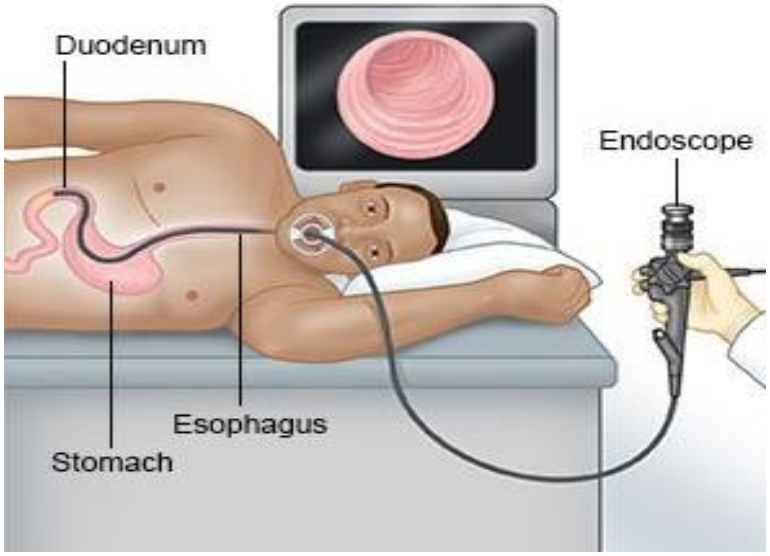


Figure: 3 Upper GI endoscopy

Oesophageal injury can be graded as:

(a) Mild injury

(b) Moderate injury

(c) Severe injury

(d) Stricture or Barrett's oesophagus.

- ✓ **Oesophageal Manometry**

This is done to find out the sphincteric pressure or oesophageal peristalsis when operation is contemplated.

- ✓ **Ambulatory oesophageal pH monitoring**

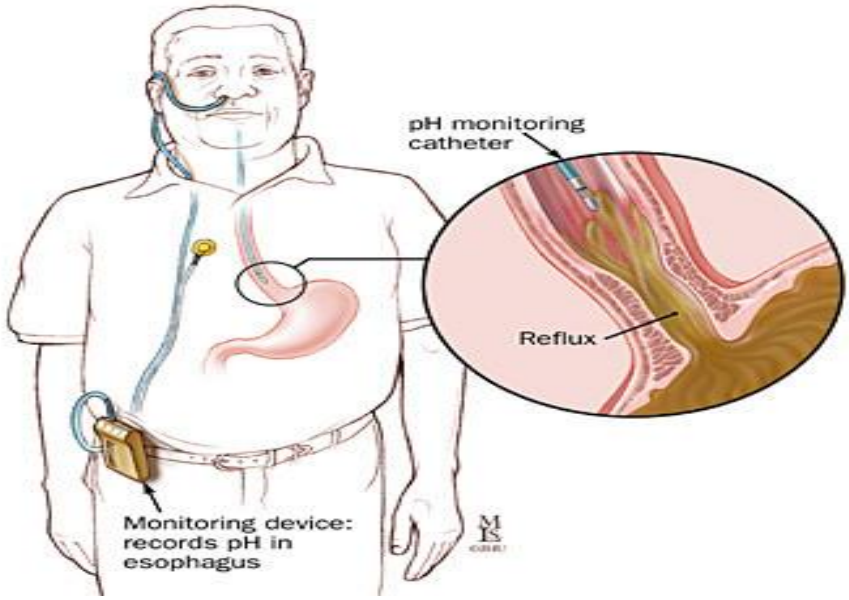


Figure: 4 pH Monitor

By this method pathological acid reflux in oesophagus can be demonstrated. This is very much required when there are atypical symptoms. By this, the frequency and duration of reflux can be recorded and correlated with symptoms produced thereby.

COMPLICATIONS:

- ✓ Peptic ulcer of oesophagus.
- ✓ Barrett's oesophagus (10%)
- ✓ Peptic stricture (10%)
- ✓ Pulmonary aspiration[27]
- ✓ Oesophagitis
- ✓ Anaemia
- ✓ Benign oesophageal stricture
- ✓ Gastric volvulus[29]

TREATMENT:

- **Medical**

General measures include avoidance of fatty food, excessive tea, coffee, alcoholic drinks, fruit juice, cold drinks, chocolates, etc. In overweight cases reduction of weight is required. Patients should avoid to lie down within 3 hours of taking food and it is better to keep the head end of the bed raised at least 6 inches.

- **Drugs**

Standard antacids may be given in the usual doses. Algenic acid preparations are better because they form a barrier on the upper part of gastric contents preventing reflux. H_2 receptor antagonists.

- **Surgical**

When medical treatment fails, and when the drugs to be continued for a long time in young subjects the commonly performed Nissen fundoplication can be done with a success rate of 85%. This can also be done laparoscopically.

- **Endoscopic therapy**

Three types of endoscopic therapy are available e.g. endoscopic sewing by machine making sutures below gastro oesophageal junction, intra-oesophageal balloon catheter with electrodes enabling radio frequency wave current and endoscopic injection of plexi glas microspheres. The last one is not practiced now-a-days because of danger of perforation.

3.2.2. GASTRITIS

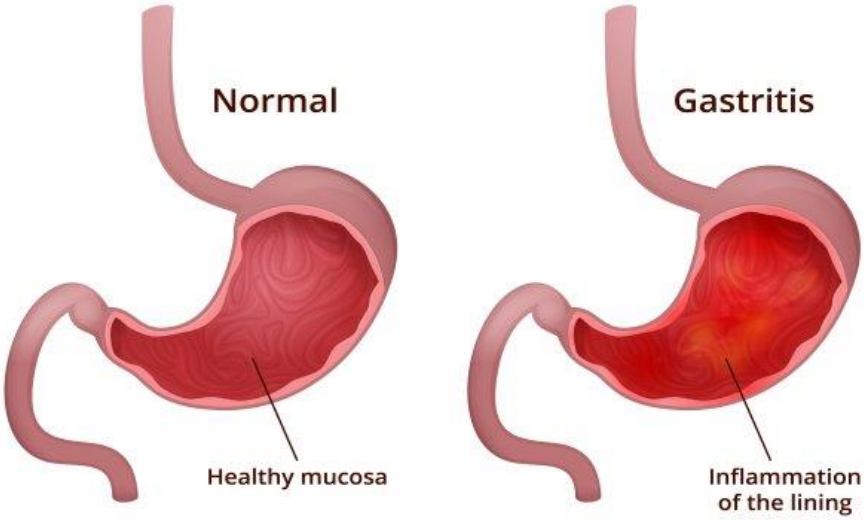


Figure: 5 Gastritis

SYNONYMUS:

Gastropathies [28]

DEFINITION:

It is the inflammation of the gastric mucous membrane. Really Rest in speaking the disease Gastritis is very vague and is a broad term Mucosal changes, e.g, Erythema, sub epithelial haemorrhage and erosions are the hallmark of endoscopic diagnosis. [27]

CLASSIFICATION:

1. **Depending upon the mucosal injury**:

   It divided into erosive gastritis and non erosive gastritis

2. **Depending upon the site of involovement :**

   It divided into cardia gastritis, Body gastritis and Antral gastritis

3. **Depending upon the histologically (inflammatory cell type**)

   It divided into acute gastritis and chronic gastritis**.** [30]

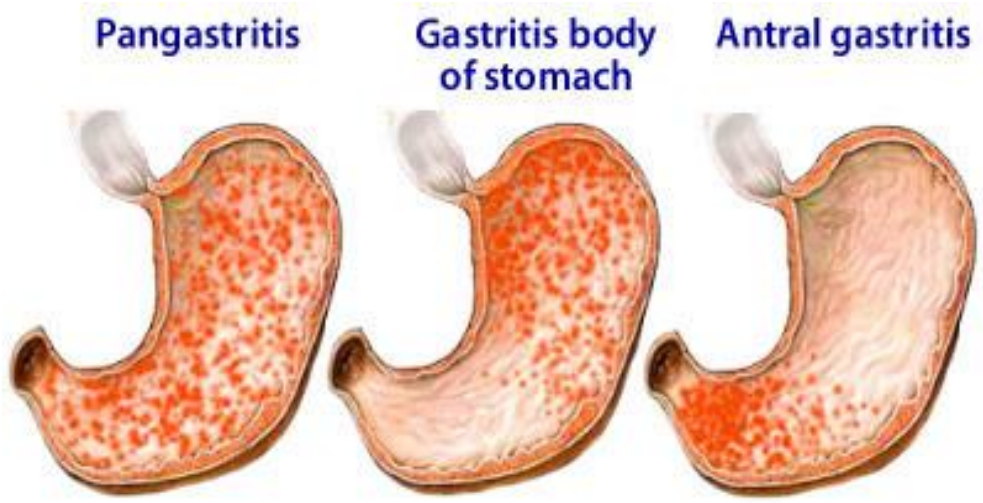


Figure: 6 Types of gastritis

Clinically it is divided into **acute and chronic** but other classifications based on histology, immunology, endoscopic appearance, secretory activity and functional status are worth consideration. Taking all these the important causes of Gastritis can be classified as

1. Acute gastritis

- ✓ A. Acute *Helicobactor pylori* infection

B. Other acute infectious gastritis

- ✓ Bacterial (other than *Helicobactor pylori*), *H.heilmannii*, Phlegmonous, Mycobacterial, Syphilitic, Viral, Parasitic, Fungal.

II. Chronic atrophic gastritis

Type A: Autoimmune, body-predominant

- ✓ Type B: *Helicobactor pylori*-related, antral-predominant, Indeterminate.

III. Uncommon forms of gastritis

Lymphocytic, Eosinophilic, Crohn's disease, Sarcoidosis, Isolated granulomatous gastritis, Russell body gastritis. [28]

4. **Erosive or haemorrhagic gastritis**.

5. **Non-erosive non specfic gastritis.**

This includes *Helicobactor pylori* gastritis. It may occur acutely when transient nausea, abdominal pain, vomiting may be found. In chronic infection, majority of cases are asymptomatic. For diagnosis of acute infections 13C urea and 14C urea breath tests have good sensitivity and over 90% specificity. Serologic and Foecal antigen tests are also done Endoscopic testing i.e. urease test can also be done.

6. Specific gastritis:

- ✓ Granulomatous gastritis,
- ✓ Lymphocytic
- ✓ Eosinophilic gastritis or Menetrier desease (hyper-trophic gastropathy. [27]

A) EROSIVE OR HAEMORRHAGIC GASTRITIS

Erosive gastritis is gastric mucosal erosion caused by damage to mucosal defense. It is typically acute,manifesting with bleeding, but may be subacute or chronic with few or no symptoms.

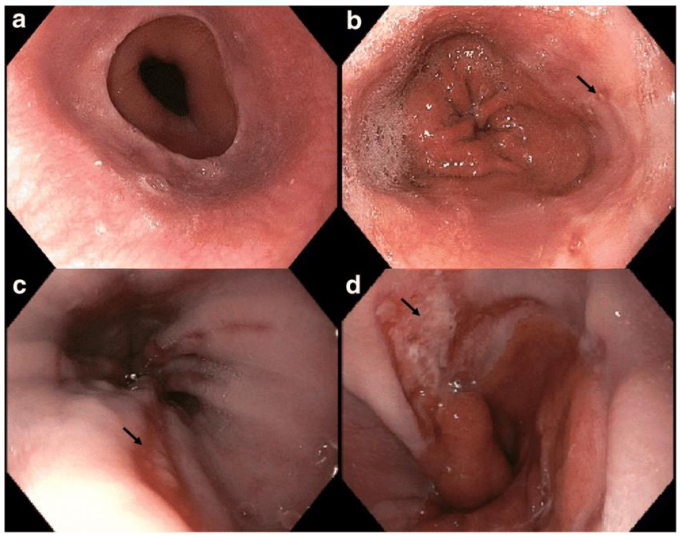


Figure: 7 Erosive gastritis endoscopic images

CAUSES:

- ✓ Chemicals NSAID (about 50% cases).
- ✓ Corrosives-Acids, Alkalai.
- ✓ Alcohol (accounts for 20% of GI Bleeding).
- ✓ Severe stress secondary to various conditions like surgery, CVA, trauma, shock, sepsis, burns, hepato renal and pulmonary disorders may cause ulcer.
- ✓ Portal hypertension with gastropathy (accounts for 25% of upper GI Bleeding).

CLINICAL FEATURES:

Onset is acute.

Anorexia, Nausea, Vomiting , Upper abdominal discomfort or pain may be present, Bleeding episodes e.g., haematemesis and melaena may be present particularly in drug induced cases giving rise to anemia, dehydration, fever, epigastric tenderness etc. may also be present.

In corrosive poisoning appropriate findings may also be present. Symptoms may be altogether absent, clinical examination shows epigastric tenderness only. Other findings are related to blood loss or dehydration.

INVESTIGATIONS:

- ✓ Blood examination may show anemia if there is considerable bleeding.
- ✓ Upper Gestro Intestinal (GI) endoscopy is the most sensitive diagnostic investigation.

TREATMENT:

Rest in bed is beneficial. Sedation is helpful particularly with phenothiazine group of drugs. Antidotes for corrosives should be given. Antacids and H_2 blockers may also be given. Sucralfate is given in cases of stress gastritis or alcoholic gastritis. When Aspirin is the cause, platelet transfusion may be required in presence of severe bleeding. In presence of portal hypertension, Propranolol can be used to reduce portal pressure. Decompression for oesophageal varices may also be done. Bland liquid diet is beneficial. If bleeding occurs appropriate measures are to be taken. In presence of continued bleeding endoscopic cauterization of oozing points or banding may also be done.

B) CHRONIC GASTRITIS

This condition is classified by the histological lesion. Endoscopic findings are usually normal.

TYPES:

Chronic gastritis is divided into two types:

A. Where proximal and secreting part of stomach is involved. Pernicious anemia is the major cause.

B. Where antrum or sometimes the whole of stomach is involved *Helicobactor pylori* infection is the most important cause.

Type A gastritis / auto immune gastritis

In this type there is autoimmune gastritis involving the fundal glands. This leads to achlorhydria and B_{12} non-absorption. Achlorhydria results in hyper-gastrinemia (> 1000 pg/ml) due to non-inhibition by gastrin cells. Parietal cell antibodies directed against the H+ K+ ATPase pump is present in about 90% of cases. Gastric carcinoid tumour without metastasis may be seen. Treatment is directed for pernicious anemia mainly.

Type B gastritis / chronic *Helico bacter pylori* gastritis

The causative organism *Helicobactor pylori* is a grám negative bacillus which is found in the gastric submucous layer very close to epithelial cells. The mechanism of injury is not clear. It is probably transmitted from person to person but the mode of spread is not clear. The resultant chronic inflammation is associated with lymphocytic and polymorpho nuclear cell infiltration. This will lead to complete atrophic gastritis. Sometimes there may be metaplasia of gastric epithelium to intestinal epithelium. This is associated with 4-6-fold rise of the incidence of Adenocarcinoma. In about 30%-50% of the general population this infection is present though in vast majority of cases it remains asymptomatic. However, this infection may give rise to peptic ulcer in some cases.

INVESTIGATIONS:

1. ELISA Test for serum IgA and 1gG Antibodies to *Helicobactor pylori*.

2. Endoscopic examination for :

- ✓ Urease activity (CLO test) which is present in 90% cases.
- ✓ Antral biopsy for Histological Examination.
- ✓ Culture of Mucosal biopsy material.
- ✓ 14C and 13C urea breath test.

TREATMENT:

Combination of Proton pump inhibitor (Omeprazole Lansoprazole) with two antibiotics (Clarithromycin and either Amoxycillin or Metronidazole) for 7-10 days will eradicate *Helicobactor pylori* in over 85% of cases.

SPECIFIC TYPES OF GASTRITIS:

1. Hypertrophic gastritis

In this condition the gastric rugae are very much thickened which can be demonstrated by radiography as well as endoscopy. Patient may complain of anorexia, nausea, vomiting, diarrhoea, weight loss and oedema. Oedema is due to protein loss. Treatment is symptomatic though sometimes gastric resection may be required.

2. Infective gastritis

This is caused by various bacteria, CMV infection seen in cases of AIDS or after transplantation, fungal infection by candida or parasitic infection by Anisakis marina.Treatment is symptomatic, sometimes gastric resection may be required.

3. Granulomatous gastritis

This produces granulomatous inflammation as seen in Tuberculosis, Syphilis, Sarcoidosis, Crohn's disease, etc. Various types of gastrointestinal symptoms may develop. [27]

3.2.3 PEPTIC ULCER DISEASE (PUD)

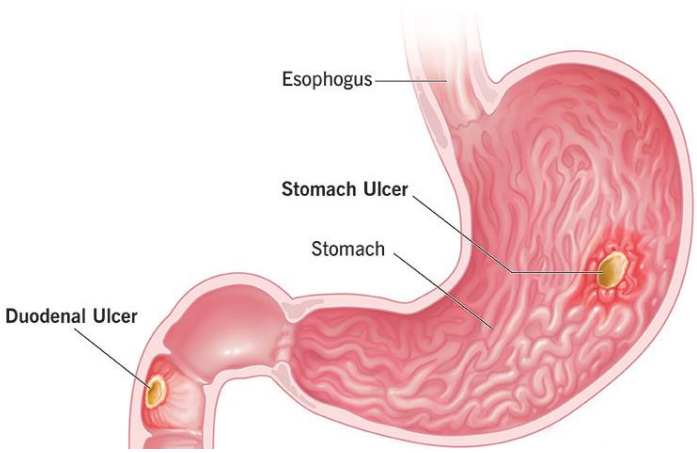


Figure: 8 Peptic Ulcer Disease

DEFINITION:

These are acute or chronic ulcers in any part of the gastro intestinal tract (mainly upper) caused by combined action of hydrochloric acid and pepsin. [27]

PUD occurs most commonly in duodenal bulb **(Duodenal ulcer, DU)** and stomach **(Gastric ulcer, GU).** It may also occur in esophagus, *Helicobactor pylori* channel, duodenal loop, jejunum and Meckels diverticulum. PUD results when aggressive factors (Gastric acid, pepsin) overwhelm " defensive" factors involoved mucosal resistance (gastric mucus, bicarbonate, microcirculation, prostaglandins, mucosal barrier) and from effects of *Helicobactor pylori*. [28]

Ulcers in the stomach or duodenum may be acute or chronic; both penetrate the muscularis mucosae but the acute ulcer shows no evidence of fibrosis. Erosions do not penetrate the muscularis mucosae. [29]

PUD is mostly occur in stomach and proximal part of duodenum. In gastric ulcer, epigastric pain is usually occur within 15 to 30 minutes subsequently a meal. In duodenal ulcer, pain occurs 2 to 3 hour after meal. [31]

EPIDEMOLOGY:

PUD is a life time risk development from 5 – 10 % and approximately incidence is about 500000 new cases per year. Now decrease the prevalence of PUD because of increase hygienic and effective treatment. Duodenal ulcer is more common than gastric ulcer . Duodenal ulcer is more common in men than women[32]

THE PREVALENCE OF GASTRIC AND DUODENAL ULCER:

The prevalence of peptic ulcer **(0.1-0.2%)** is decreasing in many Western communities as a result of widespread use of *Helicobacter pylori* eradication therapy but it remains high in developing countries.

The male-to-female ratio for duodenal ulcer varies from 5:1 to 2:1, while that for gastric ulcer is 2:1 or less. Chronic gastric ulcer is usually single; 90% are situated on the lesser curve within the antrum or at the junction between body and antral mucosa. Chronic duodenal ulcer usually occurs in the first part of the duodenum and 50% are on the anterior wall. Gastric and duodenal ulcers coexist in 10% of patients and more than one peptic ulcer is found in 10-15% of patients.[28]

ETOLOGY OF PUD:

- ✓ *Helicobactor* associated PUD
- ✓ NSAIDS associated PUD
- ✓ Zollinger Ellison Syndrome
- ✓ Malignancy
- ✓ Pscycholoical conditions
- ✓ Chemotherapy
- ✓ Radiation therapy
- ✓ Vascular insufficiency
- ✓ Any type of infection.[32]

PATHOPHYSIOLOGY:

Helicobactor Pylori

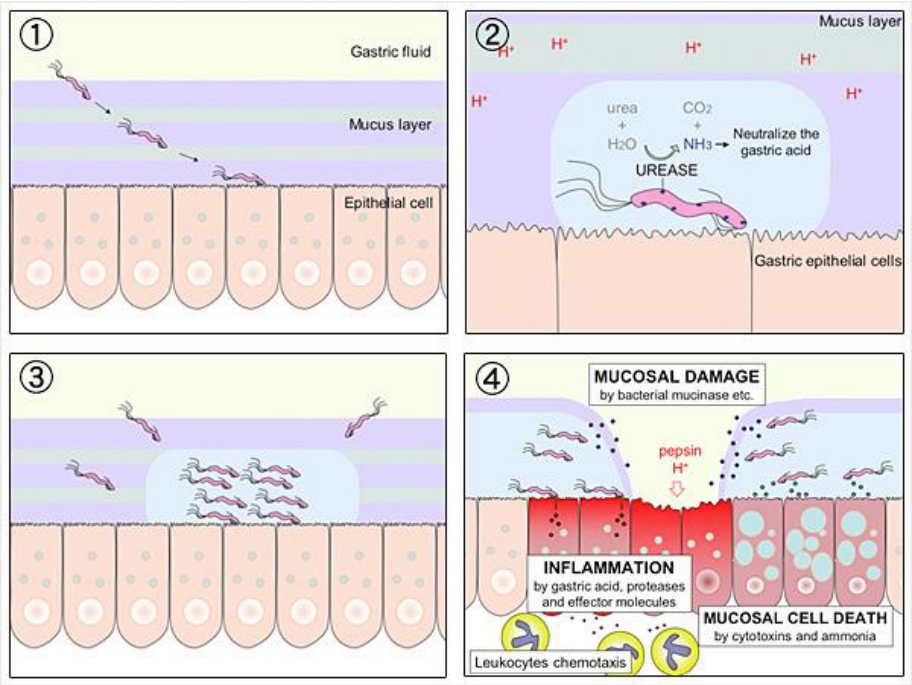


Figure:9 Mucosal damage by Helicobactor pylori

Peptic ulceration is strongly associated with *Helicobactor pylori* infection. The prevalence of the infection in developed nations rises with age and in the UK approximately 50% of people over the age of 50 years are infected. In the developing world infection is more common affecting up to 90% of adults. These infections are probably acquired in childhood by person-to-person contact. The vast majority of colonised people remain healthy and asymptomatic and only a minority develop clinical disease. Around 90% of duodenal ulcer patients and 70% of gastric ulcer patients are infected with *Helicobactor pylori*. The remaining 30% of gastric ulcers are caused by NSAIDs and this proportion is increasing in Western countries as a result of *Helicobactor pylori* eradication strategies.

Helicobactor pylori is Gram-negative and spiral, and has multiple flagella at one end, which make it motile, allowing it to burrow and live beneath the mucus layer adherent to the epithelial surface. It uses an adhesin molecule (BabA) to bind to the Lewis b antigen on epithelial cells. Here the surface pH is close to neutral and any

acidity is buffered by the organism's production of the enzyme urease. This produces ammonia from urea and raises the pH around the bacterium and between its two cell membrane layers.

Helicobactor pylori exclusively colonises gastric-type epithelium and is found in the duodenum only in association with patches of gastric metaplasia. It causes chronic gastritis by provoking a local inflammatory response in the underlying epithelium. This depends on numerous factors, notably expression of bacterial CagA and VacA genes. The CagA gene product is injected into epithelial cells, interacting with numerous cell-signalling pathways involved in cell replication and apoptosis. *Helicobactor pylori* strains expressing CagA (CagA") are more often associated with disease than CagA strains. Most strains also secrete a large pore-forming protein called VacA, which causes increased cell permeability, efflux of micronutrients from the epithelium, induction of apoptosis and suppression of local immune cell activity. Several forms of VacA exist and pathology is most strongly associated with the s1/ml form of the toxin.

The distribution and severity of *H. pylori*-induced gastritis determine the clinical outcome. In most people, *H. pylori* causes a mild pangastritis with little effect on acid secretion and the majority development significant clinical outcomes. In a minority (up to 10% in the West), the infection causes an antral predominant pattern of gastritis characterised by hypergastrinaemia and a very exaggerated acid production by parietal cells, which could lead to duodenal ulceration. In a much smaller number infected people, *H. pylori* causes a corpus predominant pattern of gastritis leading to gastric atrophy and hypochlorhydria. This phenotype is much more common in Asian countries. particularly Japan, China and Korea. The hypochlorhydria allows other bacteria to proliferate within the stomach; these other bacteria continue to drive the chronic inflammation and produce mutagenic nitrites from dietary nitrates, predisposing to the development of gastric cancer. The effects of *H pylori* are more complex in gastric ulcer patients compared to those with duodenal ulcers. The ulcer probably arises because of impaired mucosal defence resulting from a combination of *H pylori* infection, NSAIDs and smoking rather than excess acid.

NSAIDS

Treatment with NSAIDS is associated with peptic ulcer due to impairement of mucosal defense.

SMOKING

Smoking confers an increased risk of gastric ulcer and, to a lesser extent, duodenal ulcer. Once the ulcer has formed, it is more likely to cause complications and less likely to heal if the patient continues to smoke.[28]

CLINICAL FEATURES OF PUD:

PUD is a chronic condition with spontaneous relapses and remissions lasting for decades, if not for life. The most common presentation is with recurrent abdominal pain that has three notable characteristics: localisation to the epigastrium, relationship to food and episodic occurrence. Occasional vomiting occurs in about 40% of ulcer subjects, persistent daily vomiting suggests gastric outlet obstruction.

In one-third, the history is less characteristic, especially in elderly people or those taking NSAIDs. In this situation, pain may be absent or so slight that it is experienced only as a vague sense of epigastric unease. Occasionally, the only symptoms are anorexia and nausea or early satiety after meals. In some patients, the ulcer is completely silent presenting for the first time with anaemia from chronic undetected blood loss, as abrupt haematemesis or as acute perforation; in others, there is recurrent acute bleeding without ulcer pain. The diagnostic value of individual symptoms for peptic ulcer disease is poor, the history is therefore a poor predictor of the presence of an ulcer. [28]

TYPES OF PEPTIC ULCER DISEASE

- Duodenal ulcer
- Gastric ulcer

A) CHRONIC DUODENAL ULCER (DU)

Of all chronic peptic ulcers, chronic duodenal ulcer is the commonest. The site of chronic duodenal ulcer is in the first part of the duodenum in its anterior wall (95%). Rest 5% occurs in the second part of the duodenum above the ampulla Ulcers are more common in men (1.3: 1). **Doudenal ulcers** are commonly seen between **30 and 50 years** while **gastric ulcers** are common between **55 and 70 years**.

AETIOLOGY:

- It is commonly believed that the most important factor in the development of chronic duodenal ulcer in about **30% to 40% cases** is excess secretion of gastric hydrochloric acid or pepsin which is usually due to increased amount of parietal cell mass. There is usually a breakdown in the balance between acid pepsin and mucosal defence. However, the exact pathogenesis of this is far from clear. Controversies still exist as to whether fasting serum gastrin level, abnormal sensitivity of the parietal cells, vagal over activity, emotional stress, pH of the duodenal contents are in any way responsible for excessive secretion of the stomach.
- **Blood group 'O'** and non-secretor of ABO blood group in the saliva are two and a half times more prone to develop duodenal ulcer. Recently a strong association has been found with **HLA B-5 antigen**. Elevated **PG_I** (Pepsinogen 1) level has been found in 50% of DU patients and even in subclinical states. Subjects with elevated PG_I level is said to be eight times more vulnerable to develop DU than in general population.
- **Systemic diseases** like primary biliary cirrhosis, portal cirrhosis, polycythaemia, chronic cor pulmonale, hyperparathyroidism may be associated with chronic duodenal ulcer.
- About 10%-20% subjects may have gastric ulcer and 2% to 5% subjects may have duodenal ulcer in chronic NSAID users. NSAID may produce peptic ulceration.
- Striking sex difference in duodenal has led the oestrogen got some protective role females.

- Smoking associated with increased frequency DU possibly due inhibition pancreatic bi-carbonate secretion and accelerated gastric emptying into the duodenum.
- **Reflux of and pancreatic juice:**

  This believed cause gastric ulcer may be alteration of surface epithelial cells with overlying damage mucosal barrier.
- **Genetic predisposition:**
  - Multiple Endocrine Neoplasia (syndrome 1) is associated with ulcer disease.
- **Abnormalities mucosal defense**:

  Diminished blood flow, decreased bicarbonate secretion, diminished prostaglandin content gastric or duodenal mucosa, production of diminished and altered mucus all related alteration in mucosal defence.
- **Emotional stress:**

  This is someway related acid production hence peptic ulceration.
- **Delayed gastric emptying:**

  Gastrin release more acid secretion.
- **Infective agents:**

  Various infective agents, e.g., CMV, Candida, etc. have been found in ulcer stomach. Recently *H.pylori* has been in association Gastric and duodenal ulcer subjects. the ulcer occurs unclear but are considerable evidences which indicate that *H. pylori* have a pathogenetic role production peptic ulcer. About 90% subjects *H. pyloric* gastritis.
- **Steroids:**

  Steriod therapy ulceration in some subjects.However, the exact cause genesis of ulcer is be found But to be remembered that these causes more importance being paid Hyper acid secretion stomach, *H pylori.*

CLINICAL FEATURES :

Onset is insidious.

1**. Dyspepsia:** For a prolonged period, patient suffers from dyspepsia before the typical pain develops. At first it is intermittent but ultimately becomes persistent. Sometimes this recurs during winter seasons and disappears with the onset of summer.

2. Pain: It is a characteristic feature of chronic DU in 80% to 90% cases but severe ulcer may exist in its absence. This is called **"Silent ulcer"** and is present in about 20% of cases. Though its mechanism is disputed yet alteration in gastric motility and stimulation of chemoreceptors by acid are important factors. When the pain changes its character one should always suspect for any complication. However, in 20% cases with complications there may be no symptom, these are really cases of silent ulcers.

Pain has got several important features :

- **Location:**

  Usually in the epigastric region or lower part of the chest in the segments supplied by D5-8, Post bulbar ulcers produce pain in the right upper quadrant.

- **Character:**

  Usually burning, sometimes aching or stitching or gnawing in character.

- **Relation with food:**

  Food minimises or abolishes pain in 50% cases. Pain comes 2-3 hours after taking food.

- **Radiation:**

  Sometimes pain is radiated to the chest. Post bulbar ulcer pain may be radiated backwards.

- **Relieving factors:**

  After taking soda, alkali or antacid, pain is relieved. Food also causes relief of pain in about 50% of objects or by induced vomiting pain is relieved.

- **Nocturnal or Hunger pain:**

  Pain appears at midnight or late hours of the night often awakening the patient from the bed. It is very characteristic (and is present in about 60%-70% cases). Early morning pain however does not occur in DU subjects and is an indication to revise the diagnosis.

- **Periodicity of Pain:**

  During winter months pain is prominent but it disappears during summer months. This does not mean that the ulcer is healed up and its mechanism is not clear.

- **Clock-like regularity of pain:**

  Same type of food taken in same hours may induce same type of pain in the same hours. This is not always seen.

- Heart burn, acidity, acid regurgitation and water-brash are common.
- Vomiting may be present, it is often induced and may relieve pain.

COMPLICATIONS:

a. Haematemesis and melaena.
b. Gastric outlet obstruction (Pyloric stenosis),
c. Perforation.
d. Perigastric adhesion.
e. Sub diaphrematic abscess.
f. Penetration pancreas.

DIFFERENTIAL DIAGNOSIS:

- **Chronic gastric ulcer**
- **Intestinal amoebiasis**

  There is history of recurrent dysentery; caecum pelvic colon are tender and cord like, liver may be palpable, soft and tender. Stool may show cysts of *Entamoeba histolytica.*

- **Chronic Cholecystitis**

  There may be history of biliary colic and jaundice in the past, **Murphy's sign** is positive. Rarely gall bladder may be palpable. Cholecystography or Sonography settles the diagnosis by showing dysfunction of the gall bladder with or without stone.

- **Recurrent Appendicitis**

  There may be history of acute appendicitis in the past. McBurney's point is tender, barium meal X-ray of stomach shows normal finding but barium meal X-ray of appendix may show irregularity or no filling.

- **Chronic Gastritis**

  There is anorexia, discomfort in the upper abdomen (no pain) without any definite tenderness. Barium meal X-ray shows coarse or fine gastric rugae. Upper G1 endoscopy is also contributory.

- **Chronic Pancreatitis**

  There may be history of acute pancreatitis in the past, pain radiating to the back may be present without definite relation with food. Steatorrhoea and diabetes mellitus may be present. Straight X-ray of the abdomen may reveal pancreatic calcification.

Special investigations

- The measurement of basal and peak acid output of stomach is now rarely done. In presence of ectopic ulcers or when gastrinoma is suspected secretory test may be performed. Histamine test both the volume and acid output are increased.
- Estimation of serum gastrin may be done in cases of gastrinoma.

- Radiological study with barium of upper GI tract may show deformity of bulb tenderness and rapid emptying of the stomach in screening. Barium X-ray may show deformity the duodenal and crater 70%-90% of cases. In presence of recent haemorrhage X-ray deferred for about 3 instead endoscopic examination may done.
- Endoscopic examination should always be done and is the best method detect ulcer. This examination always. This is facilitates identification of small ulcers together with biopsy facility and detection of H. pylori and progress of ulcer with therapy (Duodenal ulcers are usually less than 1 cm in diameter.
- **Blood examination:**

  An elevated leucocyte count may be seen in cases of ulcer perforation or penetration. When ulcer penetrates into pancreas serum amylase level is raised. Anaemia may be present in presence of acute blood loss.
- Stool examination is positive for occult blood test in 30% cases.

B) CHRONIC GASTRIC ULCER (GU)

Chronic gastric ulcer is not so common as chronic ulcer. The site of ulcer is located usually within 5-6 cm of pyloric sphincter on the posterior wall of the stomach close to the lesser curvature and its diameter is 2-3 cm. In 25% of the cases the situation of the ulcer is high up in the lesser curvature. In 10% of cases chronic duodenal ulcer may be associated. Ulcers near the pylorus, near greater curvature or anywhere in the stomach whose diameter is more than 3 cm are usually malignant ulcers. 55% of gastric ulcers are seen in males.

AETIOLOGY:

Though there are many theories to explain the occurrence of gastric ulcer yet no one has received universal acceptance. In contrast to chronic DU, acid secretion is either normal or low in chronic gastric ulcers. However, other facts which have been discussed in duodenal ulcer disease also play similar role in the causation of chronic gastric ulcer.

CLINICAL FEATURES:

Symptoms are usually vague and not so specific as in chronic duodenal ulcer. There may be epigastric pain which is burning or aching in character, which may occur immediately after taking food but may be as late as half to one hour. The pain is relieved by alkalis or by vomiting which is.usually spontaneous due to associated gastritis. Weight loss, weakness, are frequently associated.

On examination there may be pointing sign present with somewhat resistance of the upper rectus muscle on the left side.

COMPLICATIONS:

Same as duodenal ulcer but penetration into pancreas, hourglass concentration, tea pot deformity and malignant changes are additional complications.

INVESTIGATIONS:

- Gastric Secretory Test

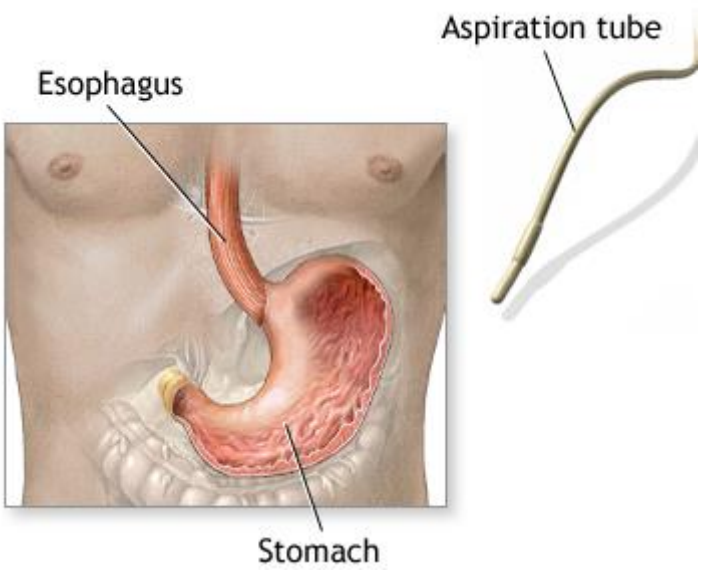


Figure:10 Gastric acid secretory test

- Barium X-ray of stomach and duodenum shows less peristalsis and delayed emptying of the stomach with tenderness over the ulcerating area on screening, while X-ray shows typical ulcer crater with niche or notch in the opposite wall 90% cases can be diagnosed by radiological method though double contrast method is better.[27]

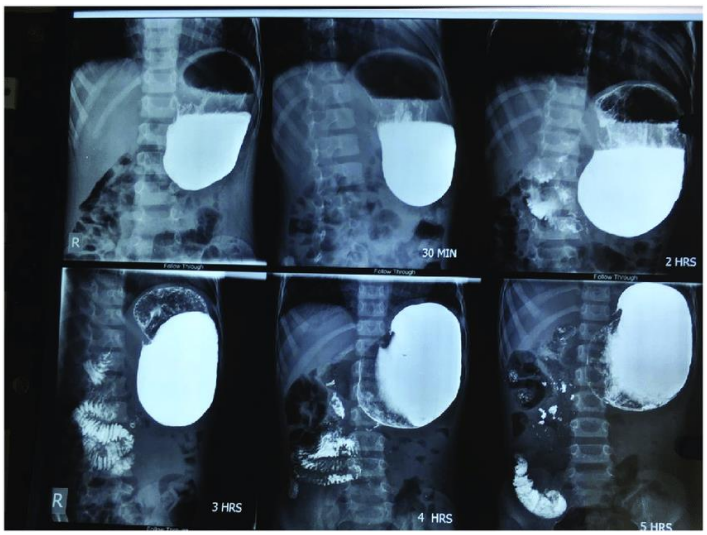


Figure:11 Barium meal X-RAY

COMPLICATIONS OF PEPTIC ULCER DISEASE:

- **Perforation**

When perforation occurs, the contents of the stomach escape into the peritoneal cavity, leading to peritonitis. This is more common in duodenal than in gastric ulcers and is usually found with ulcers on the anterior wall. About one-quarter of all perforations occur in acute ulcers and NSAIDs are often incriminated.

Perforation can be the first sign of ulcer and a history of recurrent epigastric pain is uncommon. The most striking symptom is sudden, severe pain, its distribution follows the spread of the gastric contents over the peritoneum. The pain initially develops in the upper abdomen and rapidly becomes generalized shoulder tip pain is caused by irritation of the diaphragm. The pain is accompanied by shallow respiration, due to limitation of diaphragmatic movements, and by shock.

The abdomen is held immobile and there is generalised '**board-like rigidity.** Bowel sounds are absent and liver dullness to percussion decreases due to the presence of gas under the diaphragm. After some hours, symptoms may improve, although abdominal rigidity remains. Later, the patient's condition deteriorates as general peritonitis develops. In at least 50% of cases, an erect chest X-ray shows free air beneath the diaphragm. If not, a water-soluble contrast swallow will confirm leakage of gastro duodenal contents. After resuscitation, the acute perforation should be treated surgically, either by simple closure or by conversion of the perforation into a pyloroplasty if it is large. On rare occasions, a 'Polya partial gastrectomy is required. Following surgery, *H. pylori* should be treated (if present) and NSAIDs avoided. Perforation carries a mortality of 25%, reflecting the advanced age and significant comorbidity of the population that are affected.

- **Gastric outlet obstruction**

The most common is an ulcer in the region of the pylorus. The presentation is with nausea, vomiting and abdominal distension. Large quantities of gastric content are often vomited and food eaten 24 hours or more previously may be recognised.

- **Bleeding**[29]
- **Obstruction**
- **Penetration causing pancreatitis**
- **Perforation**
- **Intractability**[28]

INVESTIGATIONS:

Endoscopy is the preferred investigation. Gastric ulcers may occasionally be malignant and therefore must always be biopsied and followed up to ensure healing. Patients should be tested for *H. pylori* infection. Some are invasive and require endoscopy: others are non-invasive. They vary in sensitivity and specificity. Breath tests or faecal antigen tests are best because of accuracy, simplicity and non-invasiveness.[29]

3.2.4. ZOLLINGER – ELLISON SYNDROME

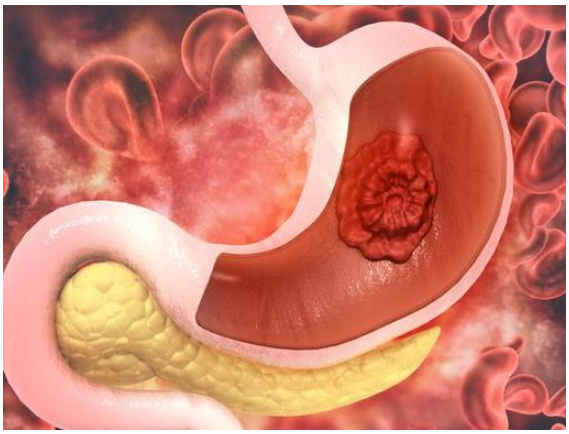


Figure:12 Zollinger Ellison Syndrome

SYNONYMUS:

Gastrinoma, Z-E syndrome[27,29]

DEFINITION:

This is a rare disorder characterised by the triad of severe peptic ulceration, gastric acid hyper secretion and a neuroendocrine tumour of the pancreas or duodenum (gastrinoma). It probably accounts for about 01% of all cases of duodenal ulceration. The syndrome occurs in either sex at **any age**, although it is most common between **30 and 50 years** of age.[29]

EPIDEMIOLOGY:

- ZES is found in **0.1 to 3 persons in million** and accurate incidence is not determined. **0.1 to 1% of** patients with PUD have ZES.
- About 90% of gastrinomas arise in the gastrinoma triangle bounded by Portal Hepatis, Neck of pancreas and 3rd part of duodenum.
- About 40% arise from pancreas, 40% from duodenum and 5%-15% from the adjoining lymph nodes. About two-thirds of Gastrinoma are malignant of which 40% develop metastasis.

- Small multicentric gastrinomas with Multiple Endocrine neoplasia Type-I are seen in 25% of patients. Less than 1% of peptic ulcer disease is caused by gastrinomas[27]

ETIOLOGY:

An ectopic neuroendocrine tumor induce the formation of the acid secreting cells of the stomach and formation of ulceration. It leads to cause ZES.[33]

PATHOPHYSIOLOGY:

The tumour secretes gastrin, which stimulates acid secretion to its maximal capacity and increases the parietal cell mass three-to six fold. The acid output may be so great that it reaches the upper small intestine, reducing the luminal pH to 2 or less. Pancreatic lipase is inactivated and bile acids are precipitated. Diarrhoea and steatorrhoea result. Around 90% of tumours occur in the pancreatic head or proximal duodenal wall.

At least ball are multiple and tumour size can vary from 1 mm to 20 cm. Approximately one-half to two-thirds are malignant but are often slow-growing. Between 20% and 60% of patients have multiple endocrine neoplasia (MEN) type1.[29]

CLINICAL FEATURES:

The presentation is with severe and often multiple peptic ulcers in unusual sites, such as the post-bulbar duodenum, jejunum or oesophagus. There is a poor response to standard ulcer therapy. [29]

Symptoms of typical peptic ulcer disease are usually present (90%) but these are more severe, progressive, persistent and intractable. After surgery for peptic ulcer whenever ulcer symptoms recur promptly associated with haemorrhage and perforation, one should suspect its presence.

Other endocrine adenomas like type I (MEN1) involving parathyroid, thyroid and pituitary may be present. Diarrhoea is an invariable accompaniment of this condition (50%) and it may precede the peptic ulcer symptoms in some cases. Steatorrhoea may

rarely occur due to inactivation of pancreatic enzyme. In some cases Vitamin B12 absorption defect may be noted. This diarrhoea is sometimes called" **Pancreatic Cholera**".[27]

DIAGNOSIS:

- Pancreas is the main seat where gastrinoma is found and it is usually multiple. This syndrome accounts for 0.1% -1% of all peptic ulcer cases. **Presence of this rare condition should be suspected when,**
- Ulcers are located in ectopic sites in duodenum and jejunum.
- Severe peptic ulcer disease intractable for treatment or recurring after surgery.
- Patients are not taking NSAID and *H. Pylori* negative.
- Peptic ulcer associated with diarrhoea and malabsorption.
- Strong family history
- MENI endocrine adenomatosis.
- Basal acid output more than 15 mEq/hour with pH less than 1 BAO more 60% 100 mmol/L MAO. Gastric pH > practically excludes gastrinoma.
- Serum gastrin level always greater than pg/ml several lakhs (normal 40-50 pg/ml).
- Provocative secretin test, calcium infusion test or standard test meal may also be helpful.
- Imaging studies including CT scan and MRI can detect only 50% cases of gastrinoma and another 15% to 30% cases can be diagnosed by Angiography. But about 20%-50% cases be localised.
- Somatostatin receptor scintigraphy is a highly sensitive test for detecting gastrinoma. Those who are negative they may be advised endoscopic ultrasonography. [28]

MANAGEMENT:

Some 30% of small and single tumours can be localised and resected but many tumours are multifocal (especially in the context of MEN 1). Some patients present with metastatic disease and in these circumstances, surgery is inappropriate. In the majority of these individuals, continuous therapy with omeprazole or other PPIs can be successful in healing ulcers and alleviating diamhoed, although double the normal dose is required. The synthetic somatostatin analogue, octreotide, given by subcutaneous injection, reduces gastrin secretion and may be of value. Other treatment options for pancreatic neuro-endocrine tumours are discussed on page 678, Overall 5-year survival is 60-75% and all patients should undergo genetic screening for MEN1.[29]

3.3. DRUG REVIEW

ORGANOLEPTIC CHARACTERS, ACTIONS AND MEDICINAL USES OF INGREDIANTS OF AMALAKATHI KIRUTHAM

1. NAME OF THE PLANT : NELIKKAI

TAXONOMICAL DITRIBUTIONS:

- ✓ Kingdom : Plantae
- ✓ Division : Angiospermae
- ✓ Class : Dicotyledonae
- ✓ Order : Geraniales
- ✓ Genus : Emblica
- ✓ Species : Officinalis Geartn
- ✓ Family : Euphorbiaceae
- ✓ Botanical name: *Phyllanthus embilica* [39]

VERNACULAR NAMES:

- ✓ English : Indian gooseberry
- ✓ Malayalam : Nellikay
- ✓ Sanskirit : Amalaki [40]

ORGANOLEPTIC CHARACTERS:

- ✓ Taste : Sour, Sweet, Pungent
- ✓ Character : Cold
- ✓ Division : Sweet

ACTIONS:

Refrigerent, Diuretic, Laxative, Aphrodisiac, Astringent, Anodyne, carminative, stomachic, rejuvenative, tonic, digestive [43]

USED PARTS:

Fruits

MEDICINAL USES:

- ✓ Its a Vaatham, Pitham and Kabam suppressant. Fruits are helps to promotes the Oon, reproductive fluids and detoxify the body.
- ✓ Its also strengthen the nervous system and improving the digestive system. This is also helps to secretion of bile juice. [41]
- ✓ Its also used for the treatment of diarrhea, indigestion, ulcer, inflammation, nausea, fever, skin sores and wounds.
- ✓ It is the best immune supplementation and protects heart, brain, stomach and other vital organs**.** [40]
- ✓ Its useful in the treatment of diarrhea, peptic ulcer, dyspepsia, headache, constipation, anemia, jaundice, hepatomegaly, diabetes, cough, bronchitis, hyperacidity, flatulance, hemorrhage, cardiac disorder and intermittent fever. [43]

PHYTOCHEMICAL CONSTITUTENTS:

Table:6 Types of Phytochemical constituents of Nelikkai:

Type	Chemical constituents
Hydrolysable Tannins	Emblicanin A &B,Punigluconin,Pedunculagin,Chebulinic acid (Ellagitannin), Chebulagic acid (Benzopyran tannin), Corilagin (Ellagitannin), Geraniin(Dehydroellagitannin),Ellagotannin.
Alkaloids	Phyllantine,Phyllembein,Phyllantidine
Phenolic compounds	Gallic acid,Methylgallate, Ellagicacid,Trigallayl glucose
Amino acid	Glutamic acid, Proline,Asparticacid,Alanine, Cystine, Lysine
Carbohydrates	Pectin
Vitamin	Ascorbic acid
Flavonoids	Quercetin, Kaempferol
Organic acid	Citric acid[40]
Others	Apogenin,Isostrictniim,Luetolin, Chromimum,Zinc,and copper.[42] Nicotinic acid, Riboflavin,D-glucose,D-fructose,myoinositol,pectin with D-galacturonic acid,D-arabinosyl,D-xylosyl,L-rhamnosyl,D-glucosyl,D-mannosyl,D-galactolysl,residues, embicol,mucic,indole acetic acid four other auxins-al,a3 and a5 two growth inhibitors R1&R2 Phyllembic acid and phyllembin [45]

பொது குணம்

பித்தமன லையம் பீநிசம்வாய் நீர்வாந்தி

மத்தமலக் காடும் மயக்கமுமில் - ஒத்தவுரு

வில்லிக்கா யம்மருங்கா மென்னாட்கா லந்தேர்ந்தே

நெல்லிகா யம்மருந் துணீ.

-தேரன் குணவாகடம்[36]

PHARMACOLOGICAL ACTIVITY:

Anti-Inflammatory, Anti-Ulcer, Gastro-protective, Anti-oxidant**,** Anti-tussive**,** Anti-depressant**,** Analgesic**,**[39] **Wound healing property,** Free radical scavenging activity**,** Anti-proliferative**,** [42] Anti-diarrheal effect**,** Laxative effect**,** [43] Anti-*helicobacter pylori*. [44]

SCIENTIFIC REVIEW:

Anti- inflammatory:

Leaves and fruits of *Phyllanthus emblica* L, have been used for the anti-inflammatory and anti – pyretic treatment of rural populations.[39]

Embilica officinalis showed Anti – inflammatory activity in carrageenan induced acute and cotton pellet induced chronic inflammation in Sprague – dawley rats by reducing paw volume in acute inflammation and by decreasing cotton pellet induced granulomatous tissue lipid peroxidation , the granulomatous tissue mass, myeloperoxidase activity and plasma extravasation in chronic inflammatory condition.(Muthuraman et al 2011)

Embilica officinalis water extract has reported to have inhibitory effect on the synthesis and release of inflammatory mediators in rats (jaijoy et al 2010). [39]

Anti- ulcer activity:

Emblica officinalis has significant ulcer protective property and ulcer healing effect dueto its offensive and defensive mucosal factors. A study has been done by its methanolic extract against ulcer. It was then reported that *Embilica officinalis* extract exhibit Anti- secretory, Cytoprotective and Anti- ulcer properties**.**

Anti tussive, Gastro protective activity:

Embilica officinalis has been mentioned by Acharya charaka as kasagana. Its anti tussive activity has been seen in conscious cats by mechanical stimulation of the laryngo- pharyngeal and trachea- bronchial mucous areas of airways.

Its Anti tussive activity was more effective than the non- nacrotic antitussive agent dropropizine but less effective than shown by the classical narcotic antitussive drug codeine.

The dry extract of *Emblica officinalis* exhibit the antitussive activity not only due to anti phliogistic, anti spasmodyltic and anti oxidant efficacy effects, but also to its effect on mucus secretion in the airways.

Embilica officinalis has been reported for its cytoprotective and immune modulating properties against chromium (6) induced oxidative damage. It inhibited chromium induced immune suppression and restored gamma- IFN production by macrophages and phagocytosis.

Anti depressant activity:

Permminati et al 2010 has checked the anti depressant activity of aqueous extract of fruits of *Embilica officinalis* in inbred adult male swiss albino mice weighing 25-30mg . The test was carried out by forced swim test (FST) and tail suspension test (TST) .

The result of this showed the anti depressant activity of *Embilica officinalis* as comparable to the of standard anti depressant drug imipramine. [39]

Anti *h pylori* **activty**

The amala pulp extract was found to be very effective against all the tested strains of *H Pylori* grown in brain heart infusion agar plate including the two strains that were resistant to clarithromycin. MIC was calculated as the minimum concentration of amala extract required to produce hair line growth inhibition in the disc diffusion assay. Determination of MIC was conducted using two strains each from reference and clinical strtains. [44]

2. **NAME OF THE PLANT : KADUKKAI**

VERNACULAR NAMES:

- ✓ English : Chebulic Myrobalan, Ink nut
- ✓ Malayalam : Katukkai
- ✓ Sanskrit : Pathya, Sudha, Bhishak, Priya, Haritaki[46]

TAXONOMICAL DITRIBUTIONS:

- ✓ Kingdom : Plantae
- ✓ Subkingdom : Tracheobionta
- ✓ Super division : Spermatophyta
- ✓ Division : Magnoliophyta
- ✓ Class : Magnoliopslida dicotyledons
- ✓ Order : Myrtales
- ✓ Family : Combrectaceae
- ✓ Genus : Terminalia
- ✓ Species : Chebula
- ✓ Botanical name :*Terminalia chebula*[46]

ORGANOLEPTIC CHARACTERS:

- ✓ Taste : It have 5 tastes except Salt
- ✓ Character : Hot
- ✓ Division : Sweet

ACTIONS

Laxative, Digestive, Diuretic, Hemostatic, Tonic,[46] Digestive aid, Stomachic, Alterative, Anti spasmodic**.** [47]

USED PART:

Stem, Fuit.

MEDICINAL USES:

It is extensively used in the treatment of Constipation, Chronic diarrhea, Ulcer, gastro enteritis, asthma, cough, dyspnea,dyspepsia, hemorrhoids, diabetes, cardiovascular disease, anorexia, wounds, hepatomegaly, renal caliculi, malabsorption syndrome and epilepsy .

Total bacterial counts and streptococcal counts in saliva samples. *Terminalia chebula* found to significantly reduced by oral rinsing extract of *Terminalia chebula*.

It is used for constipation, mental and physical disability, allergic rhinitis, dental caries and mental stress. (47)

PHYTOCHEMICAL CONSTITUTENTS:

Phenolic –Hydrolyzable tannins, Anthraquinone, Flavanol, Carbohydrates, Glucose and Sorbital, Triterpenes- Arjun glucoside 1, Arjungenin and achebulosideS 1& 2, Taanin-30%, Chebulic acid 3-5%, Chebulinic acid 30%, Tannic acid 20-40%, Ellagic acid, 2,4Chebulyi-beta-D-gluco-pyranose, Gallic acid, Ethylgallate, Punicalginterflavin A, Terchebin, Anthraquinone, Flavanoids- Luteolin, Rutins, and Quercetin, Ellagitannin-Punacalagin, Casurarinin, Corilagin, and Terrchebulin, Chebulanin, Neochebulinic acid, Chebulagic acid, Chebulinic acid. (50)

பொது குணம்

தாடை கழுத்தக்கி தாலு குறியிவிடப்
பீடை சிலிபதமுற் பேதிமுடம் - ஆடையெட்டாத்
தூலமிடி புண்வாத சோணிகா மாலையிரண்
டாலமிடி போம்வரிக்கா யால். (36)

PHARMACOLOGICAL ACTIVITY:

Anti-ulcerogenic, Wound healing, Anti-oxidant**,** Immunomodulatory**,** Anti-bacterial**,** Hepato – protective**,** Hypolipidemic**,** Anti anaphylactic**,** (49) **Anti secretory activity** (49)

SCIENTIFIC REVIEW:

Anti bacterial activity:

Terminalia chebula exhibited anti bacterial activity a number of both gram positive and gram negative human pathogenic bacteria. It is effective in inhibiting the urease activity of *Helicobactor Pylori* , an ubiquitous bacterium implicated in the development of gastritis , ulcer and stomach ulcer**.** [(48)]

Anti secretory activityand cytoprotective effects:

The gastro protective mechanism of chebulinic acid isolated from *Terminalia chebula* fruit was investigated. Chebulinic acid was evaluated against cold restraint (CRU) , aspirin (AS), alcohol (AL). The gastro protective mechanism of chebulinic acid isolated from *Terminalia chebula* fruit was investigated. Chebulinic acid was evaluated against cold restraint , aspirin,alcohol and pyloric ligation induced gastric ulcer models in rats. Potential anti ulcer activity of chebulinic acid was observed against CRU (62.9%), AS (55.3%) AL (80.67 %) AND PL (66.63%) induced ulcer models. Chebulinic acid significantly reduced free acidity (48.82%) , total acidity (38.29%) and upregulated mucin secretion by 59.75% respectively. Further , Chebulinic acid significantly inhibited H (+) K (+) – ATP ase activity invitro with IC 50 of 65.01 microgram /ml as compared to the IC50 value of omeprazole (30.24 microgram/ ml) confirming its anti- secretory activity [(49)]

Antioxidant and free scavenging activity

The leaves, bark and fruit of *Terminalia chebula* possessed high anti oxidant activity and phenolics were found to be responsible for this activity. Aqueous extract of *Terminalia chebula* inhibited xanthine / xanthine oxidase activity and was also an excellent scavenger of DPPH radicals. *Terminalia chebula*in a polyherbal formulation (Aller-7/ NR-A2) inhibited free radical induced hemolysis and also significantly inhibited nitric oxide release from lipo polysaccharide stimulated murine macrophages. Six extracts and four compounds of *Terminalia chebula* fruit exhibited antioxidant activity at different magnitudes of potency. Strong antioxidant activity of aqueous extract *Terminalia chebula* was observed by studying the

inhibiton of radiation induced lipid peroxidation in rat liver microsomes at different doses and methanolic extract was also found to inhibit lipid peroxide formation and to scavenge hydroxyl and superoxide radicals invitro.Acetone extract has stronger antioxidant activity than alpha – tocophorol and HPLC analysis with diode array detection indicated the presence of hydroxyl benzoic acid derivaties, hydroxyl cinnamic acid derivaties, flavanola glycones and their glycosides , asmain phenolic compounds. (48)

Anti inflammatory and anti arthiritis activity:

Aqueous extract of dried fruit of *Terminalia chebula* showed anti – inflammatory by inhibiting inducible nitric oxide synthesis. Chebulagic acid from immature seeds of *Terminalia chebula* significantly suppressed the onset and progression of collagen induced arthritis in mice. *Terminalia chebula* in a polyherbal formulation (Aller-7) exhibited a dose dependent anti- inflammatory effect against Freund's adjuvant induced arthiritis in rats. (48)

Gastrointestinal motility improving and anti- ulcerogenic activity

Although its traditional use as laxative is well estabilised *Terminalia chebula* fruit has been shown to increase gastric emptying time. This action appeared to be balanced with a protective effect on the gastrointestinal mucosa, with the improvement in secretory status of Brunner'gland involoved in the protection against duodenal ulcer. (48)

Antisapasmodic activity

One of the numerous studies *Terminalia chebula* demonstrated its ' anti- vata or anti – spasmodic ' properties by the reduction of abnormal blood pressure as well as intestinal spasms. This confirm its traditional usefulness for spastic colon and other intestinal disorders. (48)

Purgative property

Purgative action of an oil fraction from *Terminalia chebula* has been documented**.** (48)

3. NAME OF THE PLANT : KARUMPU

VERNACULAR NAMES:

- ✓ English : Sugarcane, Noble cane
- ✓ Malayalam : Karinpa
- ✓ Sanskiric : Ikshu, Rasalah

TAXONOMICAL DITRIBUTIONS:

- ✓ Kingdom : Plantae
- ✓ Order : Poales
- ✓ Family : Poaceae
- ✓ Sub family : Panicoidaceae
- ✓ Tribe : Andropogonae
- ✓ Sub tribe : Saccharinae
- ✓ Genus : Saccharum
- ✓ Species : Officinarum
- ✓ Botanical name: *Saccharum officinarum.* [51]

ORGANOLEPTIC CHARACTERS:

- ✓ Taste : Sweet
- ✓ Character: Cool
- ✓ Division : Sweet

ACTIONS:

Demulcent, Antiseptic, Cooling, Laxative, Diuretic, Nutrient,Aphrodisiac. [51]

USED PART:

Stem

MEDICINAL USES:

- Sugar cane helps to flow the urine and functions the kidney properly.
- Its treat skin and urinary tract infections, bronchitis, heart conditions, cough,anemia, constipation, jaundice, low blood pressure and loss of milk production**.** [52]
- It also treat anemia, inflammation and ulcers**.** [55]

PHYTOCHEMICAL CONSTITUTENTS:

- Sugar cane juice comprises 70-75% water, 13-15% sucrose and 10-15% fiber**.**
- Color components- Chlorogenic acid, Cinnamic acid, Flavones, Following all the color components from sugar cane juice were classified into four major class; Plant pigments, Polyphenolic compounds, Caramel and degradation products of sugars condensed with amino derivaties.
- Flavanoid – phenolic acid(Hydroxycinnamicacid,sinapic acid, caffeic acid)

  Flavones such as apigenin, luteolin and tricin glycosides like orientin, vitexin, schaftoside and swertisin.
- Minor flavones - Swertisim, tricin-7-neohesperoside-4-O-rhamnoside, tricin-7-O-methylglucuronate- 4-O-rhamnoside, tricin-7-O- methylglucuronide.some novel acylated flavones glycosides such as tricin-7-O-beta-Glucoside,Luteolin-8-C-rhamnosyl glucoside, and tricin-4-0-ether.
- Sodium, Calcium, Magnessium, Copper, Iron, Phosphorus and Zinc**.** (56)

பொது குணம்

கரும்பிரத மெத்தவுண்டாற் காணுங் கபநோய்

விரும்பிவெல்ல மெத்தவுண்டால் மேகம் - தருமதுநீர்

உண்டா மதைமிதமா யுண்டால்மே கம்பித்தம்

மிண்டாமற் சாந்தமுறும் விள. [36]

PHARMACOLOGICAL ACTIVITY:

Analgesic,Anti-inflammatory,Diuretic**,**[52] Immunotherapeutic effects**,**[53] Anti-bacterial**,** Anti-allergic[54], Anti-cancer, Anti- mutagenicity[55]**,Anti-Ulcer,**[56]Anti-oxidant. [58]

SCIENTIFIC REVIEW:

Anti oxidant activity:

The phenolic extract obtained from sugar cane juice showed a protective effect against in vivo MeHgCl intoxication and potent inhibition of vivo lipo peroxidation of rat homogenates, indicating a potential use for beneficial effects and / or therapeutic applications.[58]

Anti ulcer activity:

The purpose of the study was to elucidate the anti ulcer activity of stem of *Saccharum officinarum* (Poaceae) in alibino rats against aspirin induced gastric ulcer, ethanol induced gastric ulcer and pylorus ligation induced gastric ulcer models. Groups of rats were fasted overnight , received rantidine (20 mg/ kg) as a standard and plant stem juice extract at dose of 0.75 ml/ 100gm and 1.5 ml / 100 gm as a treatment against aspirin induced ulcer, ethanol induced gastric ulcer and pylorus ligation induced gastric ulcer. The treatment produced significant protection of ulcer induced by aspirin , ethanol and pylorus ligation induced ulcer. The extract also reduced ulcer index, volume of gastric content, free and total acidity, suggesting that extract possesses significant anti- ulcer activity**.** [57]

4.**NAME : COW'S GHEE**

VERNACULAR NAMES:

- Tamil : Nei
- English : Butter oil, Clarified butter, Drawn butter, Seafood butter
- Malayalam : Neyyuh
- Sanskrit : Ghritam, Ghritham, Ghrut, Ghrutham, Sarpi

ACTIONS:

- Cooling, Rejuvenating, Aprhrodisiac· [59]

MEDICINAL USES:

Aegle marmelos extract with cows ghee showed enhance the healing process and taking in the part of wound contract

It enhances stamina, Memory and Beauty. It contain highly source of Vitamin A&E and Its extensively to used to prevent blindness

Cows ghee carry the number of saturated and unsaturated fatty acids,its takng in the part of production of inflammatory mediators and wound healing processes. [59]

Cow ghee contains a number of saturated and unsaturated fatty acids that plays active roles in production of inflammatory mediators and wound healing processes**.**

It improves digestive power, absorption,mental illness and balance the Vatha , Pitha thathu. Its also strengthen nervous system**.** [60]

PHYTOCHEMICAL CONSTITUTENTS:

Conjugated linolenic acid, Carotenes, Vitamin A,D,E,K (Anti oxidant), Glycerides, Free fatty acids, Phospholipids, Sterols and their ester, Carbonyl compounds, Hydro carbons, Copper, Iron. [61]

பொது குணம்

தாக முழசுட்கம் வாந்திபித்தம் வாயுபிர
மேகம் வயிற்றரிவு விக்கலழல் - மகாசாங்
குன்மம் வறட்சி குடல்புரட்டலல் திசுட்களஞ்
சொன்மூலம் போக்கு நிறைத்துப்பு.[37]

PHARMACOLOGICAL ACTIVITY:

Wound healing property, Anti-ulcer, Anti-cancer**,** Hepato-protective**,** Anti-fungal**,** Eye lubricant activity [59]**,** Anti-oxidant.

SCIENTIFIC REVIEW:

Researchers on models of Sprague Dawely outbread rats showed that no effect of 5 – 10% ghee supplemented diets on serum cholesterol and triglycerides.

The lipophilic action of cow's ghee facilitates transporatation of drug to a target organ and final delivery inside the cell since the cell membrane also contain lipid. The cholesterol problem does not arise in the administration of ghee as it is found that absorption of cow's ghee increases only the good (HDL) and the bad cholesterol (LDL) level. This is cow ghee is capable of increasing the range of vitamins soluble in fat, like vitamin E and thereby prevents the oxidation of LDL.Hence there is no conceivable change in the lipid profile.

4. MATERIALS AND METHODS

AIM:

Clinical evaluation of siddha herbal formulation Amalakathi Kirutham in the treatment of Erigunmam (Acid Peptic Disease).

OBJECTIVE:

Primary objective :

To study the clinical efficacy of siddha formulation Amalakthi kirutham in the treatment of Erigunmam (Acid Peptic Disease).

Secondary objective:

To study other co factors related to the disease like Age, Sex, Diary habits, Family history, Socio economic status etc on the disease.

METHODOLOGY:

Study design An open clinical study.

Study type Interventional study

Study place OPD of Ayothidoss Pandithar Hospital,
National Institute of Siddha,
Tambaram sanatorium, Chennai-47

Number of patients 30 Patients (Both male and female, Transgender)

Duration 12 Months.

Treatment plan:

According to Siddha line of treatment, oil bath advised before administrating the study drug.

Thilam : Seeraga Thilam

Quantity : 50ml

TREATMENT:

Study drug	: Amalakathi kirutham
Dosage	: Nei karanti alavu
Duration	: 48 days (BD), 4ml
Reference	: Chigitcha Rathina Deepam (Page no 203)
Author	**:** C.Kannusamy pillai
Edition	: 1951
Publiser	**:** B. Rathina Nayakkarand Sons**,**
	No.26, Venkatramastreet, Kondithoppu, Chennai-79.

SELECTION CRITERIA

Subject Selection:

Eri gunmam (Acid Peptic disease) patients reported to OPD Department of Maruthuvam, Ayothidoss Pandithar Hospital, Naional Institute of Siddha. The patients were screened by using screening proforma. After screened the selected Erigunmam patients enrolled in study who fulfilled the inclusion and exclusion criteria as said below.

INCLUSION CRITERIA:

- Age: 18- 60 years
- Sex: Male, Female and Transgender
- Patient who had symptoms of Eri gunmam.
- Patient willing to sign the informed consent.
- Patient willing to gave the blood sample before and after treatment.

EXCLUSION CRITERIA:

1. Cardiac vascular disease.
2. Renal disease
3. Hypertension
4. Diabetes mellitus

5. Pregnancy & Lactation
6. Gastric carcinoma
7. Worm infestations
8. Abnormal spinal curvature of thoracic vertebrae
9. Pancreatitis
10. Liver disorders.

WITHDRAWAL CRITERIA:

- Poor patient compliance and defaulters.
- Patient turning unwilling to continue in the course of clinical trial.
- Intolerance to the drug and development of adverse reactions during the trial.
- Patients who will not take medication regularly.

ASSESSMENTS AND INVESTIGATIONS:

a) Clinical assessment- Before and after treatment
b) Siddha assessment - Before and after treatment
c) Routine investigations - Before and after treatment
d) Specific investigations - Before and after treatment

A) Clinical assessment:

Siddha aspect :

- Burning or gnawing sensation of stomach
- Loss of weight
- Headache
- Sweating from hair follicles
- Burping
- Flatulence
- Increased salivation
- Twisting pain in intestine
- Diarrhea
- Giddiness

B) Modern aspect:

The efficacy of the drug Amalakathi kirutham clinically assessed by the reduction of signs and symptoms of Erigunmam (APD) by using the Gastrointestinal Symptoms Rating Scale (GSRS). GSRS scale was combination of above the 15 symptoms. GSRS score calculated as per Revicki 1997.[34]

Table:7 Calculation of GSRS score:

Calculation of GSRS score:	
Reflux	Average of Heart burn and Acid reflux
Abdominal pain	Average of Pain or Abdominal discomfort in your upper abdomen, Hunger pain and Nausea.
Indigestion	Average of Nausea, Rumbling, Bloating and Passing gas or flatus
Constipation	Average of Constipation, Hard stools and Urgent need to have bowel movement.
Diarrhea	Diarrhea, Loose stools and Sensation of not completely empty stomach.
GSRS score: Average of all five sub scores.	

Table: 8 Gastrointestinal Symptoms Rating Scoring scale:

S.No	Gastrointestinal Symptoms Rating Scale-GSRS	No	Minor	Mild	Moderate	Moderately Severe	Severe	Very Severe
1.	Pain or Abdominal discomfort in your upper abdomen	1	2	3	4	5	6	7
2	Heart burn	1	2	3	4	5	6	7
3.	Acid reflux	1	2	3	4	5	6	7
4.	Hunger pain	1	2	3	4	5	6	7
5.	Nausea	1	2	3	4	5	6	7
6.	Rumbling	1	2	3	4	5	6	7
7.	Bloated	1	2	3	4	5	6	7
8.	Burping	1	2	3	4	5	6	7
9.	Passing gas or flatus	1	2	3	4	5	6	7
10.	Diarrhea	1	2	3	4	5	6	7
11.	Constipation	1	2	3	4	5	6	7

12.	Loose stools	1	2	3	4	5	6	7
13.	Hard stools	1	2	3	4	5	6	7
14.	Urgent need to have bowel movement	1	2	3	4	5	6	7
15.	Sensation of not completely empty stomach	1	2	3	4	5	6	7

B) Siddha assessment:

Thinai (Living Place):

1. Kurinchi (Hill areas)
2. Mullai (Forest)
3. Marutham (Fertile land)
4. Neithal (Costal area)
5. Paalai (Desert)

Kalam (Season)

1. Karkaalam
2. Koothirkaalm
3. Munpanikaalm
4. Pinpanikaalam
5. Ilavenilkaalam
6. Muthuvenilkaalam

Iympulangal (5 Sense Organs)

1. Mei (Skin)
2. Vaai (Tongue)
3. Kan (Eye)
4. Mooku (Nose)
5. Sevi (Ear)

Kanmenthiriyangal:

1. Vaai (Buccal Cavity)
2. Kaal (Lower limb)
3. Kai (Upper limb)
4. Eruvaai (Anorectal region)
5. Karuvaai (Uro-genital region)

Kosngal:

1. Paru Udambu (Annamaya Kosam)
2. Vali Udambu (Pranamaya Kosam)
3. Mana Udambu (Manomaya Kosam)
4. Arivu Udambu (Vingnaanamaya Kosam)
5. Inba Udambu (Aananthamaya Kosam)

Ezhu udal kattugal :

1. Saram
2. Senneer
3. Oon
4. Kozhuppu
5. Enbu
6. Moolai
7. Sukkilam/Suronitham

Uyir thathukkal:

Vali:

1. Praanan
2. Abaanan
3. Samaanan
4. Udhaanan
5. Viyaanan
6. Naagan
7. Koorman
8. Kirukaran
9. Dhananjeyan
10. Devathathan

Azhal:

1. Anarpitham
2. Prasakam
3. Saathakam
4. Aalosakam
5. Ranjakam

Iyam:

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

Ennvagai Thervu (The Eight types of examination):

1. Nadi (Pulse perception)
2. Naa (Tongue)
3. Niram (Complexion)
4. Mozhi (Voice)
5. Vizhi (Eyes)
6. Sparisam (Palpatory perception)
7. Malam (Bowel habits)
8. Moothiram (Urine)

C) Routine investigation:

- **Haematology :**

  Hb (gms%), Total WBC(cells/ cumm), DC, ESR

- **Renal Function Test :**

  Blood urea, Creatinine

- **Liver Function Test :**

Total bilirubin, Direct bilirubin, Indirect bilirubin, SGOT, SGPT, Alkaline phosphatase

- **Lipid Profile :**

  Total cholesterol, HDL,VLDL, LDL,Triglycerides

- **Motion test:**

  Ova, Cyst and Occult blood

USG abdomen & pelvis:

D) Special investigations:

Endoscopy (Patient who are having previous endoscopy report that patient who are willing to take endoscopy after treatment).

STUDY ENROLLMENT:

In this clinical trial, patients were reported at OPD of Department of Maruthuvam, Ayothidoss Pandithar Hospital, NIS with the clinical symptoms of burning or gnawing sensation after meals, Headache, Giddiness, Increased salivation, Bloating, Abdominal flatulence with diarrhea, Burping, sweating from hair follicles, loss of weight. Patient information sheet issued to the patients. The patients enrolled in this study and informed about the objective of the study, trial drug, possible outcomes in their own language and terms understandable to them. After ascertain the patients willingness, informed consent was obtained in the consent form. All these patients were registered in AHMIS and unique registration and issued which contain information regarding patients, Registration number, Address, Phone number and Doctors phone number etc. It help to report easily if any adverse reactions arise. Complete clinical history, complaints and duration, examination findings were recorded in the prescribed case report form. Form 2 was used for recorded the patients history, clinical examination of signs and symptoms, laboratory investigations respectively. Patients were advisd to take the trial drug with an appropriate dietary advice according to the patients perfect understanding.

CONDUCT OF THE STUDY:

Patients who came under inclusion criteria was recruited in the Study.On 1stday the patient recommended to take oil bath with Seeraga thylam (required quantity) On 2rdday the patient advised to take rest (without medication). On 3rd day, the trial drug “Amalakathi kirutham” was issued at the dose of 4ml twice a day(Before food) continuously for 48days. At each visit, the clinical assessment was done and prognosis was noted in every 24 days. Laboratory investigations were done

on the 0^{th}day and 49^{th}day of the trial. During the course of the treatment, patients advised to take the diet as given in diet form. If any of the trial patients who failed to collect the trial drug on the prescribed day but wanted to continue in the trial, from the next day or two, he/she will be allowed. But defaulters of more than one week did not allowed to continue and withdrawn from the study with fresh case was included.

Follow-up:

After the end of the treatment, the patient advised to visit the OPD for another 2 months for follow-up. In the follow-up period, the patient's improvement documented. Trial medicines did not give during this period.

DATA MANAGEMENT:

After enrolled the patient in the study, a separate file for each patient will be opened and all forms filed in the file. Study No. and OPD/ IPD No entered on the top of file for easy identification. Whenever the study patient visit OPD during the study period, the respective patient file were taken and necessary recordings was made at the CRF or other suitable forms.he screening forms were filed separately.

The Data recordings wiere monitored for completion by Guide (HOD, Dept. of Maruthuvam), SRO (statistics) and the adverse event monitored by the members of the reactions Pharmacovigilance department of NIS. All forms were further scrutinized in presence of investigator by Sr.Research Officer (statistics) for logical errors and incompleteness of data to avoid any bias

.

OUTCOME OF TREATMENT:

A).Primary outcome:

Primary outcome mainly assessed by comparing the reduction of clinical symptoms before and after treatment by using GSRS scale.

B).Secondary outcome:

Secondary outcome assessed by the disease related to Age, Sex, Dietary habits, Socio economic status, Family history etc.

Secondary outcome assessed by comparing the reduction of clinical symptoms before and after treatment by using Endoscopy.

STATISTICAL ANALYSIS:

All the data were entered into computer using MS Access software with macro for logical errors and manually cross checked for data entry error.Then the data were exported to STATA/SPSS Software for univariate /multivariate analysis. Paired 't' test performed for determining the significance of a particular effect variable.

ASSESSMENT FORMS:

Form - I	Screening and Selection Proforma
Form - II	Case record form
Form - III	Laboratory investigation form
Form – IV	Treatment Compliance form
Form - V	Information sheet
Form - VI	Consent form
Form -VII	Withdrawal form / Adverse drug reaction form
Form –VIII	Pharmacovigilance form
Form –IX	Dietary Advice form.

PREPARATION OF THE STUDY DRUG

INTERNAL MEDICINE: AMALAKATHI KIRUTHAM

Trial Drug : Amalakathi kirutham
Dosage : Nei karanti alavu (4ml), Twice a day
Duration : 48 days
Reference : Chikitcha rathina deepam (Page no: 203)
Author : C.Kannusamy pillai
Edition : 1951

STANDARD OPERATING PROCEDURE FOR AMALAKATHI KIRUTHAM:

REQUIRED RAW DRUGS:

- ✓ Nelikai (*Phyllanthus Embilica.* Linn) : 1 Padi (1.30 Liter)
- ✓ Kadukkai (*Terminalis Chebula* Linn) : 2 1/2 Palam (87.5 G)
- ✓ Karumpu (*Saccharam Officinarum* Linn) : 1 Padi (1.30 Liter)
- ✓ Cows Ghee : 10 Palam (350g)

SOURCE OF RAW DRUG:

The required raw drugs purchased from a well reputed country shop and the fresh fruits and stem collected from the kancheepuram district. These drugs were authenticated by the assistant professor of Medicinal Botany, Gunapadam, NIS, The raw drugs was purified and then the study drug was prepared as SOP in Gunapadam laboratory, National Institution of Siddha.

PURIFICATION OF RAW DRUGS:

The following drugs was purified as per siddha literature.**Ref:** Chikitcha Rathina deepam[35]

- ✓ **Nelikai (*Phyllanthus embilica.* Linn)**
  - The seed was removed and only the outer part to be taken.
- ✓ **Kadukkai (*Terminalis chebula* Linn)**
  - The seed was removed and only the outer part to be taken.
- ✓ **Karumpu (*Saccharam officinarum* Linn)**
  - Remove the skin and kanu.
- ✓ **Cows ghee :**
  - Boiled.

METHOD OF PREPARATION:

The juice was prepared from the Nelikkai, Karumpu and The kadukkai was grined into fined powder form. Nelikkai, Karumpu juice , Kaduklai thool chooranam and Ghee was added and mixed well. Whole contents were mixed to boil untill kirutham consistency.

DRUG STORAGE:

The prepared drug was stored in a clean and dry new air tight container.

DISPENSING:

The prepared medicine Amalakathi kirutham (Nei karanti alavu- 4ml) was given to the patient in the disposable air tight container. At each visit the patient was given the above drug package for 7 days of treatment. At each visit the patient brought back the unconsumed drug if any and returned it to the PG scholar.

RAW DRUGS

Kadukkai (*Terminalis chebula*)

Figure:13 Kadukkai

Nelikkai (*Phyllanthus embilica)*

Figur:14 Nelikkai

Karummpu (*Saccharam officinarum*)

Figure:15 Karumpu

Cow's ghee

Figure:16 Cows ghee

AMALAKTHI KIRUTHAM

Figure:17 The trial drug “ Amalakathi kirutham “

5. OBSERVATION AND RESULTS

5.1. PRECLINICAL EVALUATION

5.1.1. PHYTOCHEMICAL ANALYSIS

1.1 The following medical formulation used in the study was processed by the methods presecribed in standard text books of siddha medicine.

Amalakathi kirutham was prepared by the method described in Chikitcha Rathina Deepam.

1.2 Preliminary phytochemical screening preliminary qualitative analysis of drug- Amalakathi kirutham

Analyzed as per standard procedure at the department of Biochemistry, National Institute of Siddha, Chennia- 47.

Preparation of extract:

10ml of Amalakthi kirutham was measured accurately and placed in the 250ml of cleaned beaker and added with 250ml of the distilled water. Then it is boiled well for 10 minutes. Then it was cooled and filtered in 100ml volumeteric flask and made up to 100ml with distilled water.

Table: 9 Preparation of extract

S.NO	EXPERIMENT	OBSERVATION	INFERENCE
1	Apperance of sample	Dark brown in colour.	Straw yellow color
2	**SOULBILITY:** a) A liitle of the sample is shaken with distilled water. b) Aliitle of the sample is shaken well with conc HCL/conc H2SO4.	Sparingly soluble. Completely soluble.	Insoluble
3	**ACTION OF HEAT**: A small amount of the sample is taken in a dry test tube and heated gartly at first and then strong.	White fumes evolved No brown fumes.	**Presence of carbonate**
4	**FLAME TEST:** Asmall amount of the sample is made into a paste will conc.HCL in a watch glass and introduced into non luminous part of the Bunsen flame.	Bluish green flame appeared.	**Presence of Copper**
5	**ASH TEST:** A filter paper is soked into mixture of the sample and cobalt nitrate solution and introduced into bursen flame and ignited.	No yellow colour flame.	Absence of Sodium

Table:10 Test For Acid Radicals:

S.NO	PROCEDURE	OBSERVATION	INFERENCE
1	**TEST FOR SULPHATE:** A) 2ml of above prepared extract is taken in the test tube to this added 2ml of 4% ammonium oxalate solution. b) 2ml pof the above prepared extract is added with 2ml of dilution HCL is added until the effervescence ceases off.Then 2ml of barium chloride solution is added	No Cloudy appearance present. A white precipitation insoluble in conc.HCL is obtained.	Absence of Sulphate
2	**TEST FOR CHLORIDE:** 2ml of above the prepared extract is added with dilution hno3 till the effervescenes ceases. Then 2ml of is treated with sliver nitrate solution.	No cloudy appearance present.	Absence of Chloride
3	**TEST FOR PHOSPHATE:** 2ml of extract is treated with 2ml of ammonium molybdate solution and 2ml of conc.HNO3.	Cloudy yellow appearance present.	Absence of Phosphate

4	**TEST FOR CARBONATE:** 2ml of the extract is treated with 2ml of magnesium sulphate solution.	Cloudy appearance present.	**Presence of Carbonate**
5	**TEST FOR NITRATE:** 1gm of the substance is heated with copper turnings and conc H2SO4 and viewed the test tube vertically down.	No characteristics changes.	Absence of Nitrate
6	**TEST FOR SULPHIDE:** 1gm of the substance is trated with 2ml of conc HCL.	No rotten egg smelling gas evolved.	Absence of Sulphate
7	**TEST FOR FLUORIDE AND OXALATE:** 2ml of extract is added with 2ml of acetic acid and 2ml of calcium chloride solution and heated.	No cloudy appearance present.	Absence of Fluoride and Oxalate
8	**TEST FOR NITRITE:** 3 drops of the extract is placed on the fliter paper on that 2 drops of acetic acid and 2 drops of benzidine solution is placed.	No characteristics changes.	Absence of Nitrate

9	**TEST FOR BORATE:** 2 pinches of the substances is made into paste by using sulphuric acid and alchol and introduced into blue flame.	Bluish green colour flame not appeared.	Absence of Borate

Table: 11 Test For Basic Radicals:

S.NO	PROCEODURE	OBSERVATION	INFERENCE
1	**TEST FOR LEAD:** 2ml of the extract is added with 2ml of potassium iodide solution.	No yellow precipitate is obtained.	Absence of Lead
2	**TEST FOR COPPER:** a) One pinch of substance is made into paste with conc HCL in a watch glass and introduced into non luminous part of the flame. b) 2ml of the extract is added with excess of ammonia solution.	Blue colour flame Blue colour precipitate formed.	**Presence of Copper**
3	**TEST FOR ALUMINIUM**: To the 2ml of extract sodium hydroxide is added in drops to excess.	No characteristics changes.	Absence of Aluminium
4	**TEST FOR IRON**: a) To the 2ml of extract add 2ml of	Mild red colour appear.	**Presence of Iron**

	Ammonium thiocyaniate solution. b) To the 2ml of extract 2ml of Ammonium thiocyanate solution and 2ml of conc HNO3.	Blood red colour appeared.	
5	**TEST FOR ZINC:** To 2ml of the extract sodium hydroxide solution is added in drops to excess.	White precipitate if formed.	**Presence of Zinc**
6	**TEST OF CALCIUM:** 2 ml of the extract is added with 2 ml of 4% ammonium oxalate solution	Cloudy appearance and white precipitate is obtained	**Presence of Calcium**
7	**TEST FOR MAGNESIUM:** To 2 ml of extract sodium hydroxide solution is added in drops to excess.	White precipitate is obtained	Absence of Magnesium
8	**TEST FOR AMMONIUM:** To 2 ml of extract few ml of Nessier's reagent and excess of sodium hydroxide solution are added.	No brown colour appeared	Absence of Ammonium

9	**TEST FOR POTASSIUM:** A pinch of substance is treated with 2 ml of sodium nitrate solution and then treated with 2 ml of cobalt nitrate in 30% glacial acetic acid.	No yellowish precipitate is obtained	Absence of Pottasium
10	**TEST FOR SODIUM:** 2 pinches of the substances is made into paste by using HCL and introduced into the blue flame of Bunsen burner.	yellow colour flame appeared	Absence of Sodium

INTERPRETATION:

The Bio chemical analysis showed the presence of **Sulphate, Calcium, Carbonate, Copper, Zinc, Iron** and absence of Pottasium, Ammonium, Sodium, Magnesium, Aluminium, Lead, Borate, Nitrate, Chloride, Phosphate, Fluride and oxalate in **Amalakathi kirutham**.

5.1.2. PHYSICOCHEMICAL EVALUATION OF AMALAKATHI KIRUTHAM

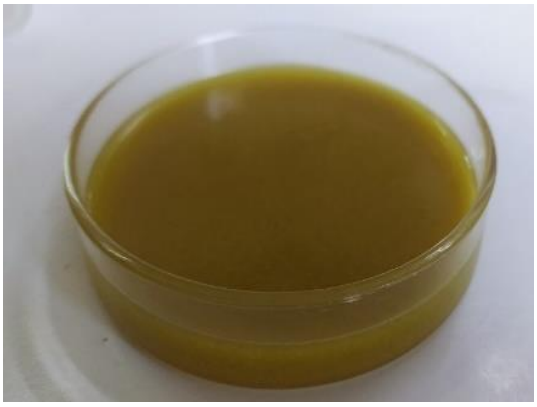


Figure:18 Amalakthi kirutham

Table12: Sample description:

State	Liquid
Nature	Viscous
Odour	Characteristic
Touch	Greasy
Flow Property	Free Flowing
Appearance	Dark Yellowish

Table: 13 Solubility Profile

S.No	Solvent Used	Solubility / Dispersibility
1	Chloroform	Soluble
2	Ethanol	Insoluble
3	Water	Insoluble
4	Ethyl acetate	Soluble
5	DMSO	Insoluble

Determination of Iodine value

About 20 gm of test sample was transferred into Iodine flask. To which 10 ml of chloroform was added and warmed slightly and cooled for 10 minutes. Followed by this about 25 ml of Wiji's solution was added in the same flask and shaken well. The flask was allowed to stand for 30 mins and refrigerated for an hour.T About 10 ml of KI solution was added to this and titrated against 0.1 N Sodium thiosulphate solutions until the appearance of yellow colour. 1 ml of starch indicator was added and again titrated against the sodium thiosulphate solution from the burette. Disappearance of blue colour indicates end point. Repeat the above procedure without taking sample and note the corresponding reading for blank titration.

Determination of saponification value

About 2 gm of test sample was transferred into the round bottomed flask. To this about 20 ml of 0.5 N alcoholic KOH solutions was added to the round bottomed flask. Repeatthe same procedure without taking the sample for blank titration. Reflux both sample and blank round bottomed flasks for 1 hour. After reflux, allow both the round bottomed flasks to cool. Titrate the samples using 0.5 N HCl with phenolphthalein indicator. The disappearance of pink indicates the end point.

Determination of Viscosity value

Viscosity determination were been carried out using Ostwald viscometers. Measurement of viscosity involves the determination of the time required for a given volume of liquid to flow through a capillary. The liquid is added to the viscometer, pulled into the upper reservoir by suction, and then allowed to drain by gravity back into the lower reservoir. The time that it takes for the liquid to pass between two etched marks, one above and one bellow the upper reservoir, is measured.

Determination of Refractive Index

Determination of RL was carried out using Refractometer.

Determination of Weight per ml

Weight per ml was determined using the comparative weight calibration method, in which the weight of 1ml of the base of the formulation was calculated and then weight of 1 ml of finished formulation were been calculated. The difference between weight variations of the base with respect to finished formulation calculated as an index of weight per ml.

Acid Value

Accurately 5 g of test sample was weighed and transferred into a 250 mL conical flask. To this, a 50 mL of neutralized alcohol solution was added. This mixture was heated for 10 min by heating mantle. Afterwards, the solution was taken out after 10 min and 1 or 2 drops of phenolphthalein indicator was added. This solution was titrated against KOH solution from the burette. The appearance of pink color indicated the end point. The volume of consumed KOH solution was determined and the titration of test sample was carried out in triplicate and the mean of the successive readings was used to calculate the acid-value of the respective sample by following expression.

Acid value = Titter Value X 0.00561X 1000 / Wt of test sample (g)

Peroxide value

5 g of the substance being examined, accurately weighed, into a 250-ml glass-stoppered conical flask, add 30 ml of a mixture of 3 volumes of glacial acetic acid and 2 volumes of chloroform, swirl until dissolved and add 0.5ml volumes of saturated potassium iodide soluton. Allow to stand for exactly 1 minute, with occasional shaking, add 30 ml of water and titrate gradually, with continuous and vigorous shaking, with 0.01M sodium thiosulphate until the yellow colour almost disappears. Add 0.5 ml of starch solution and continue the titration, shaking vigorously until the blue colour just disappears (a ml). Repeat the operation omitting the substance being examined (b ml). The volume of 0.01M sodium thiosulphate in the blank determination must not exceed 0.1 ml.

PEROXIDE VALUE= 10(a-b)/w

Table 14: Analytical Report of Amalakathi kirutham

S.No	Parameter	AMK
1	Viscosity at 50^{o}C (Pa s)	**59.65**
2	Refractive index	**1.48**
3	Weight per ml (gm/ml)	**1.43**
4	Iodoine value (mg I2/g)	**69.85**
5	Saponification Value (mg of KOH to saponify 1gm of fat)	**181.87**
6	Acid Value mg KOH/g	**0.617**
7	Peroxidase Value mEq/kg	**6.96**

5.1.3. PHYTOCHEMICAL ANALYSIS OF AMALAKATHI KIRUTHAM

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.

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.

Figure:19 Results: Qualitative Phytochemical Investigation

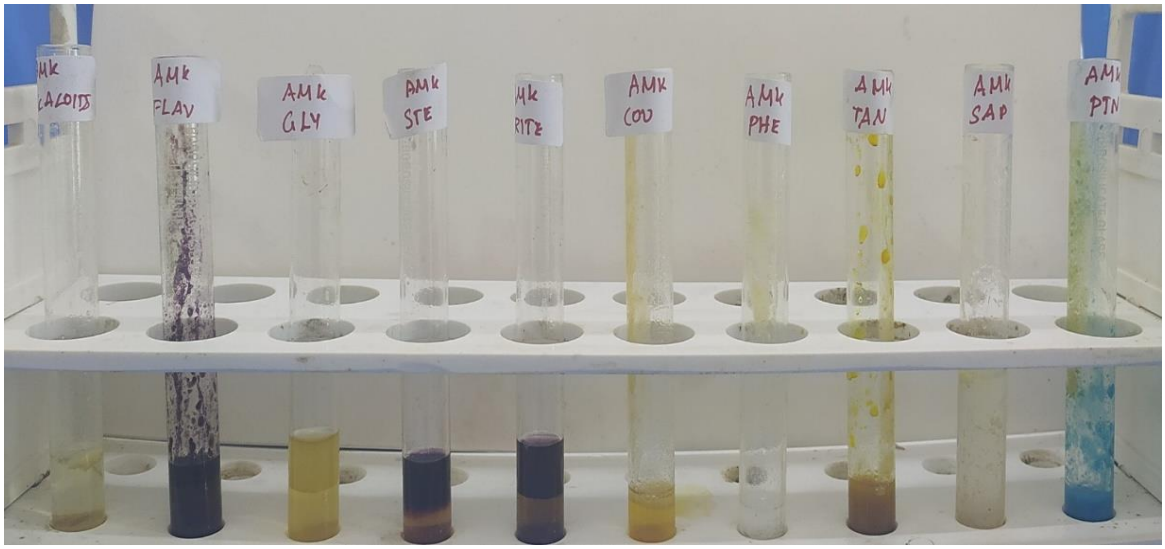


Table:15 Phytochemical Analysis Report

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

Indicates Positive + -> and - -> Indicates Negative

5.1.4 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 wasperformed 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 thetest 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-100ppm sample in 1mol/L HCL Cd& Pb-100 ppm sample in 1mol/L HNO3.

Table:16 Heavy metal analysis Test Report

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

Report and Inference

Results of the present investigation have clearly shows that the sample has no traces of heavy metals such as Lead, Mercury and Cadmium, whereas the sample shows the presence of Arsenicat 0.18 ppm.

5.1.5.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. 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 phytotherapeutics.

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 analyzed. 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 sample and their respective Rf values were tabulated.

Figure: 20 TLC Visualization of AMK at 366 nm

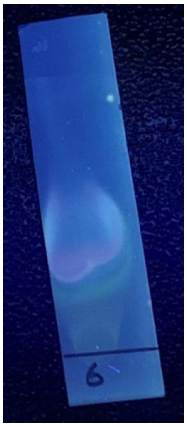
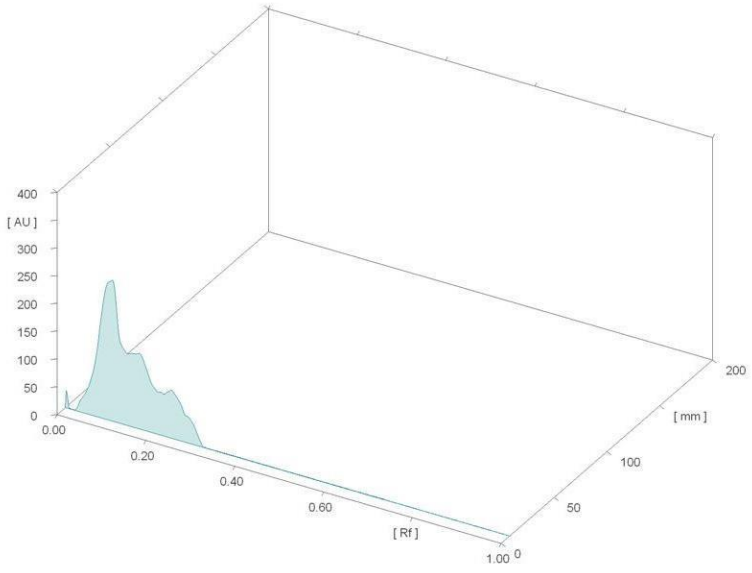


Figure: 21 3D - Chromatogram



Figur: 22 HPTLC finger printing of Sample AMK

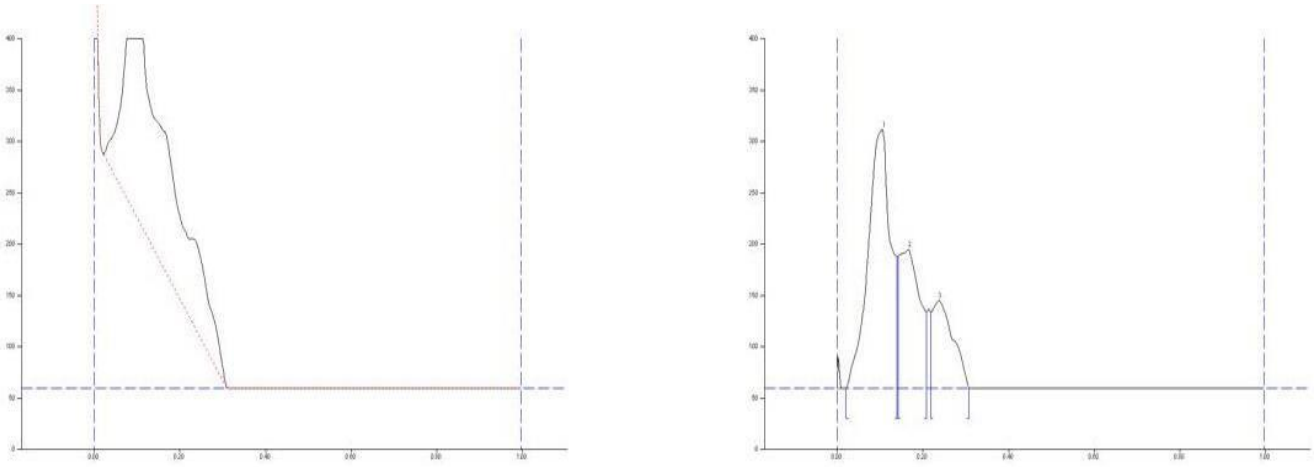


Table: 17 Peak Table

Peak	Start Rf	Start Height	Max Rf	Max Height	Max %	End Rf	End Height	Area	Area %
1	0.02	0.1	0.11	252.5	53.29	0.14	128.4	7299.0	55.11
2	0.14	129.1	0.17	135.4	28.59	0.21	75.1	3606.6	27.23
3	0.22	74.8	0.24	85.8	18.12	0.31	1.4	2338.7	17.66

REPORT

HPTLC finger printing analysis of the sample reveals the presence of three prominent peaks corresponds to presence of three versatile phytocomponents present with in it. Rf value of the peaks ranges from 0.02 to 0.22.

5.1.6. TEST FOR SPECIFIC PATHOGEN

Methodology

Test sample was directly inoculated in to the specific pathogen medium (EMB, DCC, Mannitol, Cetrimide) by pour plate method. The plates were incubated at 37^{o}C for 24 - 72h for observation. Presence of specific pathogen identified by their characteristic color with respect to pattern of colony formation in each differential media.

Table: 18 Detail of Specific Medium and their abbreviation

Organism	Abbreviation	Medium
E-coli	EC	EMB Agar
Salmonella	SA	Deoxycholate agar
Staphylococcus Aureus	ST	Mannitol salt agar
Pseudomonas Aeruginosa	PS	Cetrimide Agar

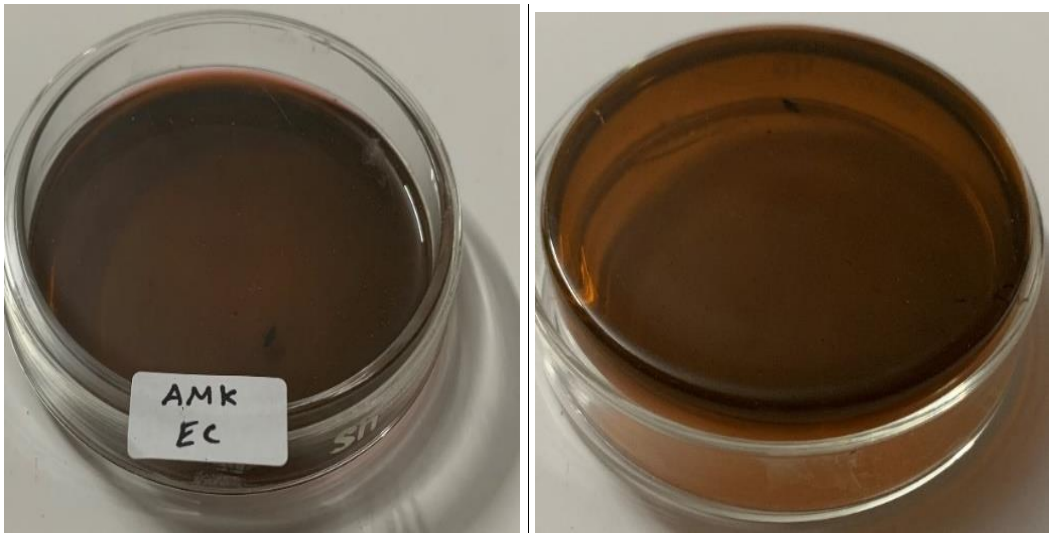
Observation & Result:

No growth was observed after incubation period. Reveals the absence of specific pathogen, No growth / colonies were observed in any of the plates inoculated with the test sample.

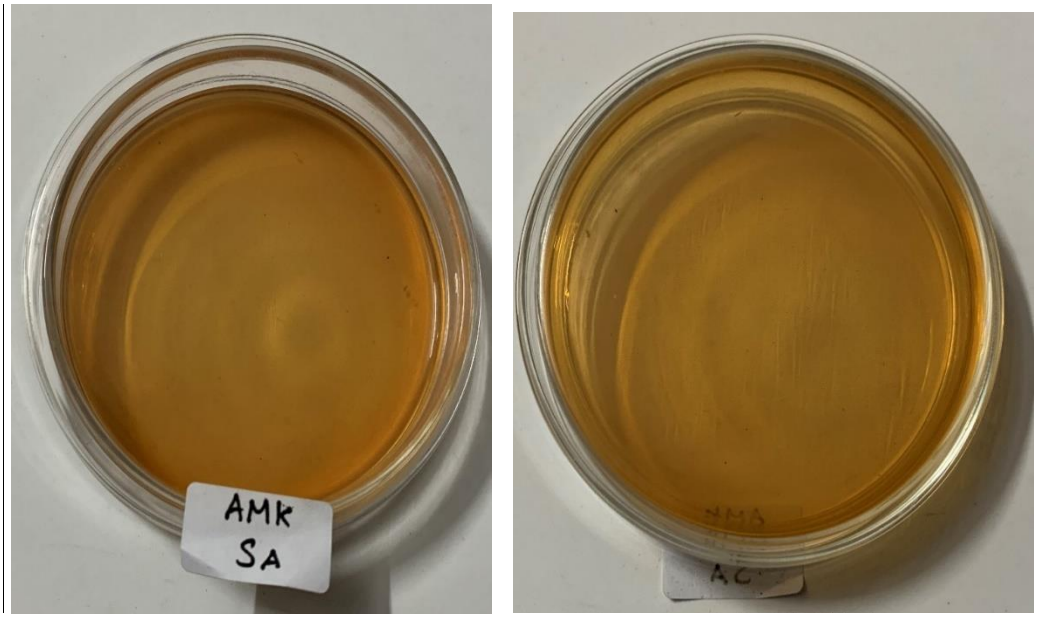
Table: 19 Observation & Result of Test for Specific Pathogen:

Organism	Specification	Result	Method
E-coli	Absent	Absent	As per AYUSH specification
Salmonella	Absent	Absent	
Staphylococcus Aureus	Absent	Absent	
Pseudomonas Aeruginosa	Absent	Absent	

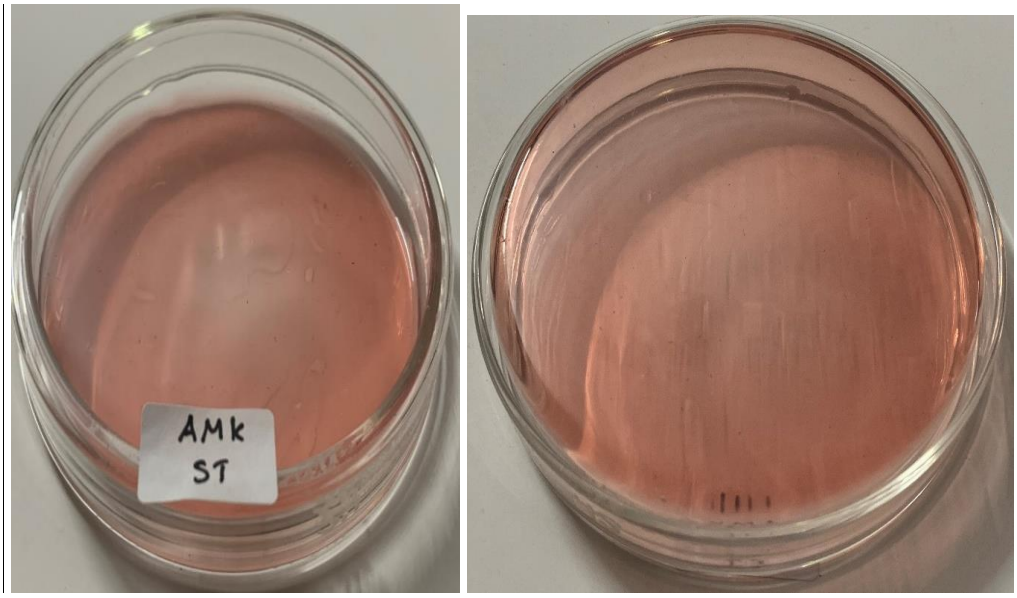
Figure:23 Culture plate with *E-coli* (EC) specific medium



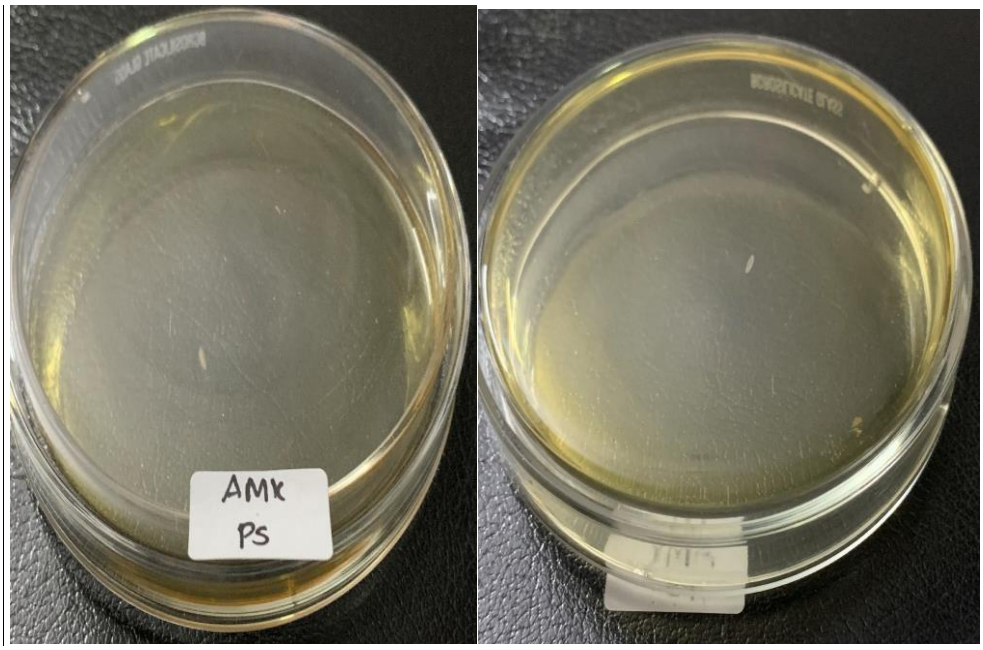
Culture plate with Salmonella (SA) specific medium



Culture plate with *Staphylococcus Aureus* (ST) specific medium



Culture plate with Pseudomonas Aeruginosa (PS) specific medium



5.1.7. 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 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 and further extended for 72 hrs for fungal growth observation. Grown colonies of organism was then counted and calculated for CFU.

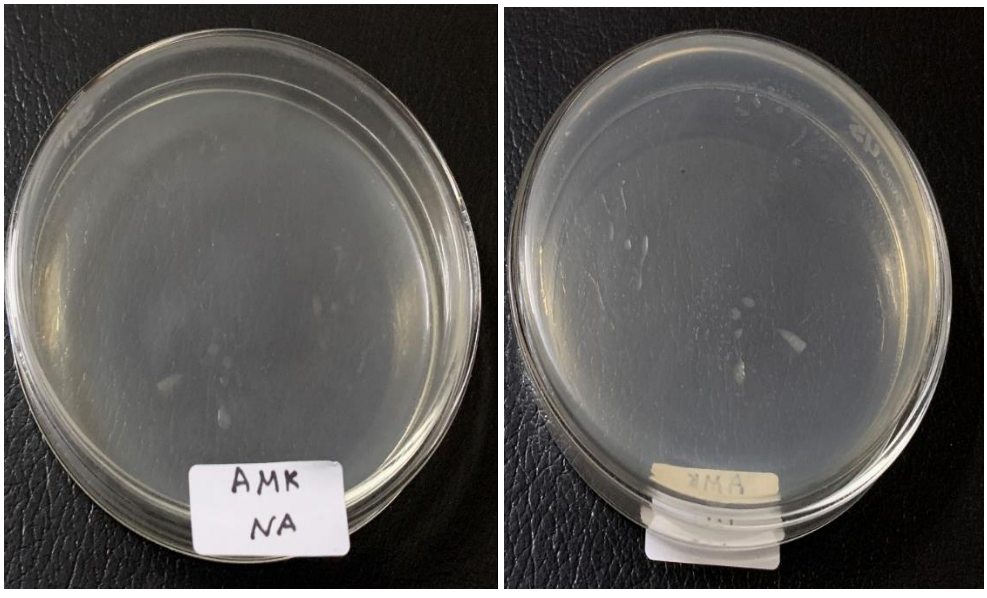


Figure:24 Sterility test by pouring Technique

Observation

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

Result

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

Table: 20 Observation & Result of Sterility test:

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	

5.1.8. AFLATOXIN ANALYSIS OF AMALAKATHI KIRUTHAM

Aflatoxin assay by TLC (B1, B2, G1, G2)

Standard

Aflatoxin B1

Aflatoxin B2

Aflatoxin G1

Aflatoxin G2

Solvent

Standard samples was dissolved in a mixture of chloroform and acetonitrile (9.8 : 0.2) to obtain a solution having concentrations of 0.5 µg per ml each of aflatoxin B1 and aflatoxin G1 and 0.1 µg per ml each of aflatoxin B2 and aflatoxin G2.

Procedure

Standard aflatoxin was applied on to the surface to pre coated TLC plate in the volume of 2.5 µL, 5 µL, 7.5 µL and 10 µL. Similarly, the test sample was placed and Allow the spots to dry and develop the chromatogram in an unsaturated chamber containing a solvent system consisting of a mixture of chloroform, acetone and isopropyl alcohol (85: 10: 5) until the solvent front has moved not less than 15 cm from theorigin. Remove the plate from the developing chamber, mark the solvent from and allow the plate to air-dry. Locate the spots on the plate by examination under UV light at 365 nm.

Table:21 Observation & Result of Aflatoxin:

Aflatoxin	Sample AMK	AYUSH Specification Limit
B1	Not Detected - Absent	0.5 ppm
B2	Not Detected - Absent	0.1 ppm
G1	Not Detected - Absent	0.5 ppm
G2	Not Detected - Absent	0.1 ppm

Result: The results shown that there were no spots were being identified in the test sample loaded on TLC plates when compare to the standard which indicates that the sample were free from Aflatoxin B1, Aflatoxin B2, Aflatoxin G1, Aflatoxin G2.

5.1.9 PESTICIDE RESIDUE AMALAKATHI KIRUTHAM ANALYSIS

Extraction: Test sample were extracted with acetone and followed by homogenization for brief period. Further filteration was allowed and subsequent addition of acetone to the test mixture.Heating of temperature not exceeding 40ºC until the solven has almost completely evaporated. To the residue add a few millimeters of toluene and heat again until the acetone is completely removed. Resultanat residue will be dissolved using toluene and filtered through memebrane filter.

Table:22 Result of Pesticide Residue Amalakthi kirutham analysis:

Pesticide Residue / **I.Organo Chlorine Pesticides**	**Sample AMK**	**AYUSH Limit (mg/kg)**
Alpha BHC	BQL	0.1mg/kg
Beta BHC	BQL	0.1mg/kg
Gamma BHC	BQL	0.1mg/kg
Delta BHC	BQL	0.1mg/kg
DDT	BQL	1mg/kg
Endosulphan	BQL	3mg/kg
II.Organo Phosphorus Pesticides		
Malathion	BQL	1mg/kg
Chlorpyriphos	BQL	0.2 mg/kg
Dichlorovos	BQL	1mg/kg
III. Organo carbamates		
Carbofuran	BQL	0.1mg/kg
III.Pyrethroid		
Cypermethrin	BQL	1mg/kg

Result: The results showed that there were no traces of pesticides residues such as Organo chlorine, Organophosphorus, Organo carbamates and pyrethroids in the sample provided for analysis.([61-69])

6. OBSERVATION AND RESULTS

6.2. CLINICAL STUDY

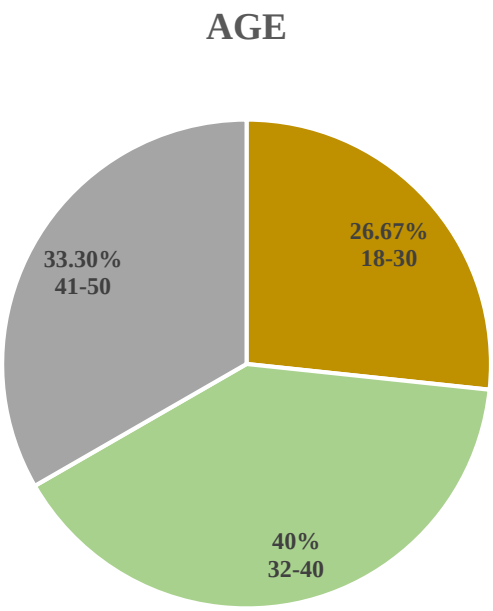
- Age
- Gender
- Geographical livelihood
- Occupation
- Socio Economic status
- BMI
- Social habit
- Dietary habit
- Duration of illness
- Bowel Habits
- Psychological status
- Blood group
- Nilam
- Gunam
- Ganandhiriyam
- Kanmenthiriyam
- Kosangal
- Udal thathukkal
- Uyir thathukkal
- Envagai thervu
- Clinical Assessment

5.2.CLINICAL STUDY

In National institute of siddha OPD among 67 patients were screened, 30 patients were included according to inclusion criteria. After obtaining the informed consent, patients were included in the study.

1. AGE:

Figure: 25 Distribution of Age :

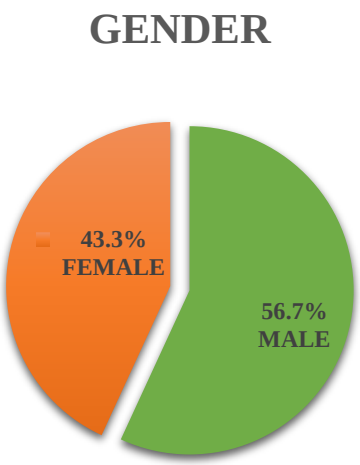


Inference:

Among 30 cases, the disease was occurred mostly between the age of 31 and 40 years (40%).

2.GENDER:

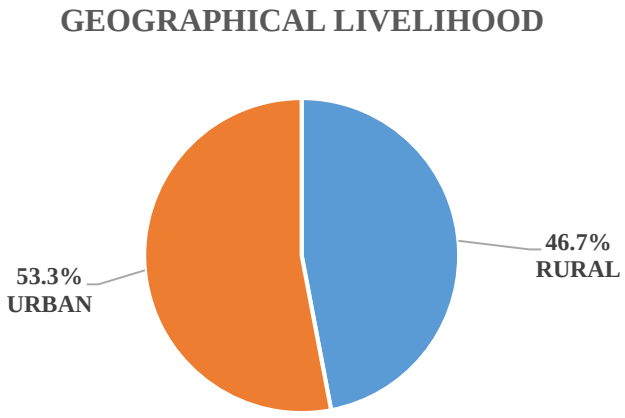
Figure: 26 Distribution of Gender :



Inference: Among 30 cases, 17 (56.7%) cases were Male.

3. GEOGRAPHICAL LIVELIHOOD:

Figure: 27 Distribution of Geographical livelihood:



Inference: Among 30 cases, most of cases 16 (53.3%) were from Urban area.

4.**OCCUPATION:**

(International Standard Classification of Occupation (ISCO-08), Structure, group definition and correspondence tables, International labour office, Geneva, Volume-1, 2012) [85]

Table: 23 Distribution of Occupation:

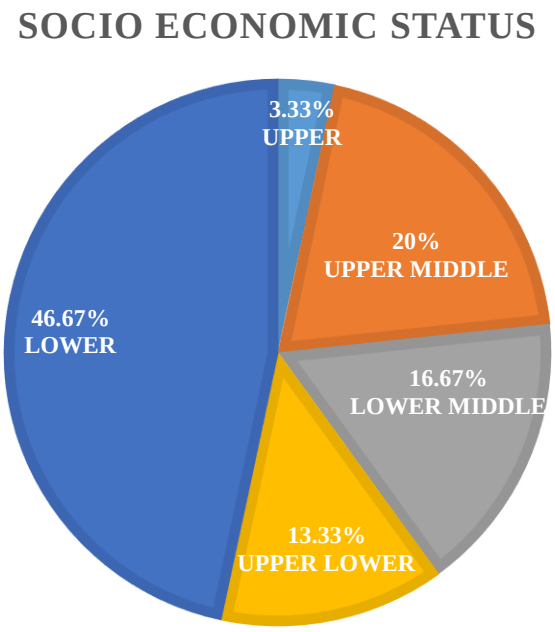
Occupation	No of patients	Percentage (%)
Legislators, Seniors Officals And Managers	0	0.00%
Professional (Teacher, Engineer)	2	6.67%
Technichian And Associate Professional	5	16.67%
Clerks	2	6.67%
Skilled Workers And Shop Market Sale Workers	2	6.67%
Skilled Agriculture And Fishery Workers	2	6.67%
Craft And Related Trade Workers	0	0.00%
Plant And Machine Operators And Assemblers	7	23.33%
Elementry Occupation	3	10.00%
Unemployed	7	23.33%
Total	30	100.00%

Inference:

Among 30 cases, 6.67% of cases ie 2 patients were belonged to the occupation of Professional, Clerks, Skilled workers and Shop market sale workers and Skilled agriculture and Fishery workers in each, 10% of cases ie 3 patients were belonged to the occupation of Elementary, 16.67% of cases ie 5 patients were belonged to the occupation of Technichian and Associate professional, 23.33% of cases ie 7 patients were belonged to the occupation of Plant And Machine Operators And Assemblers and Unemployed in each.

5. SOCIO ECONOMIC STATUS:

Figure: 28 Distribution of Socio economic status:

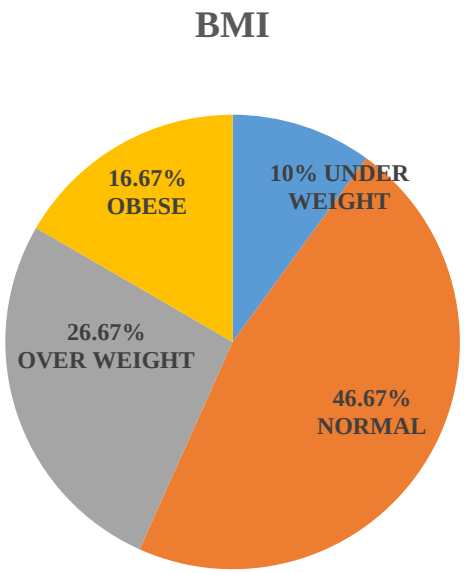


Inference:

Among 30 cases, most of the cases ie 14 (46.67%) were from Lower class.

6. BMI:

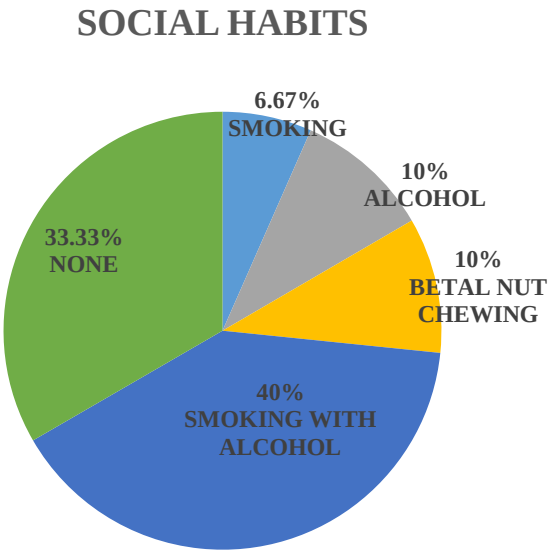
Figure: 29 Distribution of BMI



Inference: Out of 30 cases, 14 (46.7%) cases were normal weight.

7. SOCIAL HABIT:

Figure: 30 Distribution of Social habits

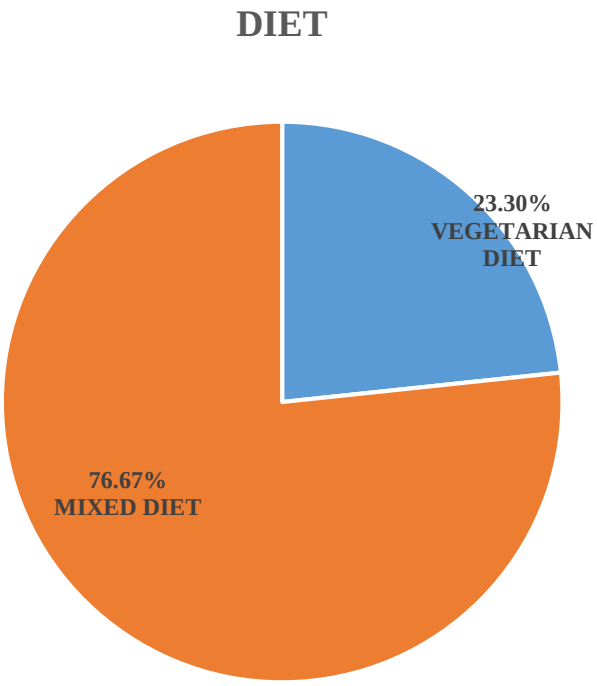


Inference:

Among 30 cases, 2 (6.67%) cases had the social habit of Smoking, 3 (10%) cases had betal nut chewing and Alcohol in each habit, 12 (40%) cases had the habit of Smoking with alcohol, Tobacco chewing habit was not observed among these cases and 10 (33.33%) cases did not have these social habits.

8. DIETARY HABIT:

Figure: 31 Distribution of Dietary Habit

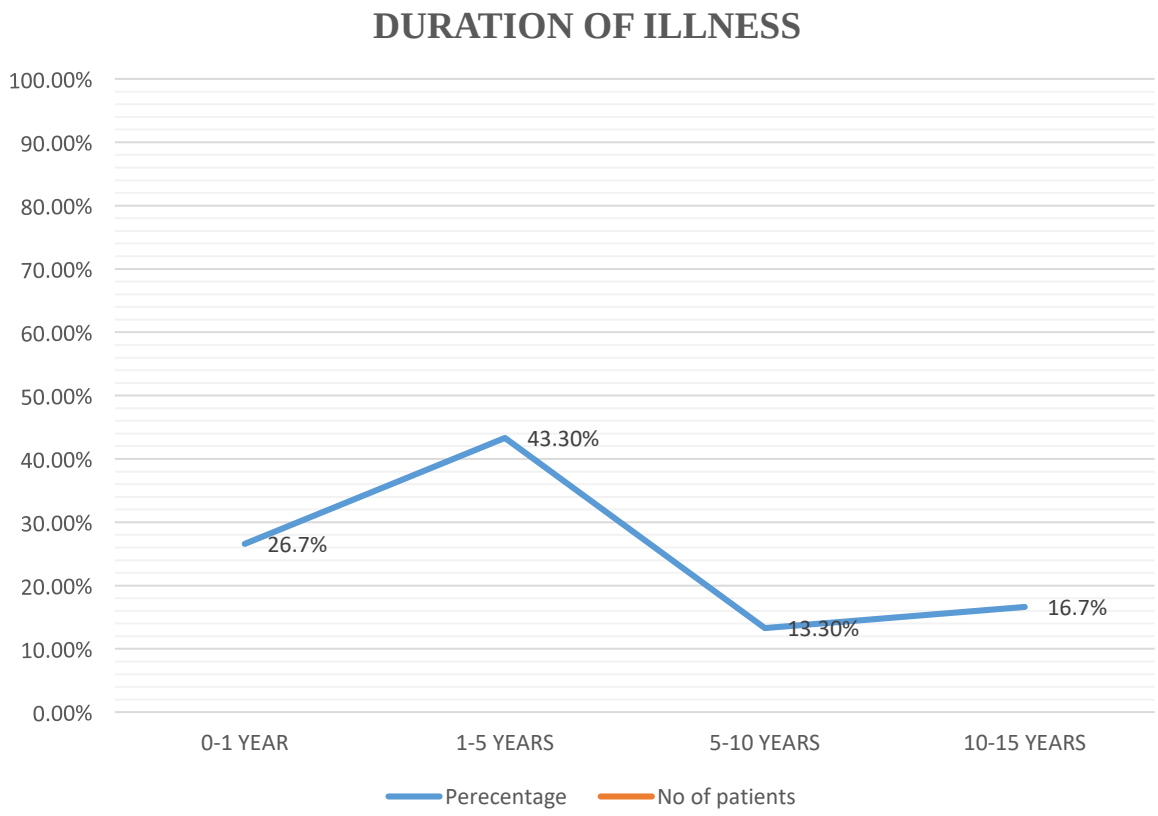


Inference:

Among 30 cases, 23 (76.7%) were taking mixed diet and 67 (23.3%) cases were taking pure vegetarian.

9. DURATION OF ILLNESS`

Figure: 32 Distribution of Duration of illness :

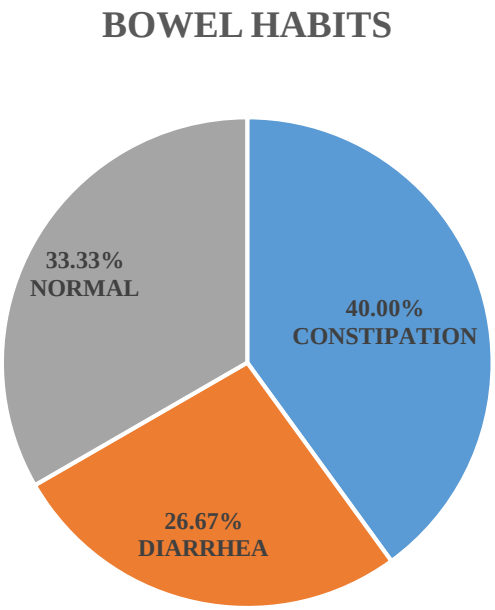


Inference:

Out of 30 cases, the illness was between within1 year ie 8 (26.67%) cases, the illness was between 1 and 5 years ie 13 (43.33%) cases, the illness was between 5 and 10 years ie 4 (13.33%) cases, the illness was between 10 and 15 years ie 5 (16.67%) cases.

11.**BOWEL HABITS:**

Figure: 33 Distribution of Bowel habits:



Inference:

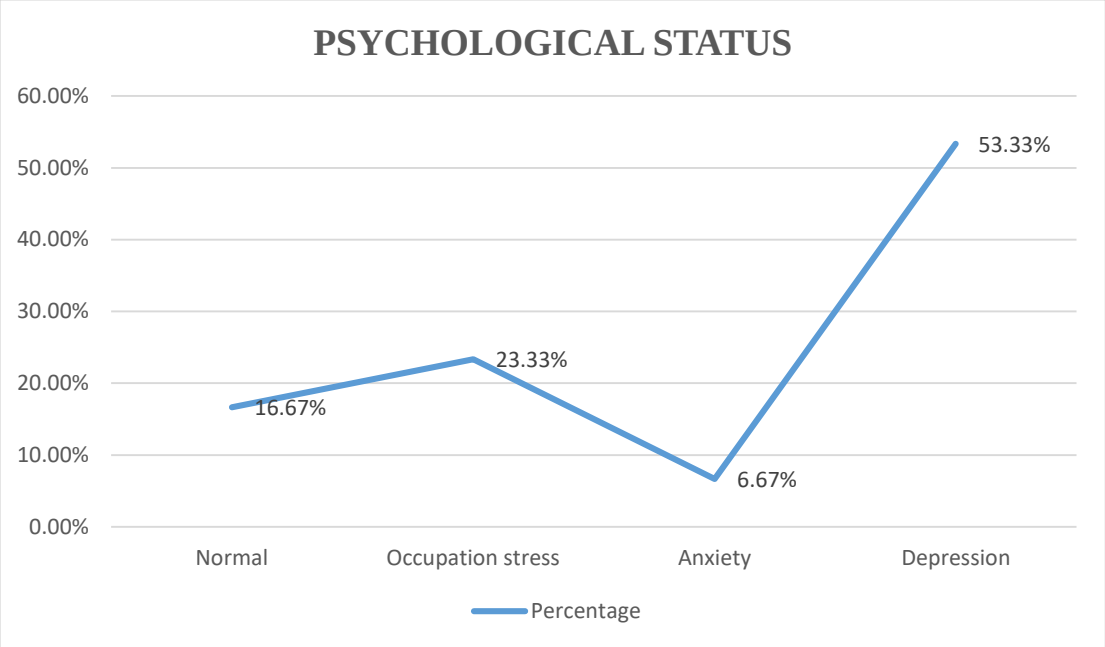
Among 30 cases, the bowel habit was normal in 10 (33.33%) cases, Constipation was present in 12 (40%) cases and Diarrhea was present in 8 (26.67%) cases.

12. SLEEP PATTERN

Out of 30 cases, 19 (63.33%) cases had regular sleep pattern and 11(36.7%) cases had irregular sleep pattern.

13.PSCYCHOLOGICAL STATUS:

Figure: 34 Distribution of Psychological status:

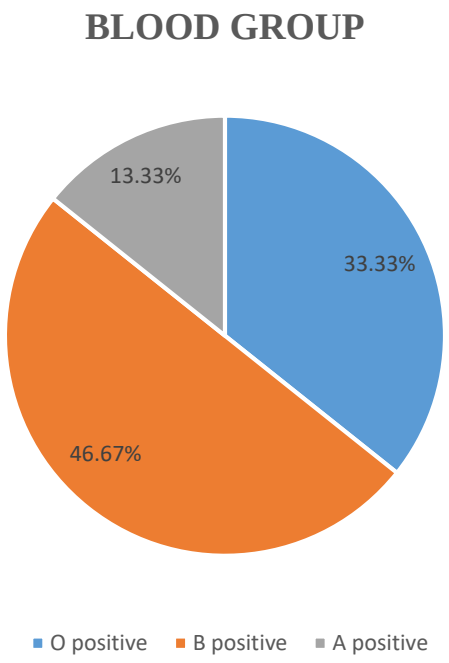


Inference:

Out of 30 cases, 7 (23.33%) cases had Occupational stress, 2 (6.67%) cases had Anxiety, 16 (53.33%) had depression and the psychological status normal in 5 (16.67%) cases.

14. BLOOD GROUP:

Figure: 35 Distribution of Blood group:



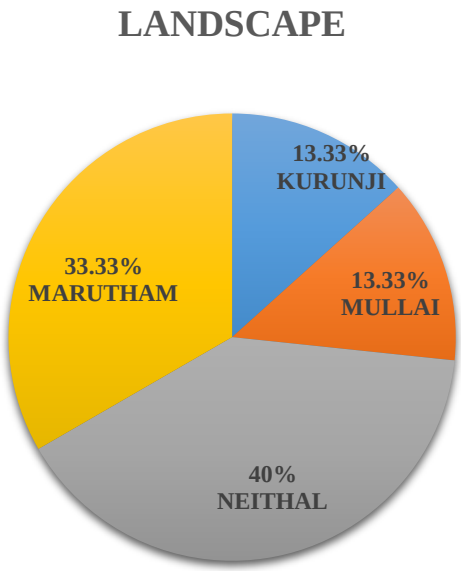
Inference:

Out 30 cases, 14 (46.67%) cases had B positive blood group.

SIDDHA SYSTEM

14.NILAM

Figure: 36 Distribution of Landscape :



Inference:

Among 30 cases, the cases from Kurunji and Mullai landscape were 4 (13.33%) in each, 12(40%) cases were from Neithal landscape, 10 (33.33%) cases were from Marutham landscape and None of the cases were reported from Palai landscape.

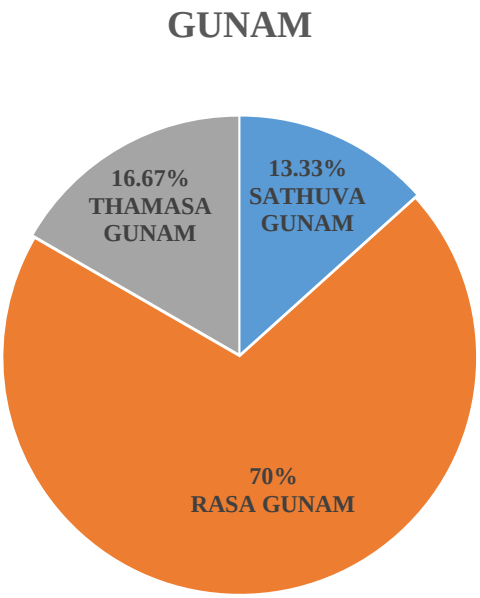
15.KAALAM

Inference:

Out 30 cases, 13(43.33%) cases were reported in the season of Karkaalam and 17 (56.67%) cases were reported in the season of Koothir kaalam.

16.GUNAM

Figure: 37 Distribution of Gunam:



Inference:

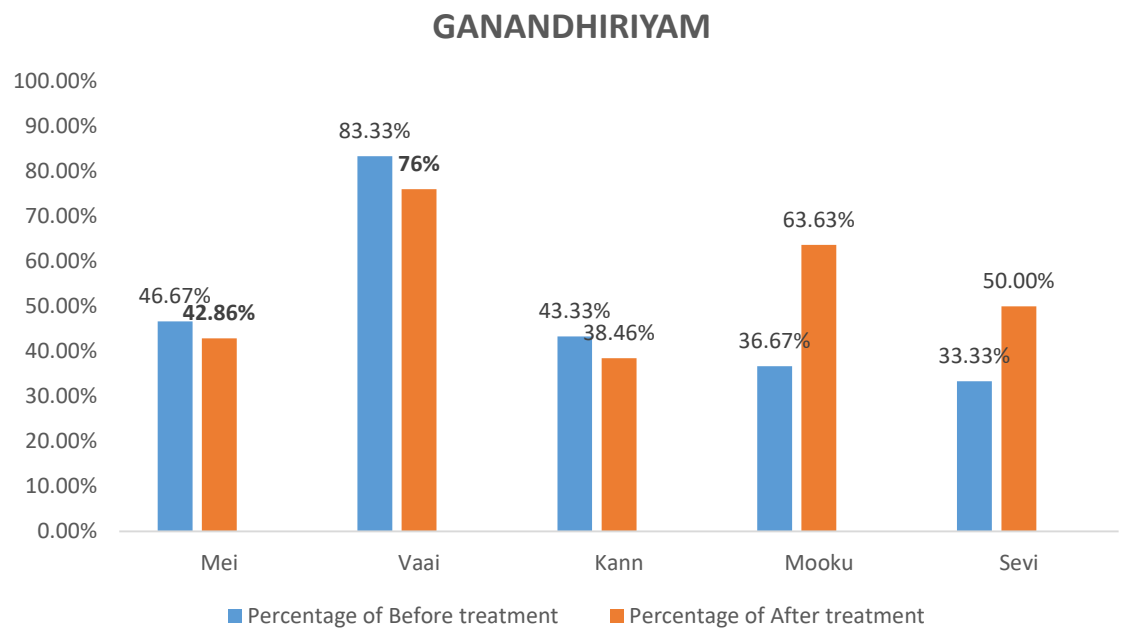
Out 30 cases, the character of Sathuva gunam was observed in 4 (13.33%) cases, Raso gunam was observed in 21 (70.00%) cases and Thamasa gunam was observed in 5 (16.7%) cases.

17. GANANDHIRIYAM

Table:24 Distribution of Ganandhiriyam Before and After treatment:

Perpulangal	No of cases affected before treatment (n=30)	Percentage (%)	No of cases improved after treatment	Percentage (%)
Mei	14	46.66%	6 (n=14)	42.86%
Vaai	25	83.33%	19 (n=25)	76%
Kann	13	43.33%	5(n=13)	38.46%
Mokku	11	36.67%	7(n=11)	63.63%
Sevi	10	33.33%	5(n=10)	50%

Figure:38 Distribution of Ganandhiriyam Before and After treatment:



Inference:

Before treatment, Mei was affected in 14 (46.67%), Vaai was affected in 25 (83.33%), Kann was affected in 13 (43.33%), Mooku was affected in 11 (36.67%) and Sevi was affected in 10 (33.33%).

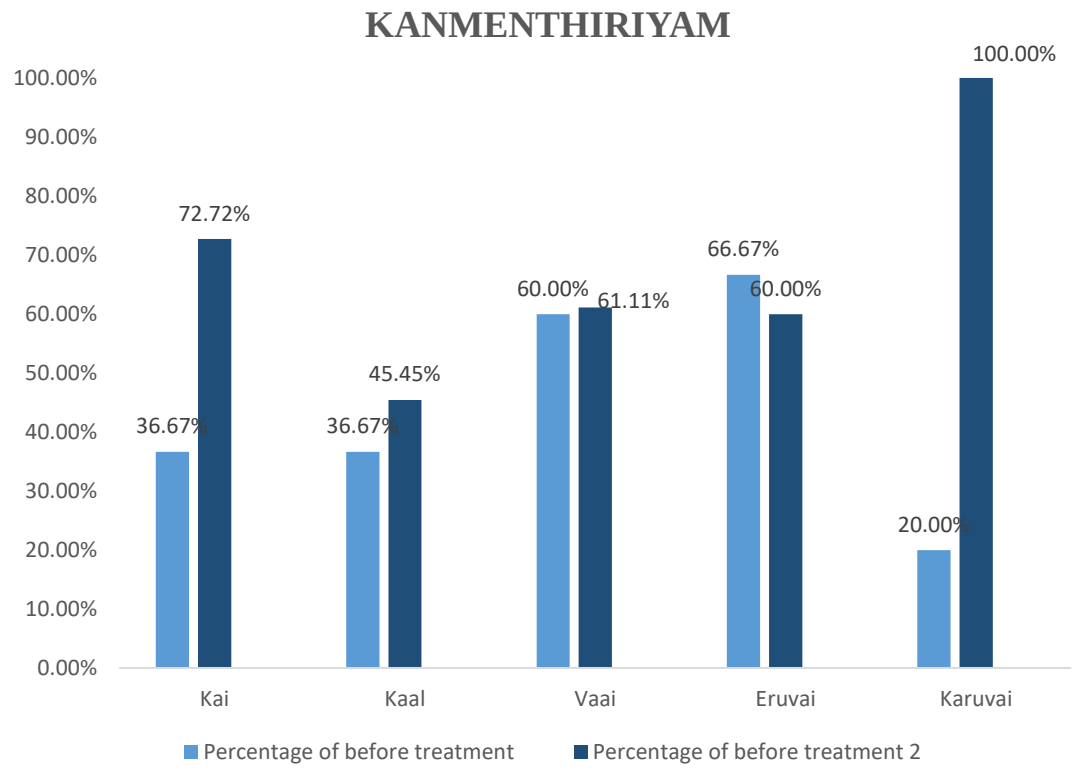
From the affected Ganandhiriyam, Mei was normal in 6 (42.86%) cases, Vaai was normal in 19 (76%) cases, Kann was normal in 5 (38.46%) cases, Mooku was normal in 7 (63.63%) cases and Sevi was normal in 5 (50%) cases.

18.KANMENTHIRIYAM

Table: 25 Distribution of Kanmenthiriyam Before and After treatment:

Kanmenthiriyam	No of cases affected before treatment (n-30)	Percentage (%)	No of cases improved after treatment	Percentage (%)
Kai	11	36.67%	8 (n=11)	72.72%
Kaal	11	36.67%	5 (n=11)	45.45%
Vaai	18	60.00%	11 (n=18)	61.11%
Eruvai	20	66.67%	12 (n=20)	60%
Karuvai	6	20.00%	6 (n=6)	100%

Figure: 39 Distribution of Kanmenthiriyam Before and After treatment:



Inference:

Before treatment, Kai was affected in 11 (36.67%), Kaal was affected in 11 (36.67%), Vai was affected with 18(60.00%), Eruvai was affected with 20 (66.67%) and Karuvai was affected with 6 (20.00%).

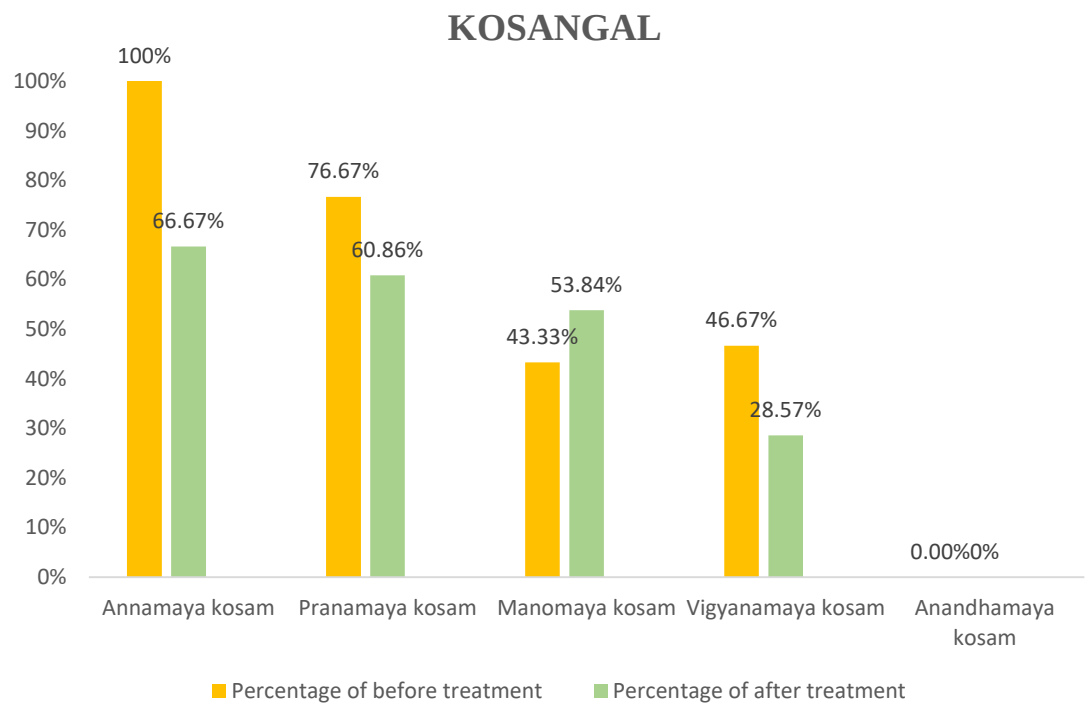
From the affected Kanmenthiriyam, Kai was normal in 8 (72.72%),Kaal was normal in 5 (45.45%), Vai was normal in 11(61.11%), Eruvai was normal in 12 (60%) and Karuvai was normal in 6 (100%).

19.KOSANGAL

Table: 26 Distribution of Kosam Before and After treatment:

Kosangal	**No of cases affected before treatment (n=30)**	**Percentage (%)**	**No of cases improved after treatment**	**Percentage (%)**
Annamaya kosam	30	100.00%	20 (n=30)	66.67%
Pranamaya kosam	23	76.67%	14 (n=23)	60.86%
Manomaya kosam	13	43.33%	7 (n=13)	53.84%
Vignamaya kosam	14	46.67%	4 (n=14)	28.57%
Ananthamaya kosam	0	0.00%	0 (n=0)	0.00%

Figure: 40 Distribution of Kosam Before and After treatment:



Inference:

Before treatment, Annamaya kosam was affected in 30 (100%) cases, Pranamaya kosam was affected in 23(76.67%) cases, Manomaya kosam was affected in 13(43.33%) cases, Vignamaya kosam was affected with 14(46.67%) cases.

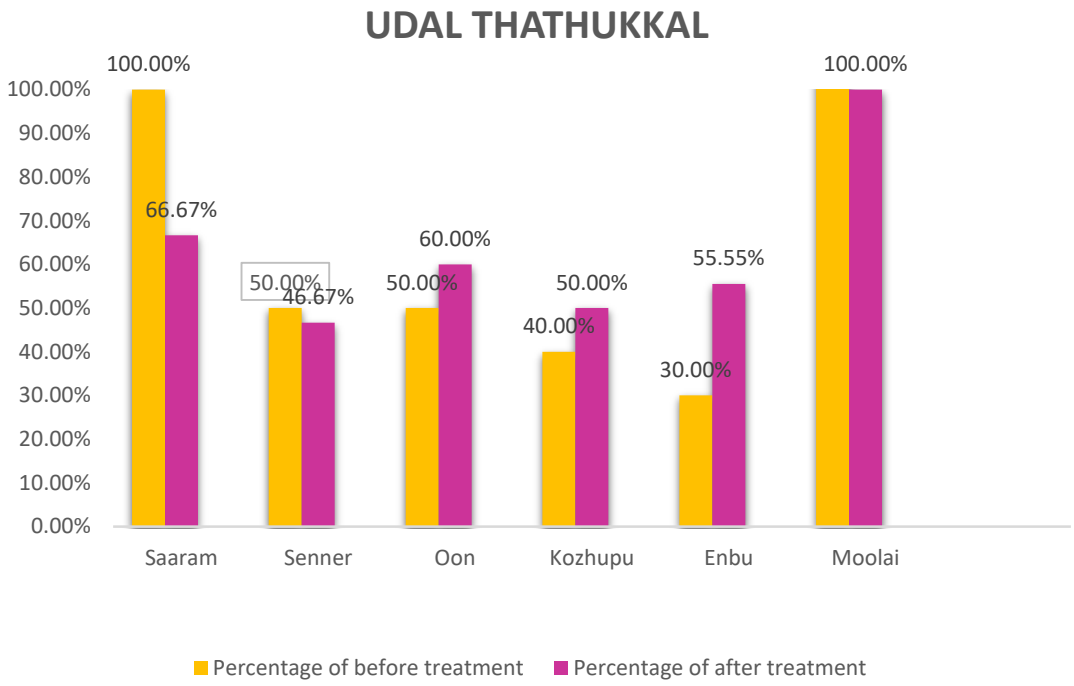
From the affected, Kosangal, Annamayakosam was normal in 20 (66.67%) cases, Pranamaya kosam was normal in 14 (60.86%) cases, Manomaya kosam was normal in 7 (53.84%) cases and Vignamaya kosam was normal in 4 (28.57%) cases.

20. UDAL THATHUKKAL

Table: 27 Distribution of Udal thathukkal Before and After treatment:

Udal Thathukkal	No of cases affected before treatment (n=30)	Percentage (%)	No of cases improved after treatment	Percentage (%)
Saaram	30	100%	20 (n=30)	66.67%
Senner	15	50.00%	7 (n=15)	46.67%
Oon	15	50.00%	9 (n=15)	60%
Kozhuppu	12	40.00%	6 (n=12)	50%
Enbu	9	30.00%	5 (n=9)	55.55%
Moolai	2	6.67%	2 (n=2)	100%
Sukilam/ Suronitham	0	0.00%	0 (n=0)	0.00%

Figure: 41 Distribution of Udal thathukkal Before and After treatment:



Inference:

Before treatment Saaram was affected with 30(100%) Senneer was affected in 15(50%) cases, Oon was affected with 15(50%), Kozhupu was affected in 12(40%) Enbu was affected in 9(30%) cases and Moolai was affected in 2(6.67%) cases.

From the affected Udal kattukal Saaram was normal in 20(66.67%) cases, Senneer was normal in 7(46.67%) cases, Oon was normal in 9(60%) cases, Kozhupu was normal in 6(50%) cases, Enbu was normal in 5(55.55%) cases and Moolai was normal in 2(100%) cases.

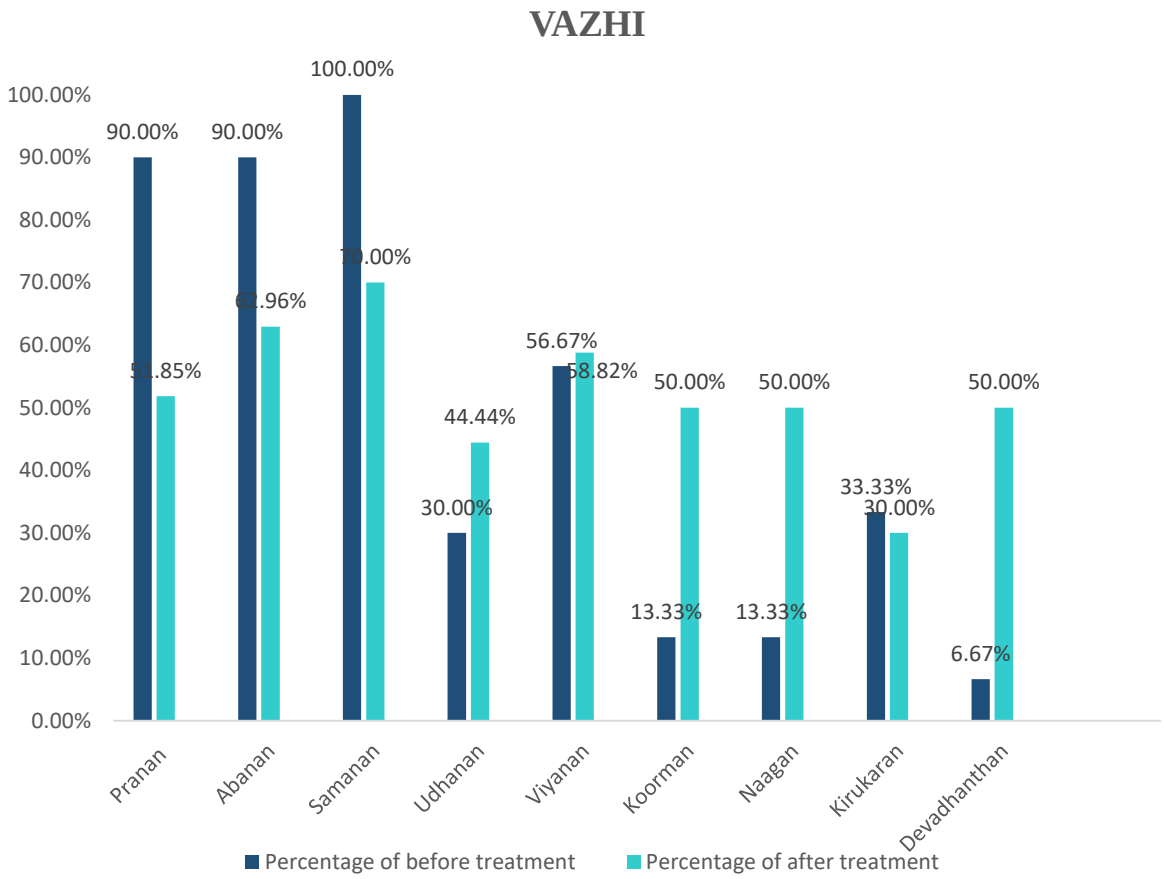
21 .UYIR THATHUKKAL

A) VAZHI

Table: 28 Distribution of Vazhi Before and After treatment:

Vazhi	No of cases affected before treatment (n=30)	Percentage (%)	No of cases improved after treatment	Percentage (%)
Pranan	27	90.00%	14 (n=27)	51.85%
Abanan	27	90.00%	17 (n=27)	62.96%
Samanan	30	100.00%	21 (n=30)	70%
Udhanan	9	30.00%	4 (n=9)	44.44%
Viyanan	17	56.67%	10 (n=17)	58.82%
Nagan	4	13.33%	2 (n=4)	50%
Koorman	4	13.33%	2 (n=4)	50%
Kirukaran	10	33.33%	3 (n=10)	30%
Devathathan	2	6.67%	1 (n=2)	50%
Dhanjeyan	0	0.00%	0 (n=0)	0.00%

Figure: 42 Distribution of Vazhi Before and After treatment:



Inference:

Before treatment Praanan was affected in 27(90%) cases, Abanan was affected in 27(90%) cases, Samanan was affected in 30(100%) cases, Udhanan was affected in 9(30%) cases, Viyanan was affected in 17(56.67%) caess, Naagan was affected in 4(14.33%) cases, Koorman was affected in 4(13.33%) cases, Kirukaran was affcetd in 10(33.33%) cases and Devathathan was affected in 2(6.67%) cases

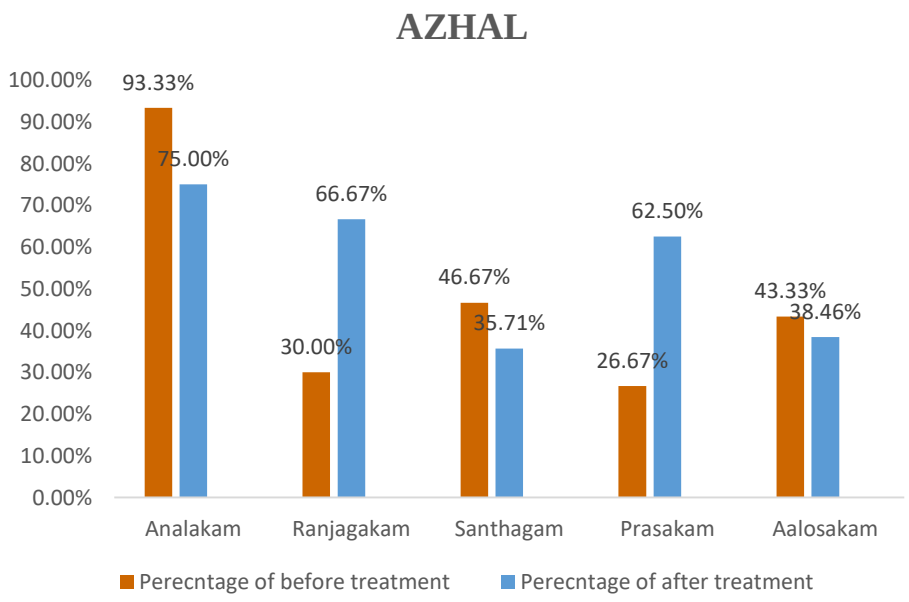
From the affected vali,Pranan was normal in 14(51.85%) cases,Abanan was normal in 17(62.96%) cases, Samanan was normal in 21(70%) cases, Udhanan was affected in 4 (44.44%) cases, Viyanan was affected in 10 (58.82%) cases, Nagan was affected in 2 (50%) cases, Koorman was affected in 2 (50%) cases, Kirukaran was affected in 3 (30%) cases and Devathathan was affected in 1 (50%) cases.

B) AZHAL

Table: 29 Distribution of Azhal Before and After treatment:

Azhal	No of cases affected before treatment (n=30)	Percentage (%)	No of cases improved after treatment	Percentage (%)
Analakam	28	93.33%	21 (n=28)	75%
Ranjakagam	9	30.00%	6 (n=9)	66.67%
Saathakam	14	46.67%	5 (n=14)	35.71%
Prasakam	8	26.67%	5 (n=8)	62.5%
Aalosakam	13	43.33%	5 (n=13)	38.46%

Figure: 43 Distribution of Azhal:



Inference:

Before treatment , Analakam was affected in 28(93.33%) cases, Ranjakam was affected in 9 (30%) cases, Sathagam was affected in 14 (46.67%) cases, Prasakam was affected in 8 (26.67%) cases and Aalosakam was affected in 13 (43.33%) cases**.**

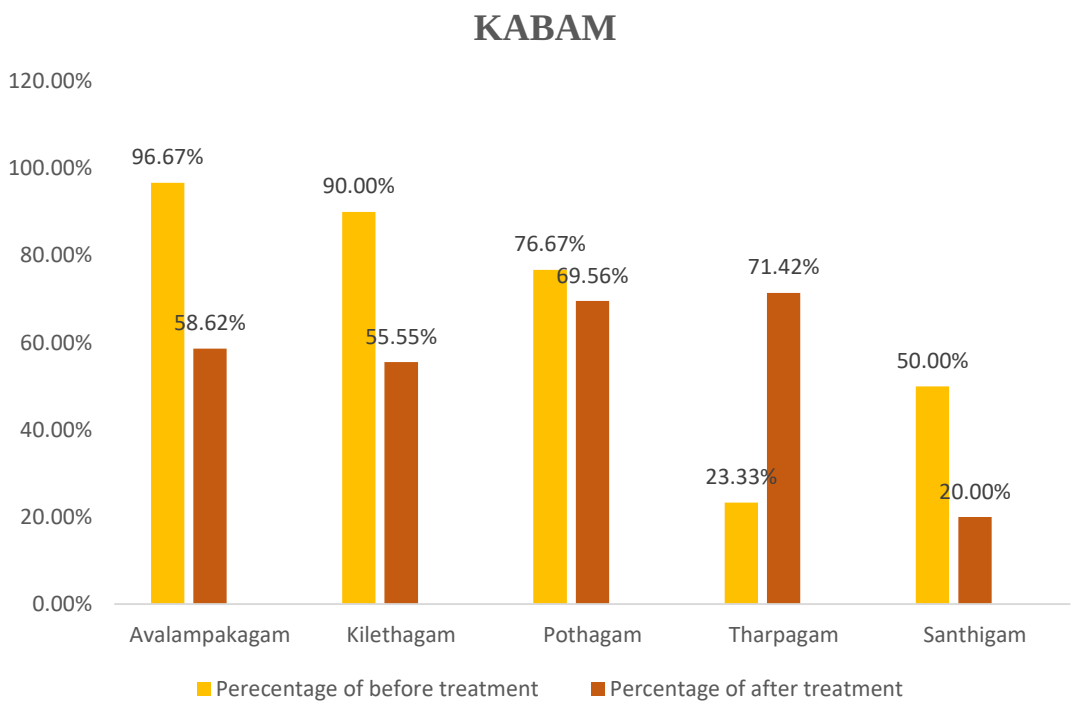
From the affected Azhal, Analakam was normal in 21 (75%) cases, Ranjakam was normal in 6 (66.67%) cases, Sathagam was normal in 5 (35.71%) cases, Prasakam was normal in 5 (62.5%) cases and Aalosakam was normal in 5 (38.46%) cases.

C)KABAM

Table:30 Distribution of Kabam Before and After treatment:

Kabam	**No of cases affected before treatment**	**Percentage (%)**	**No of cases improved after treatment**	**Percentage (%)**
Avalambagam	29	96.67%	17 (n=29	58.62%
Kilethagam	27	90.00%	15 (n=27)	55.55%
Pothagam	23	76.67%	16 (n=23)	69.56%
Tharpagam	7	23.33%	5 (n=7)	71.42%
Santhigam	15	50.00%	6 (n=15)	40%

Figure:44 Distribution of Kabam Before and After treatment:



Inference:

Before treatment Avalambagam was affected in 29 (96.67%) cases, Kilethagam was affected in 27 (90%) cases, Pothagam was affected in 23 (76.67%) cases, Tharpagam was affected in 7 (23.33%) cases and Santhigam was affected in 15 (50%) cases**.**

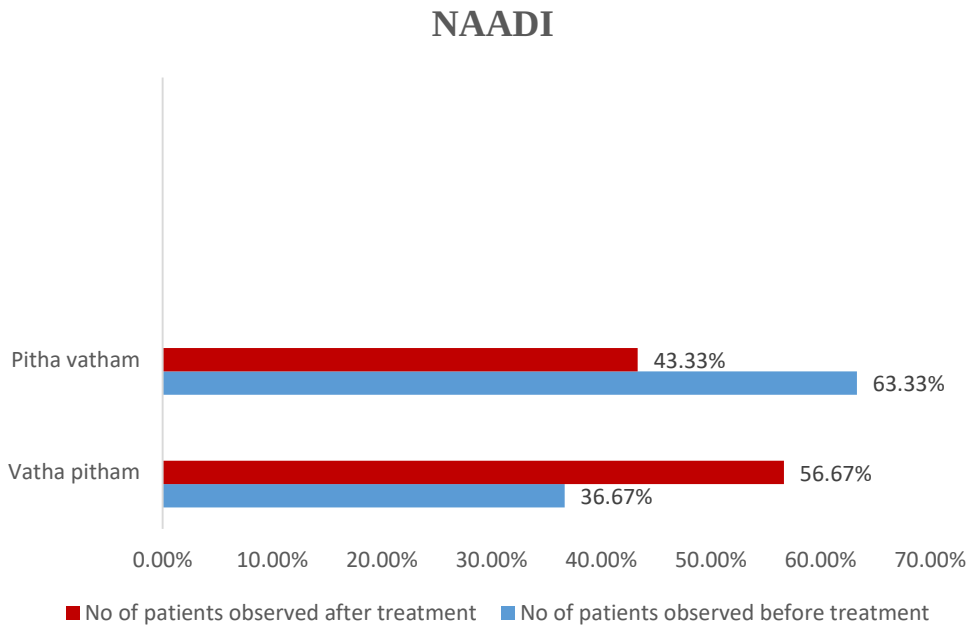
From the affected Iyam, Avalambagam was normal in 17 (58.62%) cases, Kilethagam was normal in 15 (55.55%) cases, Pothagam was normal in 16 (69.56%) cases, Tharpagam was normal in 5 (71.42%) cases and Santhigam was normal in 6 (40%) cases.

22. ENVAGAI THERVU

Table: 31 Distribution of Envagai thervu Before and After treatment:

Naadi	No of cases observed before treatment (n=30)	Percentage (%)	No of cases observed after treatment (n=30)	Percentage (%)
Vatha pitham	11	36.67%	17	56.67%
Pitha vatham	19	63.33%	13	43.33%
Total	30	100.00%	30	100.00%

Figure: 45 Distribution of Envagai thervu Before and After treatment:

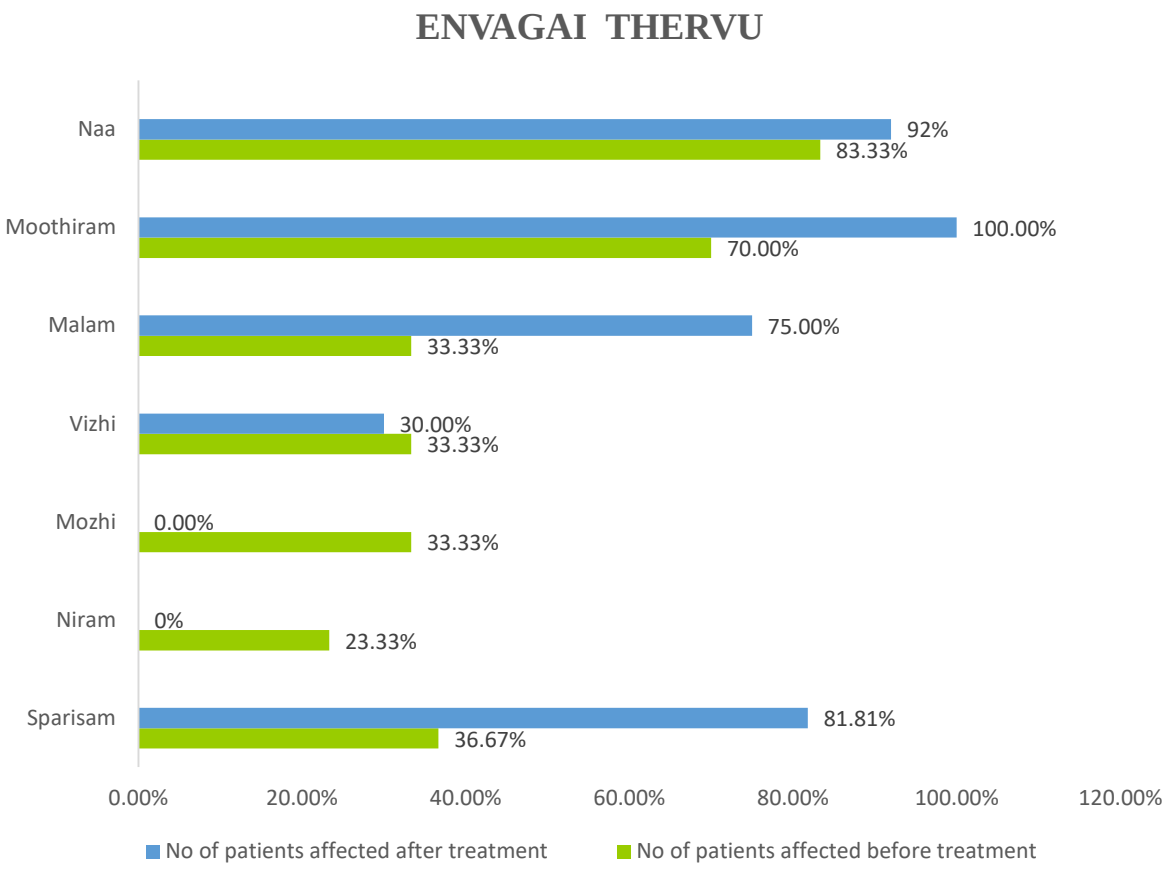


Inference: Naadi:

Among 30 cases, Before treatment, 11 (36.67%) cases were observed with Vatha pitha naadi, 19 (63.33%) cases were observed with Pitha vatham.

After treatment, 17 (56.67%) cases were observed with Vatha pitham, 13 (43.33%) cases were observed with Pitha vatham.

En vagai thervu	**No of cases affected before treatment (n=30)**	**Percentage (%)**	**No of cases improved after treatment**	**Percentage (%)**
Naa	25	83.33%	23 (n=25)	92%
Sparisam	11	36.67%	9 (n=11)	81.81%
Niram	7	23.33%	0(n=7)	0%
Mozhi	10	33.33%	0(n=10)	0%
Vizhi	10	33.33%	3(n=10)	30%
Malam	16	53.33%	12(n=16)	75%
Moothiram	21	70.00%	21(n=21)	100%



Inference:

Envagai thervu:

Before treatment , Naa was affected in 25 (83.33%) cases, Sparisam was affected in 11 (36.67%) cases, Niram was affected in 7 (23.33%) cases, Mozhi was affected in 10 (33.33%) cases, Vizhi was affected in 10 (33.33%) cases, Malam was affected in 16 (53.33%) cases and Moothiram was affected in 21(70%) cases.

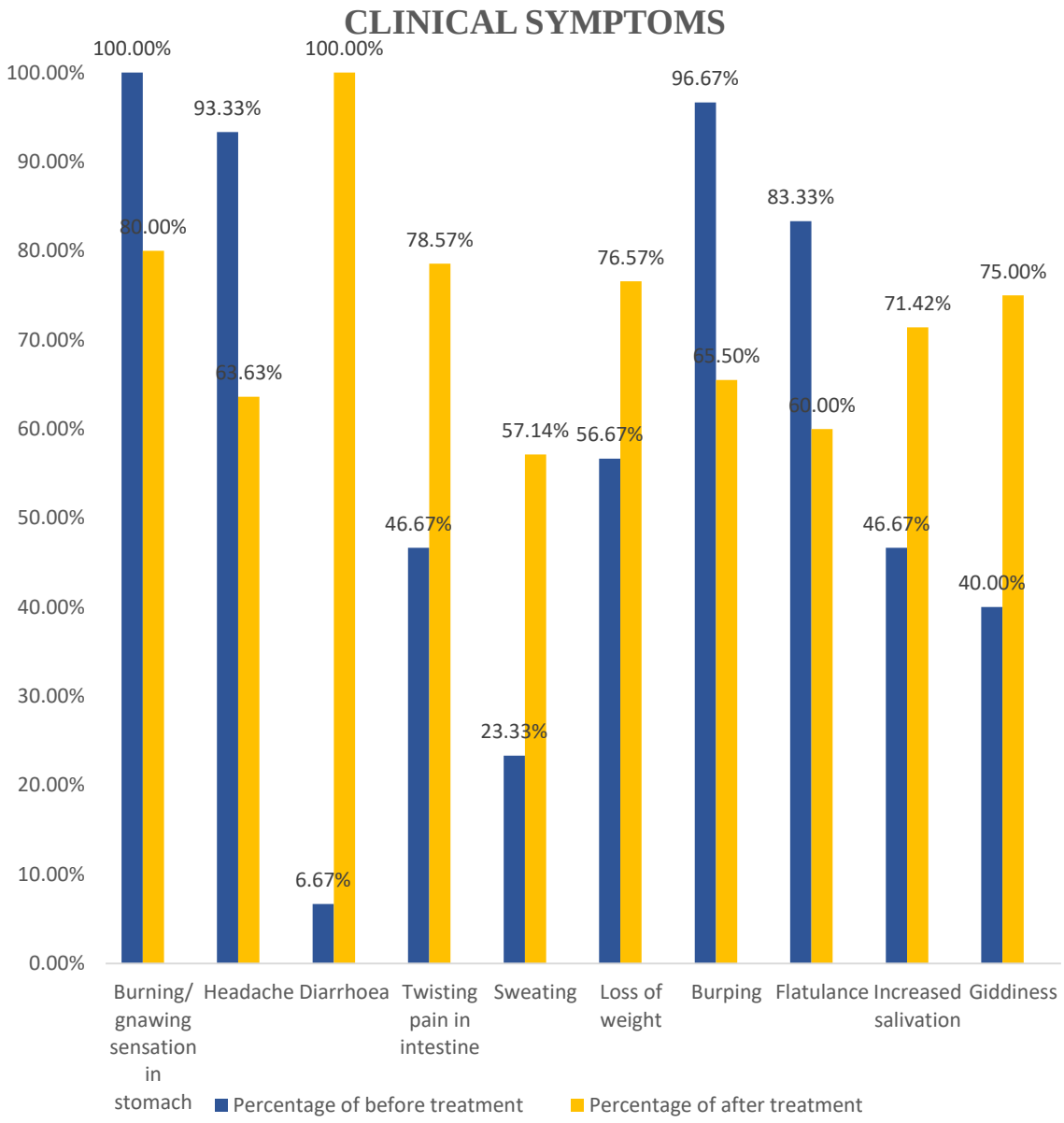
From the Affected Envagai thervugal, Naa was normal in 23(92%) cases, Sparisam was normal in 9(81.81%) cases, vizhi was normal in 3(30%) cases, Malam was normal in 12(75%) cases and Moothiram was normal in 21(100%) cases.

23 .CLINICAL SYMPTOMS

Table: 32 Distribution of Clinical symptoms Before and After treatment:

Clinical Symptoms	**No of cases affected before treatment**	**Percentage (%)**	**No of cases improved after treatment**	**Percentage (%)**
Burning / gnawing sensation in stomach	30	100%	24 (n=30)	**80%**
Headache	22	73.33%	14 (n=22)	**63.63%**
Diarrhea	2	6.67%	2 (n=2)	**100%**
Twisting pain in intestine	14	46.67%	11 (n=14)	**78.57%**
Sweating from hair	7	23.33%	4 (n=7)	**57.14%**
Loss of weight	17	56.67%	13 (n=17)	**76.47%**
Burping	29	96.67%	19 (n=29)	**65.5%**
Flatulance	25	83.33%	15 (n=25)	**60%**
Increased salivation	14	46.67%	10 (n=14)	**71.42%**
Giddiness	12	40%	9 (n=12)	**75%**

Figure: 46 Distribution of Clinical symptoms Before and After treatment:



Observation:

Among 30 cases, Before treatment, 30 (100.00%) cases were affected with Burning/ gnawing sensation in stomach, 22 (73.33%) cases were affected with Headache, 2 (6.67%) cases were affected with Diarrhea, 14 (46.67%) cases were affected with Twisting pain in intestine, 7 (23.33%) cases were affected with Sweating from hair, 17 (56.67%) cases were affected with loss of weight, 29 (96.67%) cases were affected with Burping, 25 (83.33%) cases were affected with flatulence, 14 (46.67%) cases were affected with Increased salivation, 12 (40.00%) cases were affected with Giddiness.

After treatment, 24 (80.00%) cases were reduced with Burning/ gnawing sensation in stomach, 14 (63.33%) cases were reduced with Headache, 2 (100%) cases were reduced with Diarrhea, 11 (78.57%) cases were reduced with Twisting pain in intestine, 4 (57.14%) cases were reduced with Sweating from hair, 13 (76.47%) cases were reduced with loss of weight,19 (65.55%) cases were reduced with Burping, 15 (60%) cases were reduced with Flatulence, 10 (71.42%) cases were reduced with Increased salivation, 9 (75%) cases were reduced with Giddiness.

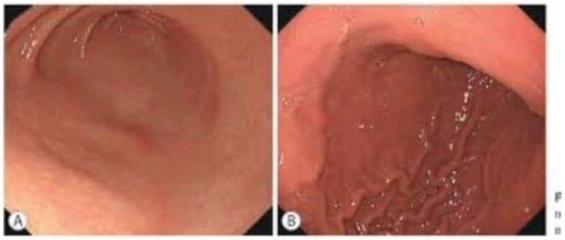
UPPER GI ENDOSCOPY CENTER
TRICHY

Patient name:	MRS. ANANTHI.N	Age/Gender	40 years/
Patient ID	715	Date:	14.11.21
Referred by	National Institute of siddha	Consulted Dr	Dr.Suresh
Procedure	Upper GI Endosopy		

Esophagus	Normal
Fundus	Erosions present
Body	Erosions present
Antrum	Normal
Pylorus	Normal
Duodenum	
D1 & D2	Normal

Impression

CHRONIC GASTRITIS



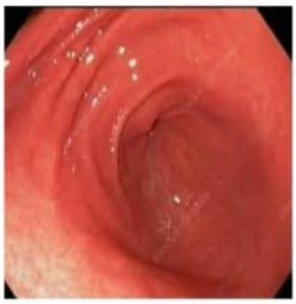
it Summary

DR. suresh

UPPER GI ENDOSCOPY CENTER
TRICHY

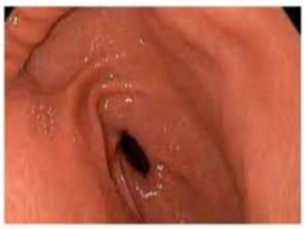
Patient name:	MRS. ANANTHI.N	Age/Gender	40 years/
Patient ID	715	Date:	3.1.22
Referred by	National Institute of siddha	Consulted Dr	Dr.Suresh
Procedure	Upper GI Endosopy		

Esophagus	Normal
Fundus	Normal
Body	Normal
Antrum	Normal
Pylorus	Normal



Duodenum

D1 & D2	Normal



Impression

Normal

nmary

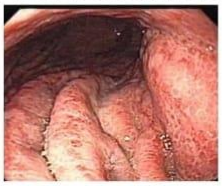
DR. suresh

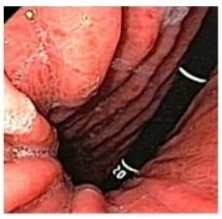
AARTHI SCANS

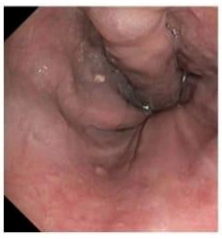
VADAPALANI, CHENNAI

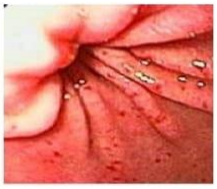
Patient name:	MISS. E. AARTHI	Age/Gender:21years/	
Patient ID	868	Date:	2.10.21
Referred Dr	National Institute of siddha	Consulted Dr	DR. ALAGUSUNDARAM
Procedure	Upper GI Endosopy		

Esophagus	Erythema +, ,erosion+
Fundus	Normal
Body	Normal
Antrum	Normal
Pylorns	Normal
Duodenum	
D1	Normal
D2	Norma
Impression	GERD









Visit Summary

DR.ALAGUSUNDARAM

Page 1 of 1

Capture/TPro- www.ambalsoft.com

AARTHI SCANS

VADAPALANI, CHENNAI

Patient name: MISS. E. AARTHI

Age/Gender:21years/

Patient ID 868

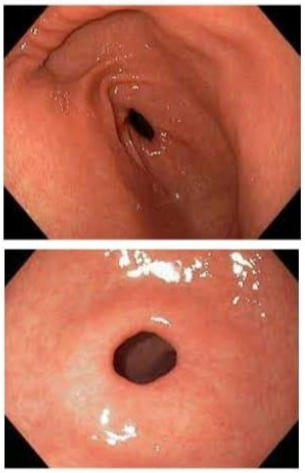
Date: 20.12.21

Referred Dr National Institute of siddha

Consulted Dr

DR. ALAGUSUNDARAM

Procedure Upper GI Endosopy



Esophagus	Normal
Fundus	Normal
Body	Normal
Antrum	Normal
Pylorns	Normal
Duodenum	
D1	Normal
D2	Norma

Impression

Normal

Visit Summary

DR.ALAGUSUNDARAM

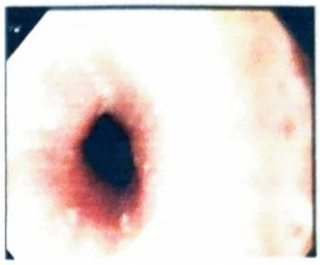
AARTHI SCANS

VADAPALANI, CHENNAI

Patient Name: Miss.Nandhini.R
Contact #:
Patient ID: 9877
Referred Dr: National institute of Siddha
Procedure: Upper G I Endoscopy

Age/Gender: 19Yrs, Female
Visit Date: 13/11/2021
Consulted Dr: DR.ALAGUSUNDARAM
Medication:

Esophagus : Normal.
OGJ - Lax LES



Stomach

Fundus : Erosions+

Body : Erosions+

Antrum : Erosions+

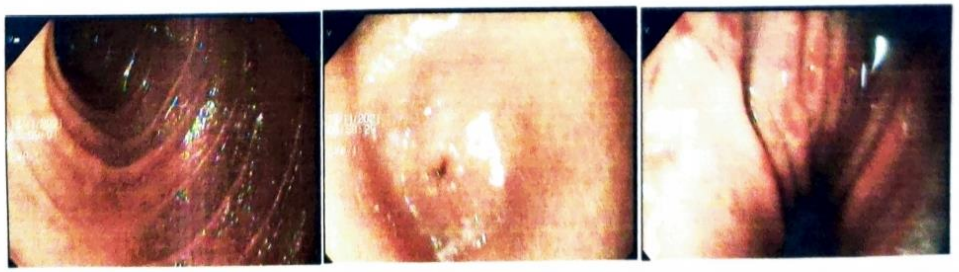
Pylorus : Normal

Duodenum

D1 : Normal

D2 : Normal

Impression : LAX LES.
EROSIVE PAN GASTRITIS.



Visit Summary

DR.ALAGUSUNDARAM

Page 1 of 1

CaptureITPro - www.ambalsoft.com

AARTHI SCANS

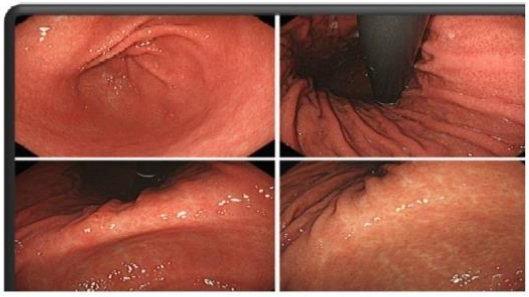
VADAPALANI, CHENNAI

Patient name:	Miss.Nandhinl.R	Age/Gender:	19years/ Female
Patient ID	9877	Date:	2.1.2022
Roferred Dr	National Institute of siddha	Consulted Dr	**DR. ALAGUSUNDARAM**
Procedure:	Upper GI Endosopy		

Esophagus	Normal.
Fundus	Normal
Body	Normal
Antrum	Normal
Pylorns	Normal
Duodenum	
D1	Normal
D2	Normal

Impression

Normal



Visit Summary

DR.ALAGUSUNDARAM

Page 1 of 1

Capture/TPro- www.ambalsoft.com

6. STATISTICAL ANALYSIS

All the data collected were entered into MS excel software using different columns as variables and rows as 30 patients. SPSS software was used to perform statistical analysis. Basic descriptive statistics include frequency distribution and cross tabulations were performed. The quantity variables were expressed as Mean±Standard Deviation and Qualitative data as percentage. A probability value of <0.05 was considered statistical significance. Paired 't' test was performed for determining the significance between before and after treatment.

Table:33Paired T- Test:Gastrointestinal Symptoms Rating Scale (GSRS) Score

Variable	N	Before Treatment (Mean±SD)	After Treatment (Mean±SD)	P-value	Inference
Reflux syndrome	30	4.333±0.723	1.550±0.356	**<0.0001**	Extremely significant
Abdominal pain	30	3.1330±0.7305	1.3330±0.2639	**<0.0001**	Extremely significant
Indigestion	30	2.9083±0.7557	1.1583±0.2126	**<0.0001**	Extremely significant
Diarrhoea	30	1.207±0.434	1.117±0.302	**0.0331**	Significant
Constipation	30	1.5803±0.6287	1.1003±0.2351	**<0.0001**	Extremely significant

Gastrointestinal Symptoms Rating Scale Score (GSRS)

The objective of this study was to evaluate the clinical symptoms of Gastrointestinal Symptom Rating Scale (GSRS) in Acid Peptic Disease (APD) patients. The GSRS contains 15 scales for symptoms. The statistically significant difference in the GSRS scale scores were observed between before and after treatment.The extremely significant **(p< 0.0001)** symptoms were Abdominal pain, Reflux, Indigestion and Constipation but the less significance **(p<0.0331)** was seen in Diarrhea. It was come to end the GSRS was concisely, adequately, extensive clinical assessment of gastro intestinal symptoms. It was easy and helpful to assess the severity of gastro intestinal symptoms.

Table:34 Descriptive statistics for laboratory investigations:

Variable	N	Before Treatment (Mean±SD)	After Treatment (Mean±SD)	P-value	Inference
Hemoglabin	30	13.613±2.0920	14.740± 1.6825	**.000****	Extremely significant
ESR	30	9.500 ± 8.5611	3.800± 2.1238	**.000****	Extremely significant
WBC	30	6946.000± 1711.0706	7163.033± 1644.8549	**.000****	Extremely significant
BT	30	2.2063± .53952	2.2763± .64021	.536	No significant
CT	30	4.2353± 1.31594	4.0617± .88471	.433	No significant

RBC	30	4.8480± .43501	5.070± .5018	**.002 ****	significant
Polymorphs	30	56.600± 9.0805	59.200± 8.7035	**.001**	significant
Lymphocyte	30	33.700± 8.1204	34.100± 8.1298	.575	No significant
Monocyte	30	6.713± 2.7786	6.067± 3.4334	**.012**	significant
Eosinophil	30	4.043±4.4359	2.367± 1.8473	**.022**	significant
Basophil	30	1.160±1.3219	.200± .4068	**.000 ****	Extremely significant
High Density Lipoprotein	30	45.233± 8.7205	50.033± 7.5315	**.000 ****	Extremely significant
Low Density Lipoprotein	30	123.067± 27.7947	103.333± 13.0710	**.000 ****	Extremely significant
Very Low Density Lipoprotein	30	29.787± 22.1441	29.800± 19.1733	.991	No significant
Triglycerides	30	120.767± 48.3961	114.767± 39.8961	.027	significant

Total Cholesterol	30	182.733± 38.3576	173.067± 22.5081	.052	significant
Urea	30	18.767±5.0425	18.733± 3.6760	.956	No significant
Creatinine	30	.887±.1907	.873± .1999	.601	No significant
Total bilirubin	30	.8490±.36215	.747± .3381	**.010****	significant
Direct bilirubin	30	.2423±16876	.2373± .12736	.783	No significant
Indirect bilirubin	30	.5260±.28121	.5170± .25371	.643	No significant
Serum Glutamate Oxalate Transaminase	30	24.100±5.6894	27.233± 7.6189	**.000****	Extremely significant
Serum Glutamate Pruvate Transaminase	30	23.667± 11.1087	25.067± 8.1238	.254	No significant
Alkaline phosphatase	30	84.600±27.3100	90.033± 26.5998	**.016****	significant

From the above table, the mean, minimum, maximum and standard deviation for the total score and laboratory analysis have been given. The sample size of the study is 30.

T-Test

Hypothesis:

Null hypothesis: There is no significantly differencein the treatment (Before & After) with respect to different factors.

Alternate Hypothesis: There is statistically significant difference in the treatment (Before & After) with respect to differenct factors.

Inference:

All parameters whose p value is less than 0.05 reject the null hypothesis. That is there exists statistically significant differ rence between the treatment methods in these parameters. All other cases with p value greater than 0.05 accept the null hypothesis that there is no statistically significant difference between the treatment methods.

7. DISCUSSION

I was selected the trial drug Amalakathi kirutham, a polyherbal siddha formulation in the treatment of Erigunmam. According to Yugimuni Vaithiya Chinthamani- 800, Erigunmam clinical features are correlated with Acid peptic disease in modern science which is set apart by burning or gnawing sensation after meals, bloating, abdominal flatulence, diarrhea, burping, sweating from hair follicles, twisting pain in intestine, Headache, Giddiness and Increased salivation.

In National Institute of siddha OPD among 67 patients were screened, 30 patients were included according to inclusion criteria. After obtaining the informed consent, patients were included in the study.

Before the commencement of the clinical study, approval was obtained from the Institutional Ethical Committee (IEC) of National Institute of Siddha **(21.12.2020; NIS/IEC/2020/D-1).** The trial was registered in clinical trial registry of India **(CTRI/2021/08/035861).**

I have need of raw drugs of the preparation of Amalakathi kirutham were bought from a well reputed country shop in Chennai and fresh drugs purchased from my garden and it is authenticated by Assistant Professor in Medicinal Botany, Department of Gunapadam in NIS. The raw drugs were cleaned and the medicine was prepared as per standard operating procedure in Gunapadam Laboratory of National Institute of Siddha.

The biochemical (both Qualitative and Quantitative) analysis of the trial drug Amalakthi kirutham was done in the biochemistry laboratory of National Institute of Siddha and the results were documented. The Physicochemical analysis, Phytochemical analysis, Sterility test, HPTLC, Alflotoxin and Heavy metal analysis were done in Noble research solutions, Perambur, Chennai.

The study was implemented as per protocol and the patients were included by using screening form about from 67 patients. And who had the symptoms of Erigunmam such as burning or gnawing sensation after meals, bloating, abdominal flatulence, diarrhea, burping, sweating from hair follicles, twisting pain in intestine, Headache, Giddiness and Increased salivation and willing to sign the informed consent form. All the enrollment cases were treated with Maruthuvam Outpatient. Patients who came under Inclusion Criteria will be recruited for the Study. On The aim of this study to reduce the Thiridhodam humor for bring down the clinical symptoms of before and after treatment.

Day:1 Oil bath (Seeraga thilam) was put forward to all patients.

Day:2 Salt restricted diet was advised without medication.

Day:3 Trial drug was administrated (Amalakathi kirutham- 4ml, bd). The clinical assessment was done during each visit (7 days once) but 24 days once the clinical data was noted in Case Report Form. Blood parameters were done 0^{th} day and 49^{th} day of the treatment. The Patients were administrated in to the study who had the previous report of endoscopy hence after treatment of Endoscopy who had willing to taken the endoscopy report only i submitted.

Required Raw Drugs:

- ✓ Nelikai (*Phyllanthus Embilica.* Linn) : 1 Padi (1.30 Liter)
- ✓ Kadukkai (*Terminalis Chebula* Linn) : 2 1/2 Palam (87.5 G)
- ✓ Karumpu (*Saccharam Officinarum* Linn) : 1 Padi (1.30 Liter)
- ✓ Cows Ghee : 10 Palam (350g)

Discussion of qualitative analysis:

Biochemical analysis:

The standard procedure of qualitative analysis was done at Department of Biochemistry, National Institute of Siddha, Tambaram sanatorium, Chennai- 47. The result of Amalakathi kirutham showed the presence of**, Sulphate, Calcium, Carbonate, Copper, Zinc, Iron.**

- ✓ **Copper:**

Usama B et al [69] reported the copper like albumin complex was reduced the oxidative stress which was used for gastric ulcer treatment.

- ✓ **Zinc:**

Yazdanpanah et al [70] was reported Zinc like compund Zinc sulphate , which was reduce the ulcer size the mean percentage of 92 (±14) % and 89.4(±16.4) % .

- ✓ **Calcium:**

Mooris T et al [71] reported the Calcium carbonate was more effective than placebo in relieving the symptoms of gastric ulcer. Calcium carbonate was one of the compound of Calcium and it same for Carbonate also.

- ✓ **Iron**

Irving ehrenfield et al [72] reported administration of non irritating form of iron for the treatment of anemia with peptic ulcer.

Physio chemical analysis:

Physico chemical analysis of Amalakathi kirutham was carried out for each extracts of Amalakathi kirutham Viscosity at 50 degree celsius (Pa s) **59.65,** Refractive index **1.48,** lodine value (mg 12/g) **69.85**, Saponification Value (mg of KOH to saponify Igm of fat) **181.87,** Weight per ml **1.43 g/ml**, Acid Value mg KOH/g **0.617**, Peroxidase Value mEq/kg **6.96.**

Heavy metal analysis

Clearly showed that the sample had **no traces of heavy metals such as lead, Mercury and Cadmium**. Where as the sample shows the **presence of Arsenic at 0.18ppm**. Absence of heavy metals revealed the safety of drug for the management of Erigunmam.

- ✓ **Arsenic**

Arsenic (As) occurs in many minerals, usually in combination with sulfur and other minerals. **Danyu zhao et al [73]** reported arsenic intake appears to cause gastric toxicity.In my study drug evaluation of Heavy metal analysis showed below the maximum limit (>3ppm) of arsenic, So the trial drug did not cause gastric toxicity.

TLC finger printing analysis:

HPTLC fingerprinting analysis of the sample reveals the **presence of three prominent** peaks corresponds to presence of three versatile phyto components present within it. Rf value of the peaks ranges **from 0.02 to 0.22**

Sterility test by pour plate method

No bacterial / fungal growth/ colonies was observed in any of the plates inoculates with the test sample.

Specific pathogen analysis

Specific pathogen such as E.coli, Salmonella, Staphylococcus aureus, and Pseudomonas aeruginosa were **absent**. These criteria were vital for the safety of drug from microbial contamination for human to be consumed.

Aflatoxin analysis

Reported that the sample were **free from** Aflatoxin B1, Aflatoxin B2, Aflatoxin Gl. Aflatoxin G2. Aflatoxin are naturally occurring compounds that are produced by fungus and are known to be the potent human carcinogen, which spoils and infect the drug and made it unsuitable for human consumption.

Pesticide residue analysis

It showed that there were **no traces of pesticide residues** such as Organo chlorine, organo phosphorus, organo carbamates and pyrethroids in the sample. These pesticides show numerous negative health effects so the concenteration should not exceed the specified safe levels.

Phytochemical analysis:

The sample showed the presence of phytochemicals such as **Steriods, Triterpenoids, Coumarin, Sugar, Betacyanin.** And absence of Alkaloids, Flavanoids, Glycosides, Phenol, Tanin, Protein, Anthocyanin.

- ✓ **Triterpenoids**

Triterpenoids are group of phytochemicals.**Onwuchekwa C et al** [74] reported Betulinic Acid (Triterpenoid) is having the anti- gastric ulcer effect may be mediated via decreasing gastric acid secretion, increasing gastric mucus secretions and increase the number of gastric mucus cells. **Wang S et al** [75] delineated *Glycyrrhiza triterpenes* might through inhibiting gastric acid secretion, reducing the release of inflammatory mediators and protecting the gastric mucosa to cure gastric ulcer.

- ✓ **Betacyanin**

Betanin is the active phytochemical compound from the Beetroot, It ptotect the heart, liver, kidney. **Sistani Karampour N et al** **[76]** showed the Betacyanin (Betanin : Betanidin -5-O-brta-Glucose) is having gastroprotective effect on gastric ulcer which could be related to attenuated lipid peroxidation and reestabilishd NO content.

Clinical assessment:

Age distribution:

Ahkalya **[77]** reported the prevalence of Erigunmam was 34-66 years, (63.33%) of age group, which was found mostly between the age of 31 and 40 years (40%) in present study due to increased Vatham and Pitham during this season .

Gender distribution:

Ahkalya **[77]** study described the prevalence of Erigunmam was affected in male patients (60%) which was found likewise (56.67%) in present study also. But may be due to the reason of missing time eating, social habits and mixed diet.

Geographical livelihood:

Chavan et al [79] delineated the prevalence of urban geographical livelihood was 35.4% which was not comparably in present study In this study urban living individuals (53.3%) were more prone to Erigunmam compared to Rural area. The reason may be due to sedentary lifestyle.

Occupation:

In this study, 23.33% of cases were belonged to the occupation of Plant and Machine Operators, Assemblers and Unemployed in each due to the reason of intense worries, irregular timing of intake food, Stressful work.

Socio economic status:

Everhart et al [78] reported lower socio economic status was strongly associated, which was closely similar in present study (46.67%) also due to low family income.

BMI:

Chavan MS et al [79] reported the prevalence of APD was normal (58%) BMI, It was similar (46.7%) in present study also. BMI was not related in the present study due to may be literate persons.

Social habits:

Talamini G et al [80] was delineated the high prevalence of smoking with 95% cases which was established the present study 40% cases had the habit of smoking with alcohol was strong risk factor to induce the Erigunmam (APD).

Diet:

Anitha t [81] described the most prevalence of Erigunmam was 75% of cases had mixed diet which was ascertained in like manner of the present study 76.67%of cases had mixed diet the reason may be due to intake of junk foods and spicy foods.

Duration of illness:

Anitha t [81] outline the high prevalence of Erigunmam 55% of cases between the year of 1 and 5 year which was closely found in the present study 43.33% of cases, the reason may be due to had the habit of smoking with alcohol and drugs.

Psychological status:

On regarding, the highest prevalence of Erigunmam patients 16 (53.33%) had depression.

Nilam:

Anitha [81] reported the highly prevalence of Erigunmam 90% of cases were from Neithal Landscape which was closely related in present study, 40 % of cases were from Neithal Landscape and 33.33% of cases were from Marutham Landscape. According to siddha literature [82] Neithal nilam was all set of derangement of Pitha vaayu. But this data was not come to an end because of the hospital located in Neithal landscape.

Blood group:

Hemi [83] delineated the most prevalence of Erigunmam was affected O+ve blood group with 55% which was not found in the present study, In this study the prevalence of Erigunmam was affected B+ blood group with 46.67%, O+ blood group with 36.67%.

Gnanendhiriyam (Sensory organs):

In this study, most of the cases were affected with (83.33%) vaai due to increased salivation, altered taste, 46.67% of cases were affected with Mei due to increased vali, 43.33% of cases were affected with Kann due to blurred vision, mono ocular diplopia, 36.67% of cases were affected with Mokku due to sneezing, 33.33% of cases were affected with Sevi due to prickling pain in ear.

Kanmendhiriyam :

In this study, 36.67% of cases were affected with Kai, kaal in each due to myalgia, 60.00% of cases were affected with Vaai due to increased salivation, 66.67% of cases were affected with Eruvai due to altered bowel movement, 20.00% of cases were affected with Karuvai due to leucorrhoea..

Kosam:

Annamaya kosam was affected in 100% of cases due to derangement of Seven Body Constituents, Belching, Anorexia. Pranamaya kosam was affected in 76.67% of cases due to derangement of Kanmenthiriyam, Manomaya kosam 43.33% of cases due to Psychological status, derangement of kanmenthiriyam, Vignamaya kosam was affected in 46.67% cases.

Udal kattukal :

On perceiving the seven components of the body, 100% of cases were affected with Saaram, 50.00% of cases were affected with Senner, 50.00% of cases were affected with Oon, 40.00% of cases were affected with Kozhupu, 30.00% of cases were affected with Enbu, 6.67% of cases were affected with Moolai. In this study Udal thathukkal was affected such as Saaram (Migu kunam), Senner, Oon, Kozhupu, Enbu, Moolai (Kurai kunam), it lead to disease. So, The gunmam patients which may be a significant finding in Udal Thathukkal.

Uyir thathukkal[(84)]

Vazhi:

As regards to derangement of Vatham due to its subdivision of Vatham, Pranan is control of digestion but in consequence the indigestion seen in 90% of cases, Abanan is accountable for bowel and bladder habits but in consequence of the altered bowel (constipation and diarrhea) seen in 90% of cases, Samanan is responsible for reglation of other vaayus so, all of them 100% of cases affected. Udhanan was affected because of Nausea, Vomiting and Recurgitation. Viyanan was affected in 56.67% of cases due to pain in all over body, 13.33% of cases affected

in Naagan and Koorman in each due to blurred vision, mono ocular diplopia, Kirukaran was affected in 56.67% of cases due to loss of appetite, Devathathan was affected in 6.67% of cases due to drowsiness of body.

Azhal:

Azhal is the combination of Analakam, Ranjakagam, Saathakam, Prasakam, Aalosakam. Analakam was affected seen in 93.33% of cases due to loss of appetite, flatulence, Ranjakagam was affected seen in 30% of cases due to anemia, Saatham was affected seen in 46.67% of cases due to difficulty to do day to day activities, Prasakam was affected seen in 26.67% of cases due to the pallor of skin, Aalosakam was affected seen in 43.33% of cases due to vision impairment.

Iyam:

Kabam is the mixture of Avalambagam, Kilethagam, Pothagam, Tharpagam and Santhigam. Avalambagam, was affected seen in 96.67% of cases due to derangement of other iyam, Kilethagam was affected seen in 90.00% of cases due to loss of appetite, Pothagam was affected seen in 76.67% of cases due to altered taste sensation, increased salivation, Tharpagam was affected seen in 23.33% of cases due to vision impairment, Santhigam was affected seen in 50% of cases due to joinit pain.

Envagai thervu:

Envagai thervu is the importanat diagnostic tool in siddha, 36.67% of cases were observed with Vatha pitha naadi, 63.33% of cases were observed with Pitha vatham. According to Sathaga naadi, Pitha vatha naadi is more prone to Erigunmam which was found similiarly in present study also, Sparisam was affected in 36.67% of cases due to migu vebam, Naa was affected in 83.33% of cases, Niram was affected in 23.33% of cases due to Vatha and Pitha niram, Mozhi was affected in 33.33% of cases due to karatha ozhi, Vizhi was affected in 33.33% of cases due to pallor of conjunctiva, Malam was affected in 53.33% of cases due to constipation, diarrhea, Moothiram was affected in 70.00% of cases due to manjal niram.

Clinical symptoms :

In clinical features, 100.00% of cases had Burning/ gnawing sensation in stomach, 73.33% of cases had Headache, 6.67% of cases had Diarrhea, 46.67% of cases had Twisting pain in intestine, 23.33% of cases had Sweating from hair, 56.67% of cases had loss of weight, 96.67% of cases had Burping, 83.33% of cases had flatulence, 46.67% of cases had Increased salivation, 40.00% of cases had Giddiness. In these cases were included in line with Yugimuni Vaithiya Chinthamani -800. Even now a days same symptoms were reported by patients in Ayothidoss Pandithar Hospital.

After treatment, 80.00%) cases were improved with Burning/ gnawing sensation in stomach, 63.63% of cases were improved with Headache, 100% of cases were improved with Diarrhea, 78.57% of cases were improved with Twisting pain in intestine, 57.14% of cases were improved with Sweating from hair, 76.47% of cases were improved with loss of weight, 65.5% of cases were improved with Burping, 60% of cases were improved with Flatulance, 71.42% of cases were improved with Increased salivation, 75% of cases were improved with Giddiness.

According to Mukkutram:

In this Clinical study, derangement of Pitha vaatham and Vaatha pitham humor in Erigunmam patients.The trial drug of Amalakathi kirutham has the combination of drugs such as Nelikai (Phyllanthus embilica), Karumpu (Saccharum officinarum), Kadukkai (Terminalia chebula) and Cows ghee. The fruit of Nelikai has the Sour, Sweet in taste and its division of Pungent in taste, The juice of Karumpu has Sweet in taste and its division Sweet in taste and The derm of Kadukkai has Pungent in taste and its division of Sweet in taste.

Accoeding to Siddha literature, The juice of Karumpu, Nelikai and Cows ghee has Antibilious activity. So, these drugs neutralizes or diminishes the Pitham humor. At the same time Kabavaatham also increases. The addition of derangement of Vatham humor neutralizes by the derm of Kadukkai (The Vaatham nature is varatchi ,The neutralization of Pitham by Sweet, Punget and Astrigent and The neutralization of Vaatham by Sweet, Sour, Salt as well as The Vaatham increases by the intake of Bitter, Astrigent, Pungent and The Pitham increases by the intake of Salt, Sour, Bitter)

Hence, The trial drug of Amalakathi kirutham can be treat the Pitha vaatha and Vaatha pitha disease. The Erigunam patients was observed derangement of Pitha vaatham also, So the trial worked correctly.(86)

8. SUMMARY

- The aim of the study is to evaluate the therapeutic efficacy of siddha herbal formulation Amalakathi kirutham in the treatment of Erigunmam.
- The protocol of the study has been approved by the Institutional Ethical Committee (IEC) of National Institute of Siddha The date of IEC approval & IEC number is **21.12.2020; NIS/IEC/2020/D-1**. The trial was registered in Clinical Trial Registry of India **(CTRI Reg no:CTRI/2021/08/035861).**
- The raw drugs were authenticated by Botanist. Medicinal Botany Department of NIS.(No: NISMB482021), and the study drug was prepared by the investigator in the Gunapadam lab, National Institute of Siddha, as per the standard operating procedure mentioned in the protocol.
- Biochemical analysis (Qualitative analysis) was done in the Biochemistry lab of NIS. Physico chemical analysis, Phytochemical analysis and heavy metal analysis were done at Noble research solutions, Perambur, Chennai.
- In this clinical study 67 patients were screened based on inclusion and exclusion criteria at the outpatient department of Maruthuvam, National Institute of Siddha. Out of 67 cases, 30 cases were recruited for the clinical study.
- Before commencement of the clinical trial, informed consent was obtained from all the patients. The patients were treated with Amalakathi kirutham within the duration of 48 daysat the dosage of 4ml, twice a day before meal.
- The clinical assessment was done in the course of every visit of 7 days and the data were noteworthy in the Case Record Form. During the period of clinical trial there was no any adverse reaction recorded.
- The trial drug was play a vital role in the clinical trial, it neutralize the Pitham and Vaatham humors to all the patients.
- Blood parameters(CBC, LFT, RFT, Blood group and Lipid profile), were done before and after treatment. USG –Whole abdomen and Motion test was done only earlier to the treatment.
- Statistical Analysis was done after the completion of the treatment period for both before and after intervention.

- The statistically highly significant difference between before and after treatment with regard to the clinical symptoms were the subscale symptoms of GSRS were Reflux, Abdominal pain, Indigestion and Constipation, this is extremely significant **(p<0.001**),** Diarrhea symptom was less significant **(p<0.0331)** in the study. The laboratory investigations were Hemoglobin, Erythrocyte Sedimentation Rate, White Blood Cell Count, Basophil, High Density Lipoprotein, Low Density Lipoprotein, Serum Glutamate Oxalate Transaminase **(p<0.000**)** and The statistically significant difference between before and after treatment regarding the blood parameters were RBC-Red Blood Cell Count (p<0.002),P-Polymorphs(p<0.001),M-Monocyte(p<0.12), E- Eosinophil (p<0.22), T.B- Total bilirubin (p<0.10), ALP- Alkaline phosphatase (p<0.016).
- According to Yugi Muni Vaithiya Chinthamani- 800, The reduction of clinical features were burning or gnawing sensation after meals, bloating, abdominal flatulence, diarrhea, burping, sweating from hair follicles, twisting pain in intestine, Headache, Giddiness and Increased salivation showed the frequency table.
- According to Gastrointestinal Symptoms Rating Scoring scale (GSRS), the reduction of clinical symptoms were Abdominal pain, Heart burn, Acid reflux, Hunger pain, Nausea, Rumpling, Bloating, Burping, Passing gas / flatus, Diarrhea, Constipation, Loose stools, Hard stools, Urgency need to have a bowel movement, Sensation of not completely emptying the bowels.The statistical analysis was done and it showed the trial drug Amalakathi kirutham is more effective and significant in Erigunmam (Acid Peptic Disease) patients.

Qualitative analysis of Amalakthi kirutham reports the trial drug contains the following:

1. **Biochemical analysis:**

   The result of Amalakathi kirutham showed the presence of Magnesium, Sulphate, Calcium, Carbonate, Copper, Zinc, Iron, Sodium.

2. **Physio chemical analysis:**

Physico chemical analysis of Amalakathi kirutham was carried out for each extracts of Amalakathi kirutham Viscosity at 50 degree celsius (Pa s) 59.65, Refractive index 1.48, lodine value (mg 12/g) 69.85, Saponification Value (mg of KOH to saponify Igm of fat) 181.87, Weight per ml 1.43 g/ml, Acid Value mg KOH/g 0.617, Peroxidase Value mEq/kg 6.96.

3. **Heavy metal analysis**

Clearly showed that the sample had no traces of heavy metals such as lead, Mercury and Cadmium. Where as the sample shows the presence of Arsenic at 0.18ppm (It is very low amount in the trial drug, the maximum limit is 3ppm). Absence of heavy metals revealed the safety of drug for the management of Erigunmam (Acid Peptic Disease).

4. **HPTLC finger printing analysis:**

HPTLC fingerprinting analysis of the sample reveals the presence of three prominent peaks corresponds to presence of three versatile phyto components present within it. Rf value of the peaks ranges from 0.02 to 0.22

5. **Sterility test by pour plate method**

No bacterial / fungal growth/ colonies was observed in any of the plates inoculates with the test sample.

6. **Specific pathogen analysis**

Specific pathogen such as E.coli, Salmonella, Staphylococcus aureus, and Pseudomonas aeruginosa were absent. These criteria were vital for the safety of drug from bacterial contamination.

7. **Aflatoxin analysis**

The Amalakthi kirutham was free from Aflatoxin B1, Aflatoxin B2, Aflatoxin Gl. Aflatoxin G2.

8. **Pesticide residue analysis**

It showed that there were no traces of pesticide residues such as Organo chlorine, organo phosphorus, organo carbamates and pyrethroids in the trial drug.

9. **Phytochemical analysis:**

The Amalakathi kirutham showed the presence of phytochemicals such as Steriods, Triterpenoids, Coumarin, Sugar, Beta cyanin.

9. **CONCLUSION**

The Erigunmam (Acid Peptic Disease) patients were treated with the trial drug of Amalakthi kirutham. This clinical study revealed the reduction of clinical symptoms by using GSRS scale. The Mean value of following symptoms (Reflux, Abdominal pain, Indigestion, Constipation and Diarrhea) before and after treatment were 4.333±1.550, 3.1330± 1.3330, 2.9083±1.1583, 1.5803±1.1003 **(p<0.000)** and 1.207±1.117 **(p<0.0331)** respectively.The Mean value of following blood parameters (Hemoglobin, White Blood Cell count, Erythrocyte Sedimentation Rate, Basophil, High Density Lipoprotein, Low Density Lipoprotein and Serum Glutamate Oxalate Transaminase)were 13.613± 14.740, 6946.000±7163.033, 9.500±3.800, 1.160±.200, 45.233±50.033, 123.067±103.333 and 24.100±27.233 respectively **(p<0.000).** There was statistically significant difference between before and after treatment as regards of clinical symptoms of GSRS, the blood parameters were Hemoglobin, White Blood Cell count, Erythrocyte Sedimentation Rate, Basophil, High Density Lipoprotein, Low Density Lipoprotein and Serum Glutamate Oxalate Transaminase (p<0.000). So, There was no adverse reaction during the period of study. There was no recurrence of the symptoms during the follow up period. Hence, The trial drug was very safe, easily available. So the study can be implemented in future with large sample size to treat the Erigunmam (Acid Peptic Disease) patients with the same trial drug successfully.

10. BIBILIOGRAPHY

1. Kannan Muthaih et al, Concepts of body constitution in traditional siddha texts : A literature review , J Ayurveda integr med, 2019 Apr-Jun; 10(2): 131–134.
2. Joseph Thas J, Siddha Medicine – background and principles and the application for skin disease,Clinics Dermatology, Voulme 26, Issue, Jan – Feb 2008, Pages 62- 78.
3. Shukla SS et al, Fundamental Aspect and Basic Concept of Siddha Medicine , Systemic review in Pharmacy ,Jan- June 2011,Vol2,Issue 1,48- 54.
4. Chithrabarathanubillai S, SIDDHA SYSTEM OF PULSE READING, 1ST edition, SIDDHA SYSTEM OF LITERATURE RESEARCH CENTER, 15.5.1993.
5. Chidambarathanu pillai S, SIDDHA SYSTEM OF DISEASES,SIDDHA MEDICAL LITERATURE RESEARCH CENTER, 1st edition, 30.7.1992
6. Kuppusamy mudhaliyar K N, Siddha maruthuvam (Pothu), Indian medicine of Homeopathy- Chennai- 600106,8th edition, 2016, page no :298-318.(6).
7. Kunmam- (Acid peptic disease), Jan 2014.
8. Sanders S W, Pathogenesis and treatment of acid peptic disorders: comparision of proton pump inhibitors with other anti ulcer agents, Clin Ther, 1996 Jan -Feb; 18(1): 2-34.
9. Alex Mejja et al, Acid peptic disease: pharmacological approach to treatment, Expert Rev Clin Pharmacol, 2009 May; 2(3): 295- 314.
10. Chavan MS et al, Prevalence and risk factors of Acid Peptic Disease at atertiary hospital, International Journal of Advances in Medicine, 2018, Aug, Vol 5, Issue 4 , Page 989.
11. Kannusamy pillai S, Chitcha rathina deepam, B. Rathina Nayakkarand Sons, No.26, Venkatramastreet, Kondithoppu, Chennai-79, 2018, page no 219.
12. Dr M Sanmugavelu H.P.I.M, Noinadal Noi Mudhal Nadal Thirattu- Part -2, 2nd edition,2010, Directorate of Indian medicine and Homeopathy, Chennai-600106, Page no:264,254,255

13. Dr.R. Thiyagarajan L.I.M, Yugi Munivar Vaithiya Chinthamani Peru Nool-800, 1ST Edition, Directorate of Indian Medicine and Homeopathy, Page no: 415-416.
14. V Madhavan, Aagsthiyar Vaithiya Kavyam-1500, Tamil university, Tanjavur- 61300, 1st edition, Page no:143-144, Song no: 63-67.
15. Yugima muinivar, Peru nool vaithiya kaviyam -1000, Ilagana kalanchiyam, Chennai, September, Page no 57, 57-65.
16. Dr. K. S. Uthamarayan, Siddha Maruthuvanga Surukkam, 2nd edition, Directorate of Indian Medicine and Homeopathy, Chennai- 600106, Page no:193, 205, 208,211.
17. Gurunaadi Sasthiram-250, B. Rathina nayagar Sanns, Chennai, 1937, Page no: 21.
18. K.N.Kuppusamy muthaliyar H.P.L.M, Siddha maruthuvam (Pothu), 8th edition, Directorate of Indian Medicine and Homeopathy, Chennai- 600106, Page no: 298-300.
19. T.Shanmugapillai, Vaithiya sara sankiragam, Vidhyara nagaram press, Chennai, 1930, Page no: 298,295-298.
20. Dr S Venkatrajan, Danvanthiri Vaithiyam- First Part, Director, Saraswathi mahal library, Tanjavur, 3rd edition , 2006, Page no:220.
21. T. V. Sambasivam pillai, Siddha Medical Dicitionary, Vol:2-Part-2, Department of Indian Medicine & Homeopathy, Chennai-106, 2nd edition,2006, Page no:1086-1087.
22. Dr.S.Venkatarajan L.I.M, Agasthiyar 2000-1st part, Saraswathi mahal, Tanjavur3rd edition , 2006 , Page no: 231-276, 226, 239.
23. M. Manikavel, Agasthiyar kuruthirattu, The progressive printers, Chennai, 1930, Page no:19,20.
24. Dr.R.Thiyagarajan L.I.M, Yugi Munivar Vaithiya Chinthamani Peru nool-800, First part, 2nd edition, Director of Indian Medicine and Homeopathy,Chennai-600029,Page no:419-420.
25. T V Sambasivam pillai, Tamil English Dicitionary based on Siddha & Indian Medical Science, Siddha Medical Dicitionary Vol 1st –Part 2(Tamil & English), 3rd edition, Page no:1411.

26. S. Kannusamy pillai, Chikitcha Rathina Deepam 2nd part Vaithiya chinthamani, B. Rathina nayagar & sanns, Chennai-79.Page no: 46.
27. 1.Das P K, Text book of Medicine, 5th edition, Current Books International, 60, Lenin saranee, Kolkata, 700013, 2009, Page no: 175-176, 178- 180, 186-187.
28. Jameson J et al, Harrisons Manual Of Medicine, 20th edition, Mc Graw Hill, 2018, Page no: 815- 817.
29. Ralston, Stuart H et al, Davidson's Principles and Practice of Medicine, 23rd edition, Elsevier Health Science, 2018, Page no: 791-794, 797-798, 802.
30. Nimish vakil MD, Overview of Gastritis, University of Wisconsin school of Medicine and Public Health, June 2021.
31. Talia F Mallik et al, Peptic Ulcer Disease, July 29, 2021.
32. Mech narayanan et al, Peptic Ulcer Disease and *Helico bactor pylori* infection, 2018, May –Jun; 115 (3): 219-224.
33. Min s Cho et al, Zollinger Ellison Syndrome, In: StatPearls Publishing; Jan 2022.
34. Revicki et al, Reliabilty and validity of the gastrointestinal symptom rating scale in patients with gastro esophageal reflux disease,Qual life Res, volume 7, pages 75-83(1997),
35. Murugesa Muthaliyar K N, Gunapadam – Mooligai Vaguppu, Department Of Indian Medicine And Homeopathy, Chennai-106, volume 1, 9th Edition, 2013, Page no : 201 -212, 236-240,620-626.
36. Thiyagajan R, Gunapadam – Thathu jeeva vaguppu, Department Of Indian Medicine And Homeopathy, Chennai-106, Voulme 2, 8th Edition, 2013, Page no : 702.
37. Kannusamy pillai C, Chikitcha rathina deepam Part 1, 1951, Page No: 26, 27, 29, 30, 33, 34, 64, 203.
38. Kavitha Sharma Et al, Pharamcological Study Of Amalaki With Special Reference To Its Anti-Microbial Agents, International Journal Ayurvedha And Pharma research, May 2017,5 (5) :93-96;Vol5, Issue 5.

39. Dr Suseela lanka, A Review on Pharmacological, Medicinal and Ethno botanical Important Plant: *Phyllanthus Embilica* (Syn: *Embilica Officinalis),* World Journal of Pharmaceutical Research, 2018, Volume7, Issue 04, 380-396.
40. Dr Ketanrathwa Et Al, Pharmacognostical Study Of Amalaki (*Embilica Officinalis*), European Journal Of Biomedical And Pharmaceutical Science, 2018, Volume 5, Issue 7, 764-766.
41. Rubaiyathasan md Et Al, Phytochemistry, Pharmacological Activities and Traditional Uses Of *Embilica officinalis*; A Review, International Current Pharmaceutical Journal, January 2016, 5(2) 14-21.
42. Bhakta Prasad Gaire Et Al, Phytochemistry, Pharmacology and Medicinal Properties Of *Phyllanthus embilica linn*, The Chinese Journal Of Integrated Medicine, 8 Jan 2015.
43. Shubhi mehrotra Et Al, Anti *H Pylori* and Anti Oxidant Properties of *Embilica officinalis* Pulp Extract: A Potential Source for Therapeutic Use Aginst Gastric Ulcer, Journal of Medicinal Plants Research, July 2011.
44. Dr Shiromanimishra Et Al, Amalaki (*Embilica officinalis*) - A Review From Text Of Modern Period, Internatioanl Journal Of Advanced Research, 5(7), 574-580.
45. Aparna upadhyay Et Al, A Review on The Pharmacological Aspects of *Terminalia chebula*, A international Journal Of Pharmacology, 2014; 10(6):289-298.
46. Anwesa Bag Et Al, The Devolpment Of *Terminalia Chebula* Retz (Combretaceae) In Clinical Research, Asian Pac J Trop Biomed, 2013; 3 (3): 244- 252.
47. Vaibhay Mishra Et Al, Anti Secretory And Cyto Protective Effects Of Chebulinic Acid Isolated From The Fruits Of *Terminalia Chebula* On Gastric Ulcer, Phyto medicine, Volume 20, Issue 6, April 15 2013, Page No 506- 511.
48. Khan M U Et Al, *Terminalia Chebula*- An Ephemeral Glance, International Journal Of Pharmacy And Pharmaceutical Science, Vol 7, Issue 2, 2015, 40-43.

49. Adriana Cheavegatti- Gianotto Et Al, Sugar Cane *Sacchrum Officinarum* A Reference Study For The Regulation Genetically Modified Cultivars, Brazil, Tropical Plant Biology, 2011; 4:62-89.
50. Amandeep singh Et Al, Phytochemical Profile of Sugarcane and Its Potential Health Aspects, Pharmacognosy Review, 2015 Jan- Jun; 9 (17): 45-54.
51. Sapidehmiraj, Phrmacological Effects of *Saccharum officinarum*, Scholars of Research Library, 2016, 8 (13): 223-225.
52. Eneh Frank Uchenna Et Al, Phytochemical And Anti Microbial Properties Of The Aqeous ethanolic Extract Of *Saccharum officinarum* (Sugar Cane) Bark, Journal Of Agriculture Science, Vol 7, No 10; 2015.
53. Vanessa G Alves Et Al, Phenolic Compounds Anticancer Activity Of Commericial Sugarcane Cultivated In Brazil, Anais Da Academic Brasilier De Cinencias, 2016, 88 (3): 1201-1209.
54. Imaokon Williams Et Al, Nutritional And Anti Microbial Evaluation Of *Saccharum officinarum* Consumed In Calabar, Nigeria, African Journal Of Biotechnology, Vol 15(33), Pp. 1789-1795, 17 , august ,2016.
55. Preksha dwivedi Et Al, Pharmacological Evaluation Of *Saccharum officinarum* Linn As Anti-Ulcer Agent, Internatioanal Journal Of Science, Technology And Society, Vol 4, No 1& 2, (2018):58-61.
56. Sepidesh Miraj, Pharmacological Effect of *Saccharum Officinarum L*, Der Pharmacia Letter, 2016, 8 (13); 223- 225.
57. Kaushik P Et Al, Therapeutic Potentials of Cow Derived Products- Review, International Journal of Pharmaceutical Sciences and Research, 2016; Vol 7 (4): 1383-1390.
58. Kumar Ravi, Critical Review of Cows Ghee Intake and Its Relation with Premaha or Diabetes, World Journal of Pharmaceutical Science, 2018; Voulme 7, Issue 4, 459-466.
59. Karupaben M Et Al, Evaluation Of Cholesterol lowering Property Of Selected herbs In Ghee (Heat Clarified Milk Fat),Trends In Phytochemical Research,3(3)2019, 217-224.
60. India Pharmacopeia I Volume I, Government of India, Ministry of Health and Family welfare, Indian Pharmacopeia commission, 2014.

61. Pharmacopoeial Laboratory for Indian Medicine (PLIM) Guideline for standardization and evaluation of indian medicine which include drugs of Ayurveda, Unani and Siddha systems. Department AYUSH .Ministry of Health & Family Welfare, Govt. of india .
62. Indian standard methods of sampling and test for oils and fats Indian standard institution New Delhi 47-50. 1964.
63. Brain KR, Turner TD. The Practical Evaluation of Phytopharmaceuticals. Bristol: Wright Scientechnica; 1975:36-45.
64. Lukasz Komsta, Monika Waksmundzka-Hajnos, Joseph sherma . Thin Layer Chromatography in Drug analysis, CRC Press, Taylor and Francis.
65. Wagner H. Plant Drug Analysis. A thin Layer chromatography Atlas.2nd ed. Heidelberg: Springer-Verlag Belgium; 2002:305, 227.
66. Luciana de CASTRO. Determining Aflatoxins B1, B2, G1 and G2 in Maize Using Florisil Clean Up with Thin Layer Chromatography and Visual and Densitometric Quantification. Ciênc. Tecnol. Aliment. vol.21 no.1Campinas. 2001.
67. WHO guideline for assessing the quality of herbal medicines with reference to contaminants and residues. WHO Geneva. 2007.
68. Lohar. D.R. Protocol for testing of ASU medicines. Pharmacopoeial Laboratory for Indian Medicines.
69. Usama et al, Role of copper albumin complex in treatment of gastric ulcer in rats, Journal of applied sciences research, 8(12):5789-5798, 2012.
70. Yazdanpanah K, Moghimi N, Yousefinejad V, Ghaderi E, Darvishi N. Effect of zinc sulphate on peptic ulcer disease. Pak J Med Sci. 2009 Apr 1; 25(3):404-07.
71. Mooris T et al, Antacid and Peptic ulcer - a reappraisal gut, 1979 20, 538-545.
72. Irving ehrenfield et al, Iron as a therapeutic supplement in peptic ulcer therapy. American journal of surgery vol 53.1941.
73. Danyu zhao et al, Arsenic intake - induced gastric toxicity is blocked by grape skin extract by modulating inflammation and oxidative stress in mouse model. Echo toxicology and environmental safety vol.233, 2022.
74. Onwuchekwa C et al, Anti-Gastric Ulcer Effect of Betulinic Acid in Male Albino Rats. Niger J Physiol Sci. 2015 Dec 20; 30(1-2):33-7.

75. Wang S et al, Multipathway Integrated Adjustment Mechanism of Glycyrrhiza Triterpenes Curing Gastric Ulcer in Rats. Pharmacogn Mag. 2017 Apr-Jun; 13(50):209-215.
76. Neda Sistani karamtour et al Gastroprotective effects of Betanine against ethanol induced gastric ulcer in Rats Jundishapur J nat pharm prod 2019.
77. Ahkalya M, A prospective open labelled Non- Randomized Phase-11 Clinical Trial of Saamuthara Chhoranam in the management of Erigunmam (Peptic Ulcer Disease) (Dissertation); GSMC, Polyamkottai, 2020.
78. Everhart JE et al, Incidence and risk factors for self reported peptic ulcer disease in united states. Am J Epidemiol 1998; 147 (6): 529-36.
79. Chavan MS et al, Prevalence and risk factors of Acid Peptic Disease at atertiary hospital, International Journal of Advances in Medicine, 2018, Aug, Vol 5, Issue 4 , Page 989.
80. Talamini G et al, Risk factors of peptic ulcer in 4943 inpatients. J Clin Gastroenterol. 2008; 42(4): 373-80.
81. Anitha therese, A clinical study on Erigunmam (Peptic ulcer) with the evaluation of siddha drug Pirandai vadagam (Dissertation); GSMC, Chennai, 2017.
82. Dr Durairasan, HPLM, Noi Illa Neri, 3rd edition, 1993, page no: 3.
83. Hemi devi T, A Study on Erigunmam(Dissertation), GSMC, Chennai, 2008.
84. Dr Shanmugavelu M, HPIM, Noi nadal Noi Mudhal Nadal- 1st part, Directorate of Indian Medicine and Homeopthy, Chennai-600106, 5th edition, 2014, Page no: 255-257.Nabil khattab, Have british Jews fully assimilated in the UK Labour Market?, International and Multidisciplinary journal of Social Science, 4(2), 121-148, july, 2015.
85. International Standard Classification of Occupation (ISCO-08), Structure, group definition and correspondence tables, International labour office, Geneva, Volume-1, 2012).
86. Dr Mahadevan L, Thiridhosa Meiganan Thathuva vilakam, Sarada Mahadeva Iyer, Ayurvedic Educational charitable Trust Derisanamcopr-629851, Kanyakumari (Dt), Tamilnadu, India.1st edition, Page no: 253-255.

11. ANNEXURE

1. Protocol
2. Forms

    Screening profoma

    Case Record Form

    Laboratory Investigation Form

    Drug Compliance Form

    Information sheet

    Consent Form

    Withdrawal Form

    Pharmacovigilance Form

    Diet Form

3. Certificates

11. ANNEXURES

NATIONAL INSTITUTE OF SIDDHA, CHENNAI-47

AYOTHIDOSS PANDITHAR HOSPITAL

CLINICAL EVALUATION OF SIDDHA HERBAL FORMULATION AMALAKATHI KIRUTHAM IN THE MANAGEMENT OF ERIGUNMAM (ACID PEPTIC DISEASE)

PROTOCOL

Principal investigator:

Dr.V.Abinaya arul malar,

2nd year PG Scholar,

Department of Maruthuvam,

National Institute of Siddha,

Chennai-47.

Name of the guide:

Dr. H. Nalinisofia MD(s),Ph.D,

Associate professor,

Department of Maruthuvam,

National Institute of Siddha,

Chennai 47.

Head of the Department:

Dr. T. Lakshmikantham MD(s),Ph.D.,

Associate professor,

Head of the Department of Maruthuvam,

National Institute of Siddha,

Chennai-47.

Name of the institution:

National Institute of Siddha,

Chennai-47,

Telephone no: 044-22411611

Fax: 044-22381314

Email:nischennaisiddha@yahoo.co.in

TITLE:

Clinical evaluation of siddha herbal formulation "Amalakathi Kirutham" in the treatment of Erigunmam (Acid Peptic Disease).

INTRODUCTION:

Siddha is one of the oldest systems of medicine being practiced in the South India. Siddha system of medicine not only deals with external body but also with the inner manor soul. The word Siddha means "established truth" and comes from the word Siddha object to obtained such as perfection in life or heavenly bliss. The concept of Siddha system based on fundamental principles of five basic elements of the universe, Three humors, Seven thathu (Physical constituents of the body), Envagai thervugal (An integral part of Siddha Medicine). The physical function of the body is mediated by three forces called Vali, Azhal, Iyam. The three dosham are considered the three pillars of health and support the structure and functions of the body. These Tridoshas are involved in regulating all the functions of the body and maintain the balance in the physical, emotional and mental. In normal state they are called three forces or three thathu that sustain and nourish the body.

Siddha medicine believes that diseases occur when there is a disequilibrium or imbalance in these humors or if their individual harmony is disturbed. The balance can be restored by correcting the underlying by the application of the Siddha medicine system.

In Siddha system, Yugi muni classified disease into 4448. Yugi muni mentioned 8 types of gunmam in the text of Yugi Vaithiya Chinthamani-800. In which Erigunmam is one among them and the sign and symptoms of this disease is correlated with Acid Peptic Disease in modern science. The characteristic features of Erigunmam, burning or gnawing sensation after meals , Headache, Increased salivation, Bloating , Abdominal flatulence with diarrhea, Burping, Sweating from hair follicles and Twisting pain in intestine.

Acid Peptic Disease is major health problem, which can affect large number of populations in all geographical regions in developing countries like India, The major reason for ulcer development is stress and life style modification, which plays a huge role in excess secretion of acid and thus may lead to ulcer. Acid Peptic Disease is combination of Gastric ulcer, Duodenal ulcer, Gastric Esophageal Reflux Disease and Meckle divericulum.

Acid Peptic Diseases are the result of distinctive but overlapping pathognic mechanism leading to excessive acid secreteion or diminished mucosal defense. It is hisologically defined as a mucosal defect the extend beyond to muscularis mucosa due to pepsin and gastrin secretion. Most of the ulcer occur in stomach, and proximal duodenum while less in the lower esophagus, the distal duodenum or jejunum. Ulcer is common in middle age group. Eating may increase pain rather than relieve pain. Other symptoms may include nausea, vomiting, and weight loss, heart burn, epigastric pain.

LITERATURE REVIEW:

திடுக்குமா மெரிகுன்மச் செயலைக் கேளாய்
சிறுவயிற்றிலெரிந்துமே குடல் குமுறும்
வடுக்கும்வாய் நீர்ச்சுரக்குந் தலைவ லிக்கும்
வயிறுப்பிக் கிறுகிறுத்தே ஏப்ப மாகும்
வெடுக்குமயிர் கால்தோறும் வியர்வை யாகும்
மிகப்பொருமி வயிறுகழிந் திரைச்ச லாகும்
எடுக்குமே குடலிளைக்கு மிரங்காத் தன்மை
எரியுமே யடலெங்கு மிரும லாமே.”

-Yugi muni vaithiya chinthamani- 800

சிறுவயிற்றிலெரிந்துமே	Burning sensation in stomach
குடல் குமுறும்	Twisting pain in intestine.
வாய் நீர்ச்சுரக்குந	Increased salivation
தலைவ லிக்கும்	Headache
வயிறுப்பிக்	Flatulence
கிறுகிறுத்தே	Giddiness
ஏப்ப மாகும்	Burping
மயிர் கால்தோறும் வியர்வை யாகும்	Sweating from hair
வயிறுகழிந் திரைச்ச லாகும்	Diarrhea

Above the poem is correlated with Acid Peptic Disease.

AIM:

To evaluate the therapeutic efficacy of siddha herbal formulation "Amalakathi Kirutham" in the treatment of Eri Gunmam (Acid Peptic Disease)" patients and document the study outcome through scientific approach.

PRIMARY OBJECTIVE:

To determine the clinical efficacy of the Siddha formulation Amalakathi kirutham (Internal) in the treatment of Eri gunmam (Acid Peptic disease) through open clinical study.

SECONDARY OBJECTIVE:

To study other cofactors related to the disease like Age, Sex, Diary habits, Family history, Socioeconomic Status and Endoscopy on the disease.

STUDY DESIGN:

Internal medicine: Amalakathi kirutham

Trial Drug	:	Amalakathi kirutham
Dosage	:	Nei karanti alavu (4ml), Twice a day
Duration	:	48 days
Reference	:	Chikitcha rathina deepam (Page no: 203)
Author	:	C.Kannusamy pillai
Edition	:	1951.

REQUIRED RAW DRUGS:

- ✓ Nelikai (*Phyllanthus Embilica.* Linn) : 1 Padi (1.30 Liter)
- ✓ Kadukkai (*Terminalis Chebula* Linn) : 2 1/2 Palam (87.5 G)
- ✓ Karumpu (*Saccharam Officinarum* Linn) : 1 Padi (1.30 Liter)
- ✓ Cows Ghee : 10 Palam (350g)

SOURCE OF RAW DRUG:

The required raw drugs purchased from a well reputed country shop and the fresh fruits and stem collected from the kancheepuram district. These drugs were authenticated by the assistant professor of Medicinal Botany, Gunapadam, NIS, The raw drugs was purified and then the study drug was prepared as SOP in Gunapadam laboratory, National Institution of Siddha.

PURIFICATION OF RAW DRUGS:

The following drugs was purified as per siddha literature,

Ref: Chikitcha Rathina deepam

- ✓ Nelikai (*Phyllanthus embilica.* Linn)
  - The seed is removed and only the outer part is to be taken.
- ✓ Kadukkai (*Terminalis chebula* Linn)
  - The seed is removed and only the outer part is to be taken.
- ✓ Karumpu (*Saccharam officinarum* Linn)
  - Remove the skin and kanu.
- ✓ Cows ghee :
  - Boiled
  -

METHOD OF PREPARATION

The juice was prepared from the Nelikkai, Karumpu and The kadukkai was grined into fined powder form. Nelikkai, Karumpu juice , Kaduklai thool chooranam and Ghee is added and mixed well. Whole contents are mixed to boil untill kirutham consistency.

DRUG STORAGE:

The prepared drug will be stored in a clean and dry new air tight container.

DISPENSING:

The prepared medicine Amalakathi kirutham (Nei karanti alavu- 4ml) was given to the patient in the disposable air tight container. At each visit the patient was given the above drug package for 7 days of treatment. At each visit the patient brought back the unconsumed drug if any and returned it to the PG scholar.

JUSTIFICATION OF DRUGS:

DRUG NAME	AC**TIVITY**
Phyllanthus embilica Linn (Nelikai)	Anti-oxidant, Heptoprotective activity, Gastroprotective, Anti-bacterial activity, Anti- inflammatory activity, Anti-pyretic activity, Anti-microbial activity, Anti-ulcerogenic activity, Analgesic activity, Wound healing property, Immnuno modulatory,
Terminalia chebula Linn (Kadukkai)	Anti-oxidant, Anti-microbial activity, Anti- inflammatory, Wound healing property, Anti fungal activity, Anti-viral activity, Anti- bacterial activity, Anti-ulcer activity, Anti mutagenic activity, Anti-diabetic activity
Saccharam officinarum Linn (Karumpu)	Anti-oxidant activity, Anti-microbial activity, Anti-bacterial activity, Anti-fungal activity,

Hence the formulations Amalakathi kirutham selected for this study will have therapeutic effect in Erigunmam.

SUBJECT SELECTION:

Erigunmam (Acid Peptic disease) Patients reporting to OPD of department of Ayothidoss Pandithar Hospital, Naional Institute of Siddha will be subjected to screening by using screening proforma. After screening the selected Erigunmam patients will be enrolled for this study who fulfill the inclusion and exclusion criteria as said below.

INCLUSION CRITERIA:

Age: 18- 60 years

Gender: Male/ Female

Patient who are having symptoms of Erigunmam.

Patient who are willing to sign informed consent form.

Patient who are willing to give blood samples before & after treatment.

EXCLUSION CRITERIA:

Gastric CA

Worm infestations

Liver disorders

Pancreatitis

History of taking other aliments

Diabetes

Hypertension

Cardiac disease

Pregnancy & Lactation

Abnormal curvature of thoracic vertebra.

WITHDRAWAL CRITERIA

Poor patient compliance and defaulters, patient turning unwilling to continue in the course of clinical trial.

Intolerance to the drug and development of adverse reactions during the trial.

Patients who will not take medication regularly.

Patients having symptoms of untolerable vomiting anddiarrhea

ASSESSMENT & CLINICAL INVESTIGATION:

A) Clinical assessment

B) Siddha assessment

C) Routine investigation

D) Specific investigation

A)Clinical assessment:

Giddiness,	Loss of weight
Burping,	Flatulance
Increased salivation	Headache
Diarrhoea,	Sweating from hair

Burning or gnawing sensation in stomach

Twisting pain in intestine

S. No	Gastro intestinal scale score	**0th day**	**24th day**	**49th day**
1.	Pain or Abdominal discomfort In your upper abdomen			
2	Heart burn			
3.	Acid reflux			
4.	Hunger pain			
5.	Nausea			
6.	Rumbling			
7.	Bloated			
8.	Burping			
9.	Passing gas or flatus			
10.	Diarrhea			
11.	Constipation			
12.	Loose stools			
13.	Hard stools			
14	Urgent need to have a bowel movement			
15	Sensation of not completely emptying the bowel			

B) Siddha assessment:

1. Nilam:

1. Kurinji
2. Mullai
3. Maruthuvam
4. Neithal
5. Paalai

2.Kaalam:

1. Kaarkalam
2. Koothir kalam
3. Munpani kalam
4. Pinpani kalam
5. Ilavenir kalam
6. Muthuvenir kalam

3.Gunam:

1. Sathuvam
2. Rasatham
3. Thamasam

4.Poripulangal:

1. Mei (Skin)
2. Vai (Tongue)
3. Kann(Eye)
4. Mooku (Nose)
5. Sevi (Ear)

5.Kanmendriyam:

1. Kai (Upper Limb)
2. Kaal (Lower limb)
3. Vai (Oral cavity)
4. Eruvai (Anal region)
5. Karuvai (Uro-genital region)

6.Kosangal:

1. Annamaya kosam
2. Pranamaya kosam
3. Manomaya kosam
4. Vignanamaya kosam
5. Ananthamaya kosam

7.Udal Thathukkal:

1. Saaram (Chyme)
2. Senneer (Blood)
3. Oon (Muscle)
4. Kozhuppu (Fat)
5. Enbu (Bones)
6. Moolai (Bone marrow)
7. Sukkilam /Suronitham (Genital discharges)

8. Udal thathukkal:

Vazhi:

1. Praanan
2. Abaanan
3. Samaanan
4. Udhaanan
5. Viyaanan
6. Naagan
7. Koorman
8. Kirukaran
9. Devathathan
10. Danjeyan

Azhal:

1. Analakam
2. Ranjakam
3. Saathakam
4. Prasakam
5. Aalosakam

Iyam:

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

9.Envagai thervu:

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

C) Routine investigations:

Hematology:

Hemoglabin(g/dl), Total RBC (million. Cumm), Total WBC(Cells/ cumm)

Differential Count(DC)

Polymorphs(%), Lymphocyte(%), Monocyte(%), Esinophill(%) and Monocyte(%)

Liver Funtion Test

Total bilirubin, Direct bilirubin, Indirect bilirubin, SGOT, SGPT& Alkaline phosphatase

Renal Function Test (mg/dl)

Urea, Creatinine

Lipid profile (mg/dl)

High Density Lipoprotein, Low Density Lipoprotein, Very Low Density Lipoprotein, Triglycerides and Total cholesterol

D) Special investigation:

Upper GI endoscopy (If possible)

STUDY ENROLLMENT:

In this clinical trial,patients reporting at OPD1 Department of Maruthuvam, Ayothidoss Pandithar Hospital, NIS with the clinical symptoms of burning or gnawing sensation after meals, Headache, Increased salivation, Bloating , Abdominal flatulence with diarrhea, Burping, sweating from hair follicles will be enrolled in this study. Patient information sheet and informed consent form will be issued to the patients. The patients enrolled in this study will be informed about the objective of the study, trial drug, possible outcomes in their own language and terms understandable to them.

After ascertaining the patients willingness, informed consent will be obtained in the consent form. All these patients will be registered in AHMIS and unique registration and will be issued which will contains information regarding patients ,Registration number, Address, Phone number and Doctors phone number etc. It can help to report easily if any adverse reactions arise. Complete clinical history, complaints and duration, examination findings will be recorded in the prescribed case report form. Form 2 will be used for recording the patients history, clinical examination of signs and symptoms, laboratory investigations respectively. Patients will be advised to take the trial drug with an appropriate dietary advice will be given according to the patients perfect understanding.

CONDUCT OF STUDY:

Patients who came under Inclusion Criteria will be recruited for the Study. On 1stday patient will be asked to take oil bath with Seeraga thylam (required quantity) On 2rdday the patient will be advised to take rest (without medication). On 3rd day, the trial drug “Amalakathi kirutham” will be given a dose of 4ml twice a day(Before food) continuously for 48days. The patients,will be asked t o visit the OPD and Ayothidoss Pandithar Hospital once in 7days.

At each visit, the clinical assessment will be done and prognosis will be noted. Laboratory investigations will be done on the 0thday and 51thday of the trial. During the course of the treatment, patients will be advised to take the diet as given in Form IX. If any of the trial patients who fail to collect the trial drug on the prescribed day but wants to continue in the trial, from the next day or two ,he/she will be allowed, but defaulters of more than one week will not be allowed to continue and be withdrawn from the study with fresh case being included.

FOLLOW UP:

After the end of the treatment, the patient will be advised to visit the OPD for another 2months for follow-up. Trial medicines will not be given in this period.

OUT COME:

Primary outcome:

Primary outcome is mainly assessed by comparing the reduction of clinical symptoms before and after treatment by using GSRS scale.

Secondary outcome:

Secondary outcome is assessed by the disease related to Age, Sex, Dietary habits, Socio economic status, Family history etc.Secondary outcome is mainly assessed by comparing the reduction of clinical symptoms before and after treatment by using Endoscopy.

ADVERSE EFFECTS:

If the trial patient develops any adverse reaction, he/she will be referred to the pharmacovigilance comittee of NIS. The members of this comittee will assess the adverse event and recorded in the prescribed adverse reaction form. For any SAE the patients will be treated with proper management at NIS, OPD. . For any SAE the patients will be treated with proper management at NIS, OPD. If any Serious Adverse Event (SAE) occurred the patient will be withdrawn from the study and referred to near by government hospital for further management.

STATISTICAL ANALYSIS:

All the data will be entered into computer using MS Access software with macro for logical errors and manually cross checked for data entry error. Then the data will be exported to STATA/SPSS Software for univariate /multivariate analysis. Student ‘t’ test and Paired ‘t’ test and Mantel-Haenszel chi-square test will be performed for determining the significance of a particular effect variable.

ETHICAL ISSUES:

- ✓ To prevent any infection, while collecting blood sample from the patient, only disposable syringes, disposable gloves, with proper sterilization of lab equipments will be used.
- ✓ No other external or internal medicines will be used. There will be no infringement on the rights of patient for this particular indication.
- ✓ The data collected from the patient will be kept confidentially. The patient will be informed about the diagnosis, treatment and follow-up.
- ✓ After the consent of the patient (through consent form) they will be enrolled in the study.
- ✓ Informed consent will be obtained from the patient explaining in the understandable language to the patient.
- ✓ Treatment will be provided free of cost.
- ✓ In conditions of treatment failure, adverse reactions, patients will be given alternative treatment at the National Institute of Siddha with full care throughout the end.
- ✓ The patients who are excluded [as per the exclusion criteria] will be given proper treatment, at NIS.

Reference:

- ✓ Dr Kuppusamy mudhaliyar K N, Siddha Maruthuvam, Pothu,8th edition Page no 298-318.
- ✓ Dr Uthamarayan K S, Siddha Maruthuvanga Churukkam,2nd edition, Page no:217
- ✓ Sage Yugi, Mohan R C, Yugimuni Vaithiya Chinthamani, 2nd edition 2013, Page : no 83.
- ✓ Vaithiya rathinam K S, Murugesa mudhaliyar,Gunapadam- Mooligai vaguppu 5th edition1998, Page no:201,236,392.
- ✓ Sambasivam pillai T V, Siddha medical dictionary ,2nd edition,2006, Volume 2, Page no : 313.
- ✓ Sambasivam pillai T V, Siddha medical dictionary ,2nd edition, 2006, Volume 2, 2 nd part, Page no : 911.

- ✓ Sambasivam pillai T V.,Siddha medical dictionary, 2nd edition,2006, volume 5, Page no : 1001.
- ✓ Davidson principles and practice of Medicine,21th edition, Page no: 791-799.
- ✓ Jan Svedlund M D, IngemarS jödin M D & Gerhard Dotevall MD, GSRS—A clinical rating scale for gastrointestinal symptoms in patients with irritable bowel syndrome and peptic ulcer disease, Digestive Diseases and Sciences volume 33, Pages129–134 (1988).
- ✓ Thiyagarajan R,L.I.M., Gunapadam, Thathu jeeva vagupu,8th edition,2013 , Page no:54.
- ✓ Anaivari anandhan , Sarakku Suthi seimuraigal, Director of Indian medicine and Homopathy, First edition,2008, Page no :9.
- ✓ Liu D et al, Evaluation of cellular anti oxidant and anti proliferative activitis of five main *Phyllanthus emblica* L.cultivars in china, Indian J Pharm scl,2015;77(3):274- 282.
- ✓ Kannusamy pillai C, Chikittcha Rathina Deepam, part 1 ,1951, Page no : 26,27,29,30,33,34,64,203.
- ✓ Joaquim Mauricio Duarte- Almelida et al, Antioxidant activity of phenolic compounds from sugar cane(*Saccharum officinarum* L) juice, Plan Foods Hum Nur.2006,Dec;6(4): 187-92.
- ✓ Praveen Sharma et al, Ani ulcerogenic activity of *Terminalia chebula* fruit in experimen1ally induced ulcer in rats, Pharmaceutical biology,2011;49(3):262-268.
- ✓ Dhale DA e al, Phytochemical screening and Anti-bacterial activity of *Phyllanthus emblica (*L.),Science Research Reporter 1(3), 138-142,Nov.2011.
- ✓ Gaire,B.P., Subedi, L. Phyto chemistry, Pharmacology and medicinal properties of *Phyllanthus emblica (*L.),*Chin.J. Integr.Med.*, 1-8,2014.
- ✓ Linda Chularojmontri et al, of *Phyllanthus emblica (*L),Enhances Human Umbilical Vein Endothelial wound healing and sprouting,*Evidence –Based Complementary and Alternative*

Medicine,Vol.2013,Article ID 720728,9 pages,2013.

- ✓ Xiaoli Liu et al, Immnuno modulatory and anticancer activities of phenolics from emblica fruit (*Phyllanthus emblica (*L.),Food Chemistry,Vol 131,Issue 2, 15 March 2012,pages 685-690.
- ✓ Lonchin Suguna et al, Influence of *Terminalia chebula* on dermal wound healing in rats,Vol 16 Issue 3 May 2002, Pages 227-231.
- ✓ Gupta et al., Biological and Pharmacological Properties of *Terminalia Chebula* Rez. *Int J Pharm Pharma Sci* ,Vol 4,Suppl 3,2012,62-68.
- ✓ Agbaje Esther Oluwatoyin et al, Anti inflammatory activity of Saccharum Officinarum L (Poaceae) juice in animal models,Research Journal Pharmacology and Pharmacy,2019, 3:7.
- ✓ Kannaih paulkumar et al 2017 Adv .Nat. Sci: Nanosci.Nanotechnol.8 03509.
- ✓ Eneh Frank Uchenna et al,Phyto chmical and Antimicrobial properties of the Aqueous Ethanolic extract of Saccharum officinarum (Sugar cane),Journal Agriculture Scienc,Vol,7,No, 10,2015.
- ✓ Velu,M.,Le,J H., Chang,WS.e t al.Fabrica tion, optimization, and characterization of noble sliver nanoparticles from sugarcane leaf(Saccharum officinarum) extract from antifungal application.3 Biotech7, 147(2017).

NATIONAL INSTITUTE OF SIDDHA, CHENNAI-47

AYOTHIDOSS PANDITHAR HOSPITAL

CLINICAL EVALUATION OF SIDDHA HERBAL FORMULATION AMALAKATHI KIRUTHAM IN THE MANAGEMENT OF ERIGUNMAM (ACID PEPTIC DISEASE)

Form:1 Screening from

Serial no: AHMIS no:

Name: Age/ Sex: Contact no:

INCLUSION CRITERIA:

Age	18- 60 years
Gender	Male/ Female
Patient who are having symptoms of erigunmam	Yes/ No
Patient who are willing to sign informed consent form	Yes/ No
Patient who are willing to give blood samples before & after treatment	Yes/ No

EXCLUSION CRITERIA:

Gastric CA	Yes/ No	Diabetes	Yes/ No
Worm infestion	Yes/ No	Hypertension	Yes/ No
Liver disorders	Yes/ No	Cardiac disease	Yes/ No
Pancreatitis	Yes/ No	Pregnancy & Lactation	Yes/ No
History of taking other alinments	Yes/ No	Abnormal curvature of thoracic vertebra	Yes/ No

Admitted on the trial: Yes/ No

Signature of investigator: Signature of Guide:

Date:

NATIONAL INSTITUTE OF SIDDHA, CHENNAI-47

AYOTHIDOSS PANDITHAR HOSPITAL

CLINICAL EVALUATION OF SIDDHA HERBAL FORMULATION AMALAKATHI KIRUTHAM IN THE MANAGEMENT OF ERIGUNMAM (ACID PEPTIC DISEASE)

Form :2 Case record form

1.Serial no: **3.AHMIS NO:**

2. Name: 4**. Gender:** Male/ Female

5. Age: **6. DOB:**

7. **Address:** Rural/ Urban **8. Height:** Weight: BMI:

9. **A) Occupation:**

B) Nature of work:

C) Work from home dueto COVID-19 pandemic:

10.**Educational status:** Literate/ Illiterate

Date of trial drug initiation: Date of trial drug cessation:

11: Social Habits:

Social Habits:	Yes/ No	Duration
Smoking		
Alcohol intake		
Tobacco chewing		
Betal nut chewing		
Smoking & Alcohol intake		
None		

12.**Diet:** Veg/ Mixed

13. **Treatment History :**

Had the patient been treated before allopathic drug: Yes/ No

If Yes …. Duration:

14. **Marital status:** Married/ Unmarried

No of Children Male/ Female

15. **Family history:**

Whether this problem runs in family? Yes/ No

If Yes, Mention the relationship affected person(s)

16. **Menstrual history:** Regular/ Irregular/ Menopause

17. **Bowel habits& Mitcuration**: Regular/ Irregular

History of habitual constipation: Yes/ No

History of frequent diarrhoea: Yes/ No

18. Sleep: Yes/ No If Yes…

19. Psychological status:

Normal/ Occupational stress/ Anxiety/ Depression

20. History of COVID-19

A) Previous history of COVID-19 Yes/ No

If yes, Mild/Moderate/ Severe Duration of treatment:

B) Any post COVID-19 symptoms persists Yes/ No

If Yes symptoms: Treatment:

C) Vaccination details for COVID-19

Dose1/ Dose2/ Dose3 Name of the vaccine:

FORM-II B

GENERAL EXAMINATION:

1. Body weight [Kg] :
2. Height [cms] :
3. Body Temperature [°F] :
4. Blood Pressure (mm/Hg) :
5. Pulse Rate/Min :
6. Heart Rate/min :
7. Respiratory Rate/min :
8. Pallor :
9. Jaundice :
10. Clubbing :
11. Cyanosis :
12. Pedal Edema :
13. Lymphadenopathy :
14. Jugular venous pulsation :

SYSTEMIC EXAMINATION

Cardiovascular system :

Gastro-intestinal system :

Central Nervous system :

Urogenital system :

Endocrine system :

Locomotors system :

SIDDHA SYSTEMIC EXAMINATION:

1.. NILAM: Kurinji/ Mullai/ Maruthuvam/ Neithal/ Paalai

2**. KAALAM:** Kaarkalam/ Koothir kalam/ Munpani kalam

Pinpani kalam/ Ilavenir kalam/ Muthuvenir kalam

3. GUNAM: Sathuvam/ Rasatham/ Thamasam

4**. PORIPULANGAL:**

PORIPULANGAL	BEFORE TREATMENT	AFTER TREATMENT
Mei (Skin)	Normal / Affected	Normal / Affected
Vai (Tongue)	Normal / Affected	Normal / Affected
Kann(Eye)	Normal / Affected	Normal / Affected
Mooku (Nose)	Normal / Affected	Normal / Affected
Sevi (Ear)	Normal / Affected	Normal / Affected

6. KANMENDRIYAM:

KANMENDRIYAM	BEFORE TREATMENT	AFTER TREATMENT
Kai (Upper Limb)	Normal / Affected	Normal / Affected
Kaal (Lower limb)	Normal / Affected	Normal / Affected
Vai (Oral cavity)	Normal / Affected	Normal / Affected
Eruvai (Anal region)	Normal / Affected	Normal / Affected
Karuvai (Uro-genital region)	Normal / Affected	Normal / Affected

7. KOSANGAL:

KOSANGAL	BEFORE TREATMENT	AFTER TREATMENT
Annamaya kosam	Normal / Affected	Normal / Affected
Pranamaya kosam	Normal / Affected	Normal / Affected
Manomaya kosam	Normal / Affected	Normal / Affected
Vignanamaya kosam	Normal / Affected	Normal / Affected
Ananthamaya kosam	Normal / Affected	Normal / Affected

8. SEVEN THATHUKKAL :

SEVEN UDAL THAATHUKKAL	BEFORE TREATMENT	AFTER TREATMENT
Saaram (Chyme)	Normal / Affected	Normal / Affected
Senneer(Blood)	Normal / Affected	Normal / Affected
Oon(Muscle)	Normal / Affected	Normal / Affected
Kozhuppu(Fat)	Normal / Affected	Normal / Affected
Enbu (Bones)	Normal / Affected	Normal / Affected
Moolai (Bonemarrow)	Normal / Affected	Normal / Affected
Sukkilam /Suronitham (Genital discharges)	Normal / Affected	Normal / Affected

9. UYIR THATHUKKAL:

VAZHI	BEFORE TREATMENT	AFTER TREATMENT
Praanan	Normal / Affected	Normal / Affected
Abaanan	Normal / Affected	Normal / Affected
Samaanan	Normal / Affected	Normal / Affected
Udhaanan	Normal / Affected	Normal / Affected
Viyaanan	Normal / Affected	Normal / Affected
Naagan	Normal / Affected	Normal / Affected
Koorman	Normal / Affected	Normal / Affected
Kirukaran	Normal / Affected	Normal / Affected
Devathathan	Normal / Affected	Normal / Affected
Dhananjeyan	Normal / Affected	Normal / Affected

AZHAL:

AZHAL	BEFORE TREATMENT	AFTER TREATMENT
Analakam	Normal / Affected	Normal / Affected
Ranjakam	Normal / Affected	Normal / Affected
Saathakam	Normal / Affected	Normal / Affected
Prasakam	Normal / Affected	Normal / Affected
Aalosakam	Normal / Affected	Normal / Affected

IYAM:

IYAM	BEFORE TREATMENT	AFTER TREATMENT
Avalambagam	Normal / Affected	Normal / Affected
Kilethagam	Normal / Affected	Normal / Affected
Pothagam	Normal / Affected	Normal / Affected
Tharpagam	Normal / Affected	Normal / Affected
Santhigam	Normal / Affected	Normal / Affected

10.ENVAGAI THERVU:

ENVAGAI THERVU	BEFORE TREATMENT	AFTER TREATMENT
Naa	Normal / Affected	Normal / Affected
Niram	Normal / Affected	Normal / Affected
Mozhi	Normal / Affected	Normal / Affected
Vizhi	Normal / Affected	Normal / Affected
Malam	Normal / Affected	Normal / Affected
Moothiram	Normal / Affected	Normal / Affected
Sparisam	Normal / Affected	Normal / Affected
Naadi		

NEIKURI:

Neikkuri	BEFORE TREATMENT	AFTER TREATMENT
Aravena neendathu/Snake like pattern (FS/SS/NS)		
Aazhipol paraviyathu annular/ ringed pattern (FS/SS/NS)		
Muththothu ninrathu/Pearlbead pattern (FS/SS/NS)		
Mixed patterns (FS/SS/NS)		
Other patterns		

11.MANIKADAI NOOL

12. CLINICAL SYMPTOMS:

CLINICAL SYMPTOMS	BEFORE TREATMENT	AFTER TREATMENT
Burning or gnawing sensation in stomach		
Headache		
Diarrhoea		
Twisting pain in intestine		
Sweating from hair		
Loss of weight		
Burping		
Flatulence		
Increased salivation		
Giddiness		

13. GASTROINTESTINAL SYMPTOMS RATING SCALE

S. No	SYMPTOMS	0th day	24th day	49th day
1.	Pain or Abdominal discomfort In your upper abdomen			
2	Heart burn			
3.	Acid reflux			
4.	Hunger pain			
5.	Nausea			
6.	Rumbling			
7.	Bloated			
8.	Burping			
9.	Passing gas or flatus			
10.	Diarrhea			
11.	Constipation			
12.	Loose stools			
13.	Hard stools			
14.	Urgent need to have bowel movement			
15.	Sensation of not completely empty stomach			

Date: Signature of the investigator: Signature of Guide:

NATIONAL INSTITUTE OF SIDDHA, CHENNAI-47

AYOTHIDOSS PANDITHAR HOSPITAL

CLINICAL EVALUATION OF SIDDHA HERBAL FORMULATION AMALAKATHI KIRUTHAM IN THE MANAGEMENT OF ERIGUNMAM (ACID PEPTIC DISEASE)

Form: 3 Laboratory form

Serial no: AHMIS NO:

Name: Age/ sex:

1.HEMATOLOGY:

Blood investigation	Normal value	Before treatment	After treatment
Hemoglobin (gm/dl)	Male: 13-18 Female:11-16		
ESR (mm/hr)	10-20		
T.WBC(cells/ cumm)	4000-11000		
Bleeding Time	2-7 min		
Clotting Time	8-15 min		
Blood group			
T. RBC(cells/ mcl)	Men: 4.7-6.1 Women:4.2- 5.4		

Differential Count (%)	Polymorphs: 40-75		
	Lymphocyte:20-35		
	Monocyte: 2-10		
	Eosinophils: 1-6		
	Basophils: 0-1		

Blood Investigations	**Normal value**	**Before treatment**	**After treatment**
Lipid profile (mg/dl)	HDL: .40		
	LDL:<100		
	VLDL:20-35		
	TGL:<150		
	T.Cholesterol:<200		
Liver Function Test (mg/dl)	Direct bilirubin: 0.1-0.2		
	Indirect bilirubin: 0.2-0.7		
Liver Function Test (IU/L)	SGOT:0-40		
	SGPT: 0-35		
	ALP:80-90		
Renal Function Test (mg/dl)	Urea: 5- 40		
	Creatinine: 0.74-1.35		

2.MOTION TEST

Ova:

Cyst:

Occult blood:

3. USG whole abdomen

4. Upper GI endoscopy

Date:

Signature of principal investigator:

Signature of guide:

NATIONAL INSTITUTE OF SIDDHA, CHENNAI-47

AYOTHIDOSS PANDITHAR HOSPITAL

CLINICAL EVALUATION OF SIDDHA HERBAL FORMULATION AMALAKATHI KIRUTHAM IN THE MANAGEMENT OF ERIGUNMAM (ACID PEPTIC DISEASE)

Form : 4 Drug compliance form

Serial no:		**AHMIS no:**	**Age/ Sex:**
Name:		Drug name: Amalakathi kirutham	
On 0th day:	Date:	Drug issued (ml)	Drug returned (ml)
On 7th day:	Date:	Drug issued (ml)	Drug returned (ml
On 14th day:	Date:	Drug issued (ml)	Drug returned (ml)
On 28th day:	Date:	Drug issued (ml)	Drug returned (ml)
On 35th day:	Date:	Drug issued (ml)	Drug returned (ml)
On 42th day:	Date:	Drug issued (ml)	Drug returned (ml)

DAY	DATE	M/N	DAY	DATE	M/N	DAY	DATE	M/N
Day1			Day18			Day35		
Day2			Day19			Day36		
Day3			Day20			Day37		
Day4			Day21			Day38		
Day5			Day22			Day39		
Day6			Day23			Day40		
Day7			Day24			Day41		
Day8			Day25			Day42		
ay9			Day26			Day43		
Day10			Day27			Day44		
Day11			Day28			Day45		
Day12			Day29			Day46		
Day13			Day30			Day47		
Day14			Day31			Day48		
Day15			Day32			Day49		
Day16			Day33					
Day17			Day34					

Date:

Signature of Principal investigator:

Signature of Guide:

NATIONAL INSTITUTE OF SIDDHA, CHENNAI-47

AYOTHIDOSS PANDITHAR HOSPITAL

CLINICAL EVALUATION OF SIDDHA HERBAL FORMULATION AMALAKATHI KIRUTHAM IN THE MANAGEMENT OF ERIGUNMAM (ACID PEPTIC DISEASE)

Form5- Information sheet

Name of Principal investigator: Dr.V. Abinaya arul malar

Location: National Institute of Siddha, Tambaram santorium.

INFORMATION SHEET FOR PATIENTS PARTICIPATING IN THE OPEN CLINICAL TRIAL:

I am Dr.V. Abinaya arul malar Studying M D (Siddha) at National Institute of Siddha, Tambaram Sanatorium is doing a study on Erigunmam (Acid Peptic Disease). In this regard, I am in need to ask you few questions. I will maintain confidentiality of our comments and data obtained from you. I am assuring of you that 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. Blood and urine investigations will be taken before and after treatment.

The choice is yours for taking part or not in this study. Since, there is no specific benefit for you if you take part in this 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. In case of any adverse symptoms like burning or gnawing sensation after meals , Headache, Increased salivation, Bloating , Abdominal flatulence with diarrhoea, Burping, sweating from hair follicles, loss of weight during the treatment shall be reported to me and care will be given at OPD of NIS. You can withdraw from the study at the midst of treatment without condition.

If you agree to be a participant in this study, you will be included in the study primarily by signing the consent form and you will be given the internal medicine Amalakathi Kirutham (4ml, twice a day). You have to visit OPD of NIS 7days once and collect drugs for 7 days. We will assess the effect of treatment after completion of 48days using clinical and lab investigation.

The information collected in this study will remain between you and me as a principal investigator (myself).The questionnaire will take approximately, 20 minutes for you to answer. If you wish to find out more about this study before taking part, you can ask me all the questions you want or contact Dr. V. Abinaya arul malar, PG Scholar principal investigator of this study through the mobile number – 9566992675You can also contact the Member-secretary of Ethics committee, National Institute Siddha, Chennai-600047, for rights and participation in this study.

தேசிய சித்த மருத்துவ நிறுவனம்

அயோத்திதாஸ் பண்டிதர் மருத்துவமனை,

சென்னை – 47

FORM V – தகவல்படிவம்

எரிகுன்மம் என்னும் நோய்க்கான ஆமலகாதி கிருதம் (உள்மருந்து) சித்தமருந்தின் பரிகரிப்பு திறனைக் கண்டறியும் மருத்துவ ஆய்விற்கான தகவல் படிவம்

முதன்மை ஆராய்ச்சியாளர் பெயர் : மருத்துவர் வே.அபிநயாஅருள்மலர்

நிறுவனத்தின் பெயர் : தேசிய சித்தமருத்துவ நிறுவனம்
தாம்பரம்சானடோரியம்சென்னை - 47.

தேசியசித்தமருத்துவ நிறுவனத்தில் பட்டமேற்படிப்பு பயின்று வரும் நான் (மருத்துவர்.வே.அபிநயாஅருள்மலர்) எரிகுன்மம் என்னும் நோயில் மருத்துவ ஆராய்ச்சில் ஈடுபட்டுள்ளேன். எரிகுன்மம் என்னும் நோயானது உணவு கொண்ட சிறிது நேரத்திற்கெல்லாம் வயிற்றில் தாங்க முடியாத எரிச்சலை உண்டாக்கி வயிற்றை முறுக்கியது போன்ற வலியைத் தரும். வாயில் நீர் சுரத்தல், தலை வலித்தல், புளிதேப்பம் உண்டாதல், வயிறூதி இரைந்து கழிதல், மயிர்க்கால் தோறும் வியர்த்தல் என்னும் இத்துணைத் துன்பங்களை விளைவித்து, உடலை இளைக்கச் செய்யும் ஆகிய குறிகுணங்களை உண்டாக்கும்.

இந்த ஆராய்ச்சி சம்பந்தமாக சில கேள்விகளை கேட்கவும், தேவையான ஆய்வக பரிசோதனைக்கு தங்களை உட்படுத்தவும் உள்ளேன். தேவையான ஆய்வகபரிசோதனை மருத்துவ ஆய்வுக்கு முன்னும் மருத்துவ ஆய்வின் முடிவு நாளிலும் மேற்கொள்ளப்படும். இது சம்பந்தமாக தங்களது அனைத்து விவரங்களும் ரகசியமாக வைக்கப்படும் என உறுதியளிக்கிறேன். இதில் பயணப்படி முதலிய எந்த உதவித்தொகையும் வழங்கப்படமாட்டாது. இந்த ஆராய்ச்சியின் போது உடலுக்கு வேறுபாதிப்பு ஏற்படும் பட்சத்தில் தேசிய சித்த மருத்துவமனையில் தக்க சிகிச்சை அளிக்கப்படும். இந்த ஆராய்ச்சிக்கு தங்கள் விருப்பத்தின் பேரில் உட்படும் பட்சத்தில் உள்மருந்தாக ஆமலகாதி கிருதம் 4மி.லி காலை, மாலை 2 வேளை உணவிற்கு முன் உட்கொள்ளவேண்டும். வெளிநோயாளிகள் 7 நாளைக்கு ஒரு முறை மருத்துவமனைக்கு வரவேண்டும்.இந்த ஆராய்ச்சியில் நோயினராக சேர்ந்த பிறகு உங்களுக்கு விருப்பம் இல்லையெனில் எப்போது வேண்டுமானாலும் விலகிகொள்ளலாம்.இந்த ஆராய்ச்சி சம்பந்தமான மற்ற விபரங்களுக்கும் நோயின் தன்மை பற்றியும் முதன்மை ஆராய்ச்சியாளரான மருத்துவர் வே.அபிநயாஅருள்மலர்(பட்டமேற்படிப்பாளர் மருத்துவதுறை) கைபேசி எண் - 9566992675.

NATIONAL INSTITUTE OF SIDDHA, CHENNAI-47

AYOTHIDOSS PANDITHAR HOSPITAL

CLINICAL EVALUATION OF SIDDHA HERBAL FORMULATION AMALAKATHI KIRUTHAM IN THE MANAGEMENT OF ERIGUNMAM (ACID PEPTIC DISEASE)

Form:6 Consent form

CERTIFICATE BY THE INVESTIGATOR

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

Date: Name: Dr.V. Abinaya arul malar

Station: Signature of the investigator:

CONSENT BY PATIENT

I ..... exercising my free power of choice, hereby give my consent to be included as a subject in the clinical trial of the drug, namely **Amalakathi Kirutham** for the treatment of **Erigunmam (Acid Peptic Disease)** and I understand that I may be treated with these drugs for the disease which has been informed to my satisfaction by the attending physician, the purpose of the clinical trial and the nature of drug treatment and follow up including the laboratory investigations to monitor and safeguard my body functions.

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

Date: Signature /Left thumb impression of patient:

Station: Name of the patient:

Signature /Left thumb impression of witness:

Name of the witness& Relation ship:

தேசிய சித்த மருத்துவ நிறுவனம்

அயோத்திதாஸ் பண்டிதர் மருத்துவமனை,

சென்னை – 47

எரிகுன்மம் என்னும் நோய்க்கான ஆமலகாதி கிருதம் (உள்மருந்து)

சித்தமருந்தின் பரிகரிப்புதிறனைக்கண்டறியும் மருத்துவஆய்வு

<u>படிவம் 6 – ஒப்புதல் படிவம்</u>

ஆய்வாளரால் சான்றளிக்கப்பட்டது

நான் எரிகுன்மம் என்னும் நோயின் ஆய்வைக் குறித்து அனைத்து விவரங்களையும் நோயாளிக்குப் புரியும் வகையில் எடுத்துரைத்தேன் என உறுதியளிக்கிறேன்.

தேதி : பெயர் :

இடம் : கையொப்பம் :

நோயாளியின் ஒப்புதல்

என்னிடம் இந்த மருத்துவ ஆய்வின் காரணத்தையும், மருந்தின் தன்மை மற்றும் மருத்துவ வழிமுறை பற்றியும், தொடந்து எனது உடல் இயக்கத்தை கண்காணிக்கவும், அதனை பாதுகாக்கவும் பயன்படும் மருத்துவ ஆய்வகபரிசோதனைகள் பற்றி திருப்தி அளிக்கும் வகையில் ஆய்வு மருத்துவரால் விளக்கி தெளிவுபடுத்தினார்.

நான் இந்த மருத்துவ ஆய்வின் போது எப்போழுது வேண்டுமானாலும் இந்த ஆய்விலிருந்து என்னை விடுவித்துக் கொள்ளும் உரிமையைத் தெரிந்திருக்கின்றேன். நான் என்னுடைய சுதந்திரமாகத் தேர்வு செய்யும் உரிமையை கொண்டு ஆமலகாதி கிருதம் என்னும் மருந்தின் பரிகரிப்புத் திறனை கண்டறியும் மருத்துவ ஆய்விற்கு என்னை உட்படுத்த முழு மனதுடன் சுயநினைவுடனும் ஒப்புதல் அளிக்கின்றேன்.

தேதி : கையொப்பம் :

இடம் : பெயர் :

கண்காணிப்பாளரின் கையொப்பம் : கையொப்பம் :

துறைத் தலைவர் கையொப்பம் : பெயர் : உறவுமுறை :

NATIONAL INSTITUTE OF SIDDHA, CHENNAI-47

AYOTHIDOSS PANDITHAR HOSPITAL

CLINICAL EVALUATION OF SIDDHA HERBAL FORMULATION AMALAKATHI KIRUTHAM IN THE MANAGEMENT OF ERIGUNMAM (ACID PEPTIC DISEASE)

Form 7: Withdrawal form

Serial no: AHMIS no:

Name: Age/ Sex:

Name of Trial commencement:

Date of withdrawal from trial:

Reasons for withdrawal:

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

NATIONAL INSTITUTE OF SIDDHA, CHENNAI-47

AYOTHIDOSS PANDITHAR HOSPITAL

CLINICAL EVALUATION OF SIDDHA HERBAL FORMULATION AMALAKATHI KIRUTHAM IN THE MANAGEMENT OF ERIGUNMAM (ACID PEPTIC DISEASE)

Form:8 Pharmacovigilance form

PHARMACOVIGILANCE OF AYURVEDA, SIDDHA, UNANI and HOMOEOPATHY (ASU & H) DRUGS

Reporting Form for Suspected Adverse Reactions

Note:

i. **Personal information of the consumers / patients / ADR reporter's will be kept confidential.**

ii. **All suspected reactions are to be reported with relevant details.**

iii. All completed forms are to be submitted to the program coordinator of nearby centre.

A / U / S / H	
Code	Ay-NIA/Code of Peripheral Centre/ADR Number/Year
	Ay-IPGT/Code of Peripheral Centre/ADR Number/Year
	Un-NIUM/Code of Peripheral Centre/ADR Number/Year
	Si-NIS/Code of Peripheral Centre/ADR Number/Year
	Ho-NIH/Code of Peripheral Centre/ADR Number/Year

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

<table>
<tr><td colspan="2">Name</td><td rowspan="2">Patient Record Number (PRN)</td></tr>
<tr><td>Place of Birth</td><td>IPD / OPD</td></tr>
<tr><td colspan="2" rowspan="2">Address
Village / Town
Post / Via
District / State</td><td>Age:</td></tr>
<tr><td>Sex: Male / Female</td></tr>
<tr><td>Diagnosis:</td><td colspan="2">Constitution and Temperament:</td></tr>
</table>

2. Description of the suspected Adverse Reactions

Date and time of initial observation	
Description of reaction	

3. Whether the patient is suffering with any chronic disorders?

Hepatic/Renal/ Cardiac/ Diabetes/ Any Others

4. Addictions, if any? If yes, please specify:

5. H/O previous allergies / Drug reactions, if any: If yes, please specify:

6. List of all ASU & H drugs used by the patient during the period of one month:

Name of the drug	Manufacturer / Batch no.	Dose	Form / Route of administration	Date of		Reason for use	Any unwanted occurrences
				Starting	Stopped / Continued		

7. List of other drugs used by the patient during the period of one month:

Name of the drug	Manufacture r / Batch no.	Dose	Form / Route of administration	Date of		Reason for use	Any unwanted occurrences
				Starting	Stopped / Continued		

8. Details of the drug suspected to cause ADR:

a. Name of the drug:
b. Manufacturing date and Expiry date (if available):
c. Remaining pack / label (if available):
d. Consumed orally along with (water / milk / honey / or any other)
e. Whether any dietary precautions have been prescribed?
   If yes, please specify :
f. Whether the drug is consumed under medical supervision or used as self medication.
g. Any other relevant information associated with drug use:

9. Management provided / taken for suspected adverse reaction

10. Please indicate outcome of the suspected adverse reaction (tick appropriate)

<table>
<tr><td>Recovered:</td><td>Not recovered :</td><td>Unknown:</td><td>Fatal:</td><td>If Fatal
Date of death:</td></tr>
<tr><td colspan="2" rowspan="2">Severe: Yes / No.</td><td colspan="3">Reaction abated after drug stopped or dose reduced:</td></tr>
<tr><td colspan="3">Reaction reappeared after re administration of drug:</td></tr>
<tr><td colspan="3">Was the patient admitted to hospital?
If yes, give name and address of hospital</td><td colspan="2"></td></tr>
</table>

11. Any abnormal findings of relevant laboratory investigations related to the episode done pre and post episode of ADR:

12. Particulars of ADR Reporter:

Please tick: Patient / Attendant / Nurse / Doctor / Pharmacist / Health worker / Drug Manufacturer / Any others (please specify)
Name:
Address:
Telephone / E - mail:

Signature of the reporter: **Date:**

Please send the completed form to: The centre from where the form is received or to

The Coordinator, National Pharmacovigilance Centre
All India Institute of Ayurveda, Sarita Vihar,
New Delhi - 110 076
Email: pharmacovigilanceayush@gmail.com

The ADR Probability Scale

(Program Coordinator has to fill this scale**)**

	Questions	Yes	No	Don't Know
1	Are there previous conclusive reports on the reactions?	+1	0	0
2	Did the ADR appear after the suspected drug was administered?	+2	-1	0
3	Did the ADR improve when the drug was discontinued a specific antagonist was administered ?	+1	0	0
4	Did the adverse reaction reappear when the drug was re-administered?	+2	-1	0
5	Are there alternatives causes that could solely have caused the ADR?	-1	+2	0
6	Was the drug detected in the blood (or other fluids) in a concentration known to be toxic?	+1	0	0
7	Was the reaction more severe when the dose was increased, or less severe when the dose was decreased?	+1	0	0
8	Did the patient have a similar reaction to the same or similar drugs in any previous exposure?	+1	0	0
9	Was the adverse event confirmed by objective evidence?	+1	0	0
	Total Score			

Score: > 9 = Certain; 5-8 = Probable; 1-4 = Possible; 0 = Unlikely

Signature of **Program Coordinator**

NATIONAL INSTITUTE OF SIDDHA, CHENNAI-47

AYOTHIDOSS PANDITHAR HOSPITAL

CLINICAL EVALUATION OF SIDDHA HERBAL FORMULATION AMALAKATHI KIRUTHAM IN THE MANAGEMENT OF ERIGUNMAM (ACID PEPTIC DISEASE)

Form: 9 Diet sheet

The following diet to be taken:	**The following diet to be avoided**
• Drink adequate water • Leafy greens and vegetables • Lady's finger • Small onion, Ginger • Steamed vegetables and vegetable salads • Bananas • Lemon or orange juice • Apple. Dates • Milk, Butter milk, Ghee • Fenugreek • Coriander seeds, Cumin seeds • Pomegranate, Grapes, Guava • Brown rice, Whole wheat	• Tamarind • Bitter gourd • Mango • Brinjal • Cluster been • Sesbanian leaves • Mustard, Mushrooms • Tea, Coffee • Preserved cool drinks • Oily and fried foods • Sour foods • Foods which causes indigestion

தேசியசித்தமருத்துவநிறுவனம்

அயோத்திதாஸர் பண்டிதர் மருத்துவமனை சென்னை - 47

எரிகுன்மம் என்னும் நோய்க்கான ஆமலகாதி கிருதம் (உள்மருந்து)

சித்தமருந்தின் பரிகரிப்புதிறனைக்கண்டறியும் மருத்துவஆய்வு

FORM VIII – DIETARY ADVICE FORM

சேர்க்க வேண்டிய உணவு வகைகள் : • இளங்கத்தரி • முருங்கை • வெண்டைகாய் • பீர்க்கங்காய் • பிரண்டை • இஞ்சி • எலுமிச்சை சாறு • ஆப்பிள் • பேரிக்காய் • பேரிச்சம்பழம்	• திராட்சை • கோதுமை • தீட்டாத அரிசி • வெண்ணெய் • மோர் • நெய் • வெந்தயம் • தனியா • சீரகம். • நெல்லிக்கனி • அத்திப்பழம் • மாதுளை

தவிர்க்ககூடிய உணவுவகைகள்: • பாகல் • தேங்காய் • கொள்ளு • உளுந்து • முட்டை • காளான் இச்சாபத்தியம் : • முள் உள்ள பாகல் • மாங்காய் • கத்திரி காய் • கொத்தவரைக்காய் • வெண்பூசணிக்காய் • மந்தகுணமுள்ள பொருட்கள் • அகத்திகீரை	• அகத்திக்கீரை • ஆட்டுகறி • மீன் • கடுகு வெள்ளை சர்க்கரை • காபஇ தேநீர் • எண்ணெய் ,வறுத்த உணவுகள் • புளிப்பு,காரம்உள்ள உணவுகள். தவிர்க்க வேண்டியவை : • புகையிலை • மதுவகைகள் • சிற்றின்பசெயல்

NATIONAL INSTITUTE OF SIDDHA
राष्ट्रीय सिद्ध संसथान
Ministry of AYUSH - आयुष मंत्रालय
GOVERNMENT OF INDIA-भारत सरकार
TAMBARAM SANATORIUM, CHENNAI -600 047 -ताम्बरम सनटोरियम चेन्नई -600 047
फ़ोन\Tele : 044-22411611 फैक्स\Fax : 22381314
ईमेल: nischennaisiddha@yahoo.co.in वेब :www.nischennai.org

F. No: NIS/4-76/IEC/2020 Date: 28th June 2021

CERTIFICATE

Address of Ethics Committee: National Institute of Siddha, Tambaram Sanatorium, Chennai-600047, Tamil Nadu, India	
Principal Investigator: Dr. V. Abinaya Arulmalar, II Year Department of Maruthuvam - Dissertation.	
Protocol title: CLINICAL EVALUATION OF *SIDDHA* HERBAL FORMULATION *AMALAKATHI KIRUTHAM* IN THE TREATMENT OF *ERIGUNMAM* (ACID PEPTIC DISEASE)	
Documents filed	1) Protocol 2) Data Collection forms 3) Patient Information Sheet 4) Consent form 5)SAE(Pharmacovigilance)
Clinical Trial Protocol (others- Specify)	**Yes**
Informed consent documents	**Yes**
Any other documents	**-**
Date of IEC approval & its number	**21-12-2020;NIS/IEC/2020/D-1**

We approve the clinical study to be conducted in its presented form.

The Institutional Ethics Committee expects to be informed about the progress of the study, Review periodically, any SAE occurring in the course of the study, any changes in the protocol and submission of final report.

J. Lakshmi Kantham 28/6/2021
Member Secretary

MEMBER SECRETARY
INSTITUTIONAL ETHICS COMMITTEE
NATIONAL INSTITUTE OF SIDDHA
CHENNAI -600 047

28/6/2021
Chairman

CHAIRMAN / ~~VICE-CHAIRMAN~~
INSTITUTIONAL ETHICS COMMITTEE
NATIONAL INSTITUTE OF SIDDHA
CHENNAI - 600 047.

Clinical Trial Details (PDF Generation Date :- Tue, 27 Jul 2021 13:11:35 GMT)

CTRI Number	Pending -
Last Modified On	27/07/2021
Post Graduate Thesis	Yes
Type of Trial	Interventional
Type of Study	Drug Siddha
Study Design	Other
Public Title of Study	TREATMENT OF ULCER BY USING SIDDHA HERBAL FORMULATION OF AMALAKATHI KIRUTHAM
Scientific Title of Study	CLINICAL EVALUATION OF SIDDHA HERBAL FORMULATION AMALAKATHI KIRUTHAM IN THE TREATMENT OF ERIGUNMAM(ACID PEPTIC DISEASE)

Secondary IDs if Any

Secondary ID	Identifier
NIL	NIL

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

Details of Principal Investigator	
Name	Dr V ABINAYA ARULMALAR
Designation	PG SCHOLAR
Affiliation	NATIONAL INSTITUTE OF SIDDHA
Address	DR V ABINAYA ARULMALAR DEPARTMENT OF MARUTHUVAM NATIONAL INSTITUTE OF SIDDHA TAMBARAM SANATORIUM CHENNAI Kancheepuram TAMIL NADU 600047 India
Phone	9566992675
Fax	22381314
Email	drabinayaasm@gmail.com

Details Contact Person (Scientific Query)

Details Contact Person (Scientific Query)	
Name	DR H NALINISOFIA
Designation	ASSOCIATE PROFESSOR
Affiliation	NATIONAL INSTITUTE OF SIDDHA
Address	DR H NALINISOFIA DEPARTMENT OF MARUTHUVAM NATIONAL INSTITUTE OF SIDDHA TAMBARAM SANATORIUM KANCHEEPURAM CHENNAI TAMIL NADU 600047 India
Phone	8939899363
Fax	22381314
Email	dr.h.nalinisofia@gmail.com

Details Contact Person (Public Query)

Details Contact Person (Public Query)	
Name	DR V ABINAYA ARULMALAR
Designation	PG SCHOLAR
Affiliation	NATIONAL INSTITUTE OF SIDDHA
Address	DR V ABINAYA ARUL MALAR DEPARTMENT OF MARUTHUVAM NATIONAL INSTITUTE OF SIDDHA TMABARAM SANATORIUM CHENNAI Kancheepuram

		TAMIL NADU 600047 India
	Phone	9566992675
	Fax	22381314
	Email	drabinayaasm@gmail.com

Source of Monetary or Material Support

Source of Monetary or Material Support
> department of maruthuvam, Ayothidoss pandithar hospital, National institute of siddha, Tambaram sanatorium, chennai 47

Primary Sponsor

Primary Sponsor Details	
Name	NATIONAL INSTITUTE OF SIDDHA
Address	AYOTHIDOSS PANDITHAR HOSPITAL NATIONAL INSTITUTE OF SIDDHA TAMBARAM SANATORIUM CHENNAI 600047
Type of Sponsor	Research institution and hospital

Details of Secondary Sponsor

Name	Address
NIL	NIL

Countries of Recruitment

List of Countries
India

Sites of Study

Name of Principal Investigator	Name of Site	Site Address	Phone/Fax/Email
DR V ABINAYA ARULMALAR	NATIONAL INSTITUTE OF SIDDHA	AYOTHIDOSS PANDITHAR HOSPITAL NATIONAL INSTITUTE OF SIDDHA TAMBARAM SNATORIUM CHENNAI 47 Kancheepuram TAMIL NADU	9566992675 22381314 drabinayaasm@gmail.com

Details of Ethics Committee

Name of Committee	Approval Status	Date of Approval	Is Independent Ethics Committee?
INSTITUTIONAL ETHICAL COMMITTEE	Approved	21/12/2020	No

Regulatory Clearance Status from DCGI

Status	Date
Not Applicable	No Date Specified

Health Condition / Problems Studied

Health Type	Condition
Patients	Diseases of the digestive system

Intervention / Comparator Agent

Type	Name	Details
Intervention	Amalakathi kirutham	Amalakathi kirutham in the treatment of Erigunmam 4ml twice a day 48 days
Comparator Agent	NIL	NIL

Inclusion Criteria

Inclusion Criteria	
Age From	20.00 Year(s)
Age To	60.00 Year(s)
Gender	Both
Details	Patient with the symptoms of erigunmam such as burning or gnawing sensation in stomach, headache, burping, increased salivation, colic pain, diarrhoea, sweating, giddiness

Exclusion Criteria

Exclusion Criteria

	Details	pregnancy & Lactation, gastric carcinoma, pancreatitis, liver disorders, worm infestations,abdominal curvature of spine curvature
Method of Generating Random Sequence	Not Applicable	
Method of Concealment	Not Applicable	
Blinding/Masking	Not Applicable	

Primary Outcome

Outcome	Timepoints
Primary outcome is mainly assessed by comparing the reduction of clinical symptoms before and after treatment by using GSRS scale	1 YEAR

Secondary Outcome

Outcome	Timepoints
SECONDARY OUTCOME IS ASSESSED BY THE DISEASE RELATED TO AGE,SEX, DIETARY HABITS, SOCIO ECONOMIC STATUS, FAMILY HISTORY ETC, SECONDARY IS MAINLY ASSESSED BY COMPARING THE CLINICAL SYMPTOMS BEFORE AND AFTER TREATMENT BY USING ENDOSCOPY	FOURTY NINTH DAY

Target Sample Size	**Total Sample Size=**30 **Sample Size from India=**30 **Final Enrollment numbers achieved (Total)=**Applicable only for Completed/Terminated trials **Final Enrollment numbers achieved (India)=**Applicable only for Completed/Terminated trials
Phase of Trial	Phase 3
Date of First Enrollment (India)	10/08/2021
Date of First Enrollment (Global)	10/08/2021
Estimated Duration of Trial	**Years=**0 **Months=**1 **Days=**17
Recruitment Status of Trial (Global)	Not Applicable
Recruitment Status of Trial (India)	Not Yet Recruiting
Publication Details	NOT YET
Brief Summary	It is an interventional study in which 30 patients with the clinical symptoms of erigunmam such as burning or gnawing sensation in stomach, headache, sweating, burping, diarrhoea, colic pain,flatulence,increased salivation will be selected based on inclusion and exclusion criteria.After enrolling patients in the study, Amalakathi kirutham 4ml will be given once a day for 48 days. After 48 days patient will be asked to do endoscopiy and blood investigations for any changes in it and absence of clinical signs and symptoms of Erigunmam.

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

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

This certificate is awarded to Dr. V. ABINAYA ARUL MALAR

for participating as Resource Person / Delegate in the 34th Workshop on

"How To Do a Good Dissertation & Publish? (Research Methodology and Biostatistics)"

(Virtual mode) for AYUSH Post - Graduates & Researchers organized by the

Department of Siddha, The Tamil Nadu Dr.M.G.R. Medical University

from 26 - 07 - 2021 to 30 - 07 - 2021.

Dr.N. KABILAN	Dr.M.B. ASWATH NARAYANAN	Dr.SUDHA SESHAYYAN
PROFESSOR & HEAD, DEPT. OF SIDDHA	REGISTRAR	VICE-CHANCELLOR

National Institute of Siddha

(Ministry of AYUSH, Govt. of India)

Tambaram Sanatorium, Chennai – 600 047

Certificate

OF APPRECIATION

This is to certify that Dr. V. ABINAYA ARULMALAR, PG1 scholar, Dept of Maruthuvam

has given Oral Presentation on the topic entitled A cross sectional study (Hospital based) Assessment of characteristic features of pithathalainokkadu at APH, NIS.

in the National Seminar on **"Recent Research in Siddha System of Medicine"** held on 25.03.2021 & 26.03.2021 at National Institute of Siddha, Tambaram Sanatorium, Chennai.

Prof. Dr. M. Meenakshi Sundaram
Dean i/c

Prof. Dr. R. Meenakumari
Director

NATIONAL INSTITUTE OF SIDDHA, CHENNAI – 600047

BOTANICAL CERTIFICATE

Certified that the following plant drugs used in the Siddha formulation **"Amalakathi Kirutham"** (Internal) taken up for Post Graduation Dissertation studies by **Dr.V.Abinaya Arulmalar** M.D.(S), II year, Department of Maruthuvam, 2021, are identified through Visual inspection, Experience, Education & Training, Organoleptic characters, Morphology and Taxonomical methods as

Phyllanthus emblica Linn. (Euphorbiaceae), Fruit
Terminalia chebula Retz. (Combretaceae), Fruit
Saccharum officinarum Linn. (Poaceae), Cane sugar juice

MEDICINAL BOTANY CHENNAI 600 047 National Institute of Siddha

Certificate No: NISMB4802021

Date: 28-07-2021

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

AUTHENTICATION CERTIFICATE

Certificate No: Gun/Aut/007/21 **Date: 15.07.2021**

Certified that the following minerals/ metals/ animal products used in the Siddha formulation ***Amalakathi Kirutham*** taken up for the Post Graduate Dissertation study by **Dr. V.ABINAYA ARUL MALAR** Department of Maruthuvam, National Institute of Siddha, Chennai-47 are correctly identified and authenticated through visual inspection/ experience, organoleptic characters, morphology,etc.

1. *Pasu Nei* - **Cow's Ghee**

15/07/2021

Head of the Department

Chennai-47

15.07.2021

प्रो.डॉ.आर. मीनाकुमारी / Prof. Dr. R. Meenakumari
निदेशक / Director
राष्ट्रीय सिद्ध संस्थान / National Institute of Siddha
आयुष मंत्रालय, भारत सरकार
Ministry of AYUSH, Govt. of India
तांबरम सानटोरियम, चेन्नै-600 047.
Tambaram Sanatorium, Chennai-600 047.

Noble research solutions
We Trust in Quality and Ethics

Noble Research Solutions

ISO 9001: 2015 Certified

We Trust in Quality and Ethics

E-mail: nobleresearchsolutions@gmail.com, info@nobleresearchsolutions.com
Contact: 9710437419
Website: www.nobleresearchsolutions.com

CERTIFICATE

Date: 24.05.2022

To,

Dr.V.Abinaya Arul Malar
National Institute of Siddha,
Chennai, Tamil Nadu, India

Project Id: NRS/AS/0738/09/2021

This is to certify that Dr.V.Abinaya Arul Malar from National Institute of Siddha, Chennai 600047, Tamil Nadu, India has carried out the following activity at our facility for the trial drug Amala Kathi Kirutham – AMK

S.No	Study Description
1.	Standardization, Physicochemical & Phytochemical Evaluation of study drug Amala Kathi Kirutham – AMK
2.	TLC and HPTLC Analysis
3.	Heavy Metal Analysis
4.	Aflatoxin assay (B1,B2,G1,G2)
5.	Pesticide Residue Analysis Organochlorine pesticides Organophosphorus pesticides Pyrethroids
6.	Sterility Test and Test for Specific Pathogens

Note:

- *Annexure was attached as a separate enclosure along with this certificate.*

NOBLE RESEARCH SOLUTIONS TAMIL NADU INDIA CHENNAI

For NOBLE RESEARCH SOLUTIONS
Authorised Signatory

Services offered : Standardization and Characterization of ASU formulations
In-vitro and In-Silico Evaluations / Instrumental analysis / Histopathological Analysis
Blood & Serum Estimations / Gene Expression studies
Paper Publication / Thesis Writing/ Research Article Preparation & Publication Services