Clinical Evaluation of Siddha herbal formulation "CHITRAMUTTI NEI" (Internal) in the treatment of Azhal pandu (Iron Deficiency anaemia.)

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DECLARATION BY THE CANDIDATE

I hereby declare that this dissertation entitled "**Clinical Evaluation of Siddha herbal formulation "CHITRAMUTTI NEI" (Internal) in the treatment of Azhal pandu (Iron Deficiency Anaemia.)** Guidance of **Dr. H.Vetha Merlinkumari, M.D(s)**, **Ph.D**., Lecturer, Under the Department of Maruthuvam, National Institute of Siddha, Chennai -47, and the dissertation work has not formed the basis for the award of any Degree, Diploma, Fellowship or other similar title.

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INTRODUCTION

The siddha system of Medicine also known as **Tamil Maruthuvam,** Sinthamani Maruthuvam, NaattuVaithiyam in Tamil Nadu, is the oldest among the Indian medicine System.

Siddha System of medicine is an integrated part of an Indian system, which is very potent and unique system when compared with traditional systems in existence. Siddha medicine is contributing much to the health care of human beings.

Siddha system propounded by the Siddhars is a vast and unique system which defines health as a perfect state of physical ,psychological, and social and spiritual wellbeing of an individual .The system not deals with medicine , but with spirituality, righteous way of living ,rejuvenation and its main aim is attainment of perfection no doubt ,The siddha system of medicine is one among the foremost of all other medical systems of the world.

The period of origin of this system is also substantiated by the extensive reference about the medical practice that are available in ancient tamil literature. The ancient tamilgrammer work **Tholkappiyam**, various other works of Sangam literature and the Tamil vedham , Thirukkural not only mention ,but also give a better picture about this system.Accorting to Thiru T.V. Sambasivampillai, who compiled the monumental work of siddha medical dictionary, dates the origin of the siddha system back to B.C.4,000.

The siddhars were the greatest spiritual scientists on those days; they were the seekers of truth. '' SIDDHU'' means ''knowledge or wisdom'' and ''SIDDHI'' means attainment of perfection''. One who had attained perfection in life is called siddhars. Siddhars thoroughly studied human body , all kinds of plants ,minerals, metals and other poisonous drugs and their physical and chemical properties.

Health is defined has physical and mental well being of an individual.

'Sound mind in a sound body' is famous saying. A perfect state of health is maintained through regular diet, exercise and physical and mental activities

Disease is defined has irregularity in diet, physical and mental activities. Siddhars have classified disease into 4448 types. In this modem mechanical world, now a days people are suffering from various diseases. Especially females are the majority of sufferers due to their dual role both in family as well as in the society,

Sage yugi classified **'paandu'** in his YugiVaidhyaChinthamani into 5 types. One of such disease is **' Azhal paandu'** of these throws a big challenge to medical practioners of our siddha field and also the general medical world. Since it affects the patients mentally, physically and economically, **'Azhal paandu'** is characterized by yellowish of the body, generalized pallor, excessive thirst, breathlessness, chest discomfort. Patients may also have a bitter or pungent tasting sensation filling in the mouth .Giddiness always haunts the Azhal paandu patient its one of the haematological disease. It occurs due to diet and life style. In order to get rid of, this problem disease and also for its preventive aspect this is the main aim of the work due.

According to siddha system of medicine, the treatment is given not only to the body but also to the mind, psychological changes are said to be causes for disease.

Many formulations are available to treat Azhal Paandu in Siddha system of medicine, I have chosen the drug CHITRAMUTTI NEI, (Ref: Kannusamypillai, ChikichaRathina Deepam, Page no; 212,213) as internal Medicine. The ingredient of trial drug is easily available and cost effective,it has rich amount of iron.

AIM AND OBJECTIVES

AIM

Clinical evaluation of siddha drug CHITRAMUTTI NEI (Internal) in the treatment of **AZHAL PANDU [Iron Deficiency Anaemia].**

OBJECTIVES

Primary Objective:

To Study the therapeutic efficacy of siddha formulation CHITRAMUTTI NEIin the treatment of **AZHAL PANDU (IRON DEFICIENCY ANAEMIA)** for increasing the level of haemoglobin.

Secondary Objective:

- To study the siddha cofactors related to the disease such as age, sex, socio-economicstatus, family history, occupation.
- To study the siddha basic principles like Envagai thervu, Neerkuri, Neikuri, Udal thathukkal and Kaalam etc., in pitha

SIDDHA ASPECT

Siddha system is said to have originated from lord siva and parvathy. Agasthiyar is the first disciple of siva no one could deny the fact that from hindu epic. Agathiyar is the mentor and pioneer to propagate this siddha system of medicine.

Siddha system of medicine declares that the human body is made up of five basic elements (Panchapootha).

The whole universe is also made up of five elements man is said to be the microsome and the world as the macrosome. Because what exists in the world exists in man. The body will get upset or change from normal if there is any change in the world resulting in the development of disease.

Siddha literatures deal with classification of diseases mainly by Tridosha theory that is Vaatham, Pitham and Kabam

"வழங்கிய வாதம் மாத்திரை யொன்றாகில்
தழங்கிய பித்தம் தன்னில வரைவாசி
அழங்கும் கபந்தா னடங்கியே காலோடில்
பிறங்கிய சீவற்கு பிசகொன்று மில்லையே."

-அகத்தியர் குணவாகடம்.

Pithapandu noi is caused by derangement of Pitham. Hence the basic details regarding Pitham are briefly explained before going into the study about Pitha pandu noi.

Mukkutra Theory of Pitham:

Pitham (Azhal) is one of the three vital humour (Vatham, Pitham, and Kabam). Among the Panchaboodhas, it is formed by the Theyu bootham. In healthy individuals, the existence of the three humours are found in the following ratio of 1: ½: ¼ respectively. This is told as,

"மெய்யளவு வாதமொன்று மேல் பித்தமோரரையாம்
ஐயங் காலென்றே அறி"

-கண்ணுசாமியம்

When this ratio is altered in our body, there is disturbance to Pitha thathu, which leads to alteration of Pitham leading to Pitha diseases.

SITES OF PITHA:

As per kannusaamiyam thoughts

Between the heart and the naval,

Viyarvai : Sweat,

Saram : Chyle

Senner : Blood,

Irrappai : Stomach,

Neerpai : Urinary Bladder,

Iruthayam : Heart,

Naavil

Oorukindraneer : Salivary Secretion,

Kan : Eye

Thol : Skin.

As per Yugimuni's thought

"போமென்ற பித்தத்துக்கிருப்பிடமே கேளாய்
பேரான கண்டத்தின் கீழதாகும்"

General Characteristics of Pitham:

1. Veppam : Hot
2. Koormai : Sharpness
3. Neippu : Lubricative
4. Nekizhchi : Viscousity

Pitham conceives the properties of the substance to which it combines.

Changes in Pitham by food:

Some of characters of food we consume which leads to aggravation of Pitha humour or neutralizing the aggravated Pitha humour, which is given as follows;

"பித்தத்தின் சீர்குணத்தைப் பேசிடிலோ ராறாகும்
சுத்தப்பசை தீயும் சொல்கடுமை - மெத்த
திரவம் புளியோடு சீர்கார முற்றிங்
குரமாய் நிலைபெறுமா முன்."
"தோன்றிவரும் பித்தந் தொடரா தடங்கிடவே
சான்றவறட்சி குளிர்ச்சி சாந்தமுடந் - ஈன்றதொரு
கெட்டியுடனே கிளரினிப்பு கைப்பி னோடு
கிட்டும் பரிகாரங் கேள்."

-கண்ணுசாமியம்

Six qualities of food which aggrevate Pitham:

1. Hot
2. Acidic
3. Mobility
4. Liquid
5. Aggressive
6. Pungent

Six neutralizing qualities of food for aggrevated Pitham:

Cold
Sweet
Immobility
Solid
Calmness
Bitter

Qualities of aggrevated Pitham:

1. Yellowish tinge of eyes, skin, urine and stool.
2. Excessive thirst and appetite.
3. Burning sensation all over the body.
4. Decrease in sleep.

Qualities of reduced Pitha:

1. Decrease in normal colour of the skin
2. Loss of appetite
3. Chillness
4. Affecting the normal growth of Kabha humour.

Natural Properties of Pitham:

"பசிதாகம் ஒக்கொளிகண் பார்வைபண் டத்து
ருசிதெரி சத்திவெம்மை வீரம் - உசித

மதிகூர்த்த புத்திவனப் பளித்துக் காக்கும்

அதிகாரி யாங்கா னழல்."

- உடல் தத்துவம்

1. Seripithal (Digestion)
2. Vanmai (Strong)
3. Vemmai (Hot)
4. Menmai (Softness)
5. Paarvai (Sight)
6. Pasi (Hunger)
7. Neervetkai (Thirst)
8. Suvai (Taste)
9. Oli (Brightness)
10. Ninaippu (Thought)
11. Arivu (Knowledge)

Physiological Functions of Pitham:

1. Increasing the body temperature.
2. Giving red or yellow tinge to the body.
3. Raising the body temperature during digestion and assimilation.
4. Produces perspiration, giddiness.
5. Raising the volume of blood and its expulsion.
6. Gives yellow stain to skin, eye, motion and urine.
7. Anger, irresponsible, immobile, thoughtfulness, emaciation.
8. Feeling of irritation, excitement.
9. All tastes are found to be sour, bitter.

Types of Pitham:

"ஆக்கனல் வண்ணவெரி யாற்றலங்கி யுள்ளொளித்தீ
நோக்கழலாம் பித்தமைந்த நூதனமா- யாக்குமொழி
பாசகமி ரஞ்சகஞ் சாதகம் ராசகமா
லோசக மென்றிடுமோ லோ."

- உடல் தத்துவம்

1. அனலம் [Analam] : Gives appetite and helps digestion.
2. பிராசகம் [Prasagam] : Gives complexion to the skin.
3. இரஞ்சகம் [Ranjagam] : Enriches the Colour of the blood.
4. ஆலோசகம் [Aalosagam] : Brightens the eye.
5. சாதகம் [Sathagam] : Controls the whole body.

Relationship of Pitham with taste:

Salt - Water + Fire
Sour - Earth + Fire
Pungent - Air + Fire

Salt, sour and pungent tastes increase Pitham, because they are formed by fire (heat). So they possess Veppa Veeriyam.

"புளிதுவர் விஞ்சுங்கறி யார்பூரிக்கும் வாதம்
ஒளியுவர் கைப்பேறில் பித்துச்சீறும்-கிளிமொழியே
கார்ப்பினிப்பு விஞ்சிற் கபம்விஞ்சு ஞ்சட்டிரதச்
சேரப் புணர்நோயணுகாதே."

- கண்ணுசாமியம்.

Astringent, sweet and bitter tastes neutralize Pitham, because they do not contain Agni (heat). Hence they Possess Seedha Veeriyam.

Astringent : Earth + Air
Sweet : Earth + Water
Bitter : Space + Air

"பித்தமதி கரிப்பின் பேசும் பரிகாரம்
சுத்தத் துவரோடு சொல்லினிப்புச் சத்தாகும்
கைப்புச் சுவையே கருதுவதன் வீறு
எய்ப்படையு மென்றுரைத்தா ரிங்கு."

-கண்ணுசாமியம்

Aggravation of Pitham in daily routine:

Pitham is raised at the time of 10 a.m to 2 p.m and 10 p.m to 2 a.m

"காலையில் வாதநாடி கடிகையில் பத்தாகும்
பாலையில் பித்தநாடி பகருச்சி பத்தாகும்
மாலையாம் சேத்தும நாடி மதிப்புடன் பத்தாகும்
வாலையா மனோன்மணிக்கு வகுத்துமே தொகுத்ததாமே."

- வைத்திய சார சங்கிரகம்.

Aggravation of pitham in week days:

If pitha gets aggravated at morning hours of Sunday, Tuesday, Saturday and Krishna patcham Thursday, the vigour and vitality of body is maintained.

PHYSIOLOGICAL ASPECTS OF SENNEER THATHU [BLOOD]

Blood is the connective tissue of the body. It reflects the changes that occur in the body. The blood is the combination of various elements like Venthavalam, Senthavalam, Prakruthi mayai, Pranavayu and Neer. Senthavalam moves like a worm in blood. It is mentioned in the following verses;

ஊறும் புழுவின் ஒழுங்கோ, நீரிடை
வைத்த மலத்தின் குப்பையோ, வைத்துக்
கட்டிய நரம்பின் கயிறோ, உடம்பிற்குள்
பிரியா தொறுக்கும் பிணியோ, தெரியாது
இன்னது யான் என்று அறியேன் என்னை."

- பட்டினத்தார் [திருவிடைமருதூர் மும்மணிக்கோவை -13]

Nourishment of Senneer:

Among seven body constituents, **Senneer** is placed in second order next to saram. This is stated by **Thirumoolar** as follows,

"இரத முதலான ஏழ்தாது மூன்றின்
உரிய தினத்தின் ஒருபுற் பனிபோல்
அரியதுளி விந்து வாகுமேழ் மூன்றின்
மருவிய விந்து வளருங்கா யத்திலே"

- திருமந்திரம்-1897

During the process of digestion in our body formation of Raktham thathu according to Siddhars:

As the digestion takes place in the body “Rasa thathu” is formed on the very first day. The second day “Raktha thathu” is formed from the Rasa thathu , Mamisam is formed from this Ratha thathu on third day. Kozhuppu is formed from Mamisa thathu on the fourth day. Enbu is formed from kozhuppu on the fifth day, “ Moolai” is formed from enbu on the sixth day and finally “Sukkilam” is formed from moolai on the seventh day. The nutrients absorbed after digestion are responsible for the metabolism and formation of blood.

PANDU NOI
VERU PEYARKAL (SYNONYMS):

- ✓ Venmai Noi
- ✓ Veluppu Noi
- ✓ Venpandam.

IYAL (DEFINITION):

Pandu noi is a disease characterized by changing of natural colour of the body and pallor noticed in skin, nails and conjunctiva.

In **Sambasivam Pillai Tamil English Dictionary,** Pandu, which means white. So the colour the body in pale or white colour. In the text **Agasthiyar gunavagadam**, it is quoted as follows,

"தேகத்தில் இரத்தம் வற்றித்
தீங்கான விந்த நோய் காணுமப்பா."

-அகத்தியர் குணவாகடம்.

In **Uyir Kaakum Siddha Maruthuvam,**

The Characters of Pandu noi are natural colour of the body will be pale and glowing, Oedema in face, Eyes in blue and dark yellow colour urination**.**

In **Agathiyar vaithiya pillai tamil,** In Pandu, Red blood cells are reduced in blood and the skin is pale in colour.

NOI VARUM VAZHI (ETIOLOGY):

According to **Yugimuni** the causes of Pandu are as follows;

"அறிந்துமே உற்பத்தி சொல்லக் கேளாய்
அதிசார மலமிளகி யெந்நே ரந்தான்
பிறிந்துமே புளியுப்பு பெருத்தலாலும்
பெத்தமா மக்கினி யிருத்த லாலும்
மிறிந்துதாம் பூலமிக அருந்த லாலும்
மீறியே மதுக்களைத்தான் புசித்தலாலும்
பறிந்துமேபகல் நித்திரையே செய்த லாலும்
பாண்டு வந்து பாரிலுள்ளோர் படும்பா டாமே."

- யூகிவைத்திய சிந்தாமணி

From the above mentioned lines, it is clear that frequent attacks of diarrhoea, Excessive intake of salt and sour food, Living in hot surroundings, Excessive chewing of pawn and nuts, Excessive intake of alcohol, Day time sleep are some of the factors causing Pandu noi.

According to **Thanvathiri vaithyam,**

"திருந்திடும் பாண்டு ரோகஞ் சேர்ந்திடுங் குணத்தைக் கேளாய்
இருந்திடும் வாதபித்தச் சிலேற்பன மிவைதான் மாறும்
புரிந்துதா னொன்றோடொன்று பொருந்துவதாலு மண்ணோ
டருந்துவதாலும் பாண்டு வணைந்திடு மென்னலாமே"
ஆகிய மூலந் தன்னிலைணைந்த வுட்டணத்திணாலுந்
தோகையர் மேகத்தாலும் துயர்மிகு ரோகத்தாலும்
தேக போஷணை யுள்ளோர்க்குத் தரித்திரஞ் சேர்தலாலும்
வேகமாந் திரிதோஷங்கள் மிஞ்சிய பாண்டு வாமே."

- தன்வந்திரி வைத்தியம்

Imbalance between the three thathus [Vatham, Pitham, and Kabam], perversion of Appetite such as eating mud, excessive heat accumulation due to altered Abana vayu, Excessive Sorrow, and psychosocial factors are some of the causes of Pandu noi.

According to **Theraiyar vagadam;**

"தாக முறும் பசியால் தாமுண்ணா ராமாகில்
கோதருநீர் தாகத்தாற் கொள்ளாராய்-போத
மிரத்தந் தனைக்குடிக்கும் மின்பவிடாய் போக்கும்
பருத்த விழிகுருடாம் பார்."

-தேரையர் வாகடம்

It is mentioned that negligence of food and water causes Pandu noi. According to **Agathiyar kanmakandam kouvmathi,**

“ நாமொன்று சொல்லுகிறோம் பாண்டு வந்த
நலமான கருமமது சொல்லக்கேளு
தாமென்ற தாய்தந்தை மனம்நோகச் செய்தல்
தரணிதனி லுள்ளவர்க்கும் வம்பே சொல்ல
லெமென்ற வுறுப்பழித்தல் செவிசு வாச
மற்றுப் பொய் சொல்லாங்காரஞ் செய்தல்
வேமென்று கருமமது பித்த மேறி
வெளுத்துதடா வெப்புமிஞ்சி கைகாலோயவே

To regret parents and others, lying and to get furious and increased pitha leads to pandu noi.

According to **Agathiyar gunavagadam,**

‘’கொள்ளடா அபக்குவ போசனத்தாலும்
குடிகெடுத்து பெரும்பாடு கிராணியாலும்
கள்ளடா கருப்பத்தின் கிரந்தியாலும்
கனமான இரத்தத்தின் போக்கினாலும்
அள்ளடா அதியமான கவனத்தாலும்
அளவற்ற விசாரந்தா னடையும் போதும்
தெள்ளவே தேகத்தில் இரத்தம் கெட்டு
தெளிவான பாண்டதுவு முண்டாம் பாரே’’

Pandu noi occurs due to unfit food, menorrhagia, dysentery and other bleeding disorders.

NOI ENN (CLASSIFICATION):

According to **Yugimuni** Pandu noi is classified into 5 types

"கூறவே பாண்டுவிடப் பெயரைக் கேளாய்
குறிப்பாக வைந்துவித மாகும் பாரு
வாரவே வாதமாம் பாண்டு வோடு
மார்க்கமாம் பித்தத்தின் பாண்டு வாகும்
தேறவே சிலேட்டுமமாம் பாண்டு தானாம்
திரிதோடப் பாண்டோடு விடப்பாண் டாகும்
ஆறவே பாண்டுவிட வாண்மை யெல்லாம்
ஆராய்ந்து சொல்லவே அறிந்து கொள்ளே."

- யூகி வைத்திய சிந்தாமணி

Thanvanthiri classified Pandu into 7 types

"பயித்திய பாண்டு வாதபாண்டுவே சிலேத்தும பாண்டு
வியத்திரி தோஷப்பாண்டு வெறும் பித்த சிலேத்தும பாண்டு
பயித்திய வாதபாண்டு பகர் சன்னிவாத பாண்டு
நயப்புறும் பாண்டு வேழின் குணத்தை நான் நவிலலுற்றேன்."

- தன்வந்திரி வைத்தியம்

KURIKUNANGAL IN PANDU NOI (CLINICAL FEATURES) :

1. Murkurikunangal (Premonitory symptoms):

In Siddha Maruthuvam Pothu, Kuppusamy Mudaliar states that, Pandu patients exhibit the following symptoms from their initial stage of development Itself. The patient experiences insidious onset of fatiguability, dyspnoea on exertion,diminished vision, faintness, palpitation and pallor of the skin.

Theraiyar Neerkkuri illustrates that;

இயற்கை நீர் சுருங்கினும் இதுவும் சலப்பொருள்
செயற்கை யாயருந்தினும் சிறுத்த நீரிதுவும்
பாண்டு நோய்ச் சம்பவத்தைத் தருமிதில்.'

Oliguria occurring suddenly and oliguria occurring even after excessive intake of water are explained as premonitory symptom of Pandu noi.

2. POTHU KURIGUNANGAL(GENERAL SIGNS AND SYMPTOMS):

In Siddha Maruthuvam Pothu, Kuppusamy Mudaliar states;

Inability to walk, headache, palpitation, blurring of vision, giddiness, syncope, dyspnoea, anorexia, vomiting, paleness of the skin, nail beds become swollen and pallor, fissured tongue, glossitis, hoarseness of voice are general signs and symptoms of Pandu noi. In female's scanty menstruation, sometimes menorrhagia may occur. If it occurs in children and elderly, it may manifest because of worm infestation and blood disorders. If it occurs in pitha thegi, anorexia, indigestion, burning sensation, pallor of skin, glossitis, and dysphagia, Vomiting with bile, bitter taste and diarrhoea occurs. If the symptoms persist for longer duration it results in jaundice.

In **Pathinen nadi sasthiram** states that,

இரும்பலு மிளைப்பும் நெஞ்சில் லிடியது மிகவுண்டாகும்
வெருகிய கிறுகிறுப்பும் மேனியும் வெளிறிப் போகும்
பெருகிய பித்தபாண்டு யென்னவே பேசலாமே
கருகிய பல்லும் நாவுங் காய்ச்சலுமிளைப்பு முண்டாம்'

Dyspnoea on exertion, Chest pain, Giddiness , Pallor present all over the body are mentioned as the sign and symptoms in **Pandu noi.**

Agasthiyar Gunavaagadam states that,

"உண்டாகும் வேளை தன்னில் தேக நேர்மை
உறுதியாய்ச் சொல்லுகிறென் நன்றாய் பாரு
குண்டான முகம் கண்கள் உதடு நாக்கு
குறிப்பான வாய் வேகம் தேக முற்றும்
வெண்டாக வேயுலர்ந்து வெண்மை யாகி
விரல் கால்கள் முழுவதிலும் ரத்தம் வற்றி
கண்டான கால்கள் தான் தணிந்து நிற்கும்
கருவான நாடியது மெதுவாய் போமே.
ஸ்ரீபோமே தான் தீபனங்கள் மட்டுப்பட்டு
பொலிவான கண்விழிகள் பெருத்துத் தோன்று

ஆமே தான் அசக்தியு மாயாசங் கண்டு

அவர் நடையும் தளர்ந்து பெருமூச்சு கண்டு

மூமேதான் மூர்ச்சையுடன் மார்துடித்து

முடிவான கணுக்காலில் வீக்கமுண்டாய்

தாமே தானிருதயத்தின் வதனந் தன்னிற்

துருத்தி நிகர் சத்தமது கேட்கும் பாரே."

-அகத்தியர் குணவாகடம்

Stomatitis, dryness of the skin, pallor of the face, eyes, lips, tongue and nails, Lassitude, tiredness, low volume pulse, anorexia, swelling of the eyelids, dyspnoea on Exertion, palpitation, oedema of the ankle joint, added heart sounds in the pericardium are Mentioned as the signs and symptoms of Pandu noi.

SYMPTOMS OF VARIOUS TYPES OF PANDU:

1. Vatha Pandu:

"கொள்ளவே வாதபாண்டு ரோகங் கேளாய்

குடல்புரட்டி யடிவயிறு தான்வ லிக்கும்

தள்ளவே தாகமொடு பசியு மில்லை

தழலான சரசரப் பாகத் தாணும்

நள்ளவே நரம்பெல்லாங் கறுப்பு மாகும்

நடுக்கலொடு கண்சிவப்பு மலபந் தந்தான்

விள்ளவே தலைவலிக்கு மேனி வீங்கும்

வெளுப்பாகும் வாதத்தின் பாண்டுதானே'.

-யூகிமுனி.

The symptoms of Vatha Pandu are lower abdominal pain, thirst, loss of appetite, dryness of the skin and visible veins due to pallor of the skin, redness of the eyes, constipation, headache, anasarca and pallor of the skin.

2. Pitha Pandu:

"வாமென்ற மேனியெல்லா மஞ்ச ளித்து
மகாவெளுப்பு உண்டாகி மந்தக் கண்ணாந்
தாமென்ற தாகமொடு மூர்ச்சை யாகுந்
தனிவாயில் மிளகுபோற் றானு றைக்கும்
நேமென்ற நெஞ்சுமுள் தானு முண்டாய்
நெருக்கியா மூச்சுமுட் டதுவே யாகுங்
கோமென்ற கிறுகிறுத்து வாய்கைப் பாகுங்
கிளர்பித்த பாண்டுவெனக் கூறலாமெ."

-யூகிமுனி

Yellowish colouration and pallor of the skin, diminished vision, thirst, fainting, pungent taste like pepper, chest pain, dyspnoea, giddiness and bitter taste.

3. Kaba Pandu :

"கூறியதோர் நரம்புதோல் மிகவெளுப்பு
கிளர்நாவு உப்புறைக்கு மயிர்கூச் சாகும்
வாறியதோர் வாந்தியாங் குரலுங் கம்மும்
மெகத்தான தும்மலுடன் கோழை யாகும்
ஈறியதோர் இருமலோடு மயக்க முண்டாம்
இடுப்பசதி இந்திரிய நஷ்ட மாகும்
சீறியதோர் சோபமொடு தாப மாகுஞ்
சிலேட்டுமத்தின் பாண்டெனச் செப்பலாமே."

- யூகிமுனி

Pallor of the skin, salty taste, pilo erection of the skin, vomiting, husky voice, Sneezing, cough with expectoration, fainting, lassitude, ejaculation of semen, anasarca and thirst.

4. Mukkutra Pandu:

"செப்பவே யருசியொடு சோப தாகஞ்
செயலானசுவாசமொடு இளைப்பு மாகும்
வெப்பவே மேகனத்தில் சிறுநீர்தான் வீழும்
மிடுக்கான பலவீன மார்பி டித்தல்
துப்பவே சூட்டோடு தியக்க மாகுந்
தும்மலா யுடம்பெங்கு மூதிக் காணும்
திப்பவே தேகமெங்கு மசதி யாகும்
திரிதோடப் பாண்டென்னச் செப்பும் நூலே."

-யூகிமுனி

Anorexia, thrist, dyspnoea, anasarca, chest pain, lassitude, sneezing, warmness of the skin.

5. Vida Pandu:

"நூலாக நலத்தோ டேயுடல்வெ ளுக்கும்
நோய்நரம்பு சூடாகும் தாக மாகும்
ஆலாக யருசியொடு சத்தி விக்கல்
அதட்டியெ இருமலுட னதிசு வாசம்
வாலாக வயிற்றிரைச்ச லதிசார தோடம்
மாசுரமு முண்டாதல் மார்க் கனத்தல்
வேலாக மேனியெங்கு மிகவே ஊதல்
விடபாண்டு அசாத்தியமென்றே விளம்பலாமே."

-யூகிமுனி

Pallor of the skin, excessive thirst, anorexia, vomiting, hiccough, cough, dyspnoea, flatulence, diarrhoea, fever, heaviness of the chest, anasarca.

THODAR NOI OF PANDU NOI (COMPLICATIONS):

When the disease progresses kabam increases resulting in sobai (Oedema). Moreover in severe condition of Pandu noi, excessive intake of pitha diets and sexual intercourse lead to kamalai (jaundice). This is stated by Yugimuni as follows.

"விளம்பவே பாண்டுமுற்றி இருக்கும் போது
மீறியே பித்தவஸ்து தனைப்பு சித்தால்
புளம்பவே மங்கையுடன் புணர்ச்சி செய்தால்
பூண்டிடுமே காமாலை யென்னும் ரோகம்."

-யூகிமுனி

MUKKUTRA VERUPAADUGAL (PATHOLOGY):

Udal vanmai is affected due to excessive intake of salt and sour foods, which cause indigestion and loss of appetite. This affects Rasam and Raththa thathus which lead to increase in Pitham and do not give nutrition to the body affecting Ranjagam leading to pallor of the skin. The increased Pitham affects both Vatham and Kabam increasing the pallor of the skin. Further Kabam increases producing generalized swelling of the body.

PINIYARI MURAIMAI (DIAGNOSIS):

Diagnostic methods in Siddha system are very unique and solely based on clinical acumen of the physician.

1. Poriyal Arithal (or) understanding by the fire organs of perception (Mei, Vai, Kann, Mooku, Sevi)
2. Pulanal Arithal (or) understanding by the sense objects (Uraithal, Suvaithal, Parthal, Mugarthal, Kettal).
3. Vinadhal (or) Interrogation.

Tools used by Siddha Physicians:

1. Kanndal (Perception)
2. Karuthal (Inference)
3. Oorai (The instruction of the inspired)

- (தோ.கி.ஆ) ப- 46

The application of these three is very extensive in diagnosis and treatment.

ENNVAGAI THERVUKAL (EIGHT TOOLS OF DIAGNOSIS):

Ennvagai Thervugal is a unique method of diagnosing the disease, which was developed by Siddhars.

"நாடிப்பரிசம் நாநிறம் மொழிவிழி
மலம் மூத்திரமிவை மருத்துவராயுதம்."
"மெய்க்குறி நிறந்தொனி விழிநாவிருமலம் கைக்குறி"

- தேரையர்

PANDU IN RELATION WITH ENNVAGAI THERVUKAL:

1. Naadi (Pulse)

உடலில் உயிர் தரித்திருப்பதற்கு காரணமான சக்தி எதுவோ அதுவே தாது அல்லது நாடி எனப்படும். -நோய் நாடல் நோய் முதல் நாடல்

Vatha,Pitha and Kabha naadi are in the ratio of 1:1/2:1/4 proportion in normal condition.This is stated as follows,

"வழங்கிய வாதம்மாத்திரை யொன்றாகில்
தழங்கிய பித்தந் தன்னிலரை வாசி
அழங்குங் கபந்தா னடங்கியே காலோடில்
பிறங்கிய சீவர்க்குப் பிசகொன்று மில்லையே."

- குணவாகடம்

By combination of the above said three naadi, six thontha naadi are formed. They are Vathapitham, Vathakabham, Pithavatham, Pithakabham, Kabhavatham and Kabhapitham. This is stated as follows,

"தானென்ற வாதமாத் திரைதா னிரண்டு
தப்பாது பித்தமது தானொன் றேறில்
வேனென்ற வாதபித்த தொந்திப்பாகும்

-பதினெண்சித்தர் நாடி

Naadi is responsible for the existence of life. It is a suitable diagnostic tool used by Siddhars. It is recognised as one of the principle means of diagnosis and prognosis of the disease from time immemorial.

A)NAADI NADAI IN PANDU NOI:

1. Pitha Naadi:

"ஆமேதான் யத்தி சுரம் பாண்டு சோகை

நாமேதான் சொன்னோமே பித்தக்கூறு

நவின்றிட்டார் வாசமுனி நவின்றிட்டாரே."

- அகத்தியர்

2. Kaba Naadi:

"தானமுள்ள சேத்துமந் தானிளகில் வெப்பு

ஏன முறுங் காமாலை பாண்டு சோபை

ஏழு சுரங்கள் பலதுக்கம் விட முண்டாமே."

- சதகநாடி

3. Vatha Kaba Naadi:

"இருக்குமந்த வாதத்தில் சீதஞ் சேர்ந்தால்

ஒருக்கின்ற மலபந்தம் பொருமல் வீக்கம்

உள்வீச்சு சூலையொடு பாண்டு ரோகம்."

- சதக நாடி

4. Kaba Vatha Naadi:

"கண்டாயோ சிலேற்பனத்தில் வாத நாடி

விண்டாலே இளைப்பிருமல் சோகை பாண்டு

விடபாகம் விடசூலை பக்கவாதம்."

- சதக நாடி

5. Kaba Pitha Naadi:

"இடமான சேத்துமத்தில் பித்த நாடி

விடமான நெஞ்சடைப்பு சுவாசம் விக்கல்

வெகுசுரமும் நாவறட்சி பாண்டு ரோகம்."

- சதக நாடி

6. Pitha Vaatha Naadi:

"சிறப்பான பித்தத்தில் வாத நாடி

சேரிலுந் தாதுநட்டமுதிர பீடை

----------"

- சதக நாடி

2. Sparisam (Palpation):

The warmth, hot, chillness, dryness, roughness of the skin, oozing, sweating, tenderness, fissures, swelling, ulcer and hepatosplenomegaly may be noted. In **PithaPandu**, hot sensation, dryness, roughness of the skin, sweating, swelling, hepatospleenomegaly are seen.

3. Naa (Tongue):

The colour, dry or wet, coating, texture, salivation, redness, ulceration, fissure, pallor, any malignant growth, predominant taste in the tongue along with the conditions of the teeth and gums should be noted. In **PithaPandu**, pallor of the tongue, dryness, ulceration, fissure, bitter or pungent taste of tongue, baldness and loss of taste buds are seen.

4.Niram (Colour):

Colour of the skin all over the body, a local region of affection, conjunctiva, tongue, nail bud, hair etc.

Vatha Udal : Black and whitish colour

Pitha Udal : Yellowish (or) Reddish colour

Kapha udal : White or golden colour

Thontha udal : Mix of two udal colours

In Pitha Paandu, pallor of skin, conjunctiva and nail beds are noted.

5. Mozhi (Sound):

This includes clarity of speech, any disturbances, high or low-pitched voice, slurring and incoherent speech and hoarseness of voice.

In Pitha Paandu,speech and voice normal.

6.Vizhi (Eyes):

Hyperemia, ulceration, response of pupil, pallor, protrusion, sunken eyes, sharpness of vision, excessive lacrimation and accumulation of secretion at the angle of eyes, visual disturbance and any specific diseases of the eyes should be noted. In **PithaPandu** noi, pallor of conjuctiva and dull vision are noted.

7. Malam (Faeces):

Colour, consistency, quality, smell, frequency, constipation/diarrhoea, presence of mucous, blood and undigested food particles in the stool should be studied. In **PithaPandu noi,** diarrhoea is noted.

8. Moothiram (Urine):
Neer Ilakkanam (Method of collection of urine):

"அறிந்துமாறிரதமும் அவிரோதமதாய்
அஃகல் அலர்தல் அகாலவூன் தவிர்ந்தழற்
குற்றளவருந்தி உறங்கி வைகறை
ஆடிக்கலசத் தாவியே காது பெய்
தொரு முகூர்த்தக் கலைக் குட்படு நீரின்
நிறக்குறி நெய்க்குறி நிருமித்தல் கடனே."

- தேரையர் நீர்க்குறி நெய்க்குறி.

Collection of Sample Urine:

The patient must take well cooked food in the previous day. The intake must be proportionate to the degree of his appetite. Food intake should be taken, at appropriate time. We must have sound sleep on the previous night. The urine is collected on the down of the next day in a glass container and closed immediately to prevent contamination. This specimen must be examination with in one and half hours. This procedure should be followed strictly to get accurate observation of Neerkuri and Neikuri.

Neerkkuri:

"வந்த நீர்க்கரி எடை மணம் நுரை எஞ்சலன
றைந்தியலுளவை யறைகுது முறையே."

- தேரையர் நீர்க்குறி நெய்க்குறி.

Urine has the following five characters,

1. Niram - Colour of the Urine
2. Edai - Specific gravity of the Urine
3. Manam - Smell of the Urine
4. Nurai - Frothy nature of the Urine
5. Enjal - Quantity (Increased or decreased amount) of Urine voided

Neerkkuri in Pandu noi:

"இயற்கை நீர் சுருங்கினும் இதுவும் சலப்பொருள்
செயற்கை யாயருந்தினும் சிறுத்த நீரிதுவும்
பாண்டு நோய் சம்பவத்தைத் தருமிதில்
தூண்டு றாய் பேதியும் சோர்வும் பிறக்குமே."

- தேரையர் நீர்க்குறி நெய்க்குறி.

Oliguria occurring suddenly and oliguria occurring even after excessive intake of water are explained as premonitory symptom of Pandu noi.

Neikkuri:

"நிறக்குறிக் குரைத்த நிருமான நீரிற்
சிறக்க வெண்ணெய்யோர் சிறுதுளி நடுவிடுத்
தென்றுறத் திறந்தொலி யேகா தமைத்ததி
நின்றதிவலை போம் நெறிவிழியறிவும்
சென்றது புகலுஞ் செய்தியை யுணரே."

- தேரையர் நீர்க்குறி நெய்க்குறி.

The diagnosis and prognosis of deranged Mukkutrams are studied on the basis of the behaviour of a drop of gingelly oil gently dropped on the surface of the urine kept in a wide vessel in the sunlight.

"அரவென நீண்டின்ஃதே வாதம்"
"ஆழிபோற் பரவின் அஃதே பித்தம்"
"முத்தொத்து நிற்கின் மொழிவ தென் கபமே"

-நோய் நாடல் நோய் முதல் நாடல்

Oil spreads like a snake - Vatha neer

Oil spreads like a ring - Pitha neer

Oil remaining and floating like a pearl - Kaba neer

Neikkuri in Pandu noi:

"விரைவுடன் கதிர்போல் நீண்டு வேற்றுமைக் குணங்கள் கண்டால்
குருதிதான் கெட்டு நாசம் குன்றி குணமதென்னே"

-நோய் நாடல் நோய் முதல் நாடல்

If the oil spreads like a kathir (ray) it indicates **Pandu noi**.

ROLE OF MUKKUTRAM IN PANDU:

Vatham : Its mathirai alavu is 1 mathirai.

Location of vatham in the body: Vatham is located in the abanan, faeces, idakalai, spermatic cord, pelvic bone, skin, nerves, joints, hair and muscles.

Ten forms of Vatham:

1. Pranan (Uyirkaal) : It resides in the heart and legs to nose and controls knowledge, mind and five objects of sense, useful for breathing. In PithaPandu noi, dysnoea is present, if pranan is affected.

2. Abanan (Keezh nokkukaal) :

It is located in the lower abdomen and extremities. It is responsible for excretion of urine, stools, ejaculation of sperm and menstrual flow. In PithaPandunoi, diarrhoea, oliguria, ammenorohoea or oligomennorohoea are present, when abanan is affected.

3. Viyanan (Paravukaal) :

It resides mainly at the heart and responsible for movements of the body and sensation. In PithaPandu noi, swelling of the body, pallor of eyes and lips, numbness are present due to the affection of viyanan.

4. Samanan (Nadukkaal) :

It is located in the stomach, helps for proper digestion and balances the above four vaayus in equillibirium. In PithaPandu noi, anorexia and any of the above four vaayus affection are present when samanan is affected.

5. Uthanan (Melnokkukaal) :

It is located in the chest and responsible for vomiting, cough and sneezing reflexes. In PithaPandu noi, excessive thirst is present due to the affection of uthanan.

6. Naagan :

It resides in the eyes and is responsible for opening and closing of the eyelids and intelligence.

7. Koorman :

It is located in the eyes. It causes wrinkling of the eyelids, yawning and closure of mouth. It gives strength and helps to visualize things and causes lacrimal secretion. In PithaPandu noi, blurred vision is present when koorman is affected.

8. Kirukaran :

It is located in the throat and responsible for salivation, nasal secretion and appetite. In PithaPandu, anorexia and dryness of mouth are present when kirukaran is affected.

9. Devathathan :

Its location is at eruvai and karuvai. It is responsible for laziness, sleep and anger. In PithaPandu, fatigue and insomnia are present when devathathan is affected.

10. **Dhananjeyan :**

It resides in the nose and escapes on the third day after death by bursting out of the cranium.

Pitham :

Its mathirai alavu is ½mathirai

Five forms of pitham:

1. Anala pitham :

This gives appetite and helps for digestion. In Pitha Pandu, loss of appetite is present when it is affected.

2. Ranjagam :

It gives colour to the blood. In Pitha Pandu, pallor of conjunctiva and skin are present when it is affected.

3. Saathagam :

It controls the entire body functions responsible for the activities of the body In Pithapandu, inability to do the works properly and sluggishness are presentwhen it is affected.

4. Alosagam :

This gives brightness to the eyes.

In **Pitha Pandu**, dull vision is present if alosagam is affected.

5. Prasagam :

It gives complexion to the skin.

In **Pitha pandu,** altered skin lusture is presentwhen it is affected.

Kabam :

Its mathirai alavu is ¼mathirai.

Location of Kabam in the body:

Kabam is located in Samanavayu, Sperm, Head, Tongue, Vulva, Fat tissue, Bone marrow, Blood, Nose, Chest, Nerve, Bone, Brain, Eyes and Joints.

Five forms of Kabam:

1. Avalambagam :

It controls heart, lungs and supports other forms of kabam

In **PithaPandu,** dyspnoea is present when it is affected.

2. Kilethagam :

It makes the food wet and helps for digestion.

In **Pitha Pandu**, indigestionis present when it is affected.

3. Pothagam :

It is responsible for taste.

In **Pitha Pandu**, bitter or pungent taste is presentwhen it is affected.

4. Tharpagam :

It keeps the eyes cool.

In **PithaPandu**, burning sensation of eye is present when it is affected.

5. Santhigam :

It is responsible for the lubrication and aids free movements of joints.

Paruvakaalam (Season):

The whole year is divided into six seasons, they are as follows;

1. Kaar kaalam - Avani and Puratasi - Aug 16 to Oct 15
2. Koothir kaalam - Ayppasi and Karthigai - Oct 16 to Dec 15
3. Munpani kaalam - Markazhi and Thai - Dec 16 to Feb 15
4. Pinpani kaalam - Maasi and Panguni - Feb 16 to Apr 15
5. Ilavenil kaalam - Chithirai and Vaigasi - Apr 16 to June15
6. Mudhuvenil kaalam - Aani and Aadi - June 16 toAug15

Seasonal influence of earth, Water bodies, Flora and Fauna will have its impact in human beings, physiology inturn make them susceptible to certain specific diseases which are common in that season.

Physiological alterations of Mukkutram;

Mukkutram	**Thannilai valarchi**	**Vetrunilai valarchi**	**Thannilai Adaithal**
Vatham	Muthuvenil kalam	Kaarkaalam	Koothirkalam
Pitham	Kaarkaalam	Koothirkaalam	Munpani kaalam
Kabam	Pinpani kaalam	Ilavenil kaalam	Muthuvenil kaalam

Thannilai Valarchi:

Definition :

Provoked kutram in its own locations is called Thannilai Valarchi.It can be perceived byhatefulness of the things, which are causing Thannilai Valarchi and likeliness of the things which are possessing opposite properties.

Season:

Pitham gets Thannilai Valarchi during Kaarkaalam .

Vetrunilai Valarchi:

Definition :

Provoked kutram to other locations is called Vetrunilai Valarchi.It can be perceived bysigns and symptoms of the affected kutram and the pathological conditions of the udal thathukkal.

Season :

Pitham gets Vetrunilai Valarchi during Koothirkaalam .

Thannilai Adaithal:

Definition:

Provoked kutram neutralizing its own property is called Thannilai adaithal.

Season: Provoked pitham neutralizes during Munpani kaalam .

Nilam:

1. Kurinji - Hill region and its surroundings
2. Mullai - Forest region and its surroundings
3. Marutham - Cultivating region and its surroundings
4. Neithal - Coastal region and its surroundings
5. Palai - Desert region and its surroundings increased chance to acquire Pithapandu noi.

Udal Kattugal:

Our body consists of seven udal kattugal. It gives strength to the body

1. Saaram - It gives strength to the body and mind.
2. Senneer - It is responsible for knowledge, strength, boldness and healthy complexion.
3. Oon - Gives structure and shape to the body and is responsible for the movement of the body.
4. Kozhuppu - Lubricates the organs and proceeds on its own works.
5. Enbu - Protects vital organs and is useful for movements.

6. Moolai - Present inside the bones and it gives strength and maintains the normal conditions of the bone.

7. Venneer - Responsible for the propagation of species.

In PithaPandu,

- ✓ If Saaram is affected , fatigue, dyspnoea and tiredness are present.
- ✓ If Senneer is affected ,pallor of skin and conjunctiva are present.
- ✓ If Oon is affected, swelling of the body is present.
- ✓ If Suronitham is affected , ammenorrhoea / oligomenorrhoea is present.
- ✓ If Sukkilam is affected, sluggishness in sexual life is present.

PROGNOSIS OF PANDU:

Curable and Incurable Types:

According to **Siddha Maruthuvam**,

- ❖ The possibilities of cure for Nanju Veluppu noi are rare.
- ❖ All other types of Veluppunoi are curable.
- ❖ Eventhough, if any of the following symptoms or diseases like vomiting, diarrhoea, odema, thirst, diabetes, tuberculosis gets associated in the above said four Veluppu noi, then it is not curable easily.

Kannusamiyam states that**;**

"வெப்பு பிணியதனில் வெம் மேகத்தால் வருந்தின்
தப்பு மிகை நீரே தானிறங்கிந் செப்பும்
கிராணியிற் பாண்டில்கிளர் நீர்சுருங்கிற்
பிராணன் பிரியுமென பேசு."

"பாண்டு பிரமேகம் பன்வாத சூலை குன்மம்
வேண்டா சயஞ்சன்னி வெண்சோபை-நீண்ட
அதிநீரே காமாலை யானபிணி தம்மு
ளதி சாரமா காதறி."

"சொல்லு பித்ததிற் சோபை சோபைதனில் வாயு தொந்தம்
வல்லவதிற் பாண்டுவன் பாண்டில் - நல்ல

வயிற்றுக் கடுப்பு வளர் கடுப்பிற் சீதம்
பயிலிற் கெடுதி யெனப்பன"

- கண்ணுசாமியம்.

According to **Sarabendrar Vaidhya Muraigal:**

a) The Pandu noi, which is chronic in nature, is **not treatable.**

a) b) In acute stage, odema with yellowish discolouration,which is not curable.
b) Constipation or greenish dysentery, if occurs also is not curable.
c) Extreme pallorness of teeth, nail and eyes and the vision to every object seems to be
d) whitish is not curable.
e) Emaciation of the Pandu noi persons, with odema present in head, upperlimb and
f) lower limb, swelling of the external genetalia, inguinal region, frequent fainting,
g) diarrhoea and fever in pandu noi is not curable**.**

According to Sadhaga Naadi,

தானான பிரமேகம் வாத சூலை
சார்வான நீரிழிவு குன்மரோகம்
மானான சயரோகங் சன்னிதோடம்
யடுத்த விடங்காமாலை பாண்டு சோகை
மானே கேள் கபரோக மந்திர வியாதி
மஞ்சள் நோய் குலைநோவு பயித்தியரோகம்
ஊனாகும் வருமிடத்தில் யதிசாரங்கள்
உண்டாகிய சாத்தியமா முறுதி தானே."

- சதக நாடி

According to **Agathiya Vaithiya Pillai Tamil,**

In pandu noi persons, edema, laziness, thrist, anorexia, vomiting, hiccough, cough, diarrhea are the symptoms appears and after that the vision to every object to be yellow is not curable.

According to **Agathiyar gunavagadam,**

தானான அசாத்தியத்தின் பாண்டி னேர்மை
தானறியச் சொல்லுகிறேன் தரணி யோர்க்கு
ஊனான தேகத்தில் இருமல் பேதி
உறுதியாய் வாந்தியுடன் விக்கல் காணும்
தேனான தோற்றமடா மஞ்சள் காட்டும்
தெளிவான நகக்கண்களு மஞ்ச ளாகி
வீணாகப் போகுமடா மருந்து செய்தால்
விண்ணுலகிற் செல்வென்பார் விதிதீர்ந் தானே

Cough, Vomiting, Diarrhoea and yellow colour appear in eyes, nails and all over the body in pandu noi is not curable

NOI NEEKKAM (TREATMENT):

The speciality of Siddha treatment emphasise not only for complete healing but also for the prevention and rejuvenation. This is said as follows,

Kappu (Prevention)
Neekkam (Treatment)
Niraivu (Restoration)

Siddha system has stated that even during the time of conception, some defects creep into the fertilized embryo. These defects form the basis of the manifestation of certain constitutional disease later on during the existence of the individual. Diseases are produced by the unequillibrium of three thathus, which may be due to various causes like diet, life style pattern, mental and physical activities. When treating the disease the following principles must be noted.

"நோய் நாடி நோய்முதல் நாடியது தணிக்கும்
வாய்நாடி வய்ப்பச் செயல்"
"உற்றா னளவும் பிணியளவும் காலமும்
கற்றான் கருதி செயல்"

- திருக்குறள்

So, it is essential to know about the disease and the Cause for the onset of disease, body constituent of the patient, severity and chronicity of the illness, the season and the time of onset of the disease must be observed.

Line of Treatment of Pandu:

The aim is to normalize the vitiated Mukkutram, Vayus and the affected Saram and Senneer thathu. Before starting the actual treatment, the presence of toxins in the body produced due to derangement of three thathus should be controlled. This is explained as follows.

"சத்தியால் பித்தந் தாழும்"
"பேதியால் வாதந் தாழும்"
"அஞ்சனத்தால் கபந் தாழும்"
-சித்த மருத்துவாங் க சுருக்கம்

Usually for pitha diseases, emetics are given to restorethe deranged Pitham. But there are some exceptions to this rule. For instance, in Pandu noi, since the patient is already weak and drowsy, the administration of emetic medicine is excluded from the line of treatment. As per Siddha Maruthuvam, the line of treatment includes:

1. Mild laxatives can be administrated to neutralize the deranged thaathus.
2. To improve haemoglobin content of blood, iron preparations are used.
3. Pathiyam ie, diet restrictions are advised to normalize the affected thathu.

TREATMENT:

❖ Agasthiyar Kuzhambu in 200 mg was administered at early morning in empty stomach for one day only before the start of the treatment, for mild laxative purpose and for normalizing the deranged Pitha thaathu.

❖ From next day onwards, the trial drug Chitramutti Nei (4ml) was administered twice a day with milk, before food for Pitha pandu.

DIET :

"மாறுபா டில்லா உண்டி மறுத்துண்ணின்
ஊறுபா டில்லையு யிர்க்கு"
-திருக்குறள்.

Diet regimen for Pandu Noi :

Diet should be of

1. Stimulating appetite
2. Strengthening the body
3. Easily digestable should be taken.

- For Pandu noi, the following food items are advised. Easily digestible foods like porridge, mutton soup, and bone soup must be given in acute stages of Pandu noi.
- Tender brinjal, tender country bean, pepper, garlic, anise seed, ginger, onion green Peas, bengal gram, vegetable soups are advised to consume in diet.
- After the normal appetite is restored properly, prepared meat of Kaadai[quail], Udumbu[Monitor] can also be given. They tone up the deblitated system and also help
- in rejuvenation.
- Tamarind, tea, coffee, betel chewing, tobacco chewing and alcohol are advised to avoid as they prevent absoption of the drug.

MODERN ASPECT

The blood is the most precious fluid in the body. It is also considered as fluid of growth, fluid of health. Blood is one of the extracellular body fluids. Blood contains iron in the form of Haemoglobin and also as cytochromes etc. Any form of iron deficiency cause anaemia.

BLOOD:

Blood is a complex fluid which circulates rapidly in the vascular system.

Composition of Blood:

Blood consist of a solid portion and a fluid portion. The solid portion constitutes the blood cells namely RBC, WBC, and platelets and the fluid portion is plasma. The cells form 45% and the plasma forms 55% of the total volume of the blood.

FUNCTIONS OF BLOOD

1) Transport of hormones and enzymes:

The hormones and some of the enzymes arecarried by blood to different parts of the body from the source of secretion.

2) Excretory Function:

Waste products formed during various metabolic reactions in the tissues are removed by the blood and carried to the excretory organs like kidney, skin, liver etc.,

3)Nutrient Function:

Nutritive substances like glucose, amino acids, lipids and vitamins derived from digested food are absorbed from gastro intestinal tract and carried by blood to different parts of the body for growth and production of energy.

4) Regulation of body temperature:

Because of high specific heat of blood, it is responsible for maintaining the hermoregulatory mechanism in the body i.e., the balance between heat loss and heat gain in the body.

5) Respiratory Function:

Transport of respiratory gases is done by the blood. Blood conveys oxygen from the alveoli of lungs to the tissues for the oxidation of food and production of energy. The carbon-di-oxide formed in the tissues as a result of this process is carried to the lungs, where it is exhaled.

6) Defensive Function:

Blood has WBCs, Gamma globulins which have phagocytic action. They also transport protective subtances such has anti-bodies, anti-toxins and lysins.

7) Storage Function:

Water and some important substances like protein, glucose, sodium and potassium are constantly required by the tissue. Blood serves as a readymade source for these substances and these substances are taken from the blood during conditions like starvation, fluid loss, and electrolyte loss.

8) Regulation of acid – base balance:

The plasma proteins and haemoglobin acts as buffer and helps in the regulation of acid-base balance.

9) Regulation of water balance:

Blood maintains the water content of the tissues and helps in the regulation of fluid in different compartments of the body.

10) Regulation of osmotic pressure:

The plasma proteins play the major role in regulating the osmotic pressure of tissue fluids.

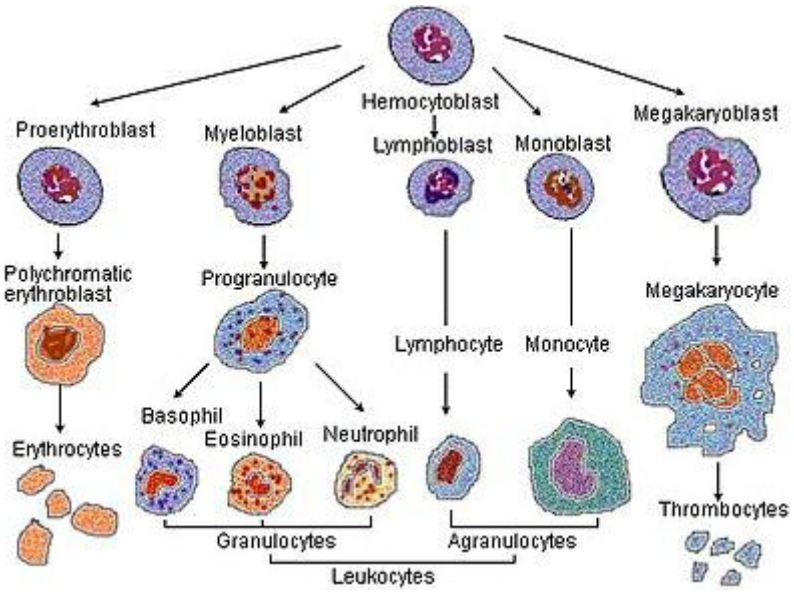
11) Defensive Function:

Blood has WBCs, Gamma globulins which have phagocytic action. They also transport protective subtances such has anti-bodies, anti-toxins and lysins.

12) Storage Function:

Water and some important substances like protein, glucose, sodium and potassium are constantly required by the tissue. Blood serves as a readymade source for these substances and these substances are taken from the blood during conditions like starvation, fluid loss, and electrolyte loss.

Erythropoiesis:



Erythropoiesis is the process by which the origin, development and maturation of erythrocytes occur. In the bone marrow, there are cells called uncommitted pluripotent hemopoietic stem cells because these cells are not designed to form a particular type of blood cell. When these cells are designed to form a particular type, the stem cells are called committed pluripotent hemopoietic stem cells.

Sites of Erythropoiesis

❖In the early few weeks of embryonic life - yolk sac

❖ During the middle trimester of gestation - Liver, Spleen, lymphoid organ

❖ Later part of gestation and after birth - Red bone marrow and liver

❖ Up to the age of 5 - Red bone marrow of all the bones

❖ After the age of 5 to adult - Red bone marrow of long bones and flat bones

Stages of Erythropoiesis

Stage I – Pro erythroblast (Megaloblast)

This early cell is large (15-20) µ. The cytoplasm is basophilic staining with a deep violet blue and there is a pale-staining crescent near the nucleus and the cell contains no haemoglobin. The nucleus is about 12µ and occupies about three quarters of the cell volume and the chromatin forms a fine stippled reticulum.

Stage II – EarlyNormoblast (Early erythroblast)

This cell is smaller than pro erythroblast diameter 15µ. It shows active mitosis. The nucleoli have disappeared. Condensation of chromatin network occurs. The cytoplasm is basophilic. So this cell is also called basophilic erythroblast.

Stage III – IntermediateNormoblast (Late erythroblast)

This cell is smaller (10-15) µ and shows active mitosis. Nucleus is still present. Chromatin network shows further condensation. Haemoglobin begins to appear and its eosinophilicstaining give the cytoplasm a polychromatic appearance.

Stage IV – LateNormoblast (Normoblast)

Mitosis has now ceased and the diameter of the cell is 8 – 10 µ. The nucleus becomes very smaller and the condensed chromatin assumes a **"*cart wheel*" appearance or ink spot** and finally becomes deeply stained in a uniform manner. Quantity of haemoglobin increases. Cytoplasm becomes almost acidophilic. So the cell is called Orthochromic erythroblast. In this cell, the nucleus disintegrates and disappears. The process is called pyknosis.

Stage V – Reticulocyte

It is slightly larger than matured red blood cells. Cytoplasm contains reticular network. It is basophilic in nature. During this stage, the cells enter the blood through the capillary membrane by means of a process called diapedesis.

Matured Erythrocyte

Reticular network disappears. Matured red blood cell is biconcave; smaller in size; diameter of 7.2 microns. It is with haemoglobin and without nucleus. It takes 5 days for the development of reticulocyte from proerythroblast. The reticulocyte takes two more days to become matured red blood cells.

FACTORS NECESSARY FOR ERYTHROPOIESIS:

I.General factors

ii.Maturation factors

iii.Factors necessary for haemoglobin formation

I.GENERAL FACTORS:

a) Erythropoietin:

The most important general factor for erythropoiesis is the hormone erythropoietin . It is also called haemopoietin or erythrocyte stimulating factor.

Source of Secretion:

Erythropoietin is secreted by peritubular capillaries of kidney.

Stimulant for Secretion:

Hypoxia is the stimulant for the secretion of erythropoietin.

Actions of Erythropoietin :

Erythropoietin causes formation and release of new RBCs into circulation.After secretion ,it takes 4 to 5 days to show the action.

i. Production of proerythroblasts from the stem cells in CFU-E of bone marrow.
ii. Developmentofproerythroblasts into matured RBCs.
iii. Release of matured erythrocytes into blood.

b) Thyroxine:

General metabolic hormone thyroxine accelerates the process of erythropoiesis at many levels.

c) Haemopoietic Growth Factors:

Haemopoietic growth factors are the interleukins.This factors induce the proliferation of pluripotent stem cells.

d) Vitamins:

Vitamins are necessary for erythropoiesis ;Which is vitamin B,C,D,E.

HAEMOGLOBIN:

1) Haemoglobin is the colouring matter of red blood cell. It is a chromoprotein forming 95% of dry weight of red blood cell and 30 to 34% of wet weight.
2) The function of haemoglobin is to carry the respiratory gases,oxygen and carbon dioxide.
3) The molecular weight of haemoglobin is 68,000.

STRUCTURE OF HAEMOGLOBIN:

Haemoglobin is a conjugated protein. It consist of a protein combined with an iron containing pigment. The protein part is globin and the iron containing pigment is heme.

IRON:

It is present in ferrous (fe++) form. It is in unstable or loose form. Under certain conditions, the iron may be present in ferric (fe++) state,which is a stable form.

PORPHYRIN:

The pigment part is called porphrin.This is formed by four pyrrole rings called I, II, III and IV.Thesepyrrole rings are attached to one another by methane (ch4)bridges. The iron is attached to N-of each pyrrole ring and N-of globin molecule. 41

GLOBIN:

This contains four polypeptide chains. Among the four polypeptide chains,two are alpha chains and two are beta chains.

Varieties of haemoglobin:

Haemoglobin is of two types namely. 1. Adult haemoglobin – HbA 2. Fetal haemoglobin – HbF

Blood Indices:

Blood indices are specifically meant for erythrocytes. The number, shape, volume and colour of the red blood cells indicate the quality of blood. So these features are named as blood indices.

Importance of Blood indices:

Blood indices have got diagnostic value in determining the type of anaemia.

Different Blood Indices:

1. Mean corpuscular Volume (MCV)
2. Mean corpuscular haemoglobin (MCH)
3. Mean corpuscular haemoglobin concentration (MCHC)
4. Colour Index (CI)

1. **Mean corpuscular Volume (MCV):**

Mean corpuscular Volume is the average volume of single red blood cells and it is expressed in cubic microns (cu.µ).

2. **Mean corpuscular haemoglobin (MCH):**

Mean corpuscular haemoglobin is the quantity or amount of haemoglobin present in one red blood cell. It is expressed in micro gram or pico gram (pg).

3. **Mean corpuscular haemoglobin concentration (MCHC):** This is the concentration of haemoglobin in one red blood cell. It is the amount of haemoglobin expressed in relation to volume of one red blood cell. So the unit of expression is percentage.

4. **Colour Index (CI):**

This is the ratio between the percentage of the haemoglobin and the percentage of red blood cells in the blood. All the above mentioned blood indices are reduced in iron deficiency anaemia.

Normal values:

- PCV:Women 35 - 48%; Men 36 - 51%
- MCV: 78-98 fl
- MCH: 26-34 picograms
- MCHC: 31 -37 gm /dl

IRON:

Iron is an essential constituent of haemoglobin, myoglobin, cytochromes and other components of respiratory enzymes like cytochrome oxidase, catalase and peroxidase. The main functions of iron are, Transport of oxygen to the tissues. Iron is necessary for electron transport oxidative phosphorylation. Peroxidase,lysosomal enzyme is required for phagocytosis and killing of bacteria by neutrophils. Iron is associated with effective immune competence of the body.

Daily Iron Requirements in different age groups:

Pregnant and lactating female	- 40 mg/day
Females 11 years to 30 years	- 18 mg/day
Adult's male	- 10 mg/day
Males 11 years to 17 years	- 12 mg/day
Upto 10 years (M/F)	- 10 mg/day

Iron sources:

Rich Sources:

Muscle meat (Red more than white)**,** Organ meat (Liver, heart, kidney)**,** Beef liver,Red meat not only supplies a good amount of iron it also increases absorption of iron from other food sources

Good Source:

Greens, Leafyvegetables, Nuts, Cereals, Wheatgerms, Fish, Shellfish, Poultry, Egg, Apples and dry fruits, Jaggery, Yeast, Molasses, Oysters, Spinach, Banana, Pomegrannate.

Poor Sources:

Wheat and Polished rice.

Distribution of iron in the body:

Total quantity of iron in the body averages 4 - 5 gm of total body weight.
Iron is distributed in the body as follows;

- Haemoglobin – present in red cells contain most of the body iron (65%)
- Myoglobin – comprises a small amount of iron in the muscles (4%)
- Haem and non-haem enzymes – eg cytochrome catalase, peroxidase, succinic dehydrogenase and flavoproteins constitute a fraction of total body iron (0.5%)
- Transferrin bound iron – circulates in the plasma and constitutes another fraction of total body iron (0.5%). (All these forms of iron are in functional form)
- Ferritin and haemosiderin – are the storage form of excess iron (30%). They are stored in the mononuclear phagocytic cells of the spleen, liver,bone marrow and in parenchymal cells of the liver.

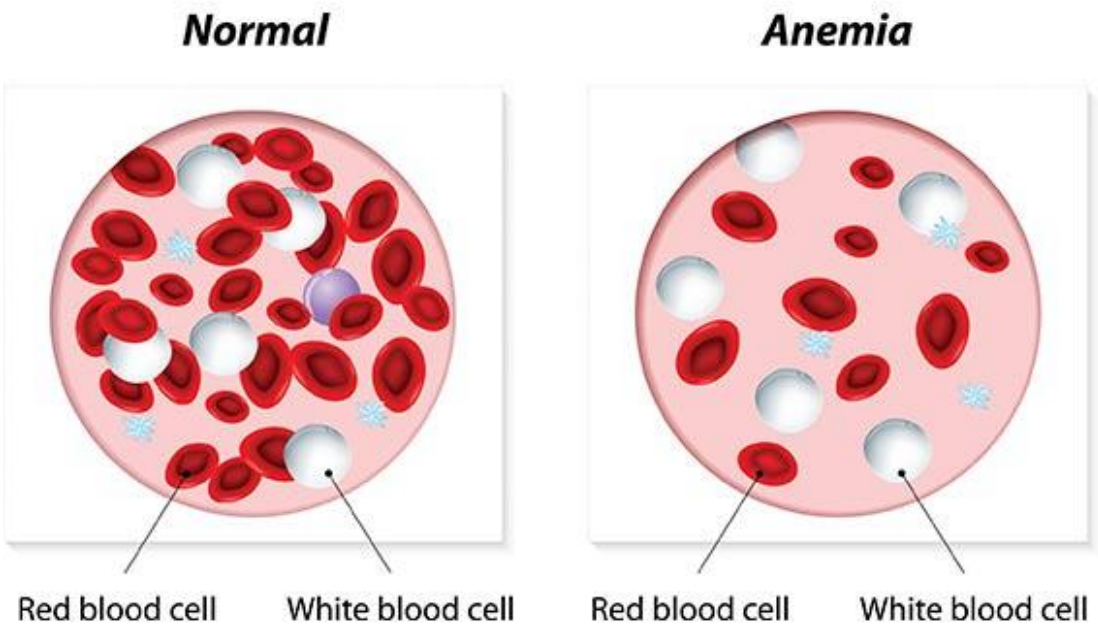
Factors affecting iron Absorption:

- ❖ Acidity, ascorbic acid and cysteine enhance iron absorption.
- ❖ In Iron deficiency anaemia iron absorption is increased to 2 to 10 times that of Normal.
- ❖ Small peptides and amino acids favour iron absorption.Phytate and oxalate (found in leafy vegetables) interfere with iron absorption.
- ❖ Food additives (EDTA) and antacids reduce iron absorption.
- ❖ A diet with high phosphate which are found in soft drinks, beer, ice cream, Candy bar decreases iron absorption
- ❖ Smoking and alcohol interferes with iron absorption.

- ❖ Impaired absorption of iron is observed in malabsorption syndrome such as Steatorrhoea.
- ❖ In patients with partial or total surgical removal of stomach, iron absorption is Severely impaired.

Blood iron buffer as well as iron storage medium. **Hemosiderin** is another iron storage protein and this is insoluble form.

ANAEMIA



DEFINITION:

Anaemia is defined as a reduction of the red blood cell volume or haemoglobin concentration below the range of values occurring in healthy persons.

WHO criteria for diagnosis of Anaemia

Adult women	11-15gms%
Adult men	14-18gms%
Children	6 years-14 years
Children 6 months	6 years Less than 11gms%

CLASSIFICATION:

A. Based on Production/destruction of RBC

1) Decreased or ineffective production of red blood cells or haemoglobin.
2) Increased destruction or loss of red blood cells.

1) Anaemia resulting primarily from inadequate production:

i. Marrow failure

- Aplastic anaemia: Congenital,Acquired.
- Decreased number of red blood cell precursor: Congenital,Acquired.
- Marrow replacement:Malignancies,Osteopetrosis,Storage disorders.

ii. Deficiency of Specific Factors

a. Megaloblastic anaemia:

- Folic acid deficiency or malabsorption.
- B12 deficiency or malabsorption.

b. Microcytic anaemia:

- **Iron deficiency**.
- Copper deficiency.
- Lead poisoning

iii. Impaired Erythropoietin Production

- Chronic renal disease.
- Hypothyroidism, Hypopituitarism.
- Chronic inflammation, infection.
- Malignancy.
- Protein malnutrition

2) Anaemia resulting primarily from rapid destruction:

I. Blood Loss: Acute haemorrhage**,** chronic haemorrhage.

II. Haemolytic Anaemia

a. Intrinsic Defects [Intrinsic abnormalities]

- **Membrane Defects :** Hereditary spherocytosis, Elliptocytosis**.**
- **Enzyme Defects:** 1. Enzyme of glycolytic pathway 2. Enzyme of the pentose phosphate pathway
- Defects in synthesis of haemoglobin: Hb S, C, D, E

b. Extrinsic abnormalities

- Immunologic disorders 1. Rh iso immunization 2.A (or) B iso immunization 3. Other minor Blood group incompatibilities
- Active antibody formation

B. Morphological classification :

Based on the red cell size, haemoglobin content and red cell indices anaemia are classified as follows 1. Microcytic Hypochromic anaemia

- *Iron deficiency*
- Thalassemia
- Haemoglobinopathies
- Haemolytic anaemia.

2. **Normocytic normochromic anaemia**

- Aplastic anaemia

3. **Macrocytic normochromic anaemia**

- Folate and vitamin B12 deficiency
- Hypothyroidism

4. **Macrocytic hypochromic anaemia**

❖ Combined deficiency of iron and folate or Vitamin B12

Microcytic anaemia :

The size of red cells is smaller than normal and colour index less than one. The mean orpuscular volume is less than its normal range (76-96 cubic microns).

Causes of Microcytic anaemia:

Inadequate intake of iron, defective absorption of iron, idiopathic hypochromic anaemia, starvation, dietary deficiency, anaemia of milk fed children. Excessive need of iron during growth, pregnancy Chronic haemorrhages Inadequate utilization of haematinics – myxoedema, chronic sepsis, chronicrenal diseases.

Macrocytic anaemia:

The red cells are bigger than normal and the colour index is above one. The mean orpuscular volume is more than its normal range (76-96 cubic microns).

Causes of Macrocytic anaemia:

Deficiency of the Extrinsic factors, Nutritional anaemias, Pellagra. Absence of Intrinsic factor, Total gastrectomy Cirrhosis of liver Megaloblastic anaemia,Hypoblastic anaemia.

Normocytic Anaemia:

The size of the red cells is more or less than the normal size. The colour index is less than the normal range and the mean corpuscular volume is 76 to 96 cubic microns.

Causes of Normocytic anaemia:

Acute hemorrhage Haemolytic anaemias Blood destruction by metals, Protozoa, Haemolysis Leukemia, Hodgkin’s disease, Drug poisoning

B. Based on Etiopathogenesis:

1. Nutritional Anaemias:

Iron deficiency anaemia, Folic acid, VitaminB12, Vitamin C, Pyridoxine, Thyroxine deficiency anaemias.

2. Haemolytic Anaemias:

Congenital - Thalassemia, Sickle cell anaemia, Hereditary spherocytosis, G-6-PD Deficiency

Acquired - Malaria, Kala azar, Rh or ABO incompatibility

3. Haemorrhagic Anaemias:

Acute - Trauma, Epistaxis

Chronic - Hookworm, Scurvy, Chronic dysentery, Oesophageal varices

4.Anaemia due to Bone marrow depression:

Primary - Hypoplasia or Aplasia, Fanconi's Anaemia

Secondary - Infections, Irradiatio

Congenital - Thalassemia, Sickle cell anaemia, Hereditary spherocytosis, G-6-PD deficiency

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Secondary - Infections, Irradiation

5. Anaemia due to Infections:

Acute	-	Fulminating osteomyelitis, Septicaemia
Chronic	-	Tuberculosis, Rheumatic fever, Sub acute bacterial Endocarditis
		Wound infections, Congenital syphilis

6. Other Miscellaneous Conditions:

Chronic amoebic dysentery repeated bouts of diarrhea.

CLINICAL FEATURES OF ANAEMIA:

The haemoglobin level at which symptoms and signs of anaemia develops depends upon 4 main factors.

1. **The Speed of onset of anaemia:**

Rapidly progressive anaemia causes more symptoms than anaemia of slow onset, as there is less time for physiological adaptation.

2. **The Severity of Anaemia:**

Mild anaemia produces no symptoms or sign, but a rapidly developing severe anaemia (haemoglobin below 6 gm) may produce significant clinical features

3. **The age of the patient:**

The young patient due to good cardiovascular compensation tolerates anaemia quite well as compared to the elderly.

4. **The haemoglobin dissociation:**

In anaemia, the affinity of haemoglobin for oxygen is depressed. As a result oxy haemoglobin is dissociated more readily to release free oxygen for cellular use.

IRON DEFICIENCY ANAEMIA (IDA)

Iron deficiency is the most common and widespread nutritional disorder in the world. Iron deficiency is the most common single cause of anemia worldwide, accounting for about half of all anemiacases. Globally, the World Health Organization (WHO)

estimates that 25% of the population (1.62 billion people) has anemia . Preschool children 47.4% and pregnant women 41.8% have the highest prevalence overall. Africa (67.6 and 57.1%) and Southeast Asia (65.5 and 48.2%) have the highest burden of anemia in preschool children and pregnant women, respectively . It is more common in women than men. About 20% of all women of child bearing age have iron-deficiency anemia, compared with only 3% of adult men. The principal cause of iron-deficiency anemia in these countries is blood lost during mensus in premenopausal women and not compensated by intake from food and supplements. Nutritional Anemia – major public health problem worldwide particularly in developing countries among women of reproductive age. As per National Family Health survey[MARCH 2015], more than half of women in India (55%) have anemia, including 39% with mild anemia, 15% with moderate anemia and 2% with severe anemia. Nearly 50 – 80% of Indian mothers suffer from anemia due to iron – deficiency in their diet. Maternal anemia invariable translates into anemic infants and newborns. About 30- 40 percent of newborn suffer from low birth weight due to maternal anemia and malnutrition. The cause of IDA in India is due to poverty, malnutrition, untreated illness, hook worm infestation; socio-ecnomicproblems.Various programmes are launched by Indian government to eradicate iron deficiency anaemia. Iron deficiency and anaemia reduce the work capacity of individuals and entire populations, bringing serious economic consequences and obstacles to national development.

STRUCTURES OF THE RED CORPUSCLES IN IRON DEFICIENCY ANEMIA:

In iron deficiency anaemia, the red blood corpuscles are decreased or normal in the number and haemoglobin content of the red blood corpuscles is reduced. In the blood smear, the red cells appear pale with a large central pale area and many of the red blood cells appear to be smaller than the normal. This type of anemia is called "*Hypochromic and Microcyticanemia*".

Etiology:

The etiology varies with the age, sex, and country of residence of the patient.

Etiological factors in iron deficiency Anaemia:

Increased physiological requirements: Rapid growth in Infant and preadolescence, Menstruation, Pregnancy.

Decreased iron assimilation:

Iron poor diet, Iron malabsorptionSprue, non tropicalsprue, Pica **,**GIsurgery**,**Chronic diarrhoea**,** Malnutrition.

Blood Loss :

Gastro intestinal bleeding, Peptic ulcer disease**,** Inflammatory Boweldisease**,** Meckel's diverticulum, Drugs-Salicylates, antibiotics etc.,Hook worm infestation, Haemoglobinuria, prosthetic heartvalve, Intense exercise, Bleeding diasthesis, Repeated venous sampling.

Increased demands:

Prematurity**,** Adolescence, Pregnancy

Iron Poor Diet:

Dietary inadequacy is present in more than 80 percent of cases especially in the poorer groups.

IRON MALABSORPTION:

- Iron malabsorbtion is an unusual cause of iron deficiency where malnutrition is rampant however both histologic and functional abnormalities of the intestine are common. Defective iron absorption is caused by non-tropical sprue.
- Partial or total gastrectomy impairs iron absorption caused by reduction in gastric acidity and acceleration of the food through the upper portion of the small bowel. The absorption of both haem iron and non-haem is defective.
- Pica or the habitual ingestion of non-food substances is common in children, and pregnant women. It markedly inhibits iron absorption.
- Pancreatic enzymes may contribute to the high incidence of iron deficiency in patients with cystic fibrosis.

Gastro Intestinal bleeding:

- In adult men and postmenopausal women and children, occult bleeding from the gastrointestinal tract is the most common cause of iron deficiency.
- Peptic ulcer disease is a well-documented cause of occult blood loss.
- Crohn's disease and ulcerative colitis also are commonly associated with iron deficiency.
- Corticosteroids, Indomethacin and other non-steroidal anti-inflammatory agents may also induce gastrointestinal tract bleeding.
- Hookworm infestation (Ankylostomiasis) is the most important cause of intestinal blood loss worldwide. The parasites Ankylostomaduodenale and Nectar americanus attach to the proximal portion of the small intestine and suck blood from submucosal vessels.

Pathogenesis:

Iron deficiency anaemia develops when the supply of iron to the bone marrow is insufficient for the requirements of haemoglobin synthesis. It has been pointed out that the body is normally in a state of positive iron balance. When a negative iron balance occurs either due to blood loss, increased requirements or impaired absorption, the deficit is made good by iron mobilized from the tissue stores and an 57 adequate supply of iron for haemoglobin formation is maintained. It is only when the tissue stores are exhausted and the supply of iron to the marrow for haemoglobin synthesis becomes inadequate, hypochromic anaemia develops. Thus iron deficiency may be regarded as developing in two stages.

1. The progressive depletion and cultivate exhaustion of the available tissue iron stores.
2. The development of anaemia. Iron deficiency state, which may be divided into three functionally distinct stage of severity

Stage of Iron deficiency anaemia:

Storage iron depletion:

Iron reserve is small or absent and is characterized by reduced serum ferritin or reduced iron concentration in marrow and liver tissue. Haemoglobin serum iron, Transferritin concentration and saturation are within normal limits.

Iron limited erythropoiesis:

Haemoglobin (Hb) may still be normal but serum iron is low and TIBC increased with a low serum ferritin and raised free erythrocyte protoporphyrin (FEP).

Iron deficiency anaemia:

The flow of iron to erythroid marrow is impaired to cause reduction in haemoglobin concentration with a progressive microcytic hypochromic anaemia associated with the reduced serum iron, transferrin saturation and serum ferritin level.

CLINICAL FEATURES:

Symptoms:

Anorexia, Headache, Bodyache, Giddiness, Fatigue, Lassitude, Breathlessness on exertion, Dimness of Vision, Dizziness, Insomnia, Inability to concentrate , Tinnitus, Anginal pain, Paraesthesia in fingers and toes, Palpitation, Insomnia, Anxiety, Constipation, Abdominal distension, Hair loss, Exercise intolerance, Restless leg syndrome, Missed menstrual cycle or oligomenorrhoea and Pica.

Signs:

Pallor of the skin, mucous membrane, palms, nails and conjunctiva Smooth, pale, glossytongue, Angularstomatitis, Glossitis and Koilonychia.

Epithelial tissue changes

Long standing IDA causes epithelial tissue changes in some patients. The changes occur in the nails (koilonychia or spoon shaped nails), tongue (atrophic glossitis), mouth (angular stomatitis) and oesophagus causing dysphagia from development of thin membranous webs at the post cricoid area (Plummer Vinson syndrome).

Role of iron deficiency anaemia in various systems:

Cardiovascular system :

Dyspnoea and palpitation are common symptoms while on exertion but in very severe anaemia the patient may get cardiac failure and there may be dyspnoea at rest. Haemic murmurs are commonly heard in anaemic patients. Jugular venous pressure increases in severe anaemia due to the high pulse pressure, with a capillary pulsation. Oedema of the legs occasionally occurs in ambulant patient with severe anaemia as the result of venous and capillary pressure on exertion and increased capillary permeability.

Central nervous system:

Symptoms include faintness, giddiness and headache, roaring and banging in the ears, tinnitus, spots before the eyes, lack of concentration and drowsiness and with severe anaemia clouding of consciousness, numbness, and coldness and sometime tingling of the hands and feet.

Reproductive system:

Menstrual disturbances are commonly found.

Re**nal system:**

Slight proteinuria may be present with severe anaemia. Anaemia may further reduce renal function to the point at which nitrogen retention develops. Correction of anaemia in such patient is usually followed by a fall in blood urea.

Gastro Intestinal system:

Anorexia is the commonest symptom, nausea, flatulence and constipation may also occur. Slight to moderate smooth hepatomegaly is common is severe anaemia and when congestive heart failure develops the liver may become tender. In certain cases of iron deficiency anaemia, spleen may be enlarged.

Pyrexia:

Mild pyrexia may occur with severe anaemia but marked fever is due to either the causative disorder or to some complicating factor.

Dietary Iron:

The dietary iron comes from two sources, Heme and non-heme, the later being the major source of iron in diet and is found in varying degrees in all foods of plant origin. Heme iron is present in meat, fish, and poultry, but the intake of these products is generally low. Heme iron is better absorbed than non-heme iron and is not influenced by dietary factors. Good sources of iron in the diet includes, pulses, dhals, green leafy vegetables, dates, nuts, jaggery, meat and fish. Administration of 50 mg of vitamin C increases iron absorption by two folds.

Complications in Iron Deficiency anaemia:

Iron deficiency anaemia may be the present finding in gastro intestinal cancer. In patients with heart disease severe anaemia may precipitate angina pectoris or congestive heart failure Infections are more common in Iron deficiency anaemia, especially those of the respiratory, gastrointestinal and urinary tracts. Chronic iron deficiency anaemia reduces the efficiency in work and study

Investigations required for Iron Deficiency anaemia:

1. Blood Investigations :

Haemoglobin**,** Total Red Blood cell count**,** Peripheral blood smear**,** Packed cell volume**,** Mean corpuscular volume**,** Mean corpuscular haemoglobin**,** Mean corpuscular haemoglobin concentration**,** Total iron binding capacity**,** Serum iron**,** Serum Ferritin, Differential count**,** Erythrocyte sedimentation rate**,** Serum protein**,** Serum creatinine.

2. Urine Investigations:

Sugar**,** albumin**,** Deposits**,** Red blood cells, Pus cells.

3. Stool Investigations:

Ova**,** Cyst**,** Occult blood**,** Red blood cells**,** Pus cells.

Special Investigations occasionally required:

- X-ray barium meal, X-ray Barium enema, X-ray chest
- Endoscopy, colonoscopy, sigmoidoscopy, gastro duodenoscopy
- Isotope studies

i. Determination of life span of red cells using 51Cr labelled erythrocytes

ii. Determination of absorption, utilization, and disposal of iron using Fe.

- Skeletal survey for multiple myeloma and secondary deposits
- Bone marrow examination
- liver Function Test (LFT)
- Jejunal biopsy, urography, selective angiography
- Ultrasonography

Laboratory Diagnosis:

In Iron deficiency anaemia the haemoglobin is less than 11 gm in women and less than 14 gm in men. The red cell count in rarely below 2.5 million/cubic millimeter and the red cells are usually microcytic and hypochromic reticulocytes and platelets are normal or increased. The white cell count is normal.Serum ferritin is below 30µg/L in women and below 100µg/L in men .Serum iron is usually below normal range (Normal is 50 - 150µg/dl). Bone marrow haemosiderin is absent. The PCV, MCV, MCH, MCHC are all reduced.

Differential Diagnosis :

Iron deficiency anaemia must be differentiated from other hypochromic anaemia.

I. Anaemia of infection

II. Pyridoxine (Vit B6) Deficiencyanaemia

III. SomeHaemoglobinopathies

IV. Sideroblastic anaemia

V. Anaemia of lead poisoning.

Diagnosis :

Following criteria are essential to diagnose iron deficiency anaemia. History of inadequate intake of dietary iron and blood loss if any Typical symptoms and signs like easy fatiguability, pallor, pica, koilonychia, smooth tongue, cheilosis, numbness, palpitation, dyspnoea and dysphagia associated with general considerations. Haemoglobin estimation variably reduced. Hypochromic and microcytic structure of red blood cells. Low serum ferritin, low serum iron, increased total iron binding capacity. Reduced mean corpuscular volume. Platelet count is either normal or raised. Blood loss usually occult. Erythrocyte count may be normal or reduced less than haemoglobin level would suggest.

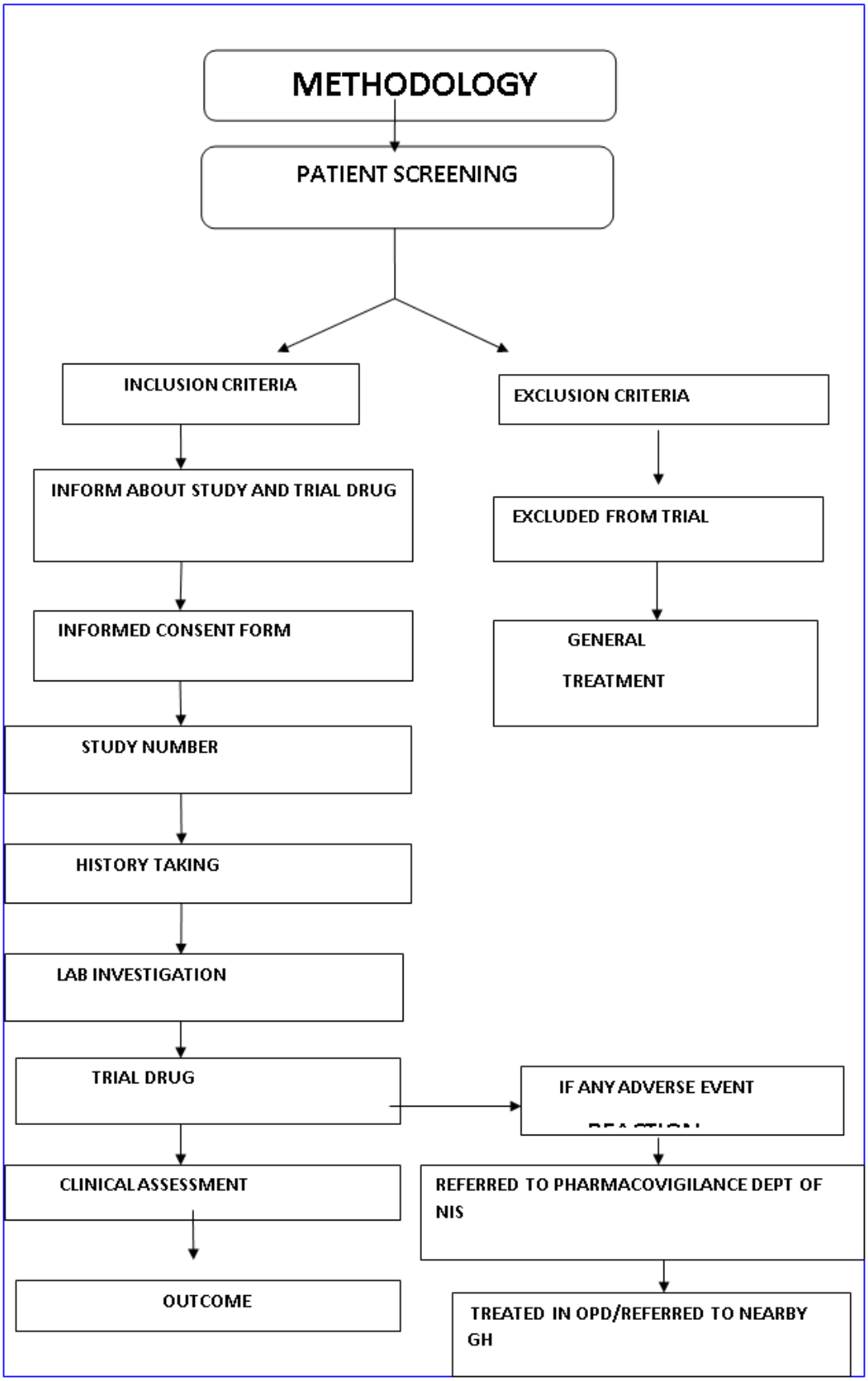
PREVENTION OF IDA:

Appropriate nutritional strategies are an important factor in prevention of IDA. The basic approaches to the prevention of IDA include .

1. Dietary modification and consumption of larger amounts of habitual foods increases total iron consumption by 25 – 30 %. Processes like germination (Sprouting of green gram) consumption of green leafy vegetables would be additional long-term methods for prevention of IDA.
2. Periodic de-worming with anti-helminthic drugs for hookworm infestation and schistosoma should be considered in endemic areas.
3. Supplementation with medicinal iron is considered necessary to reduce the extent of anaemia in developing countries.
4. Food and salt fortification with iron are evolving rapidly and would be one of the most effective ways to control IDA. Salt fortification with iron content of 1 mg per gram of salt is the most effective preparation.

Self care Procedures for iron deficiency anaemia:

- Eat more foods that are good source of iron
- Concentrate on green leafy vegetable, red meat, beef liver, poultry, fish, wheat germs, oysters, dried fruit and fortified cereals.
- Boost iron absorption. Foods high in vitamin C like citrus fruits, tomatoes and strawberries help the body absorbing iron from food.
- Red meat not only supplies a good amount of iron, it also increases absorption of iron from other food sources.
- Take an iron supplement, Consult your physician for proper dosage.
- While iron is best absorbed when taken on an empty stomach, it can upset your stomach. Taking iron with meals is less upsetting to the stomach
- Avoid antacids, phosphates (which are found in soft drinks, beer, ice cream, candy bars, etc) and the food additive EDTA. These block iron absorption
- Increase dietary fibre to prevent constipation.
- Avoid aspirin and products with aspirin.
- Eat good sources of folic acid daily.These include vegetables like asparagus, sprouts, spinach and lettuce
- Black-eyed peas, orange juice, oatmeal, whole grain cereals, wheat germ, liver and other organ meats are excellent sources of folic acid.
- Eat fresh uncooked fruits and vegetables often. Heat destroys folic acid


METHODOLOGY
PATIENT SCREENING
INCLUSION CRITERIA
EXCLUSION CRITERIA
INFORM ABOUT STUDY AND TRIAL DRUG
EXCLUDED FROM TRIAL
INFORMED CONSENT FORM
GENERAL
TREATMENT
STUDY NUMBER
HISTORY TAKING
LAB INVESTIGATION
TRIAL DRUG
IF ANY ADVERSE EVENT
CLINICAL ASSESSMENT
REFERRED TO PHARMACOVIGILANCE DEPT OF NIS
OUTCOME
TREATED IN OPD/REFERRED TO NEARBY GH

TITLE

Clinical Evaluation of Siddha drug "**CHITRAMUTTI NEI"** (Internal) in the treatment of **Azhal paandu** (**Iron Deficiency anaemia**.)

BACKGROUND:

Siddhars classified the diseases into 4448 and established a separate chapter which deals Veluppu on the basis of vali , Azhal, Iyyam, humours, mentioned in yugi vaithiya chindhamani. Yugi munivar further classified pandu into 5types and Azhal pandu is one among them. The signs and symptoms like pallor, Giddiness, Faint, Glossitis, Chest discomfort, Breathlessness, Bitter taste, Dizziness can be correlated well with Iron Deficiency Anaemia mentioned in modern science.

Yugi indirectly explained the etiology of Azhal pandu, which as follows excessive intake of salt&sour food, living in hot surroundings, excessive chewing of pawn &nut, excessive intake of alchol, daytime sleep [life style changes] This will be highly appreciated in modern science well.

Anaemia is the most common nutrional deficiency in the world. Globally, Iron deficiency anaemia affects 1.62 billion people, which corresponds to 24.8% population. The highest prevalence is in preschool age children (47.4%) and the lowest prevalence in men (12%) The greatest number of individuals affected is pregnant woman (41.8%). In woman anaemia may become the underlying cause of maternal mortality and perinatal Mortality. Nearly 50% of woman of reproductive age and 26% of men in the age group of 15-59 years are anaemic.

Siddhars idendified numerous numbers of herbs in treating anaemia. One such siddha formulation by CHITRAMUTTI NEI mentioned in chikicha rathna deepam which is said to be cost effective , efficacious and simple formulation .

One cause for Iron deficiency anaemia is poor intake of Iron due to poverty and socioeconomic status. The main ingrediends of the above formulation are of **nellikkai** [Phllanthus emblica Linn], shows significant antioxidant and haematinic, Immunomodulatory activities. **Nilavembu** [Andrographis paniculata Burm] possesses H epato protective activity, Antioxidant, Anti Inflammatory, diuretic activities. **Manjal** [Curcuma longa Linn] possesses Anti cancer, Antioxidant, Hepato protective, Anti

Inflammatory, Appetizer Activity. **Kadukkai** (Terminalia chebula (Retz), possesses Haematinic activity.

Chitramutti [Pavonia zeylanica Lin (cav) possesses, Hepato protective , Antioxitant, Larvicidal Activity. Therefore I have selected the trial drug for clinical trial.

AIM:

1. PRIMARY AIM:

To study the therapeutic efficacy of siddha formulation **CHITRAMUTTI NEI** in the treatment of **AZHAL PAANDU (IRON DEFICIENCY ANAEMIA)**.

2. SECONDARY AIM:

- To study the cofactors related to the disease (i.e., age, sex, socioeconomic status, family history, occupation.
- To study the siddha basic principles like Envagai thervu, Neerkkuri and Neikkuri, Udal thathukal, Uyir thathukal and Kaalam etc., in pitha pandu patients.

STUDY DESIGN&CONDUCT OF THE STUDY:

Study type : An Open Clinical trial

Study Place:

Ayothidass Pandithar Hospital (OPD&IPD),

National Institute of Siddha,

Tambaram sanatorium,

Chennai-47.

Study Period **:** 12 months

Sample size **:** 40 patients

TREATMENT:

Drug **:** CHITRAMUTTI NEI (INT)

Dose : 4ml (Twice a day –before food)

Duration : 45 days

Vehicle : Hot water

Reference book: Chikicha Rathna Deepam -page no 212-213.

Urai aasiriyar : Kannusamy pillai

Edition : I (2007)

SUBJECT SELECTION:

As and when patients reporting at OPD of Ayothidass pandithar Hospital NIS with the symptoms of inclusion criteria was subjected to screening test and documentation was done by using screening proforma.

INCLUSION CRITERIA:

- Age: 15-55
- Sex: both sex,
- Hb level less than normal range,
- For male:7-12gms/d1[13-18gms/d1]
- For female :7-11gms /d1[11.5-16.5gms/d1]
- Patient willing to undergo blood investigation.
- Patient willing to sign the informed consent stating that he/she will conscientiously stick to the treatment during 48days but can opt out of the trial of his/her own conscious discretion.

EXCLUSION CRITERIA:

- Hyper tension
- Pregnancy and lactation
- Presence of any associated severe systemic illness (e.g.CA, RA)
- Endocrine disorder (Thyroid abnormality, Diabetes mellitus)

- Cardiac disease
- Renal disease
- Inherited defects (sickle cell anemia, Thalassemia, Aplastic Anemia)
- Patient not willing to give blood sample
- Epilepsy
- Worm Infestation

WITHDRAWAL CRITERIA:

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

ASSESSMENTS AND INVESTIGATIONS:

- a) CLINICAL ASSESSMENT
  Siddha assessment
- b) ROUTINE INVESTIGATIONS:
  1.Modern parameters
  2.Siddha parameters

- c) SPECIFIC INVESTIGATIONS:
  1.clinical assessment:

  - Pallor, Oedema of the Body, Breathlessness,
  - Palpitation, Tachycardia, Anorexia, Giddiness,
  - Numbness, Tingling sensation, Lack of concentration,
  - Amenorrhoea, Angular stomatitis, Glossitis, Cheliosis,
  - Koilonychia, Hair fall,Lassitude,Fatigue,Pica,

SIDDHA ASSESSMENT:

Pallor, Giddiness, Faint, Glossitis, Chest discomfort, Breathlessness, Bitter taste, Dizziness

SIDDHA PARAMETERS:

- Naadi (pulse perception)
- Sparisam(palpable perception)
- Naa(Tongue)
- Niram(complexion)
- Mozhi(voice)
- Vizhi(eyes)
- Malam(bowel habits)
- Moothiram(urine)
- Moothiram(urine)
    - Neerkuri
    - Neikuri

ROUTINE INVESTIGATIONS

- Liver function test
- Renal function test
- Blood sugar level:

  Fasting (mg/d1)

  Post prandial (mg/d1)

  Random (mg/d1)
- Lipid profile
- Urine Routine
- Motion test

SPECIAL INVESTIGATIONS:

1. Complete Blood count:

- Hb
- Total RBC
- PCV
- MCV
- MCH
- MCHC
- Total WBC
- Differential count :(%)

  Polymorphs

  Lymphocytes

  Monocytes

  Esinophils

  Basophils
- ESR(mm/hr)
- Platelet count
- Smear study
- Bleeding time- /min
- Clotting time- /min

2. Serum Ferritin Level

STUDY ENROLLMENT:

- In this clinical trial, Patient reporting at NIS, OPD with clinical symptoms of Pallor, anorexia, giddiness, odema, palpitation, numbness,fatigue etc., was examined clinically before enrolling the study.
- The patients were informed (from IV) about the objective of the study, trial drug, possible outcomes in their own language and terms understandable to them.
- After ascertaining the patient's willingness, Informed consent was obtained them in the consent form (Form VI).

- All these patients were given unique registration card in which patient's Registration number of the study, Address, phone number and Doctors phone number etc, were given, so as to report easily, if any complications arise. All these patients were given unique registration card in which patient's Registration number of the study, Address, phone number and Doctors phone number etc. Were given, so as to report easily, if any complications arise.
- Complete clinical history, complaints and duration, examination findings- all were recorded in the prescribed proform in the clinical research form. Screening Form-I was filled up; Form – II and Form – III were used for recording the patient's history, clinical examination of symptoms and signs and laboratory investigations respectively.

CONDUCT OF THE STUDY:

- Patients who had satisfied inclusion and exclusion criteria were recruited for the study.
- As per Sidhha literature, before starting the treatment for AZHAL PANDU, purgative drug **Agathiar Kulambu** 130mg od with 15 ml of Pepper powder **[Milagu thool]** at early morning in empty sto mach for one day was given.
- Then the trial drug " **CHITRAMUTTI NEI**'' was given at a dose of **4ml twice a day** with **hot water** continuously for 45days, patients visited the hospital once in 9 days. At each clinical visit clinical assessment was done and prognosis was noted. Laboratory investigations were done on 0^{th} day and 46^{th} day of the trial.
- After the end of the treatment ,the patient was advised to visit the OPD for another 2 Months for follow up without trial medicine.

DATA MANAGEMENT:

- After enrolling the patient in the study, a separate file for each patient was opened and all forms were filed in the file. Study No. and Patient Number was entered on the top of file for easy identification. Whenever the study patient visits OPD during the study period, the respective patient's file was taken and necessary recordings were made at the assessment form or other suitable forms.
- The screening forms were filed separately.

- The Data recordings were monitored for completion by Guide (HOD, Dept. of Maruthuvam), SRO (Statistics).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

- **PRIMARY OUTCOME:**

  Primary outcome was mainly assessed by comparing the pre and post treatment Hemoglobin level, of the trial patient.

- **SECONDARY OUTCOME:**

  Secondary outcome was assessed by comparing the following parameters,before and after the treatment.

  1.Reduction of clinical symptoms
  2.changes in complete blood count
  3.changes in serum ferritin level

Adverse Effect and serious effect Management

No Cases were reported with adverse reactions to during the study period

STATISTICAL ANALYSIS:

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

ETHICAL ISSUES:

- The data collected from the patient will be kept confidentially. The patient will be informed about the diagnosis, treatment and follow up.
- Informed consent will be obtained from the patients after explaining about the clinical trial in an understandable language.

- After getting the consent of the patient (through consent form) they will be enrolled in the study.
- Treatment will be provided free of cost.
- No other medicines will be used except the trial drug.
- 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.
- The patients who are excluded (as per the exclusion criteria) are given proper treatment with full care at OPD.
- In conditions of treatment failure, adverse reactions patients will be given alternative treatmentat the OPD with full care through the end. **.**

DATA COLLECTION FORMS:

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

FORM l **:** Screening & Selection Prof

FORM ll : Case Record form

FORM lll : Laboratory Investigation form

FORM IV : Drug compliance form

FORM V : Patient Information Sheet

FORM VI : Informed Consent Form

FORM VII : Withdrawal Form/ Adverse drug reaction form (Pharmacovigilance form)

FORM VIII : Dietary advice Form

RAW DRUGS, PURIFICATIN & DRUG PREPARATION:

INGREDIENTS:

1. Chitramutti[*Pavonia zeylanica* .Linn]	-	8palam(280grams)
2. Kari manjal [*Curcuma longa* .Linn]	-	8palam(280grams)
3. Kadukkai [*Terminalia chebula* .Retz]	-	8palam(280grams)
4. Nellikai [*Phyllanthus emblica* .Linn]	-	8palam(280grams)
5. Thandri [*Terminalia bellarica* .Gaertn]	-	8palam(280grams)
6. Nilavembu [*Andrographis paniculata* .Burm]	-	8palam(280grams)
7. Eluppai [*Madhuca longifolia*.Koening]	-	8palam(280grams)
8.Neer	-	4marakkal(21.48liters)
9. Cow's milk	-	4padi(5.36 liters)
10. Cow's ghee	-	1padi(1.34 liters)

SOURCE OF RAW DRUGS;

- The required raw drugs for preparation of **CHITRAMUTTI NEI** was purchased from a well reputed country shop at Chennai.
- The raw drugs was authenticated by the Assistant Professor, Medicinal botany, NIS.

The raw drugs was purified and medicine was prepared at Gunapadam lab of National Institute of siddha.

METHOD OF PURIFICATION:

1. Chitramutti - *Pavonia zeylanica* .Linn
   Cleaned with water & wipe it with a clean cloth.
2. Kari manjal - *Curcuma longa* .Linn
   Remove the outer skin.
3. Kadukkai - *Terminalia chebula*.Retz
   Discard the seed and collect the rinds alone for use.
4. Nellikai - *Phyllanthus emblica.* Linn
   Boil it with milk, remove the seed and dry.

5. Thaantrikkai	-	*Terminalia bellarica*.Gaertn Discard the seed and collect the rinds alone for use.
6. Nilavembu(whole plant)	-	*Andrographi spaniculata* .Burm Dry it in sunlight.
7. Eluppaiverpattai	-	*Madhuca longifolia* (Koening) Wash the root in running water and dry it.

METHOD OF PREPARATION:

Ref : "ChikichaRathnaDeepam" page no 212-213, Edition I 2007

STEP 1

The raw drugs were crushed and mixed in 21.48 liters of water.

STEP 2

Then the mixture was allowed to boil till reduced to 1.34 liter.

STEP 3

To the above mixture 5.36 liters of cow's milk and 1.34 liter cow's ghee were added.

STEP 4

Then it was boiled till it reached ghee consistency.

DRUG STORAGE:

The trial drug **CHITRAMUTTI NEI** was stored in a clean and dry wide Mouth glass bottle**s.**

DISPENSING:

The prepared medicine, Chitramutti Nei (68ml) was given to the patients in a container. At each visit (once in 9 days for 45 days) the patients was given the above drug package for 9 days of treatment. At each visit the patients were advised to bring back the unconsumed drugs if any and return to the Investigator.

REVIEW OF TRIAL DRUGS

1. NELLIVATRAL

Botanical name : *Phyllanthus emblica.* Linn.

Family : Euphorbiaceae

Synonyms : Aamalagam ,Aalagam , Aambal , Aamarigam, Korangam , Miruthupala, Meethunthu, Dhathri, Dhaththari,

Taste : Sour ,Astringent , Sweet

Potency : Coolent

Division : Sweet.

Actions : Coolant ,Diuretic, Laxative

General character :

பொதுகுணம்

நல்லநெல்லி முள்ளியது நாக்குக் குருசிதரும்
அல்லல்விரி பித்தம் அகற்றுமரை-மெல்லத்
தலை முழுகக் கண்குளிருந் தாவுபித்த வாந்தி
இலையிழிமே கங்களும் போம் எண்.

- குணப்பாடம் மூலிகை வகுப்பு

Properties and its medicinal uses:¬ It is used for giddiness, thirst, oliguria, vomiting, **Anaemia**, edema, burning sensation of the body and dryness. The fruits are rich source of Vitamin C and also contain Ellagic acid, Phyllembin, Phyllantidine ,Phyllantine. It is an anti-oxidant and haematinic. It helps in good absorption of iron.

2.KADUKKAI:

Botonical Name : *Terminalia chebula.*Retz

Family : Combretaceae

Synonyms : Amutham, Arithagi,Amrutha, Aliyan, Magam, Nanthiri, Nechi, Pathiyam,Parium, Jeevanthi, Jeevapriya, Sethagi, Varikkai, Vanadurkki, Vijayadevan.

Taste : Mainly Astrigent, Small amount of Sweet, Sour, pungent and Bitter.

Potency : Hot

Division : Sweet

Actions : Stomachic , Digestive

General character :

கடுக்காயுந் தாயுங் கருதிலொன்றென் றாலும்
கடுக்காய்த் தாய்க்கதிகங் காண்நீ–கடுக்காங்நோய்
ஒட்டியுடற்றேற்றும் உற்றவன்னையோசுவைகள்
ஊட்டியுடற்றேற் முவந்து.

- அகத்தியர் குணவாகடம்

Properties and its medicinal uses:

It contains Astrin,Chebulinic acid, Tannic acid and gallic acid. It induces appetite and helps in digestion. It is useful in anemia

3.THANDRIKKAI

Botanical Name : *Terminalia bellirica .Roxb*

Family : Combretaceae

Synonyms : Aksham, Akkantham, Akkaathan, Amutham, Ambalathi, Amutham, Aaramam , Boothavasagam, Erikatpalam ,Kanthakatpalam, Sathagam, Thabamari, Vanthiyam, Vithiyam, ThirilingamThanikkai.

Taste : Astringent

Potency : Hot

Division : Sweet.

Actions : Astringent , Laxative ,Tonic

General character :

சிலந்திவிடம் காமியப்புண் சீழானமேகங்
கலந்துவரும் வாதபித்தங் காலோ-டலர்ந்துடலில்
ஊன்றிக்காய்ப் வெப்பமுதிரவித் துங்கரக்குந்
தான்றிக்காய் கையிலெடுததால்.

- குணபாடம் மூலிகைவகுப்பு

Properties and its medicinal uses:

- It cures the disease of Vatha and Pitha and neutralizes three doshas.
- Gallic acid, Ellagicacid ,Chebulagic acid, β Sitoserol are isolated from fruits.
- It is useful to induce appetite and relieve abdominal flatulence.
- It boosts the immunity and enhances the body resistance against the disease.

4. CHITRAMUTTI

Botanical name : *Pavonia zeylanica Cav.*

Family : Malvaceae

Properties and its medicinal uses :

- It cures Pitha diseases.
- It is also a hepatoprotective and antioxidative

Synonyms : Siruntthotti, Sirunthottai, Sirukuruntthotti.

Taste : Astringent

Potency : Coolent

Division : Sweet.

Actions : Emollient, Vermifuge

General character :

அத்திசுரமுதல் அனந்தசுரம் பித்தமும் போம்
மெத்தவிழிக்கொளியாம் வீறுதயி–லத்திற்காம்
நற்றாமரைத்திருவுநாடுமெழிந்நிருவே!
சிற்றாமுட் டித்துரைச் செப்பு

\- குணபாடம் மூலிகைவகுப்பு

5.ILUPPAI

Botanical name : *Madhuca longifolia.*Koenig

English name : The narrow lived Mohua

Synonyms : Irupai,Kulikam,Madhugam

Taste : Astringent, Potency,Coolent

Division : Sour

Action : Demulcent, Refrigent, Stimulant, Tonic, Astrigent.

General character:

"குன்றாவிலுப்பையின்பூ கூர்மதுரம் வாசையைாந்
தின்றாற் பயித்தியமுந் சேருங்காண் - மன்றலூறுந்
தார்குழலே! பித்தசுரம் தாகந் தணிந்துவிடும்
வார்தயக்கமெய்தும் வழுத்து"

- குணபாடம் மூலிகை

Properties and its Medicinal uses:

- Palmitic, Arachiticacid, LinoleicAcid, Sapanin,Albumin.
- Bitter, Asringent, Emollient, Anti-Inflammmatory, Anthelmintic.

6.NILAVEMBU

Botanical name : Andrographis paniculata

English name : Greenchiretta

Synonyms : Kiriyath, Kaandagam, Chiratkuchi,Chiretta

Taste : Bitter, Potency, hot

Division : Hot

Division: Stomachic, Tonic, Alterative, Stimulant

GENERAL CHARACTER;

பொதுகுணம்

வாதசுரம் நீரேற்றம் மாற்றுந் சுரதோட
காதமென ஓடக் கடியுங்காண் - மாதரசே!
பித்த மயக்கறுக்கும் பின்புதெளி வைக் கொடுக்கும்
சுத்தநில வேம்பின் தொழில்.

- குணப்பாடம் மூலிகை வகுப்பு

Properties and Uses:

- Contains bitter Glicosides, Andrographolide, Neoandrographolide, panicalin, Apigenin-7-4-dimethyl ether.
- Plants are bitter, Acrid, cooling, laxative, anti-inflammatory, Anthelmentic, Digestive.

7.KARIMANJAL

Botanical name	**:**	*Curcuma longa*.Linn
Family	**:**	Zingiberaceae
Synonyms	**:**	Arisanam, Kaansani, Nisi, Peetham
Taste	**:**	Pungent, Bitter
Potency	**:**	Hot
Division	**:**	Pungent
Action	**:**	Carminative, Stimulant, Hepatoprotective

General character:

பொன்னிறமாம் மேனிபுலனாற்றமும்போகும்
மன்னுபுருடவசியமாம் - பின்னியெழும்
வாந்திபித்ததோடமையம் வாதம்போந் தீபனமா
கூர்ந்தமஞ்சளின் கிழங்குக்கு
- அகத்தியர் குணவாகடம்

Properties and Medicinal uses:

- It stimulates Appetite, cure oedema, diseases of Vatha and Pittha.
- It contains curcumin, Curcuminoides, Arturmerone, Turmerone, Zingiberone, Ascorbicacid, Copper and Calcium.
- Curcumin has been shown to exhibit hepatoprotective,Anti-oxidant,Anti-inflammatory,Anti-viral,Anti-bacterial,Anti-fungal and Anti-cancer activity.

COW'S GHEE

தாகமுழ லைசுட்கம் வாந்தி பித்தம் வாயுபர
மேகம் வயிற்றெரிவு விக்கலழல் - மாகாசங்
குன்மம் வறட்சி குடற்புரட்ட லஸ்திசுட்கஞ்
சொன்மூலம் போக்குநிறைத்துப்பு
- குணப்பாடம் தாதுசீவ வகுப்பு

General character Properties and its medicinal uses :

- Cow's ghee reduces pitha and kapha.
- Ghee is rich in the oil soluble Vitmin A&E.
- Ghee stimulates the secretion of gastric acid, thus aiding in the digestive process. So it is excellent in increasing appetite.

- It detoxifies the body.
- It strengthens immune system and vitality.
- Ghee is used as a carrier for herbs and bhasmas because of its supreme penetrating qualities and the ability to carry the substances deep into dhathus or tissues.

Ghee is rich with antioxidants and act as an aid in the absorption of vitamins and minerals from other food , serving to strengthing the immune system.

- It cures constipation.
- Ghee is used preferentially for diseases caused by **Pitha dosha.**

Raw Drugs

NILABEMBU

CHITRAMUTTI

KARI MANJAL

THANDRIKKAI

NELLIKKI VATRAL

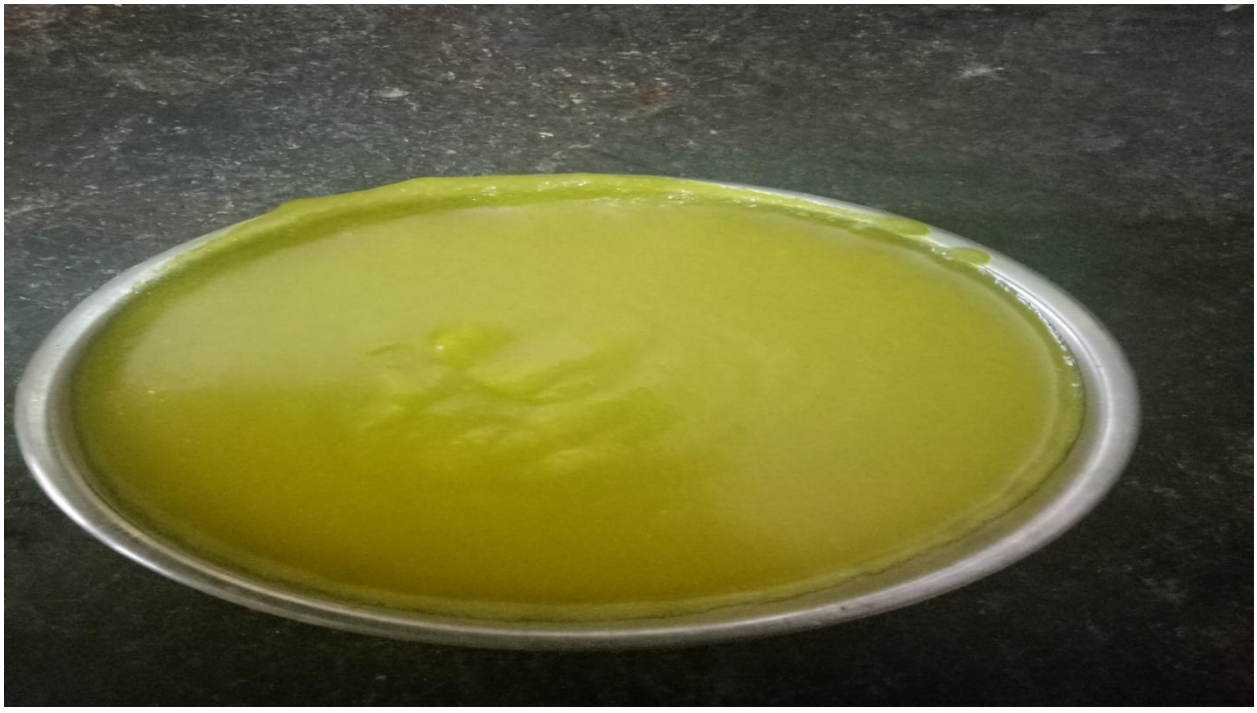
ILUPAI VERPATTAI

KADUKKAI

NEI

PAAL

CHITRAMUTTI NEI



CHEMICAL ANALYSIS OF *CHITRAMUTTI NEI*

The chemical analysis of ***chitramutti nei*** was carried out in Bio chemistry lab, National Institute of Siddha.

S.No	EXPERIMENT	OBSERVATION	INFERENCE
1.	Physical Appearance of extract	Straw colour	
2.	**Test for Silicate** A 500mg of the sample was shaken well with distilled water.	Sparingly soluble	**presence of silicate**
3.	**Action of Heat:** A 500mg of the sample was taken in a dry test tube and heated gently at first and then strong.	No White fumes evolved.	Absence of Carbonate
4.	**Flame Test:** A 500mg of the sample was made into a paste with Con. HCl in a watch glass and introduced into non-luminous part of the Bunsen flame.	No bluish green flame	Absence of copper
5.	**Ash Test:** A filter paper was soaked into a mixture of extract and dil. cobalt nitrate solution and introduced into the Bunsen flame and ignited.	Appearance of yellow color flame	Absence of sodium

Preparation of Extract:

5gm of sample was taken in a 250ml clean beaker and added with 50ml of distilled water. Then it was boiled well for about 10 minutes. Then it was cooled and filtered in a 100ml volumetric flask and made up to 100ml with distilled water. This preparation was used for the qualitative analysis of acidic/basic radicals and biochemical constituents in it.

S.No	EXPERIMENT	OBSERVATION	INFERENCE
	I. Test For Acid Radicals		
1.	**Test For Sulphate:** 2ml of the above prepared extract was taken in a test tube to this added 2ml of 4% dil ammonium oxalate solution	No cloudy appearance	**Presence of sulphate**
2.	**Test For Chloride:** 2ml of the above prepared extract was added with 2ml of dil-HCl until the effervescence ceases off.	No Cloudy appearance was formed	Absence of Chloride
3.	**Test For Phosphate:** 2ml of the extract was treated with 2ml of dil.ammonium molybdate solution and 2ml of Con.HNo3	Cloudy yellow appearance present	Absence of phosphate
4.	**Test For Carbonate:** 2ml of the extract was treated with 2ml dil. magnesium sulphate solution.	No Cloudy appearance was evolved.	**Presence of carbonate**
5.	**Test For Nitrate:** 1gm of the extract was heated with copper turning and concentrated H2So4 and viewed the test tube vertically down.	No Brown gas was evolved	Absence of nitrate
6.	**Test For Sulphide:** 1gm of the extract was treated with 2ml of Con. HCL	No rotten egg smelling gas was evolved	Absence of Sulphide
7.	**Test For Fluoride & Oxalate:** 2ml of extract was added with 2ml of dil. Acetic acid and 2ml dil. calcium chloride solution and heated**.**	No cloudy appearance.	**presence of fluoride and oxalate**
8.	**Test For Nitrite:** 3drops of the extract was placed on a filter paper, on that-2 drops of dil.acetic acid and 2 drops of dil.Benzidine solution were placed.	No characteristic changes were noted.	Absence of nitrite
9.	**Test For Borate:** 2 Pinches (50mg) of the extract was made into paste by using dil.sulphuric acid and alcohol (95%) and introduced into the blue flame.	No Appearance of bluish green color.	Absence of borate

II. Test For Basic Radicals			
1.	**Test For Lead:** 2ml of the extract was added with 2ml of dil.potassium iodine solution.	No Yellow precipitate was obtained	Absence of lead
2.	**Test For Copper:** One pinch (25mg) of extract was made into paste with Con. HCl in a watch glass and introduced into the non-luminuous part of the flame.	No blue colour appeared	Absence of copper
3.	**Test For Aluminium:** To the 2ml of extract dil.sodium hydroxide was added in 5 drops to excess.	No yellow Colour appeared	Absence of Aluminium.
4.	**Test For Iron:** a. To the 2ml of extract, added 2ml of dil.ammonium solution b. To the 2ml of extract 2ml thiocyanate solution and 2ml of con HNO3 were added	No Red colour appeared	**presence of Iron**
5.	**Test For Zinc:** To 2ml of the extract dil. sodium hydroxide solution was added in 5 drops to excess and dil. ammonium chloride was added.	No White precipitate was formed	Absence of Zinc
6.	**Test For Calcium:** 2ml of the extract was added with 2ml of 4% dil.ammonium oxalate solution	No Cloudy appearance and white precipitate was formed	**Presence of calcium**
7.	**Test For Magnesium:** To 2ml of extract dil. sodium hydroxide solution was added in 5 drops to excess.	No White precipitate was obtained	Absence of magnesium
8.	**Test For Ammonium:** To 2ml of extract 1 ml of Nessler's reagent and excess of dil.sodium hydroxide solution were added.	No Brown colour appeared	**Presence of ammonium**
9.	**Test For Potassium:** A pinch (25mg) of extract was treated with 2ml of dil. sodium nitrite solution and then treated with 2ml of dil. cobalt nitrate in 30% dil. glacial acetic acid.	No Yellow precipitate was obtained	Absence of potassium
10.	**Test For Sodium**: 2 pinches (50mg) of the extract was made into paste by using HCl and introduced into the blue flame of Bunsen burner.	No yellow colour flame evolved.	Absence of sodium

11.	**Test For Mercury**: 2ml of the extract was treated with 2ml of dil. sodium hydroxide solution.	No Yellow precipitate was obtained	Absence of Mercury
12.	**Test For Arsenic:** 2ml of the extract was treated with 2ml of dil. sodium hydroxide solution.	No Brownish red precipitate was obtained	Absence of arsenic

III. Miscellaneous			
1.	**Test For Starch:** 2ml of extract was treated with weak dil.Iodine solution	No Blue colour developed	**presence of starch**
2.	**Test For Reducing Sugar:** 5ml of Benedict's qualitative solution was taken in a test tube and allowed to boil for 2 minutes and added 8 to 10 drops of the extract and again boil it for 2 minutes. The colour changes were noted.	No Brick red colour is developed	Absence of reducing sugar
3.	**Test For The Alkaloids**: a) 2ml of the extract was treated with 2ml of dil.potassium lodide solution. b) 2ml of the extract was treated with 2ml of dil.picric acid. c) 2ml of the extract was treated with 2ml of dil.phosphotungstic acid.	Yellow colour developed	**Presence of Alkaloid**
4	**Test For Tannic Acid:** 2ml of extract was treated with 2ml of dil. ferric chloride solution	No Blue-black precipitate was obtained	Absence of Tannic acid
5	**Test For Unsaturated Compound:** To the 2ml of extract, 2ml of dil. Potassium permanganate solution was added.	Potassium permanganate was not decolourised	Absence of unsaturated compound

6	**Test For Amino Acid:** 2 drops of the extract was placed on a filter paper and dried well. 20ml of Burette reagent was added**.**	No Violet colour appeared	Absence of amino acid
7	**Test For Type of Compound:** 2ml of the extract was treated with 2 ml of dil. ferric chloride solution.	No green and red colour developed No Violet colour developed No Blue colour developed.	Absence of quinolepinephrinepyrocatechoantipyrine Aliphatic amino acid and meconic acid. Apomorphine salicylate and Resorcinol were absent Morphine, Phenol cresol and hydrouinone were Absent.

Result;

The chemical study of the trail drug revealed that Iron, silicate, sulphate, carbonate, fluoride andoxalate,, calcium, ammonium, starch , and alkaloids.

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

ई-मेल/ E-mail: csmriasdd-chennai@gov.in
csmdria@gmail.com

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

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

F.1-24/Test Reports/2018-19/CSMRADDI/ 207 23/06/2018

To

Dr. M.S. Shakila,
NIS, Tambaram Sanatorium,
Chennai-47

Sir,

Sub: Analytical Report of 'Chitra Mutti Nei'
Ref: Your Letter dt. 26.04.2018.

I am to enclose herewith the analysis report for the sample submitted by you along with the feed back form which is to be filled and returned back to this office.

Yours faithfully,

23/6/18

(Dr. R. Ilavarasan)
Assistant Director (S-3) In-charge

Encl: as above.

PART A: Particulars of Sample Submitted

a) Name of sample	:	Chitra Mutti Nei
b) Grade /Variety/Type/Size/Class etc.	:	Nei
c) Declared values, if any	:	Nil
d) Code No	:	Nil
e) Batch No. and Date of manufacture	:	Nil
f) Quantity	:	100 ml
g) Mode of packing	:	Plastic container
h) Seal	:	Sealed Plastic container
i) Sample received on	:	26.04.2018
j) CSMDRIA Lab Code No.	:	1805426

PART B: Supplementary Information

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

PART C: Test Results

Standardization Report

S. No.	Parameters	Results
1	Refractive Index	1.4592
2	Acid Value	1.48
3	Saponification Value	229.79
4	Peroxide Value	3.20
5	Iodine Value	36.64
6	TLC	Report enclosed
7	HPTLC	Report enclosed
*8	Weight/ml	0.91g/ml

Note: *8 Not under Scope

PART D: Remarks

NB: 1. The results stated above relate only to the items tested.

2. This Test Certificate shall not be reproduced except in full without the written approval of the Laboratory.
3. The Test report shall not be utilized for any legal purpose without prior intimation to the issuing authority.

23/06/2018

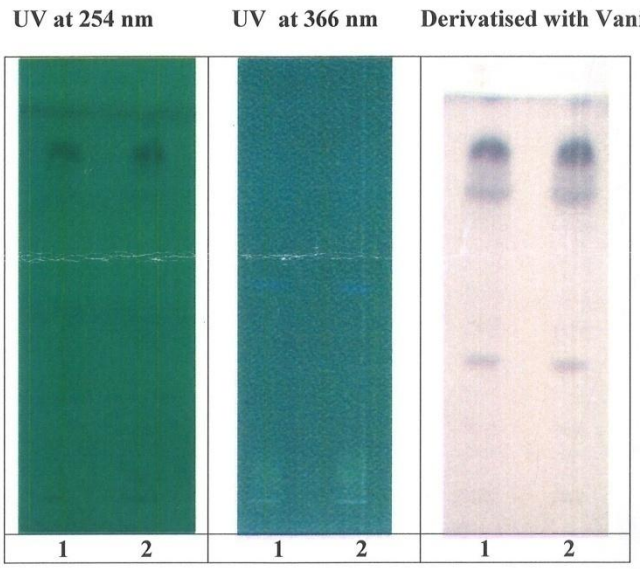
Technical Manager
Name & Designation
(Ch. V. Narasimhaji)
R.O. (Chem.)

23/6/18

Quality Manager
(Authorized Signatory)

TLC/ HPTLC Identification of DTL- 1805426

TLC Photodocumentation of sample code – DTL 1805426



Track 1- Sample solution – 6 µl; **Track 2-** Sample solution - 8 µl;

Solvent system : *Toluene : Ethylacetate:* (9: 1)

TLC Methodology:

0.2 g of oil dissolved with hexane and made up to 10 ml volumetric flask. The sample solution 6 µl, 8 µl was applied on Tracks-**1** & Track-**2** respectively on an E. Merck aluminium plate pre-coated with Silica gel $60F_{254}$ of 0.2 mm thickness using ATS4 applicator. The plate was developed in the solvent system of *Toluene: Ethylacetate* (9: 1) upto 85 cm and dried. The plate was observed through CAMAG TLC Visualizer under UV at 254 nm and 366 nm photos were taken. Finally the plate was dipped in Vanillin-Sulphuric acid reagent and heated in hot air oven at 105°C untill the colour of the spots were appeared and photo was documented.

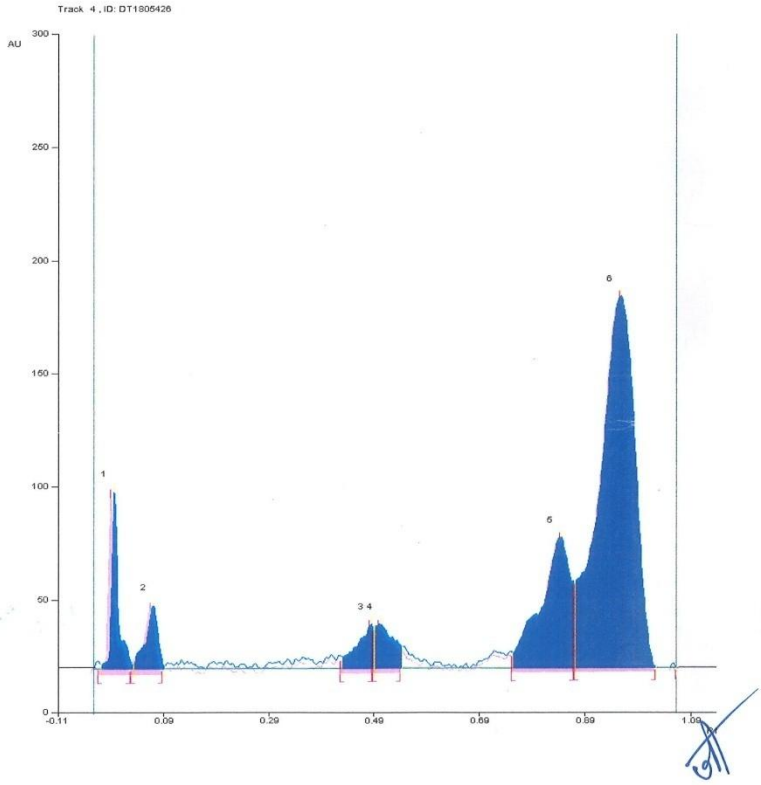
Rf Values:

S. No	UV at 254 nm		UV at 366 nm		Derivatised with Vanillin-Sulphuric acid	
	R_f	Color	R_f	Color	R_f	Color
Track-1 & Track2	0.90, 078	Green	0.55, 0.09	Fluorescent blue Pale Yellow	0.35, 0.77, 0.90 0.18, 0.45,	Dark Grey Dark Grey Grey

HPTLC Finger print profile of Sample code - 1805426

The TLC plate developed above was scanned at 254 nm using scanner 3, Camag HPTLC instrument using D2 lamp. After Derivatised with Vanillin-Sulphuric acid the plate was scanned at 560 nm using tungsten lamp.

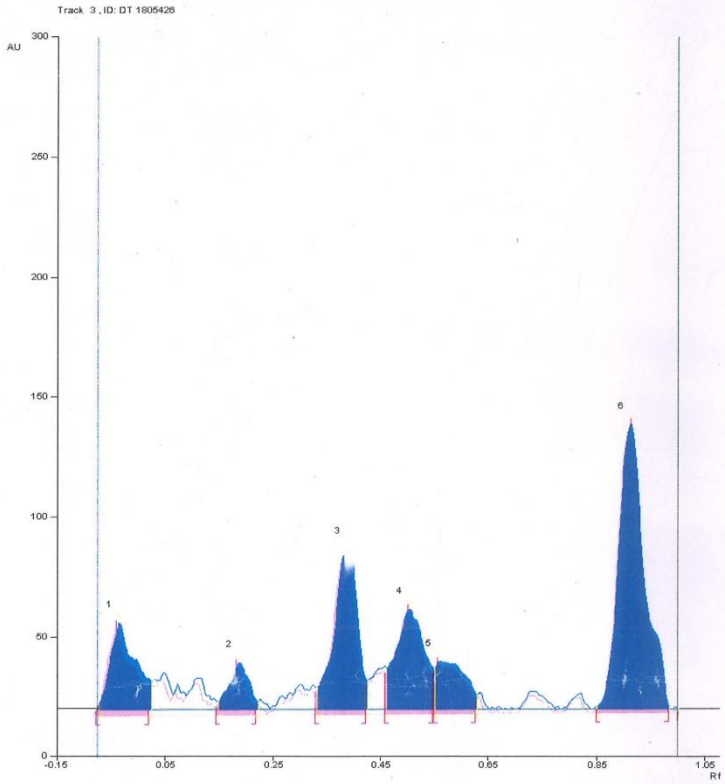
HPTLC Finger print profile of Sample at UV 254 nm – 8 µl



Track 4, ID: DT1805426

Peak	Start Position	Start Height	Max Position	Max Height	Max %	End Position	End Height	Area	Area %	Assigned substance
1	-0.03 Rf	1.9 AU	-0.00 Rf	78.2 AU	21.25 %	0.03 Rf	1.0 AU	823.5 AU	5.75 %	unknown *
2	0.03 Rf	1.6 AU	0.07 Rf	28.0 AU	7.61 %	0.09 Rf	1.2 AU	541.9 AU	3.79 %	unknown *
3	0.43 Rf	5.2 AU	0.48 Rf	19.8 AU	5.37 %	0.49 Rf	18.3 AU	504.9 AU	3.53 %	unknown *
4	0.49 Rf	18.4 AU	0.50 Rf	19.5 AU	5.30 %	0.54 Rf	9.8 AU	593.2 AU	4.14 %	unknown *
5	0.75 Rf	6.8 AU	0.84 Rf	57.9 AU	15.71 %	0.87 Rf	38.2 AU	2717.8 AU	18.99 %	unknown *
6	0.87 Rf	36.5 AU	0.96 Rf	164.8 AU	44.76 %	1.02 Rf	0.4 AU	9131.6 AU	63.80 %	unknown *

HPTLC Finger print profile of Sample at 560 nm – 8 µl



Track 3, ID: DT 1805426

Peak	Start Position	Start Height	Max Position	Max Height	Max %	End Position	End Height	Area	Area %	Assigned substance
1	-0.07 Rf	1.9 AU	-0.04 Rf	36.4 AU	11.96 %	0.02 Rf	11.8 AU	1280.2 AU	11.88 %	unknown *
2	0.15 Rf	3.4 AU	0.19 Rf	19.6 AU	6.43 %	0.22 Rf	3.4 AU	531.3 AU	4.93 %	unknown *
3	0.33 Rf	9.5 AU	0.39 Rf	67.3 AU	22.09 %	0.42 Rf	12.2 AU	2204.9 AU	20.46 %	unknown *
4	0.46 Rf	16.9 AU	0.50 Rf	41.9 AU	13.77 %	0.55 Rf	17.1 AU	1659.5 AU	15.40 %	unknown *
5	0.55 Rf	17.1 AU	0.58 Rf	20.2 AU	6.63 %	0.63 Rf	6.0 AU	821.7 AU	7.62 %	unknown *
6	0.85 Rf	1.4 AU	0.91 Rf	119.1 AU	39.11 %	0.98 Rf	0.6 AU	4281.3 AU	39.72 %	unknown *

PART - C: TEST PERFORMED

Test for Aflatoxin:

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

Instrument Details:

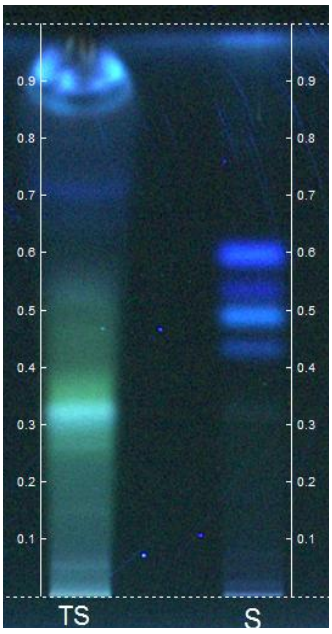
Name of the Instrument	: CAMAG (CAMAG - Automatic TLC sampler, Scanner and Visualiser)
Spray Gas	: N2
Lamp used	: Mercury Lamp

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

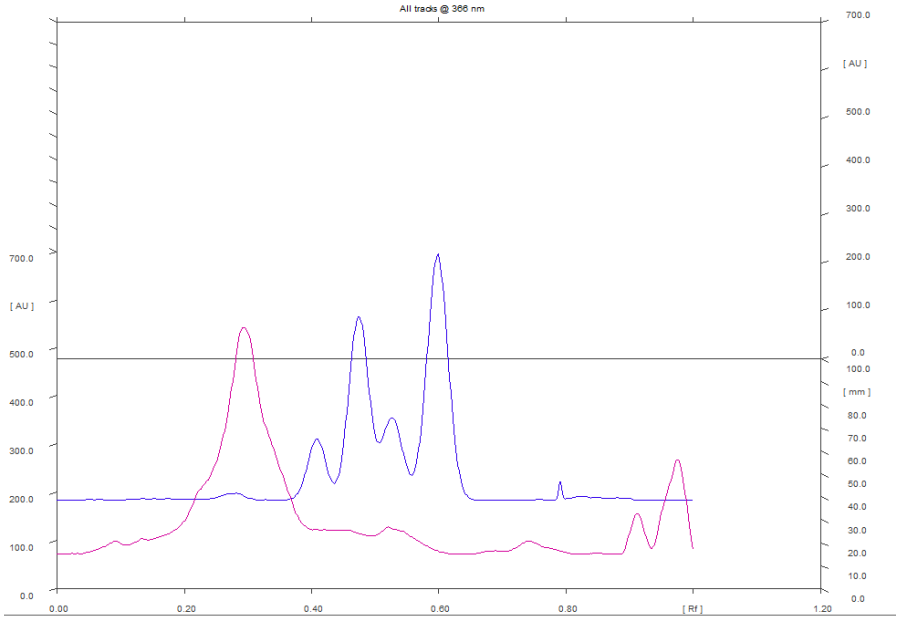
PART - D: RESULTS

Test for Aflatoxin analysis:

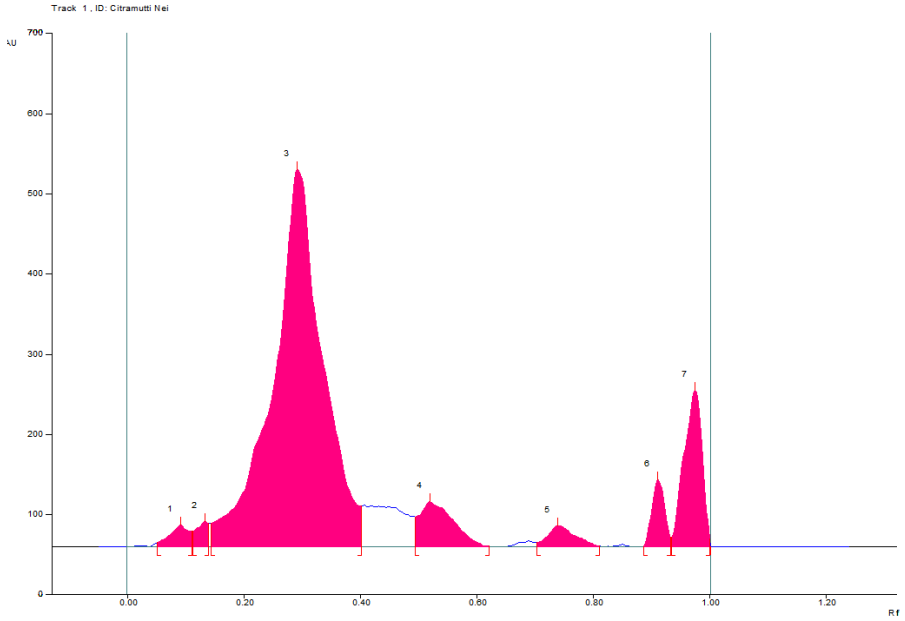
The sample TS: Citrmutti Nei, 20µl and Standard Std - G2, G1, B2 and B1 (15 µl) were applied on TLC aluminium sheet silica gel 60 F 254 (E.MERCK) and plate was developed using the solvent system Chloroform : acetone : water (14 : 2 : 0.2). After development the plate was allowed to dry in air and examined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



UV-366nm



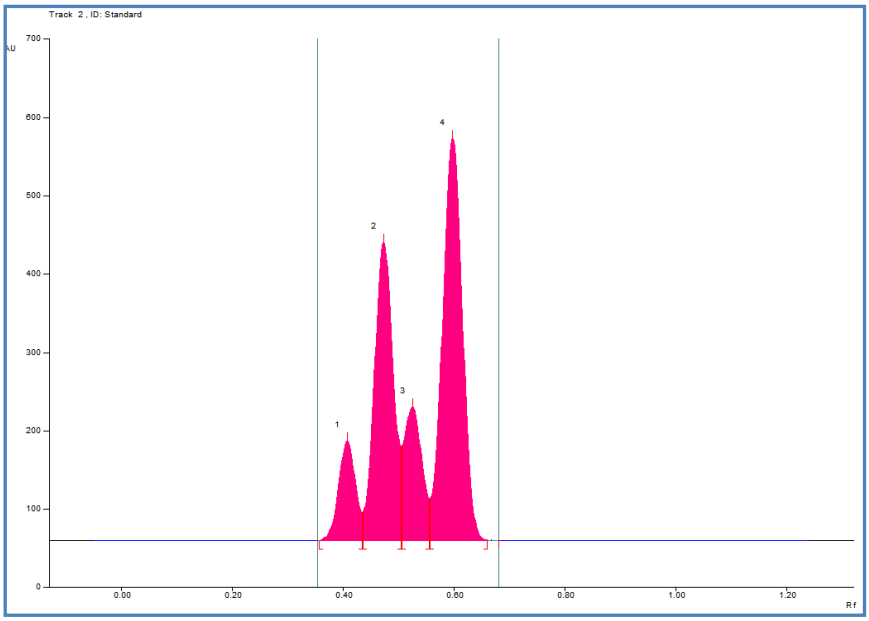
HPTLC Densitometric chromatogram (366nm)
Test sample (TS) : Citramutti Nei ; Standard (S) – G2, G1, B2 & B1



HPTLC finger print of Sample (TS) : Citramuttti Nei at 366nm

Peak	Start Position	Start Height	Max Position	Max Height	Max %	End Position	End Height	Area	Area %
1	0.05 Rf	4.9 AU	0.09 Rf	27.0 AU	3.03 %	0.11 Rf	19.3 AU	652.5 AU	1.69 %
2	0.11 Rf	19.5 AU	0.13 Rf	31.9 AU	3.58 %	0.14 Rf	29.7 AU	474.5 AU	1.23 %
3	0.14 Rf	29.2 AU	0.29 Rf	470.2 AU	52.83 %	0.40 Rf	50.4 AU	28653.8 AU	74.00 %
4	0.50 Rf	37.3 AU	0.52 Rf	56.2 AU	6.31 %	0.62 Rf	0.6 AU	2339.2 AU	6.04 %
5	0.70 Rf	5.7 AU	0.74 Rf	26.3 AU	2.96 %	0.81 Rf	0.7 AU	887.2 AU	2.29 %
6	0.89 Rf	0.4 AU	0.91 Rf	83.5 AU	9.39 %	0.93 Rf	12.3 AU	1316.3 AU	3.40 %
7	0.94 Rf	12.3 AU	0.98 Rf	194.9 AU	21.90 %	1.00 Rf	10.1 AU	4399.0 AU	11.36 %

Rf value of Sample (TS) : Citrmutti Nei at 366nm



HPTLC finger print of Standard (S) at 366nm

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

Rf value of Standard (S) at 366nm

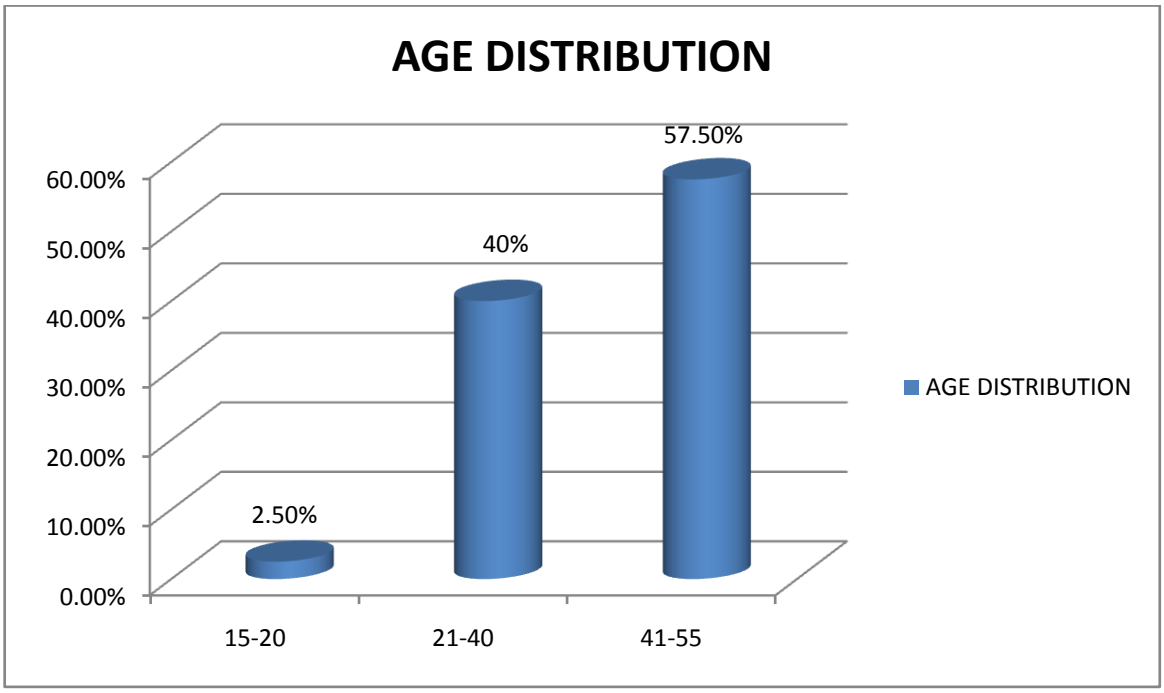
OBSERVATION AND RESULTS

For this clinical study totally 130 cases were screened of which 90 cases were excluded and 40 cases were selected and treated in the Out-patient department of Ayothidoss Pandithar Hospital, National Institute of Siddha, Chennai-47. Results were observed with respect to the following criteria.

1. Age distribution
2. Sex distribution
3. Duration of illness
4. Treatment history
5. Socio-ecnomic distribution
6. Occupational distribution
7. Educational distribution
8. Dietary distribution
9. Habitual distribution
10. Marital status distribution
11. Menopausal status distribution
12. Reference to Thegi
13. Reference to Thinai
14. Reference to Season
15. Reference to Iymporigal
16. Reference to Iympulangal
17. Reference to Kosangal
18. Reference to Mukutram
19. Reference to Ezhuudalkattugal
20. Reference to Ennvagaithervugal
21. Reference to Neikkuri
22. Reference to Signs and Symptoms
23. Reference to .Investigation Results
24. Results after treatment
    - i) Primary outcome - Hb before and after treatment.
    - ii) Secondary outcome - Results from Complete Blood Count
        - i. Results from Iron supply studies
        - ii. Results from clinical signs and symptoms
25. Statistical Analysis

AGE DISTRIBUTION

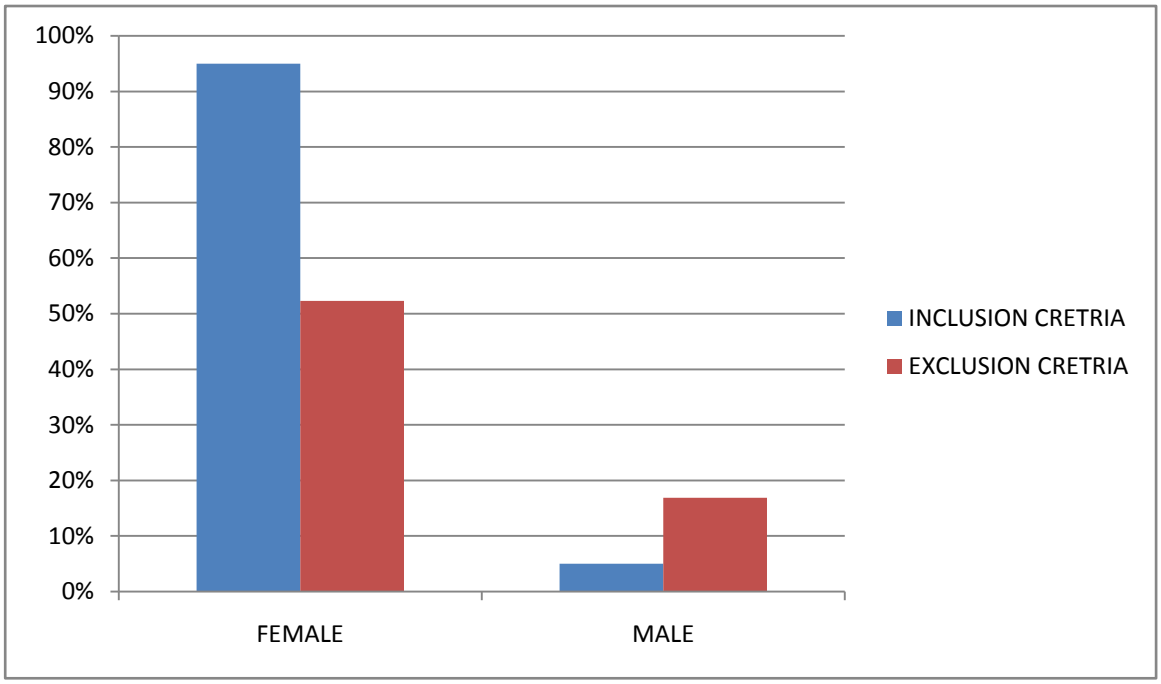
S. No	Age	No of cases	Percentage
1	15-20	1	2.5 %
2	21-40	16	40 %
3	41-55	23	57.5 %



Observation and Inference: Among the 40 cases treated 1(2.5%) cases belonged to 15-20 years, 16(40%) cases belonged to 21-40 years and 23(57.5%) cases belonged to 41-55 years. The percentage is more in the age group of 41-55years.

SEX DISTRIBUTION

S No	Sex	No of cases under inclusion criteria [Percentage%]	No of case under exclusion criteria [Percentage %]
1	Female	38 (95%)	68 (52.3%)
2	Male	2 (5%)	22 (16.9%)

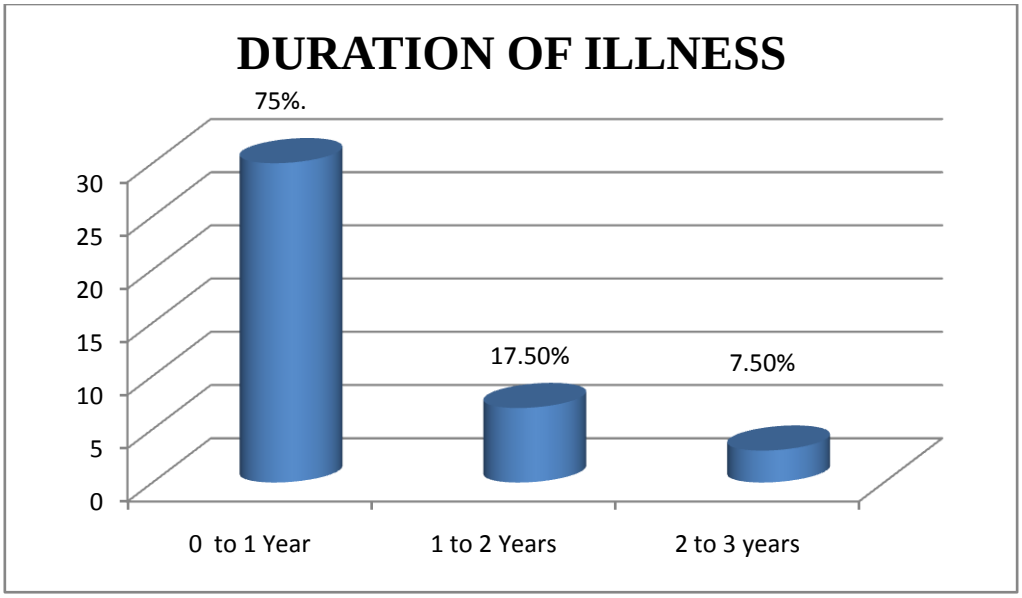


Observation and Inference:

Among the 130 cases screened, Patients who satisfied the inclusion criteria were all females 38 (32%) were included in the trial. 68 (52.3%) of female cases and 22(16.9%) cases of male cases presented with anaemia were under exclusion criteria.

DURATION OF ILLNESS:

S.NO	YEAR	NO. OF CASES	PERCENTAGE
1	0-1	30	75%
2	1-2	7	17.5%
3	2-3	3	7.5%

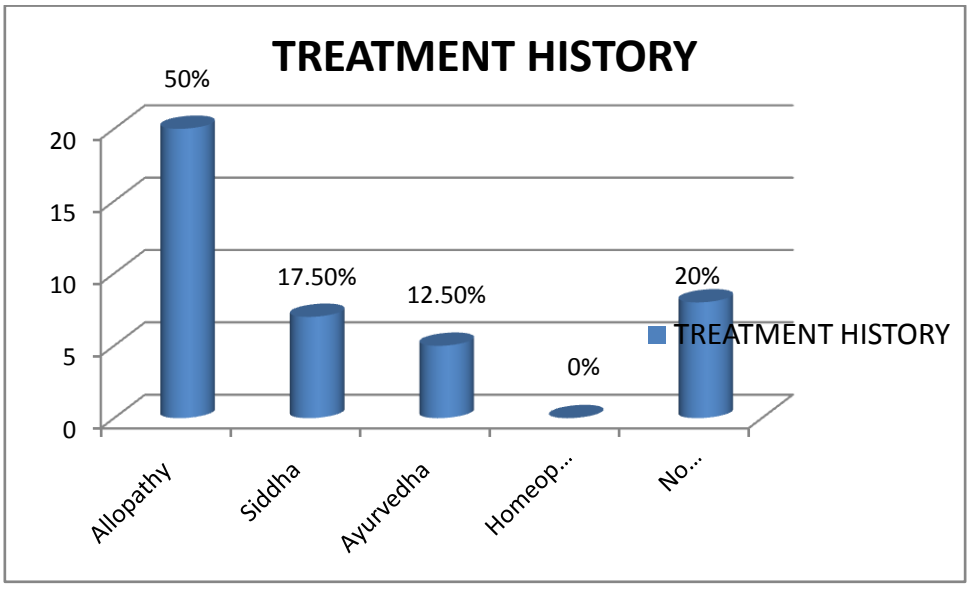


Observation and inference:

out of 40 cases,30 cases(75%) were 0-1 year duration, 7 cases were (17.55) were 1-2 years of duration, 3 cases (7.5%) were 2-3 years.

TREATMENT HISTORY:

TREATMENT HISTORY	NO. OF CASES	PERCENTAGE
Allopathy	20	50%
Siddha	7	17.5%
Ayurvedha	5	12.5%
Homeopathy	0	0
No treatment history	8	20%

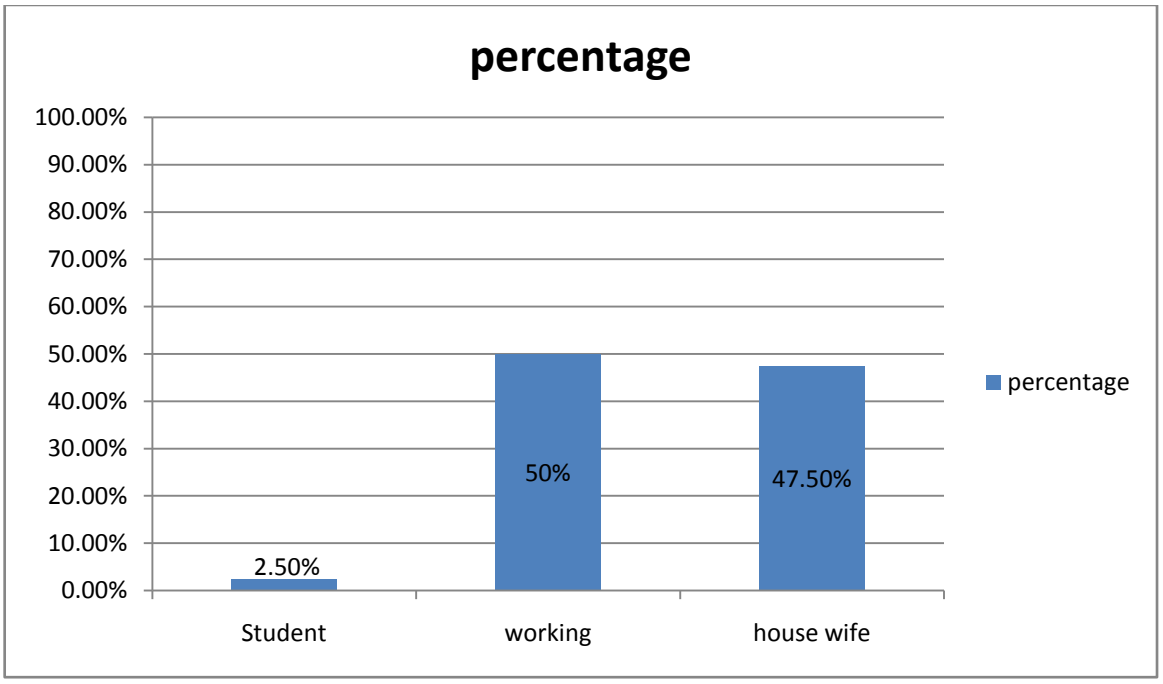


Observation and inference:

Among 40 cases, 50% of patients had allopathic treatment for aneamia,

OCCUPATIONAL DISTRIBUTION

S.No	Occupational status	No of cases	Percentage%
1	Student	1	2.5
2	working	20	50
3	House wives	19	47.5

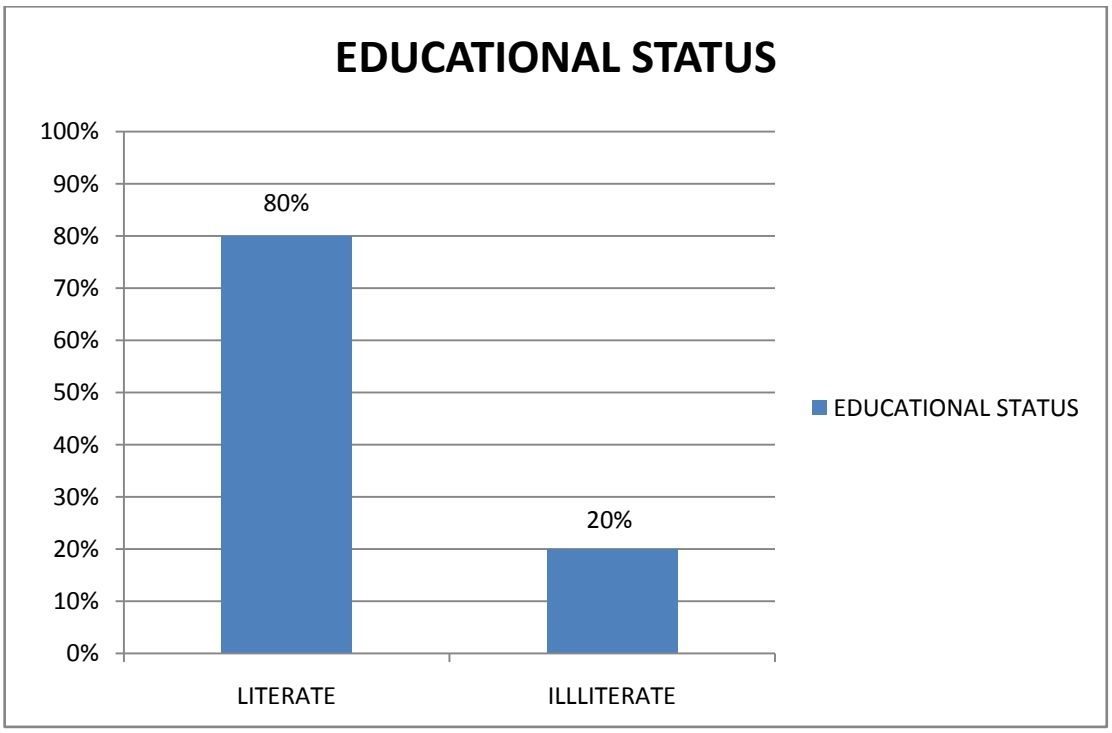


Observation and Inference:

Of the 40 cases, 1(2.5%) were students, 20(50%) were Working women and 19(47.5.5%) were house wives. The percentage is more in house wives.

EDUCATIONAL DISTRIBUTION

S.No	Educational Status	No of cases	Percentage %
1	Literate	32	80
2	Illiterate	8	20

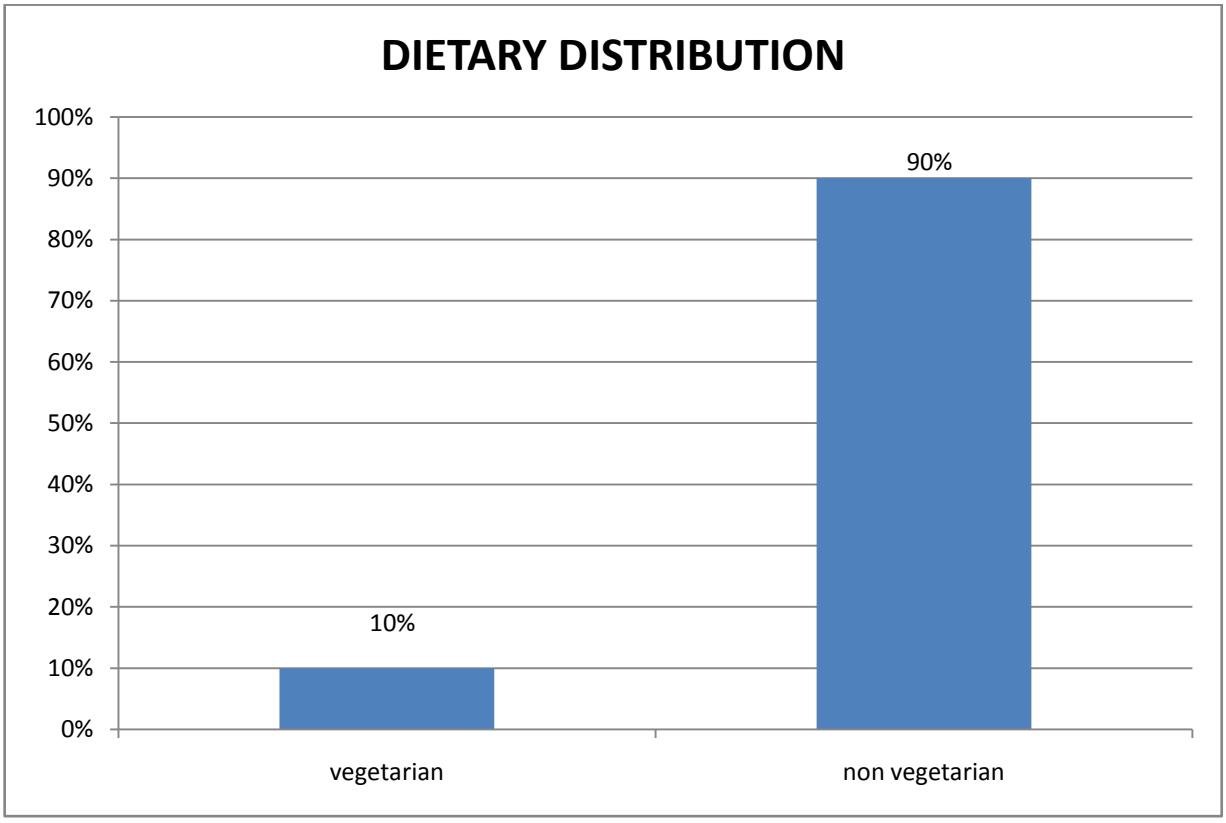


Observation and Inference:

Out of 40 cases, 32(80%) cases were literate, and 8(20%) were illiterates

DIETARY DISTRIBUTION

S.No	Diet	No of cases	Percentage%
1	Vegetarian	4	10
2	Non-vegetarian	36	90

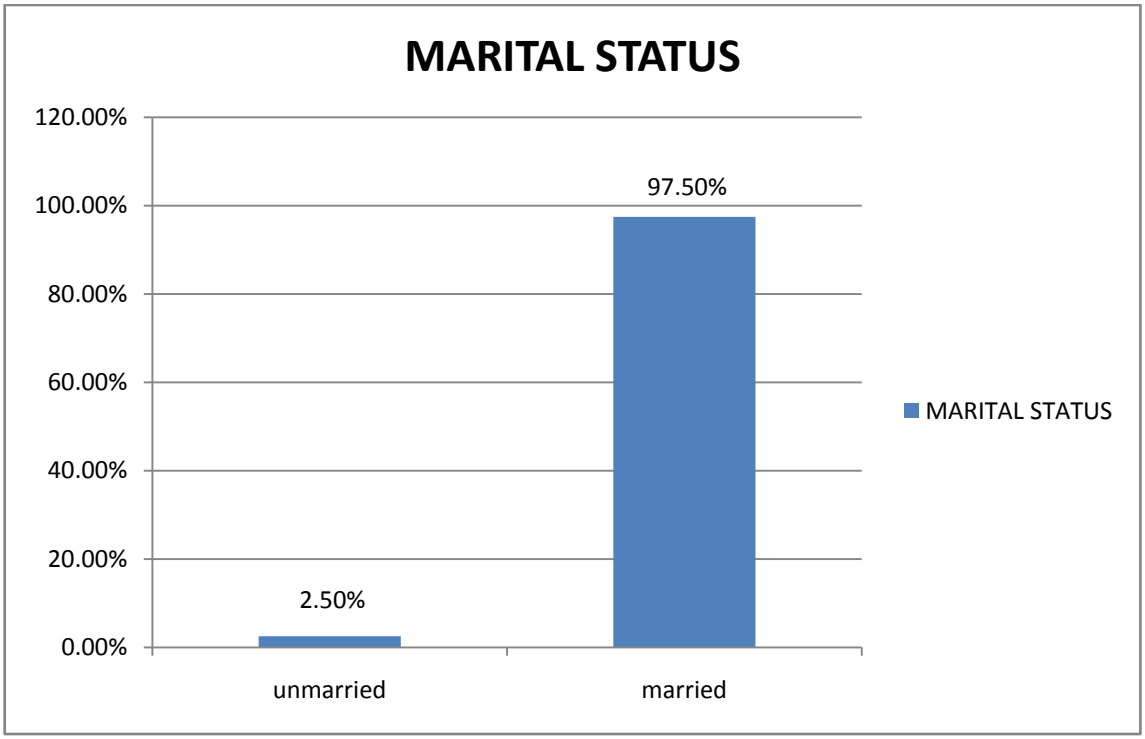


Observation and Inference:

Among 40 cases, 36 cases (90 %) belonged to nonvegetarian dietary habit and 4cases (10%) belonged to vegetarian dietary habit.

MARITAL STATUS DISTRIBUTION

S.No	Marital Status	No of cases	Percentage%
1	Unmarried	1	2.5
2	Married	39	97.5

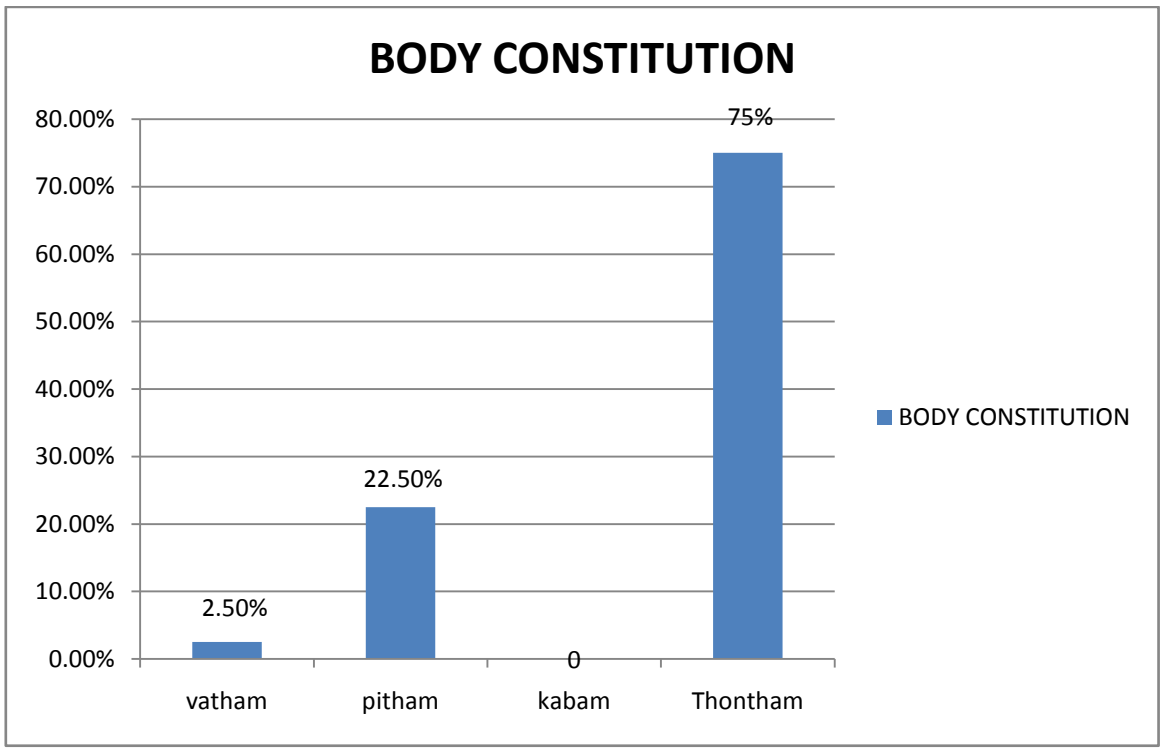


Observation and Inference:

Of the 40 cases, 1(2.5%) cases were in unmarried status, 39 (97.5%) cases were in married status. The percentage was more in married status

REFERENCE TO THEGI (BODY CONSTITUTION)

S. No	Thegi	No of cases	Percentage%
1	Vatham	1	2.5
2	Pitham	9	22.5
3	Kabam	0	0
4	Thontham	30	75

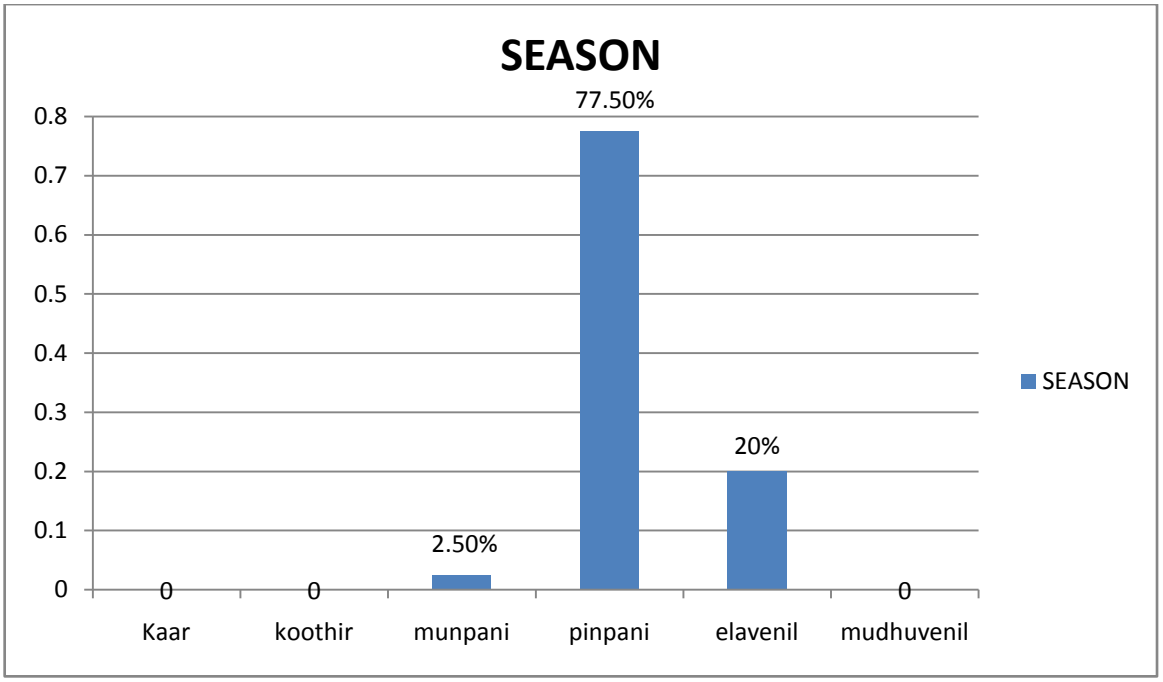


Observation and Inference:

Of the 40 cases, 9(22.5%) cases were in pitha body constitution, 30(75%) cases were in thontham body constitution and no cases were in kabam and 1(2.5%)cases vatham body constitution.The percentage was more in pitham type of body constitution

REFERENCE TO SEASON

S. No	Paruvakaalam	No of cases	Percentage%
1	Kaar (Aug 16-Oct15)	0	0
2	Koothir(Oct 16-Dec 15)	0	0
3	Munpani(Dec 16-Feb 15)	1	2.5%
4	Pinpani(Feb 16-Apr 15)	31	77.5%
5	Elavenil(Apr 16-June 16)	8	20%
6	Mudhuvenil(June16-Aug 15)	0	0

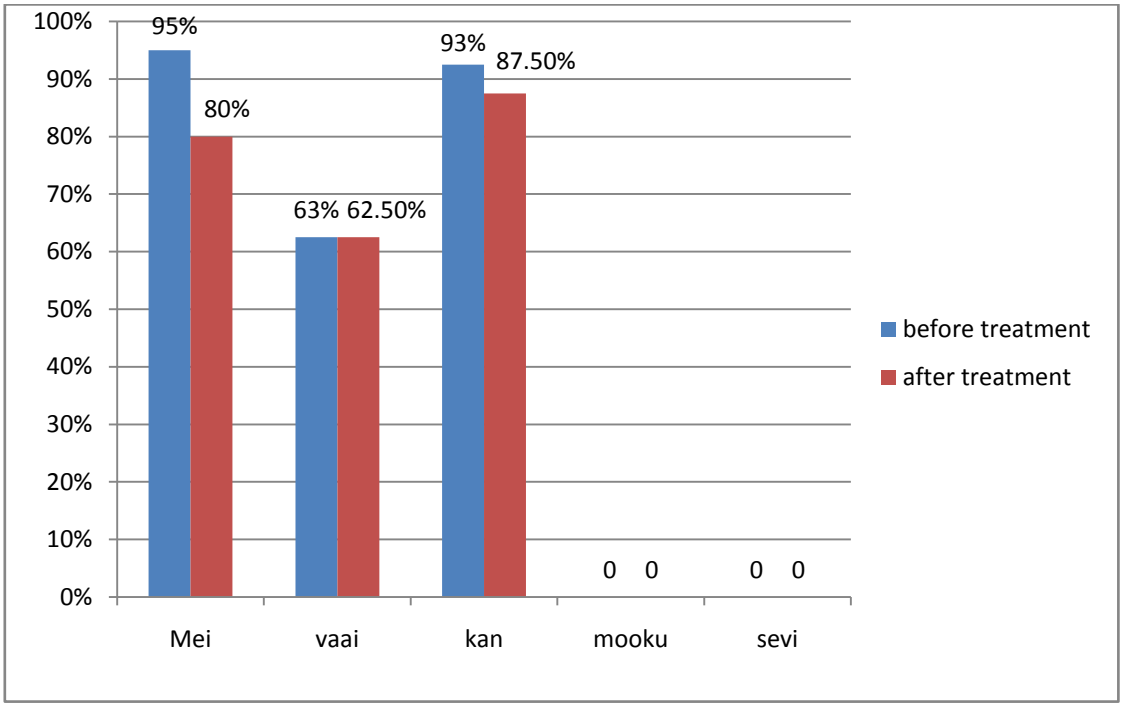


Observation and Inference:

Among the 40 cases, 1 case (2.5%) was affected during Munpani and 31 cases (77.5%) were affected in Pinpani kalam.8 cases (20%) were affected during Elavenilkalam.

REFERENCE TO IYMPORIGAL

S.No	Iymporigal	No of cases affected	before treatment [Percentage%]	No of cases improved	after treatment [Percentage%]
1	Mei [skin]	38	95%	32	80%
2	Vaai [Buccalcavity]	25	62.5%	25	62.5%
3	Kan [Eyes]	37	92.5%	35	87.5%
4	Mooku[Nose]	0	0	0	0
5	Sevi [Ear]	0	0	0	0

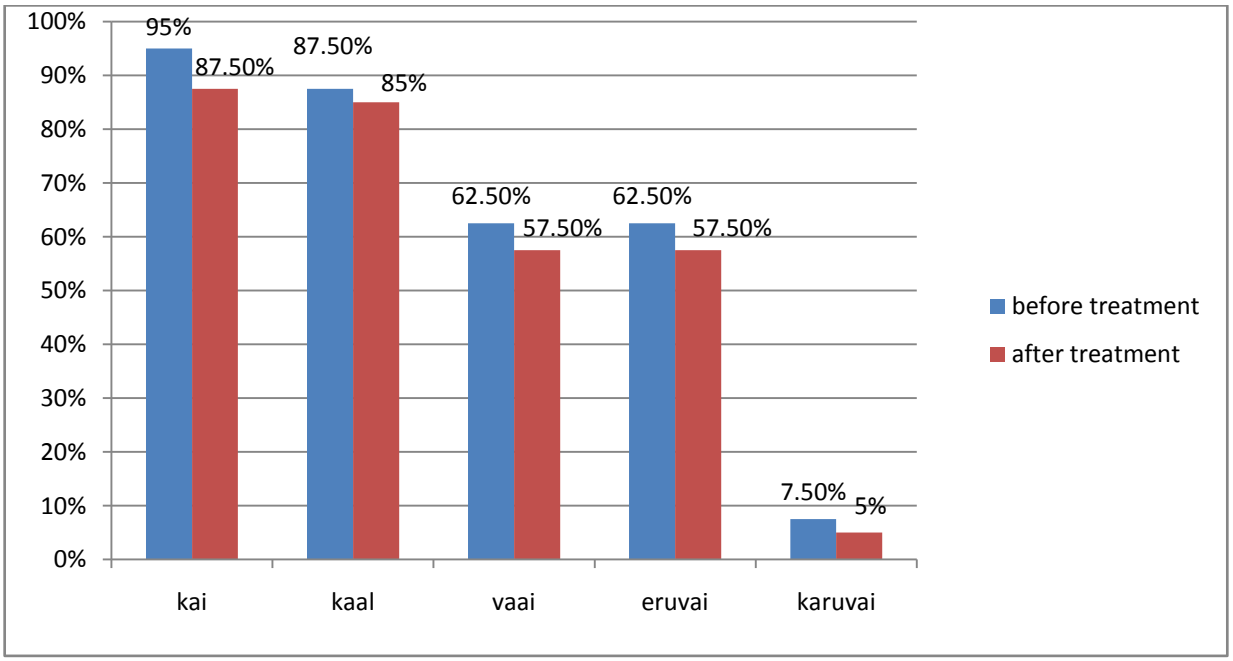


Observation and Inference:

Of the 40 cases, **Mei** [skin] was affected noted as pallor, numbness, dryness, in 38(95%) cases and 32 (80%) cases improved after the treatment. Of the 40 cases, **vaai**[buccal cavity] was affected noted as glossitis, angular stomatitis, bitter or pungent taste, dryness, pallor, fissured and coated tongue in 25(62.5%) cases and all the patients were improved after the treatment. Of the 40 cases, **Kan**[eye] was affected noted as pallor, blurred vision in 37 (92.5%) cases and 35(87.5%) cases improved after the treatment.

REFERENCE TO IYMPULANGAL

S.No	Iympulangal	No of cases affected	before treatment [Percentage%]	No of cases improved	after treatment [Percentage%]
1	Kai [upper limb]	38	95%	35	87.5%
2	Kaal [lower limb]	35	87.5%	34	85%
3	Vaai[Buccalcavity]	25	62.5%	23	57.5%
4	Eruvai[Anus]	25	62.5%	23	57.5%
5	Karuvai[Genital organ]	3	7.5%	2	5%

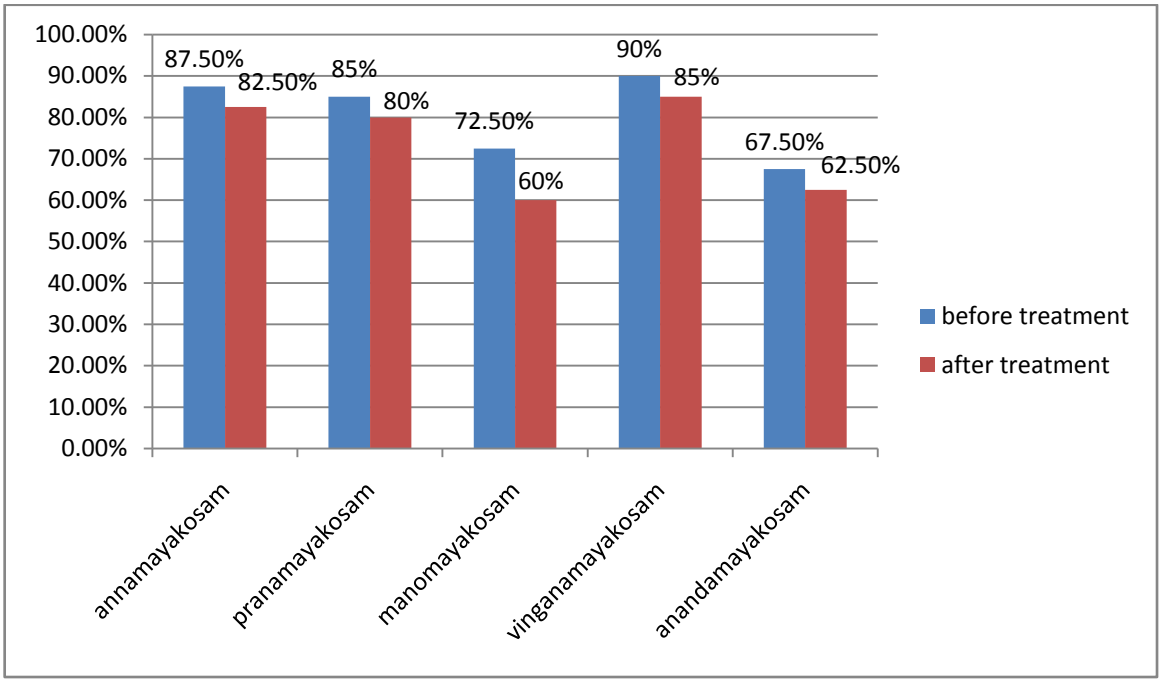


Observation and Inference:

Out Of the 40 cases, Kai [upper limb] was affected noted as numbness, pain in 38 (95%) and 35 (87.5%) cases were improved after the treatment. Kaal[lower limb] was affected noted as numbness, pain, paedaledema in 35(87.5%),and 34(85%) cases were improved after the treatment Vaai[buccal cavity] was affected noted as glossitis, angular stomatitis, bitter orpungent taste, dryness, pallor, fissured and coated tongue in 25 (62.5%) cases and 23 (57.5%) cases were improved after the treatment Eruvai [Anus]was affected noted as constipation 25 (62.5%) cases and 23 (57.5%) cases were improved after the treatment Of the 40 cases, Karuvai[genital organ] was affected in 3(7.5%) cases noted as ammennorhoea and 2(5%) cases were improved after the treatment.

REFERENCE TO KOSANGAL

S.No	Kosam	No of cases affected	before treatment [Percentage%]	No of cases improved	after treatment [Percentage%]
1	Annamayakosam	35	87.5%	33	82.5%
2	Pranamayakosam	34	85%	32	80%
3	Manomayakosam	29	72.5%	24	60%
4	Vinganamayakosam	36	90%	34	85%
5	Anandamayakosam	27	67.5%	25	62.5%



Observation and Inference:

Of the 40 cases, **Annamaya kosam** was affected, noted as loss of appetite in 35 (87.5%) cases, **Manomaya kosam** was affected, noted as palpitation in 29 (72.5%) cases, **Vinganamaya kosam** was affected, noted as pain, numbness and tingling sensation in 36(90%) cases and all the patients were improved after the treatment. Of the 40 cases, **Pranamaya kosam** was affected, noted as breathlessness in 34(85%) cases and 32(80%) of the patients were improved after the treatment. Of the 40 cases, **Anandamaya kosam** was affected, noted as ammenorrhoea, oligomenorrhoea and constipation in 27(67.5%) cases and 25 (62.5%) cases were improved after the treatment.

EFERENCE TO MUKKUTRAM

VATHAM:

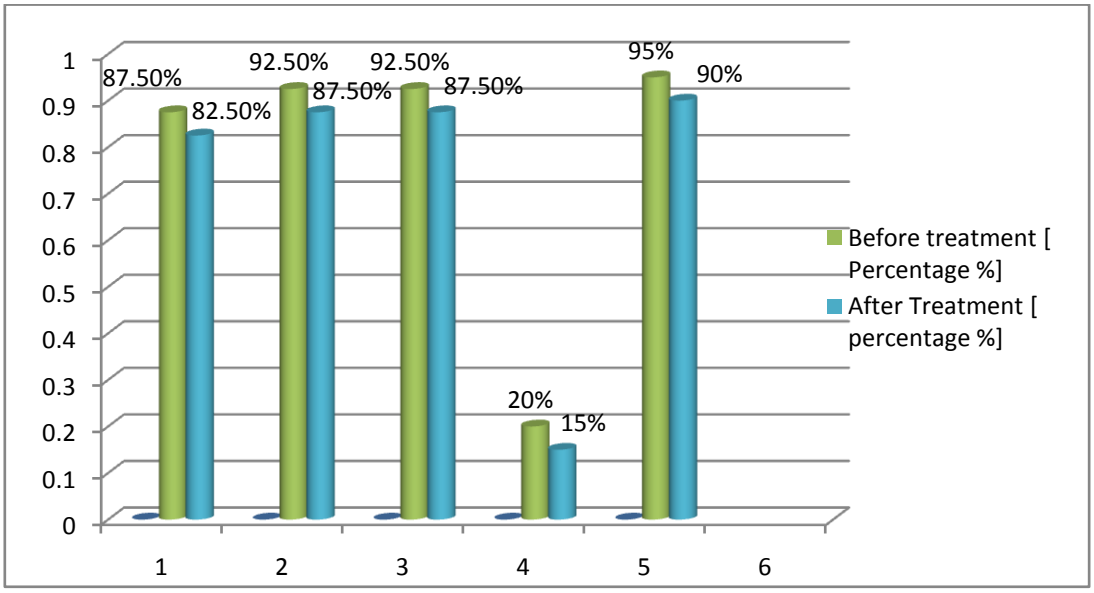
S.No	Vatham	No of cases affected	before treatment [Percentage%]	No of cases Improved	After treatment[Percentage%]
1	Pranan	35	87.5%	31	77.5%
2	Abanan	25	62.5%	23	57.5%
3	Viyanan	38	95%	35	87.5%
4	Uthanan	29	72.5%	24	60%
5	Samanan	35	87.5%	33	82.5%
6	Naagan	15	37.5%	12	30%
7	Koormam	10	25%	8	20%
8	Kirukaran	35	87.5%	33	82.5%
9	Devathathan	25	62.5%	23	57.5%
10	Dhananjeyan	Not applicable	0	Not applicable	0

Observation and Inference:

Of the 40 cases, **Pranan** was affected, noted as breathlessness in 35(87.5%) cases and 31 (77.5%) were improved after the treatment. **Abanan** was affected, noted as flattulence, constipation, ammenorrhoea and oligomenorrhoea in 25 (62.5%) cases and 23 (57.5%) were improved after the treatment **Uthanan** was affected, noted asbreathlessness in 29 72.5%)cases before the treatment and 24 (60%) were improved after the treatment. Of the 40 cases,**Viyanan** was affected noted as pain, numbness, and tingling sensation in 38 (95%) cases and 35 (87.5%) were improved after the treatment.**Samanan** was affected noted as loss of appetite,pain, numbness and breathlessness in 35 (87.5%) cases and 33 (82.5%)**Koorman** was affected notedas blurred vision in 10 (25%) cases and 8 (20%) were improved after the treatment **Kirukaran** was affected noted as loss of appetite, dryness of mouth in 35 (87.5%) cases and 33 (82.5%) were improved after the treatment, **Devadhathan** was affected noted afatigue in 25 (62.5%) of the cases and 23 (57.5%) were improved after the treatment.

PITHAM:

S.No	Pitham	No of cases affected	before treatment [Percentage%]	No of cases Improved	After treatment[Percentage%]
1	Analam	35	87.5%	33	82.5%
2	Ranjagam	37	92.5%	35	87.5%
3	Prasagam	37	92.5%	35	87.5%
4	Alosagam	8	20%	6	15%
5	Sathagam	38	95%	36	90%

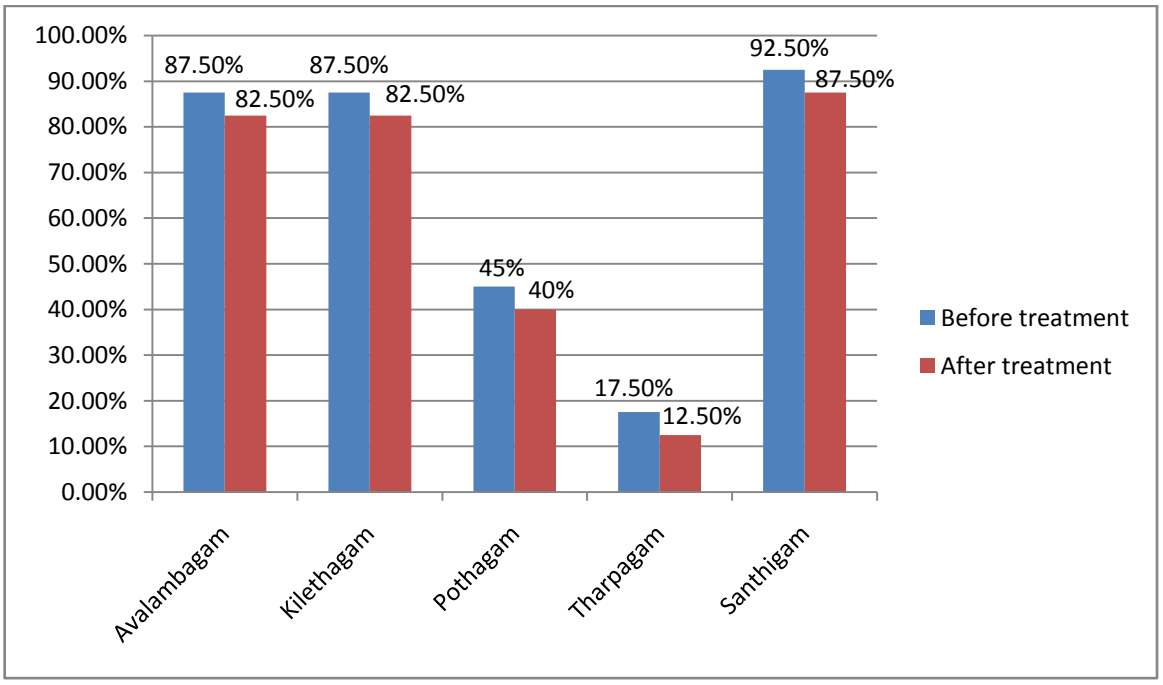


Observation and Inference:

Of the 40 cases, **Analam** was affected noted as loss of appetite in35(87.5%) cases and 33 (82.5%) were improved after the treatment, **Alosagam** was affected noted as dull vision in 8(20%) cases and 6 (15%)were improved after the treatment , **Sathagam** was affected noted as fatigue in 38(95%) cases and 36 (90%) were improved after the treatment.

KABHAM:

S.No	Kabam	No of cases affected	before treatment [Percentage%]	No of cases Improved	After treatment[Percentage%]
1	Avalambagam	35	87.5%	33	82.5%
2	Kilethagam	35	87.5%	33	82.5%
3	Pothagam	18	45%	16	40%
4	Tharpagam	7	17.5%	5	12.5%
5	Santhigam	37	92.5%	35	87.5%

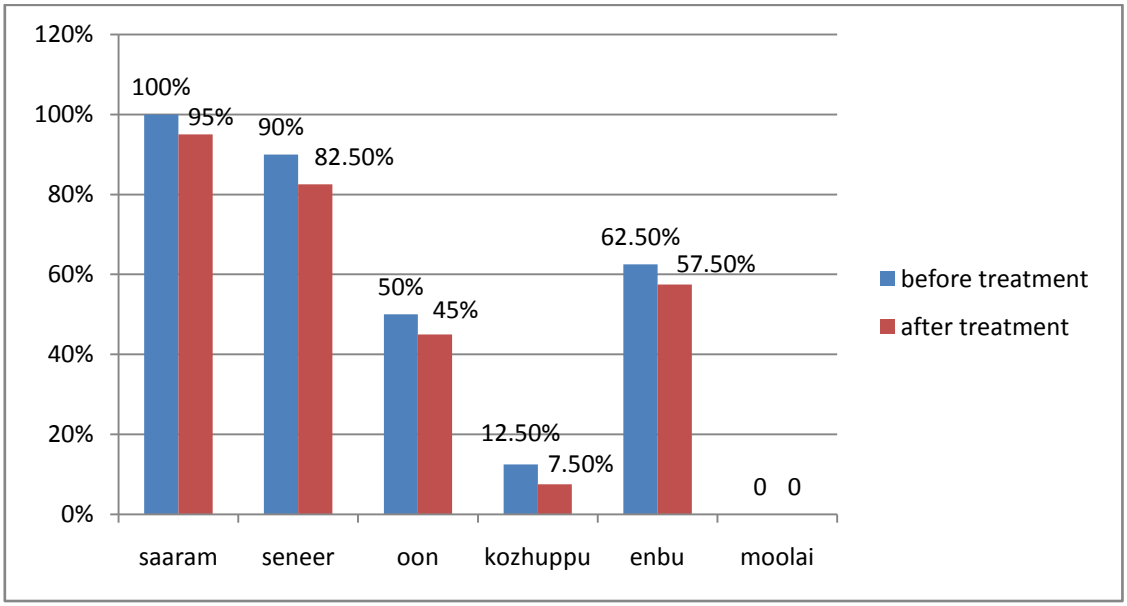


Observation and Inference:

Of the 40 cases, **Avalambagam** was affected noted as breathlessness in 35(87.5%) cases before the treatment and 33(82.5%) cases were improved after the treatment.

REFERENCE TO EZHU UDALKATTUGAL

S.No	Udalkattugal	No of cases affected	before treatment [Percentage%]	No of cases Improved	after treatment[Percentage%]
1	Saaram	40	100%	38	95%
2	Senneer	36	90%	33	82.5%
3	Oon	20	50%	18	45%
4	Kozhuppu	5	12.5%	3	7.5%
5	Enbu	25	62.5%	23	57.5%
6	Moolai	0	0	0	0
7	Suronitham	2	5%	2	5%



Observation and Inference:

Regarding seven Udalkattugal, **Saaram** [noted as fatigue] and **Senneer**[noted as pallor, reduction of Hemoglobin level] were affected in all 40 patients (100%) before the treatment and 38(95%) patients of saaram were improved and 33 (82.5%) patients of senneer were improved after the treatment. **Oon** was affected noted as paedaledema in 20 (50%) cases, before the treatment and 18 (45%) were improved after the treatment. **Suronitham**was affected in 2(5%) patients noted as ammennorhoea in 2 patients before the treatment and 2 (5%) were improved after the treatment.

REFERENCE TO THINAI

S.No	Thinai	No of cases	Percentage%
1	Kurinji (Hill area)	0	0
2	Mullai (Forest area)	0	0
3	Marutham (Fertile area)	1	2.5
4	Neithal (Coastal area)	39	97.5
5	Paalai (Desert area)	0	0

Observation and Inference: Among the 40 cases, 1(2.5 %) belonged to Marutham nilam, 39(97.5 %) belonged to Neithalnilam

REFERENCE TO ENVAGAI THERVUGAL

S.No	Envagai Thervugal	Affected cases	before treatment [percentage%]	Improved cases,	after treatment [percentage%]
1	Naadi: Pithavatham Kabapitham kabavatham	 15 13 12	 37.5% 32.5% 30%	 13 12 10	 32.5% 30% 25%
2	Sparisam	25	62.5%	23	57.5%
3	Naa	38	95%	37	92.5%
4	Niram	38	95%	37	92.5%
5	Mozhi	0	0	0	0
6	Vizhi	38	95%	37	92.5%
7	Malam	20	50%	18	45%
8	Moothiram	0	0	0	0

Observation and Inference:

Among the Ennvagai Thervugal, **Naa**[pallor, coated, glossitis, angular stomatitis, baldness, fissure, dryness, pungent or bitter taste, decreased salivation] **Niram** [pallor] and**Vizhi** [pallor] were affected in all the 38cases (95%) and 37 (92.5%), 37(92.5%) and37(92.5%)

cases were improved from the affection after the treatment. 25(62.5%) and 20 (50%) cases were affected from **Sparisam** [noted as dryness, hot orcold sensation, excessive sweat] and **Malam** [noted as constipation] before the treatment and 15 (37.5%),13 (32.5%), 12 (30%) were observed in Pithavatham, Kabapitham, kabavathamnaadibefore the treatment and 13 (32.5%), 12 (30%), 10 (25%)were improved in the above said naadirespectively.

REFERENCE TO NEIKKURI

1 Ring form-Pithaneer 25 (62.5%)

2. Serpentineform-Vathaneer 18 [45%]

3.pearl form – kabaneer 13 (32.5%)

REFERENCE TO NEIKKURI

S.No	Neikkuri	No of cases observed	[percentage%]
1	Vathaneer	18	45%
2	Pithaneer	25	62.5%
3	kabanee	13	32.5%

Observation and Inference: Of the 40 patients, 25 (62.5%) cases were observed in Pithaneer and remaining 18 (45%) cases were observed in Vathaneer before the treatment And 13 (32.5%) were observed in kabaneer.

REFERENCE TO SIGNS AND SYMPTOMS

S.No	Signs and symptoms	No of cases affected	before treatment [Percentage%]	No of cases Improved	After treatment [Percentage%]
1	Pallor	38	95%	36	90%
2	Anorexia	25	62.5%	23	57.5%
3	Fatigue	30	75%	28	70%
4	Tachycardia	32	80%	32	80%
5	Palpitation	35	87.5%	34	85%
6	Giddiness	20	50%	18	45%
7	Breathlessness	38	95%	35	87.5%
8	Pungent taste of tongue or Bitter taste of tongue	22	55%	20	50%
9	Angular stomatitis	23	57.5%	22	55%
10	Glossitis	18	45%	15	37.5%
11	Lack of concentration	8	20%	6	15%
12	Hairfall	35	87.5%	33	82.5%
13	Numbness	37	92.5%	35	87.5%
14	Tingling sensation	10	25%	8	20%
15	Ammenorrhoea	2	5%	2	5%
16	Oligomenorrhoea	0	0	0	0
17	Odema	12	30%	10	25%
18	Koilonychia	0	0	0	0

Out of 40 cases, **Pallor and Fatigue** was noted in 38 [95%] and 30 (75%) cases before the treatment. Of which, 36 (90%) cases in Pallor and 28 (70%) cases in Fatigue showed improvement after the treatment. Out of 40 cases, **Anorexia** was noted in 25 (62.5%) cases, **Tachycardia** was noted in 32 (80%) cases, **Palpitation** was noted in 35 (87.5%) cases, **Giddiness** was noted in 20 (50%) cases, **Breathlessness** was noted in 38 (95%) cases, **Angular stomatitis** was noted in 23 (57.5%) cases, **Glossitis**was noted in 18 (45%) cases, **Numbness** was noted in 37 (92.5%) cases, **Tingling sensation** was noted in 10 (25%) cases, **Odema**was noted in 12 (30%)cases and before the treatment and all the cases showed

improvement after the treatment. Out of 40 cases, **Lack of concentration** was noted in 8 (20%) cases before the treatment and 6 (15%) showed improvement after the treatment. Out of 40 cases, **Hairfall**was noted in 35 (87.5%) cases before the treatment and 33 (82.5%) showed improvement after the treatment. Out of 40 cases, **Ammenorrhoea**was noted in 2 [5%] cases before the treatment and 2 (5%) shows improvement after the treatment.

RESULTS AFTER TREATMENT

1	J93019	Pallor,anorexia,fatigue,tachycardia,palpitation,giddiness,breathlessness,angular stomatitis,lack of concentration, hairfall ,numbness ,tinglingsensation, ammennorhoea,	Good improvement
2	J19960	Pallor,anorexia,fatigue,tachycardia,palpitation,breathlessness,hairfall	Moderate improvement
3	J65728	Pallor,fatigue,tachycardia,palpitation,giddiness,breathlessness,hairfall,numbness,tingling, sensation,	Good improvement
4	J43406	Pallor,fatigue,giddiness,hairfall,numbness,tingling sensation.	Good improvement
5	J72309	Pallor,pungent taste of the tongue, fatigue, palpitation, giddiness, breathlessness, angularstomatitis, glossitis, lack of concentration, numbness, tinglingsensation, paedalodema,	Moderate improvement
6	J67762	Pallor,anorexia,fatigue,tachycardia,palpitation,giddiness,breathlessness,glossitis,hairfall,numbness, Tingling, sensation,paedalodema.	Good improvement
7	H94602	Pallor,anorexia,fatigue,tachycardia,palpitation,breathlessness, glossitis, hairfall, numbness, tingling sensation,paedalodema.	Good improvement
8	J79501	Pallor,anorexia,pungent taste of the tongue, fatigue, breathlessness, glossitis, hairfall,	Good improvement
9	I18133	Pallor,fatigue,tachycardia,palpitation,breathlessness,numbness,tinglingsensation,pungent taste of the tongue.	Good improvement
10	I71774	Pallor, fatigue, giddiness,hairfall,numbness,tingling sensation	Good improvement
11	J47615	Pallor,anorexia, fatigue, hairfall, numbness, tinglingsensation, ammennorhoea .	Good improvement
12	D082569	Pallor,anorexia, fatigue, breathlessness, glossitis, numbness,	Good improvement

13	C71989	Pallor,anorexia,bitter taste of the tongue, fatigue, tachycardia, palpitation, giddiness, breathlessness, angularstomatitis, gossitis,hairfall,numbness,tingling sensation,	Good improvement
14	J00382	Pallor, bitter taste of the tongue, fatigue, giddiness, breathlessness, hairfall, numbness,	Good improvement
15	J90991	Pallor, anorexia,fatigue, tachycardia, palpitation, giddiness, hairfall, numbness .	Good improvement
16	E0121771	Pallor, anorexia, pungent taste of the tongue,fatigue, tachycardia, palpitation, giddiness, breathlessness, angular stomatitis, lack of concentration, hairfall, numbness, tinglingsensation, ammennorhoea	Good improvement
17	I54947	Pallor,anorexia,fatigue,palpitation,giddiness,breathlessness, hairfall, numbness,	Moderate improvement
18	E004118	Pallor,anorexia, fatigue, tachycardia, breathlessness, hairfall, numbness	Moderate improvement
19	J76500	Pallor, anorexia, bitter taste of the tongue, fatigue, palpitation, giddiness, breathlessness, hairfall, numbness.	mild improvement
20	K30418	Pallor,anorexia,fatigue,tachycardia,palpitation,giddiness,breathlessness,angular stomatitis,hairfall,numbness,paedalodema.	Good improvement
21	K30539	Pallor,fatigue, tachycardia, palpitation, giddiness, breathlessness, angularstomatitis, glossitis,lack of concentration, hairfall.	Mild improvement
22	J93972	Pallor,anorexia,bitter taste of tongue, fatigue, tachycardia, palpitation, breathlessness, hairfall, numbness, tinglingsensation, oligomennorhoea, paedalodemaPallor, anorexia,bitter taste of the tongue, fatigue, tachycardia, palpitation, giddiness, breathlessness, hairfall.	Good improvement
23	K01685	Pallor,anorexia,fatigue,tachycardia,palpitation,giddiness,breathlessness,angular stomatitis, glossitis, lack of concentration, hairfall, numbness, tinglingsensation, paedalodema,	Good improvement
24	J36738	Pallor,anorexia,bitter taste of the tongue, fatigue, tachycardia, palpitation, giddiness, breathlessness, hairfall.	Moderate improvement
25	F95887	Pallor, anorexia, fatigue, palpitation, breathlessness, angularstomatitis, glossitis, hairfall.	Good improvement

26	K15251	Pallor, anorexia, fatigue, tachycardia, giddiness, glossitis, lack of concentration, hairfall.	Good improvement
27	J74373	Pallor, anorexia, fatigue, tachycardia, palpitation, giddiness, breathlessness, lack of concentration, hairfall, numbness.	Good improvement
28	I45243	Pallor, pungent taste of the tongue, fatigue, breathlessness, glossitis, hairfall, numbness, tingling sensation.	Good improvement
29	J79782	Pallor, anorexia, bitter taste of the tongue, fatigue, tachycardia, palpitation, giddiness, breathlessness, angular stomatitis, glossitis, lack of concentration, hairfall, numbness, tingling sensation,	Good improvement
30	K19272	Pallor, anorexia, fatigue, giddiness, breathlessness, hairfall, numbness, tingling sensation,	Good improvement
31	K19930	Pallor, anorexia, bitter taste of the tongue, fatigue, tachycardia, palpitation, giddiness, breathlessness.	Good improvement
32	J35113	Pallor,anorexia,fatigue,palpitation,giddiness,breathlessness,hairfall,numbness,paedalodema.	Good improvement
33	J83931	Pallor, anorexia, bitter taste of the tongue, fatigue, palpitation, breathlessness, lack of concentration, hairfall.	Good improvement
34	K17392	Pallor, anorexia, pungent taste of the tongue, fatigue, tachycardia, palpitation, giddiness, breathlessness, glossitis, hairfall, numbness, tinglingsensation,	Good improvement
35	H53441	Pallor, anorexia, bitter taste of the tongue, fatigue, palpitation, giddiness, breathlessness, glossitis, lack of concentration, hairfall, numbness, paedalodema.	Good improvement
36	H67371	Pallor,anorexia,fatigue,palpitation,giddiness,breathlessness,hairfall.	Good improvement
37	K14057	Pallor, anorexia, bitter taste of the tongue, fatigue, tachycardia, palpitation, giddiness, breathlessness, lack of concentration, hairfall, numbness, tinglingsensation,	Moderate improvement
38	J37178	Pallor,anorexia, bitter taste of the tongue, fatigue, palpitation, giddiness, breathlessness,lack of concentration, hairfall, numbness,	Good improvement
39	K11911	Pallor, anorexia, bitter taste of the tongue, palpitation, giddiness, breathlessness ,hairfall, numbness, paedalodema	Good improvement
40	H59413	Pallor, anorexia, fatigue, palpitation, breathlessness, lack of concentration, hairfall, numbness .	Good improvement

RESULTS AFTER TREATMENT:

Results were observed on the basis of two main criteria.

Primary Outcome:

Primary Outcome is mainly assessed by comparing the pre and post treatmental Hemoglobin level, of the trial patient.

Secondary Outcome:

Secondary outcome is assessed by comparing the following parameters, before and after the treatment.

1) Reduction of Clinical symptoms

2) Changes in Complete Blood Count

3) Changes in Iron supply studies

HEMOGLOBIN CHART BEFORE AND AFTER TREATMENT

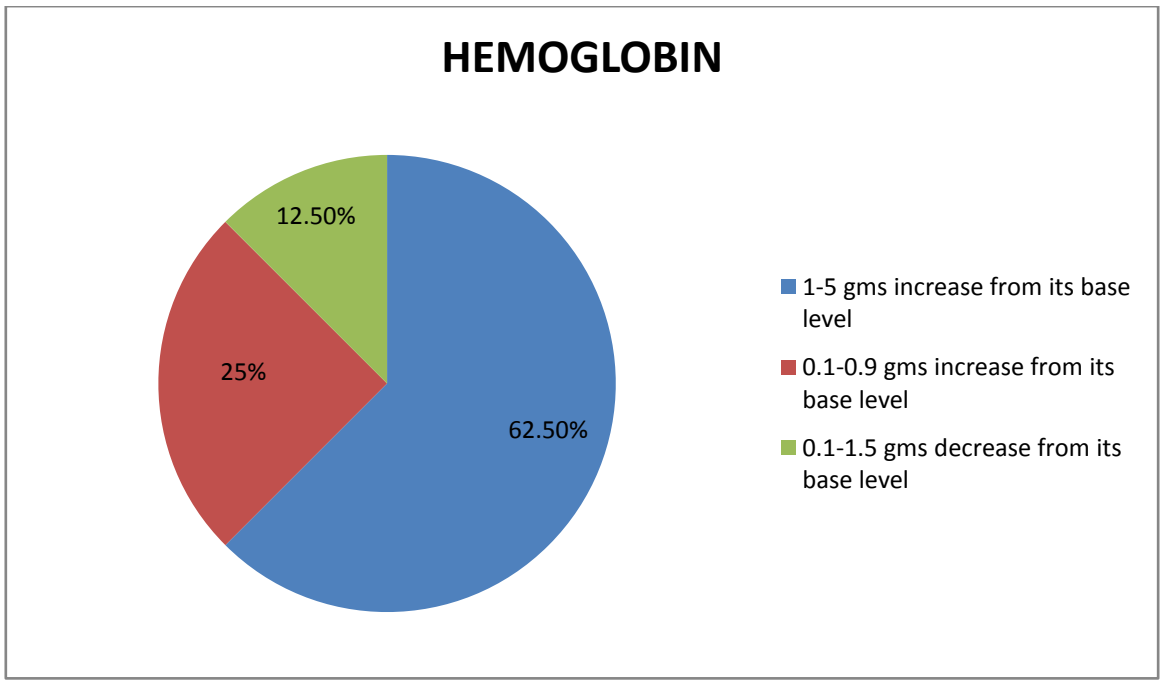
S.No	OPD/IPD NO	**HB BEFORE TMT**	**HB AFTER TMT**
1	J93019	9.4mg/dl	10mg/dl
2	J19960	7.3	8
3	J65728	9.4	10.3
4	J43406	10	11.1
5	J72309	7.6	8
6	J67762	10.3	11.4
7	H94602	10	10.5
8	J79501	11.1	12
9	I18133	10.2	12
10	I71774	9.1	9.8
11	J47615	10	10.8
12	D082569	8..3	9
13	C71989	10.9	11.5
14	J00382	10.3	11.8
15	J90991	8.9	10.8
16	E0121771	10.2	11.1
17	I54947	7.3	8.4

18	E004118	7.0	8.6
19	J76500	8.4	9.6
20	K30418	8.6	9.9
10	K30539	10.3	10
22	J93972	8.0	8
23	K01685	8.3	10.3
24	J36738	7.6	11.1
25	F95887	10.3	8
26	K15251	7.8	11.4
27	J74373	8.4	10.5
28	I45243	9.4	12
29	J79782	10.7	12
30	K19272	9.1	9.8
31	K19930	8.9	10.8
32	J35113	9.3	10.6
33	J83931	10.3	12.2
34	K17392	9.1	10.4
35	H53441	9.8	11.0
36	H67371	10.1	11.6
37	K14057	7.5	8.4
38	J37178	9.1	10.5
39	K11911	9.0	10.3
40	H59413	10.5	11.3

PRIMARY OUTCOME:

Results derived from the Hemoglobin

S. NO	Hemoglobin	No of cases	[Percentage %]
1	1- 5 gms increase from its base level	25	62.5%
2	0.1-0.9 gms increase from its base level	10	25%
3	0.1-1.5 gms decrease from its base level	5	12.5%



Among the 40 cases, 25(62.5%) cases showed increase of 1 to 5 grams in the hemoglobin level and10(25%) cases showed increase of 0.1-0.9 grams in the hemoglobin level.5() cases showed no improvement in the Hemoglobin level.

ii) SECONDARY OUTCOME:

1. Results from clinical improvement:

Good, moderate and mild improvements were assessed on the basis as follows,

Good improvement

Reduction of pallor, hairfall. Restoration of regular menstrual cycle. Relief of signs and symptoms such as fatigue, palpitation, tachycardia, pungent or bitter taste of the tongue, giddiness, breathlessness, paedal edema,numbness,tingling sensation and koilonychia. Improvement in appetite. Absence of angular stomatitis, glossitis.

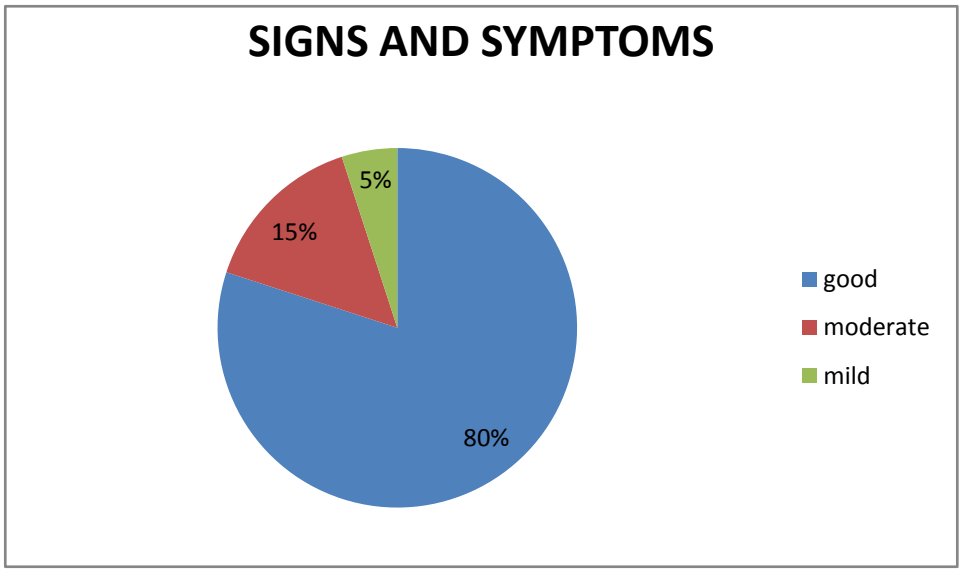
Moderate improvement

No reduction in pallor, hairfall. Presence of oligomenorrhoea and amenorrhoea. Reduction of signs and symptoms such as fatigue, palpitation, tachycardia, pungent or bitter taste of the tongue, giddiness, breathlessness,paedal edema,numbness,tingling sensation and koilonychia. Little improvement in appetite. Mild improvement in angular stomatitis, glossitis.

Mild improvement

No reduction of pallor, hairfall. Presence of oligomenorrhoea and amenorrhoea. Reduction of signs and symptoms such as fatigue, palpitation, tachycardia, pungent or bitter taste of the tongue, giddiness, breathlessness,paedal edema,numbness,tingling sensation and koilonychia. No improvement in appetite. Presence of angular stomatitis, glossitis.

S. NO	Signs and symptoms	No of cases	[Percentage %]
1	Good	32	80%
2	Moderate	6	15%
3	Mild	2	5%

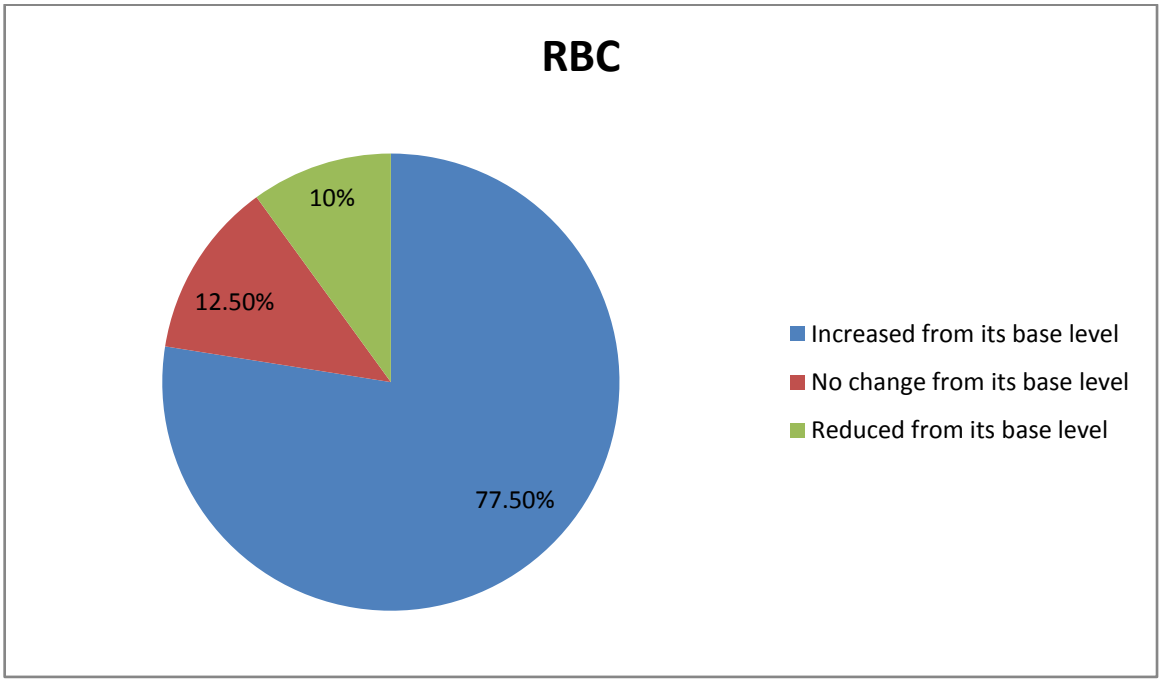


Among the 40 cases, 32(80%) cases assessed as good improvement, 6(15%) cases assessed as moderate improvement and 2 (5%) cases showed mild improvement.

2. Results from Complete Blood Count:

Results from RBC:

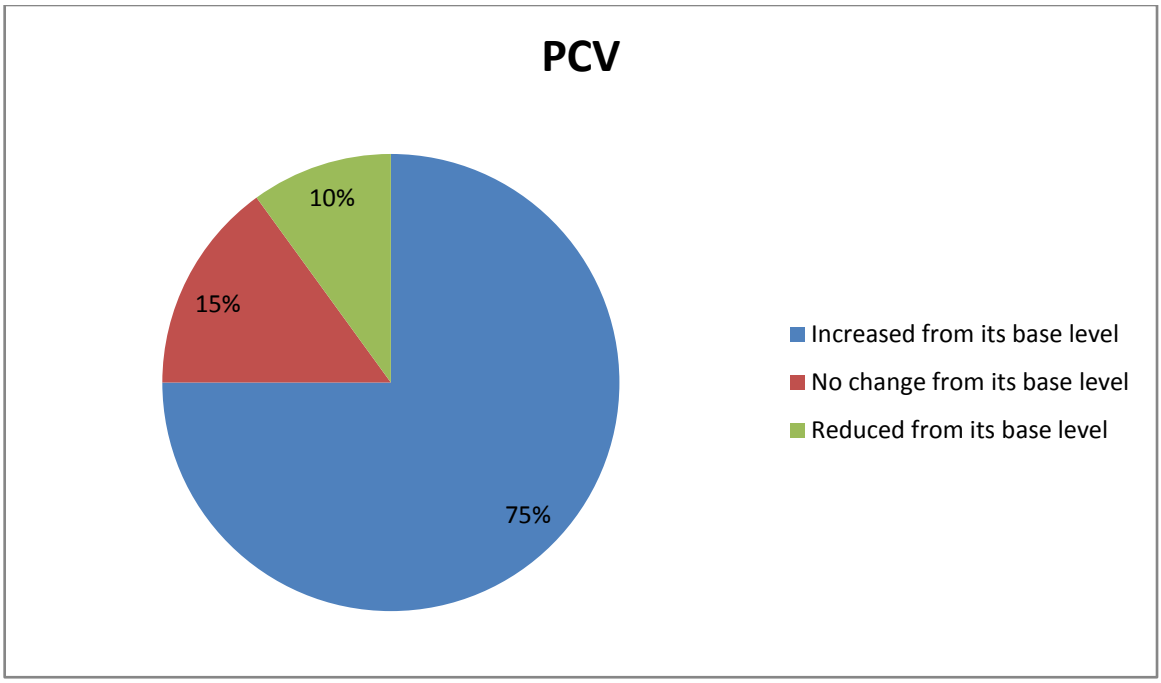
S. NO	RBC	No of cases	[Percentage %]
1	Increased from its base level	31	77.5%
2	No change from its base level	5	12.5%
3	Reduced from its base level	4	10%



Regarding RBC of the 40 cases, 31 cases (77.5%) increased from its base level, 5 cases (12.5%) did not show any change from its base level and 4 cases (10%) showed reduction from its base level.

Results from PCV:

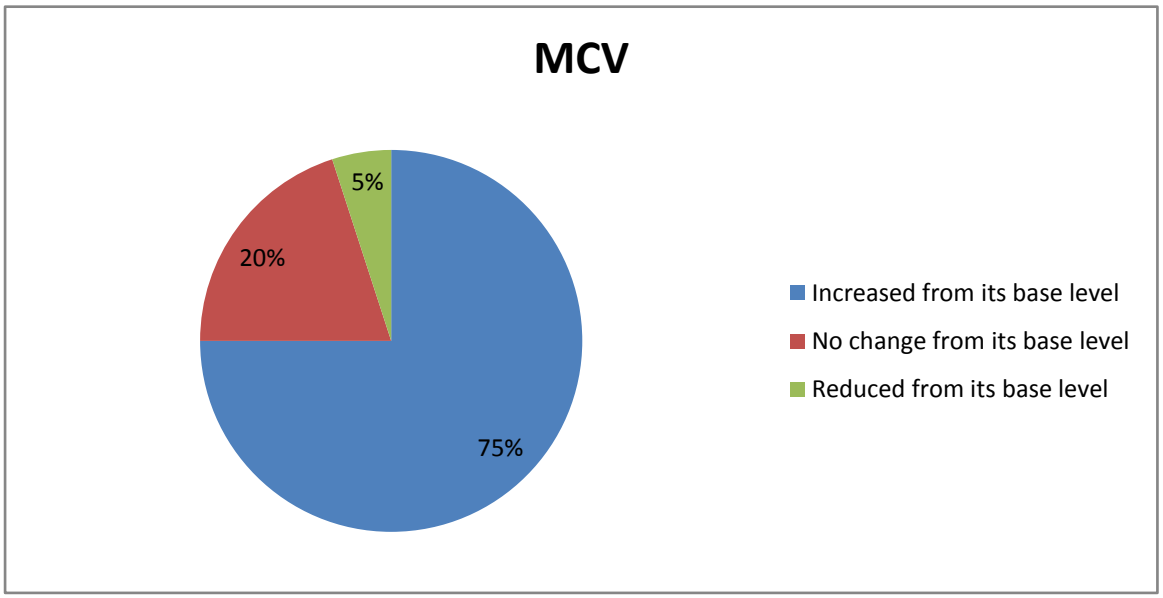
S. NO	PCV	No of cases	[Percentage %]
1	Increased from its base level	30	75%
2	No change from its base level	6	15%
3	Reduced from its base level	4	10%



Regarding PCV of the 40 cases, 30(75%) showed increase from its base level, 6[15%] showed did not change from its base level and 4 (10%) showed reduction from its base level.

Results from MCV:

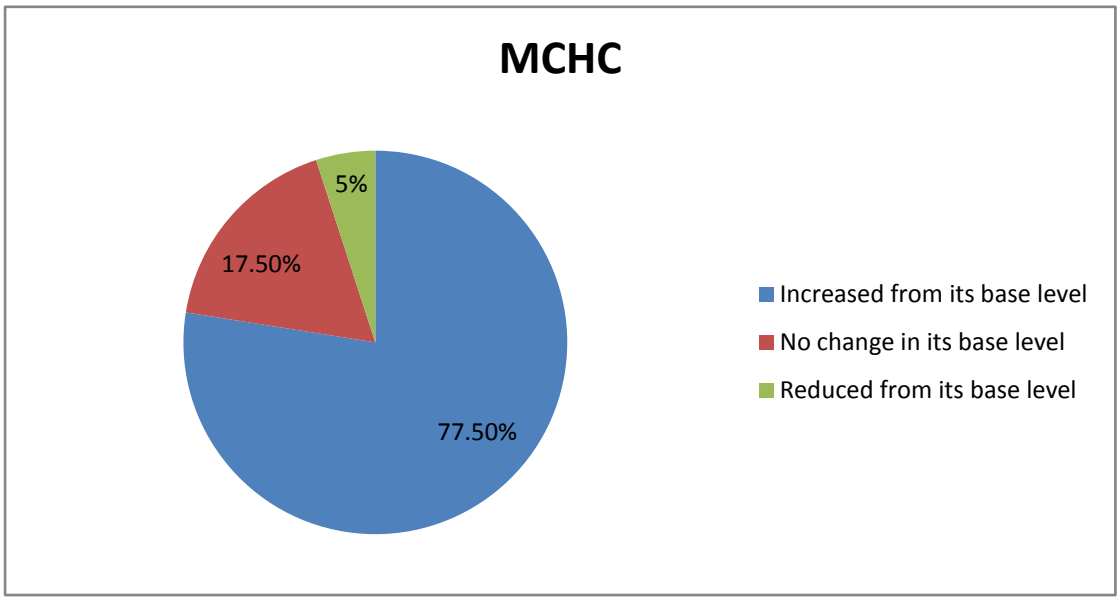
S. NO	MCV	No of cases	[Percentage %]
1	Increased from its base level	30	75%
2	No change from its base level	8	20%
3	Reduced from its base level	2	5%



Regarding MCV of the 40 cases, 30(75%) showed increase from its base level ,8 [20%] showed did not change from its base level and 2 (5%) showed reduction from its base level.

Results from MCHC:

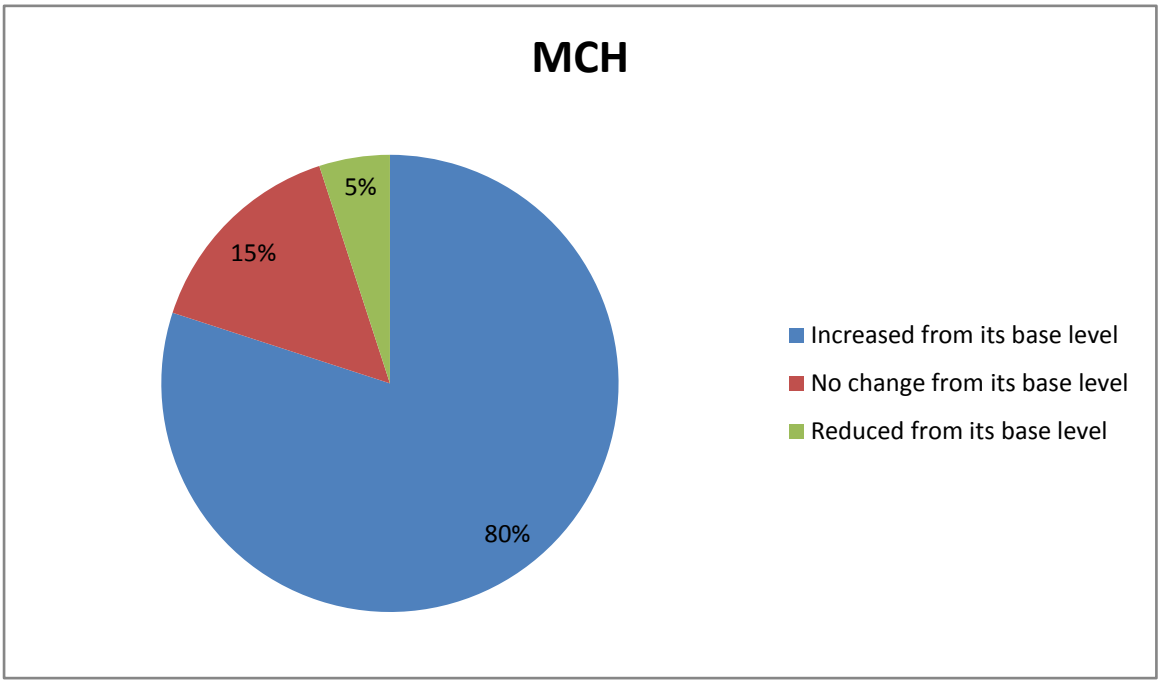
S. NO	MCHC	No of cases	[Percentage %]
1	Increased from its base level	31	77.5%
2	No change in its base level	7	17.5%
3	Reduced from its base level	2	5%



Regarding MCHC of the 40 cases, 31 (77.5%) showed increase from its base level and 7 (17.5%) showed no change in the base level, 2(5%) cases reduction from its base level.

Results from MCH:

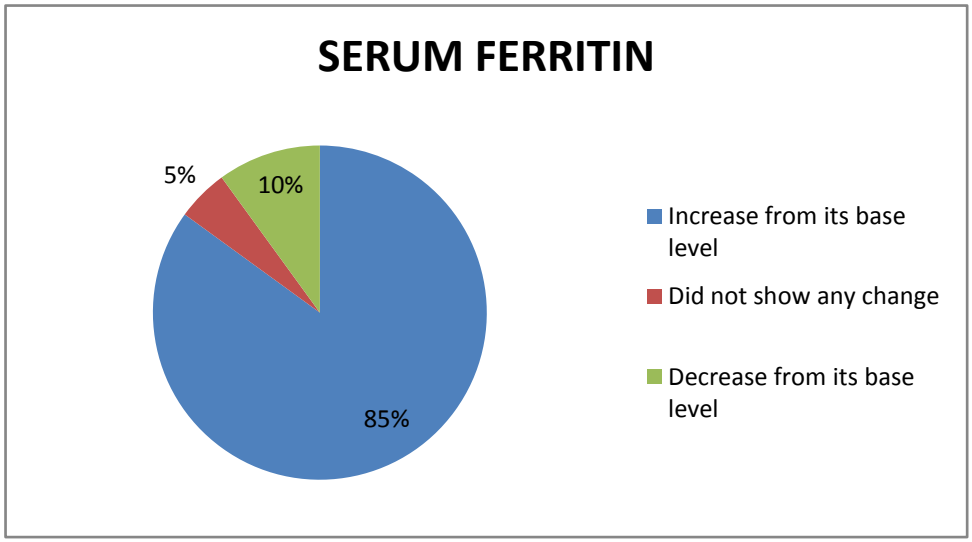
S. NO	MCH	No of cases	[Percentage %]
1	Increased from its base level	32	80%
2	No change from its base level	6	15%
3	Reduced from its base level	2	5%



Regarding MCH of the 40 cases, 32(80%) showed increase from its base level, 6 (15%) did not show any change in its base level and 2 (5%) showed reduction from its base level.

Results from Serum Ferritin:

S. NO	Serum Ferritin	No of cases	[Percentage %]
1	Increase from its base level	34	85%
2	Did not show any change	2	5%
3	Decrease from its base level	4	10%



Regarding Serum Ferritin, Out of 40 cases, 34 (85%) cases showed increase from its base level, and 2 (5%) cases did not any change, 4(10%) cases showed reduction from its base level.

S.NO	OP NO	AGE /SEX	HAEMATOLOGY					
			Haemoglobin (gm/dl)		Red blood cells(mill/cu.mm)		Serum Ferritin (ug/L)	
			Before	After	Before	After	Before	After
1	J93019	43/F	9.4	10	4.4	4.5	5.5	6.3
2	J19960	46/M	7.3	8	4.8	4.8	0.9	1.0
3	J65728	44/F	9.4	10.3	3.7	4.0	9.2	10
4	J43406	33/F	10	11.1	4.3	4.5	6.6	7.5
5	J72309	45/F	7.6	8	4.6	4.8	0.9	10.0
6	J67762	55/F	10.3	11.4	4.1	4.2	4.0	4.2
7	H94602	49/F	10	10.5	3.8	4.0	3.6	6.5
8	J79501	30/F	11.1	12	4.2	4.1	14.5	16.0
9	I18133	35/F	10.2	12	3.7	3.9	6.2	15.0
10	I71774	26/F	9.1	9.8	4.8	4.7	2.2	2.5
11	J47615	45/F	10	10.8	4.6	4.7	11	12.3
12	D082569	44/F	8..3	9	4.1	4.4	12.8	13
13	C71989	33/F	10.9	11.5	4.7	4.9	5.8	6.2
14	J00382	45/F	10.3	11.8	4.4	4.7	2.3	3.5
15	J90991	28/F	8.9	10.8	4.2	4.5	4.9	8.0
16	E0121771	38/F	10.2	11.1	4.0	4.2	3.0	4.5
17	I54947	40/F	7.3	8.4	3.8	4.0	0.80	1.2
18	E004118	48/F	7.0	8.6	4.0	4.3	0.70	1.2
19	J76500	41/F	8.4	9.6	4.3	4.3	0.80	1.4
20	K30418	36/F	8.6	9.9	4.1	4.1	1.0	3.3
21	K30539	46/F	10.3	11.2	4.1	5.0	12.5	13.9
22	J93972	48/F	8.0	9	4.2	4.5	0.90	1.2

23	K01685	41/F	8.3	8.8	3.5	3.8	0.70	0.90
24	J36738	45/F	7.6	8.9	3.5	3.6	3.4	4.4
25	F95887	45/F	10.3	11.6	4.1	4.1	12.8	15.0
26	K15251	16/M	7.8	8.9	5.4	5.5	2.9	3.5
27	J74373	32/F	8.4	9.4	4.5	4.7	6.9	8.1
28	I45243	35/F	9.4	10.3	4.3	4.4	11.1	12.0
29	J79782	46/F	10.7	11.5	4.9	4.9	13.8	14.50
30	K19272	47/F	9.1	10.3	4.3	4.6	15.8	17.10
31	K19930	42/F	8.9	10.6	4.2	4.5	0.90	2.3
32	J35113	42/F	9.3	10.6	3.9	4.0	14.8	16.0
33	J83931	45/F	10.3	12.2	4.4	4.5	16.3	18.4
34	K17392	42/F	9.1	10.4	4.1	4.1	15.3	16.4
35	H53441	49/F	9.8	11.0	3.5	3.9	12.5	13.9
36	H67371	44/F	10.1	11.6	4.3	4.4	0.90	1.2
37	K14057	38/F	7.5	8.4	4.6	4.6	0.70	0.90
38	J37178	43/F	9.1	10.5	4.3	4.4	3.4	4.4
39	K11911	36/F	9.0	10.3	4.1	4.2	12.8	15.0
40	H59413	41/F	10.5	11.3	4.0	4.3	2.9	3.5

S.NO	OP NO	AGE /SEX	HAEMATOLOGY							
			PCV(%)		MCV (fl)		MCH (pg)		MCHC (%)	
			Before	After	Before	After	Before	After	Before	After
1	J93019	43/F	30.4	32.2	71.7	72.7	20.9	21.9	29.2	30.3
2	J19960	46/M	28.5	29.5	58.9	59	18	19	25.6	25.9
3	J65728	44/F	29.4	32.0	78	79.8	24.9	25.7	32	32.2
4	J43406	33/F	31.3	23.4	72	73	72	73	23	24
5	J72309	45/F	29.5	30.3	63	63	16	70	25.8	28.8
6	J67762	55/F	33.6	34	80.4	81.8	25.8	27	29.2	33.5
7	H94602	49/F	31.3	32	81.1	83	27.2	29	33.3	34
8	J79501	30/F	34	32.9	80.4	80	26.2	25.8	32.6	32.2
9	I18133	35/F	30.7	32	82.3	84	27.3	29	27.3	28
10	I71774	26/F	31.7	30.9	65.2	65.6	18.8	19.1	28.9	29.1
11	J47615	45/F	22.5	32.8	70	68.6	22.4	22	32	32
12	D082569	44/F	28.4	29	68.8	69	20.1	72	29.2	29.2
13	C71989	33/F	36.1	33.5	75.7	78	24.1	26	31.1	33
14	J00382	45/F	31.1	32.7	69.3	72	22.9	24	33.1	33.8
15	J90991	28/F	29.9	34.9	70.7	76.7	21	23.6	29.8	30.9
16	E0121771	38/F	31.5	33	77.2	81	25	22	32.4	34
17	I54947	40/F	28.7	34.0	58.6	60.0	14.9	16.0	25.4	26
18	E004118	48/F	25.2	29.9	61.8	65.7	17.2	19.6	27.8	29.4
19	J76500	41/F	29.5	32.6	67.2	69.2	19.8	21.6	29.5	31.3
20	K30418	36/F	28.2	33.3	68.0	74.2	20.7	26	30.5	36
21	K30539	46/F	32.5	37.0	72.9	78.0	22.0	25.0	30.3	32.7
22	J93972	48/F	28.1	28.6	65.5	68	19.6	20	29.9	31
23	K01685	41/F	26.4	28	75	77	23.6	25	31.4	32
24	J36738	45/F	26.4	28.4	73.5	76.2	22.7	24	29.5	31.1

25	F95887	45/F	32.5	36.8	78.9	80	25	27.3	31.7	33.6
26	K15251	16/M	31.6	33.5	58.4	60.1	14.4	16.4	24.7	28
27	J74373	32/F	30.4	31.6	66.2	67.1	19.4	20.3	29.3	30.1
28	I45243	35/F	30.6	33.5	70.6	74.2	21.5	23.5	30.7	32.9
29	J79782	46/F	34.3	36.5	69.2	71	21.6	23.0	31.2	33
30	K19272	47/F	30.3	36.5	69.1	72	21	23.2	30.3	33.4
31	K19930	42/F	29.9	34.9	70.7	76.2	21	23.6	29.9	31.9
32	J35113	42/F	30.5	32.0	78.2	80	23.8	25.6	30.5	32.6
33	J83931	45/F	36.0	38.2	81.0	83.4	29.0	26.6	29.9	31.9
34	K17392	42/F	29.9	32.0	72.6	76.4	22.1	24.5	22.4	33.0
35	H53441	49/F	31.0	33.2	80.2	83.4	25.0	27.6	30.1	33.1
36	H67371	44/F	33.2	34.3	76.3	79.2	23.2	24.2	30.2	34.2
37	K14057	38/F	28.0	29.4	60.5	61.9	16.2	18.2	26.8	29
38	J37178	43/F	30.7	34.0	70.2	72.7	20.0	29.9	29.6	22.0
39	K11911	36/F	30.1	33.2	71.8	73.4	21.5	24	29.9	32.4
40	H59413	41/F	32.9	34.0	82.3	84.6	26.3	28.4	31.9	34

S.NO	OP NO	AGE /SEX	HAEMATOLOGY								
			Total wbc cells/ul		Differential count %before.treatment			Differential count % After treatment		
			Before	After	P	L	E	P	L	E
1	J93019	43/F	8200	9100	66	32	2	65	33	2
2	J19960	46/M	8200	8900	60	32	8	60	35	5
3	J65728	44/F	7100	7500	62	35	3	62	35	3
4	J43406	33/F	7000	7200	56	42	2	58	40	2
5	J72309	45/F	7500	7700	65	33	2	65	33	2
6	J67762	55/F	6900	7800	61	35	4	68	29	3
7	H94602	49/F	8100	8200	62	36	2	60	38	2
8	J79501	30/F	7300	6400	68	29	3	55	41	4
9	I18133	35/F	6500	6800	57	39	4	60	36	4
10	I71774	26/F	6000	7100	59	38	3	55	41	4
11	J47615	45/F	8400	9700	55	42	3	59	38	3
12	D082569	44/F	10500	10000	62	35	3	61	36	3
13	C71989	33/F	6800	7000	59	39	2	62	36	2
14	J00382	45/F	5600	6000	66	31	3	59	38	3
15	J90991	28/F	8400	9200	59	39	2	60	36	4
16	E0121771	38/F	6300	6800	68	30	2	66	30	4
17	I54947	40/F	7600	8000	65	33	2	63	35	2
18	E004118	48/F	6800	7500	59	38	3	59	39	2
19	J76500	41/F	7000	8400	60	36	4	63	35	2
20	K30418	36/F	7200	9000	65	33	2	64	34	2
21	K30539	46/F	8800	10600	59	39	2	54	33	1
22	J93972	48/F	10700	10800	59	36	3	60	37	3

23	K01685	41/F	5600	6000	54	42	3	56	40	3
24	J36738	45/F	6600	9100	66	34	5	60	30	3
25	F95887	45/F	8700	9800	60	37	3	60	38	2
26	K15251	16/M	4800	6200	62	36	2	36	54	3
27	J74373	32/F	8900	8700	69	27	4	60	38	2
28	I45243	35/F	5500	6200	54	44	2	59	40	1
29	J79782	46/F	8000	8600	65	32	3	63	35	2
30	K19272	47/F	6400	7900	71	27	2	66	32	2
31	K19930	42/F	8400	9200	59	39	2	60	36	4
32	J35113	42/F	6900	7400	71	27	2	68	30	2
33	J83931	45/F	8100	9200	66	33	1	63	34	3
34	K17392	42/F	6700	7200	63	35	2	69	30	1
35	H53441	49/F	6400	6900	65	31	4	59	39	2
36	H67371	44/F	6600	7200	70	27	3	65	34	1
37	K14057	38/F	6500	6800	59	39	2	60	36	4
38	J37178	43/F	7600	8100	68	30	2	66	33	1
39	K11911	36/F	9300	9700	71	26	3	65	33	2
40	H59413	41/F	4700	5600	62	35	3	58	30	2

S.NO	OP NO	AGE /SEX	HAEMATOLOGY					
			ESR- ½ hr-1hr		Clotting time /min		Bleeding time/min	
			before	after	before	after	before	after
1	J93019	43/F	20	42	4min30sec	4min35sec	2min5sec	2min5sec
2	J19960	46/M	16	32	2min50sec	2min50sec	1min45sec	1min45sec
3	J65728	44/F	10	22	3min50sec	3min	1min	1min
4	J43406	33/F	12	24	3min	2min15sec	2min	1mjn.50s
5	J72309	45/F	8	16	2min	2min15sec	3min	2min
6	J67762	55/F	34	70	2min	3min	1min45sec	1min45sec
7	H94602	49/F	36	54	3min	2min	2min	1min50s
8	J79501	30/F	10	22	2min	1min30sec	1min15sec	1min15sec
9	I18133	35/F	44	90	3min	1min45sec	2min	1min 50sec
10	I71774	26/F	11	22	1min	2min	1min	1min
11	J47615	45/F	2	6	2min	1min	1min	1min
12	D082569	44/F	40	82	1min	1min45sec	3min	2min
13	C71989	33/F	20	42	1min	3min50sec	3min	2min 50sec
14	J00382	45/F	10	22	2min	3min20sec	3min	2min 40sec
15	J90991	28/F	12	24	3min	2min	2min	1min 45sec
16	E0121771	38/F	30	62	3min50sec	2min15sec	1min45sec	1min 40sec
17	I54947	40/F	10	22	2min50sec	2min50sec	1min50sec	1min 30sec
18	E004118	48/F	40	82	3min50sec	3min	2min50sec	1min 45sec
19	J76500	41/F	12	24	2min50sec	2min50sec	1min50sec	1min 45sec
20	K30418	36/F	10	22	3min50sec	2min45sec	1min30sec	1min

21	K30539	46/F	8	10	3	2min 45sec	2min 45sec	1min 45sec
22	J93972	48/F	10	22	3	1min45sec	1min45sec	2min30sec
23	K01685	41/F	16	34	3min45sec	2min30sec	2min30sec	1min30sec
24	J36738	45/F	20	31	4min55sec	3min	3min	1min45sec
25	F95887	45/F	12	24	3min	2min45sec	2min45sec	1min45sec
26	K15251	16/M	10	22	3min	2min45sec	2min45sec	1min45sec
27	J74373	32/F	16	22	3min	2min50sec	2min50sec	1min45sec
28	I45243	35/F	14	28	3min45sec	3min	3min	1min30sec
29	J79782	46/F	16	34	3min	2min	2min	1min45sec
30	K19272	47/F	12	24	3min30sec	3min	1min15sec	1min
31	K19930	42/F	12	24	3min	2min45sec	1min45sec	1min
32	J35113	42/F	16	22	2min45sec	2min	1min45sec	1min30sec
33	J83931	45/F	20	42	3min50sec	3min	1min15sec	1min
34	K17392	42/F	16	24	3min15sec	3min	2min5sec	2min
35	H53441	49/F	32	40	3min50sec	3mn	1min15sec	1min
36	H67371	44/F	16	22	1min50sec	1min40sec	2min30sec	2min
37	K14057	38/F	22	34	3min	2min45sec	2min	1min50sec
38	J37178	43/F	16	22	2min30sec	2min	1min50sec	1min30sec
39	K11911	36/F	20	40	3min50sec	3min	2min	1min50sec
40	H59413	41/F	36	54	2min45sec	2min15sec	1min15sec	1min

S.NO	OP NO	AGE /SEX	Lipid profile							
			Fasting blood sugar gm/dl		pp blood sugar gm/dl		Total cholesterol gm/dl		HDL gm/dl	
			Before	After	Before	After	Before	After	before	after
1	J93019	43/F	95	98	119	129	149	159	49	51
2	J19960	46/M	102	101	139	140	121	121	52	44
3	J65728	44/F	83	94	150	111	231	227	62	60
4	J43406	33/F	86	101	84	108	151	160	50	52
5	J72309	45/F	102	100	133	120	138	135	62	65
6	J67762	55/F	78	82	141	143	189	188	40	42
7	H94602	49/F	98	102	106	113	159	154	49	51
8	J79501	30/F	93	99	92	136	105	108	39	56
9	I18133	35/F	88	97	88	95	110	115	47	48
10	I71774	26/F	84	95	95	97	157	165	39	36
11	J47615	45/F	118	135	124	142	168	170	54	56
12	D082569	44/F	95	110	100	108	191	195	40	48
13	C71989	33/F	98	102	130	141	226	220	67	65
14	J00382	45/F	98	105	112	116	167	163	39	42
15	J90991	28/F	94	100	120	128	125	146	46	48
16	E0121771	38/F	84	90	92	97	217	220	53	60
17	I54947	40/F	107	104	128	110	125	127	44	43
18	E004118	48/F	95	104	150	118	188	185	76	69
19	J76500	41/F	84	89	152	121	164	165	54	51
20	K30418	36/F	114	102	140	141	158	156	55	52
21	K30539	46/F	114	109	109	126	195	197	47	50
22	J93972	48/F	60	71	127	132	190	191	57	50

23	K01685	41/F	110	109	140	150	142	145	34	55
24	J36738	45/F	102	110	133	137	161	174	43	36
25	F95887	45/F	100	108	136	140	178	174	45	55
26	K15251	16/M	100	103	110	114	131	139	40	42
27	J74373	32/F	90	94	102	114	184	189	43	46
28	I45243	35/F	76	81	100	10	133	140	42	47
29	J79782	46/F	98	102	110	118	159	163	40	49
30	K19272	47/F	70	74	99	110	172	174	45	44
31	K19930	42/F	94	100	120	128	125	146	46	46
32	J35113	42/F	84	90	93	112	139	142	42	48
33	J83931	45/F	86	90	134	139	146	152	40	46
34	K17392	42/F	111	115	117	128	169	171	50	46
35	H53441	49/F	96	110	127	131	175	173	38	53
36	H67371	44/F	113	116	134	144	196	200	52	37
37	K14057	38/F	93	95	79	97	142	149	52	56
38	J37178	43/F	88	92	108	116	127	135	56	60
39	K11911	36/F	98	102	126	134	128	131	40	42
40	H59413	41/F	97	100	129	134	114	118	35	37

S.NO	OP NO	AGE /SEX	Lipid profile				Renal function test			
			LDL gm/dl		TGL gm/dl		Uriagm/dl		Creatininegm/dl	
			Before	After	Before	After	Before	After	before	after
1	J93019	43/F	87	87	143	125	15	16	0.8	0.9
2	J19960	46/M	63	59	61	64	12	12	0.9	1
3	J65728	44/F	129	128	103	114	16	19	0.9	0.8
4	J43406	33/F	76	70	86	90	26	29	0.8	1.6
5	J72309	45/F	79	73	50	62	15	18	0.8	1.5
6	J67762	55/F	106	106	146	140	17	20	0.8	0.7
7	H94602	49/F	74	75	79	78	22	10	1	0.8
8	J79501	30/F	59	78	52	93	07	21	0.8	0.9
9	I18133	35/F	58	59	44	45	16	19	0.7	0.8
10	I71774	26/F	97	97	84	70	21	25	1	0.9
11	J47615	45/F	105	93	91	103	18	25	0.9	0.9
12	D082569	44/F	120	122	82	88	16	16	0.9	0.8
13	C71989	33/F	118	117	115	118	17	17	1	0.7
14	J00382	45/F	94	95	72	74	17	20	0.9	0.8
15	J90991	28/F	53	66	41	59	24	18	0.8	0.9
16	E0121771	38/F	127	129	124	127	14	20	0.8	0.8
17	I54947	40/F	77	67	103	93	18	20	0.8	0.8
18	E004118	48/F	90	94	96	84	22	21	0.9	0.9
19	J76500	41/F	89	86	85	99	16	16	0.9	0.8
20	K30418	36/F	83	80	53	50	11	10	0.9	0.8
21	K30539	46/F	116	120	88	90	24	24	1.0	1.1
22	J93972	48/F	106	105	88	63	27	18	0.8	0.9
23	K01685	41/F	95	97	161	80	13	24	0.8	0.8

24	J36738	45/F	91	101	113	98	18	11	0.9	.08
25	F95887	45/F	103	98	71	102	25	21	0.8	0.8
26	K15251	16/M	68	73	64	69	24	24	0.8	0.8
27	J74373	32/F	106	109	125	127	23	24	0.7	0.8
28	I45243	35/F	80	86	49	51	20	20	0.8	0.8
29	J79782	46/F	109	112	82	86	15	16	0.8	0.9
30	K19272	47/F	98	100	114	111	16	17	1.0	0.9
31	K19930	42/F	53	66	41	67	24	18	0.8	0.9
32	J35113	42/F	75	79	110	116	16	16	0.8	0.9
33	J83931	45/F	69	73	69	67	21	20	0.9	0.9
34	K17392	42/F	93	97	69	71	17	18	0.7	0.8
35	H53441	49/F	100	98	88	86	27	21	0.8	0.8
36	H67371	44/F	112	118	150	156	12	13	0.8	0.9
37	K14057	38/F	75	81	51	56	19	18	0.8	0.9
38	J37178	43/F	62	69	38	41	18	19	0.9	0.8
39	K11911	36/F	69	71	57	60	23	21	1.0	0.9
40	H59413	41/F	61	64	228	229	16	16	0.9	0.9

STASTICAL ANALYSIS

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

Paired 't' test for Haemoglobin before and after treatment

group	Mean	std	't' value	P value
Before treatment	9.22	1.112	3.469	<o.ooo1
After treatment	10.05	1.712		

Haemoglobin before treatment is 9.22 and after treatment is 10.05 which is statistically significant (p<0.0001).

Paired 't' test for RBC before and after treatment

group	Mean	std	't' value	P value
Before treatment	4.37	4.38	0.096	0.4618
After treatment	1.08	0.37		

RBC before treatment is 4.37 and after treatment is 4.38 which is statisticallynonsignificant (p0.4618).

Paired 't; test for PCV before and after treatment

group	Mean	std	't' value	P value
Before treatment	30.65	2.388	7.025	<o.ooo1
After treatment	32.73	2.421		

PCV before treatment is 30.65 and after treatment is 32.73 which is statistically significant (p<0.0001).

Paired ‘t’ test for MCV before and after treatment

group	Mean	std	‘t’ value	P value
Before treatment	71.58	6.85	5.141	<o.ooo1
After treatment	74.26	7.29		

MCV before treatment is 71.58 and after treatment is 74.26 which is statistically significant ($p<0.0001$).

Paired ‘t’ test for Serum ferritin before and after treatment

group	Mean	std	‘t’ value	P value
Before treatment	7.51	6.136	5.767	<o.ooo1
After treatment	8.82	6.52		

Serum ferritin before treatment is 7.51 and after treatment is 8.82 which is statistically significant ($p<0.0001$).

DISCUSSION

- In Siddha Science, Azhal pandu is caused due to derangement of Pitham. The signs and symptoms of Azhal pandu such as pallor, anorexia, dyspnoea, palpitation, blurred vision, pungent taste of tongue etc., are related with Iron Deficiency Anaemia in Modern Science.

- **Azhal pandu [Iron Deficiency Anaemia]** is one of the global diseases affecting 1.62 billion people all over the world and nearly 50% of women of reproductive age in India are affected.

- Hence the Principal Investigator focused to treat Azhal pandu [IDA].The aim of the study was to find the theurapeutic efficacy of the Siddha formulation CHITRAMUTTI NEI (INT) [Ref: ": Chikicha Rathna Deepam -page no 212-213] in Azhal pandu.

- Before the initiation of the study, Institutional Ethical Committee approval **[Reg No: F.No.NIS/6-20/IEC/15-16]** was obtained by submitting well defined protocol, at NIS.

- The raw herbs were authenticated by Assistant professor of Medicinal Botany, NIS, Chennai.

- The Siddha formulation Chitramutti nei was prepared by following the standard operating procedure in Gunapadam labarotary, NIS.

- The HPTLC of Chitramutti nei was evaluated at captain srinivasamurthy regional ayurvedha drug development institute, Arumbakkam, Chennai showed the fingerprint at UV 254 nm showed highest peak in 8th peak (max44.76% area 63.80%) which could serve as a marker and it is responsible for biological action.

QUALITATIVE ANALYSIS:

The Qualitative study was done in Department of Biochemistry, NIS and the results are as follows, Presence of **Iron,** sulphate, Calcium, fluoride and oxalate, Ammonium, starch, Alkaloids, Carbonate, Silicate, etc., which are essential to fulfill the therapeutic need.

CLINICAL STUDIES:

- The clinical study was conducted in OPD of NIS.
- The patients with the complaints of pallor, anorexia, glossitis, breathlessness, palpitation, numbness etc., were screened using screening proforma, for Azhal pandu.
- Out of 130 patients screened, 106 were females and 24 were males of which 40 of the patients who satisfied the inclusion and exclusion criteria were recruited for the trial.
- Before the start of the trial, Informed Consent was obtained from the patients.
- Out of 40 patients All cases were treated in OPD
- .❖ The treatment aim was to regulate the deranged Pithadosha and to improve the Hemoglobin level.
- The patient was advised to consume 200mg. of agasthiyar kuzhambu with ginger juice once a day at early morning for one day only before the start of the treatment to regulate the Pitha dosha. From the next day, the drug Chitramutti nei was advised to consume 4 ml, twice a day before meals with hot water for 45 days continuously.
- Specific diet restrictions such as tobacco, betel chewing, tea, coffee and alcohol were advised to avoid, during the trial period.
- For OPD patients, the drug was provided for 9 days and clinical assessment was done using assessment forms once in 9 days.
- Labarotary investigations were done on 0th, and 45th day for the assessment of safety of the patients and efficacy of the drug.
- After completion of the trial, patients were followed up for the next 2 months in the OPD.
- After the completion of treatment with the trial drug in 40 cases, highly encouraging results were observed in the following Haematological, Stastical and Clinical parameters as follows,

RESULTS FROM HAEMATOLOGICAL PARAMETERS:

1.Hemoglobin: Out of 40 cases,

32 [80%] cases showed improvement, of which 6 cases reached normal level.

i) Increase of 1 to 5 grams of HB – 25 (62.5%)

ii) Increase of 0.1- 0.9 grams of HB – 10 (25%)

Remaining 5 [12.5%] cases showed no improvement.

2. **RBC**: Out of 40 cases, 31cases (77.5%) increased from its base level, 5 cases (12.5%) did not show any change from its base level and 4 cases (10%) showed reduction from its base level.

3. MCV: Out of 40 cases, 30cases (75%) showed increase from its base level,8case(20%) showed didnot any change from its base level and 2cases(5%) showed reduction from its base level.

4. **PCV**: Out of 40 cases, 30(75%) showed increase from its base level, 6 case (15%) did not show any change from its basal level and 4(10%) showed reduction from its base level.

5. **MCH**: Of the 40 cases, 32(80%) showed increase from its base level, 6(15%) did not show any change and 2 (5%) showed reduction from its base level.

6. **MCHC**: Of the 40 cases, 31(77.5%) showed Increase from its base level and 7(17.5%) did not show any change and 2(5%) showed reduction from its base level.

7. **Serum Ferritin**: Out of 40 cases, 38 cases had undergone the investigation for Serum Ferritin and in that 34(85%) cases showed increase from its base level, and 4(10%) cases showed reduction from its base level

8. Liver function tests, Renal function tests and other blood parameters were found to be in normal limits, during the treatmental period and after the treatment.

STASTICAL REPORT: The Stastical report states that the Mean ± Standard deviation for,

i. Haemoglobin before treatment is 9.22 and after treatment is 10.05 which is statistically significant ($p<0.0001$)

ii. RBC before treatment is 4.37 and after treatment is 4.38 which is statisticallynon significant (p o.4618).

iii. PCV before treatment is 30.65 and after treatment is 32.73 which is statistically significant ($p<0.0001$).

iv. MCV before treatment is 71.58 and after treatment is 74.26 which is statistically significant ($p<0.0001$).

v. Serum ferritin before treatment is 7.51 and after treatment is 8.82 which is statistically significant ($p<0.0001$).

RESULTS FROM CLINICAL PARAMETERS:¬

Age incidence:

The age limit for the cases taken for study ranged from 15 to 55 years. Among the 40 cases treated 1(2.5%) cases belonged to 15-20 years, 16(40%) cases belonged to 20-40 years and 23(57.5%) cases belonged to 40-55 years. The percentage is more in the age group of 20-40 years .

Sex incidence:

Out of 130 patients screened for the trial, 24 cases were males and all of them were found to be under the exclusion criteria were not included and 106 cases were females of which 40 of the cases, who satisfied the inclusion and exclusion criteria were included in the trial. The inference obtained from the study showed, the vulnerability of the female population towards the disease Azhal pandu [IDA].

Occupational incidence:

Among the 40 cases, 1(2.5%) were students, 20(50%) were working women and 19(47.5%) were house wives. The percentage is more in house wives.

Socio-ecnomic Incidence:.

Among the 40 cases, 5(12.5%) cases belonged to Upper middle class economic status, 10(25%) cases belonged to middle class people and 25(62.5%) belonged to poor economic status.The percentage is more in poor economic group.The inference obtained from the study showed, poor socio-economic status is a main predisposing factor, since the poor people usually consume low nutritional food.

Dietary Factor:

Among the 40 cases, 4(10%) cases were observed to have pure vegetarian diet and36 (90%) were taken non-vegtariandiet.The incidence is high in nonvegtarians.

Habitual incidence:

Among 40 cases ,none of the cases having betelnut chewing, tobacco chewing and alcoholism.

Marital status incidence:

Of the 40 cases, 1(2.5%) cases were in unmarried status, 39(97.5%) cases were in married status. The percentage was more in married status.

Menopausal incidence :

Of the 40 cases, 4(10%) cases were in menopausal attained status, 36 (90%) cases were in menopausal not attained status.The percentage was more in menopausal not attained.

Thegi [Body constitution]:

Of the 40 cases, 1(2.5%) cases were in vatha body constitution, 9(22.5%) cases were in pitham body constitution and thontham body constitution cases 30 (75%) in vatham pitham, and kabham body constitution. The percentage was more in thontham type of body constitution.

Iymporigal [Sensory organs]: of the 40 cases,

- **Mei** [skin] was affected noted as pallor, numbness, dryness, in 38 (95%) cases and 32 (80%) cases improved after the treatment.

- **Vaai** [buccal cavity] was affected noted as glossitis, angular sto3matitis, bitter or pungent taste, dryness, pallor, fissured and coated tongue in 32 (80%) cases and all the patients were improved after the treatment.

- **Kan**[eye] was affected noted as pallor, blurred vision in 37 (92.5%) cases and 35(87.5%) cases improved after the treatment

- **Iympulangal [Motor organs]:** Of the 40 cases,

- **Kai** [Upper limb] was affected noted as numbness, pain in 38(75%) cases and35(87.5) cases improved after the treatment..

- **Kaal** [Lower limb] was affected noted as numbness, pain, paedaledema in 35 (87.5%) cases and 34(85)cases improved after the treatment.

- **Vaai** [Buccal cavity] was affected noted as glossit is, angular stomatit is, bitter or pungent taste, dryness, pallor, fissured and coated tongue in 25 (62.5%) cases andand23(57.5) cases improved after the treatment.

- **Eruvai** [Anus] was affected noted as constipation in25 (62.5%) cases and **Karuvai** [Genital organ] was affected in 3 (30%) cases noted as ammennorhoea in 2 patients and oligomennorhoea in 10 patients and 10(7.5%) [1 in ammennorhoea and 9 in oligomennorhoea] were improved after the treatment.

- **Kosam:** Of the 40 cases,

- **Annamayakosam** was affected, noted as loss of appetite in 35 (87.5%) cases and 33(82.5) cases improved after the treatment.

- **Manomayakosam** was , noted as palpitation in 29(72.5%) cases and 24(60) cases improved after the treatment

- **Vinganamayakosam** was affected, noted as pain, numbness and tingling sensation in 36 (90%) cases and 25(62.5) improved after the treatment.

- **Pranamayakosam** was affected, noted as breathlessness in 34(85%) cases and 32(80%) of the patients were improved after the treatment.

- **Anandamayakosam** was affected, noted as ammenorrhoea, oligomenorrhoea and constipation in 17 (42.5%) cases and 15(37.5%) were improved after the treatment.

- **Mukkutram:**
  Vatham: Out of 40 cases,

- **Pranan** was affected, noted as breathlessness in 35(87.5%) cases and 31(77%) were improved after the treatment.

- **Abanan** was affected, noted as constipation, flatulence, ammenorrhoea and oligomenorrhoea in 25(62.5%) cases and 23(57.5%) were improved after the treatment.
- **Uthanan**was affected, noted as breathlessness in 29(72.5%) of the cases before the treatment and 24(60%) of the cases were improved after the treatment.

- **Viyanan** was affected noted as pain, numbness and tingling sensation in 35(87.5%) cases and 3587.5) were improved after the treatment.

- **Samanan** was affected noted as loss of appetite, pain, numbness and breathlessness in 35(87.5%) cases and 33(82.5) were improved after the treatment.

- **Koorman** was affected, noted as blurred vision in 10(25%) cases and 8(20)%were improved after the treatment.

- **Kirukaran** was affected noted as loss of appetite, dryness of mouth in 35(87.5%) cases and all of them were improved after the treatment.

- **Devadhathan** was affected, noted as fatigue in 40(100%) of the cases and all of them were improved after the treatment.

- **Pitham:** Out of 40 cases,

- **Ranjagam** was affected in all the 37 [87.5%] cases, noted as pallor before the treatment and 35(87.5%) cases showed improvement after treatment.

- **Prasagam** was affected in all the 37 [92.5%] cases, noted as pallor and 35(87.5%) cases showed improvement after treatment.

- **Analam** was affected in 35 (87.5%) of the cases noted as loss of appetite before the treatment and 33(82.5) cases showed improvement after the treatment.

- **Alosagam** was affected in 8(20%) of the cases noted as dull vision before the treatment and 6(15)%caeses showed improved after the treatment.

- **Sathagam** was affected noted as fatigue in 38(95%) cases and all 36(90)% cases were improved from the affection after the treatment.

- **Kabam:** Out of 40 cases,

- **Avalambagam** was affected noted as breathlessness in 35(87.5%) cases before the treatment and 33(82.5%) cases were improved after the treatment.

- **Kilethagam** was affected noted as indigestion in 35(87.5%) cases and33 (82.5) were improved after the treatment.

- **Pothagam** was affected in 18(45%) cases noted as feeling of pungent or bitter taste of the tongue and 16 (40) were improved after the treatment.

- **Tharpagam** was affected noted as burning sensation of eye in 7(17.5%) cases before the treatment and all 5 (12.5)were improved after the treatment.

- **UdalKattugal:** Of the 40 cases,

- **Saaram** [noted as fatigue] was affected in all 40 patients (100%) before the treatment and 38(95%) patients were improved after the treatment.

- **Senneer** [noted as pallor, reduction of Hemoglobin level] was affected in all 36 patients (90%) before the treatment and 33(82.5%) patients were improved after the treatment.
- **Oon** was affected noted as paedaledema in 20(25%) cases, before the treatment and 18 (45) %were improved from the affection after the treatment.

- **Suronitham** was affected in 12(30%) patients noted as ammenorrhoea in 2 of the cases and oligomenorrhoea in 10 cases before the treatment of which 10(25%) [9 patients in oligomennorhoea and 1 patient in ammennorhoea] were improved after the treatment.

- **Envagai Thervugal:** Out of 40 cases,

- **Naa** [noted as pallor, coated, glossitis, angular stomatitis, baldness, fissure, dryness, pungent or bitter taste, decreased salivation] was affected in 38 [95%] cases before treatment and 38(95%) cases were improved after the treatment.

- **Niram** [noted as pallor] was affected in 40 [100%] cases before treatment and 37(92.5%) cases were improved from the affection after the treatment.

- **Vizhi** [noted as pallor] was affected in all the 38 cases (95%) of which 37(92.5%) cases were improved from the affection after the treatment.

- **Sparisam** was affected [noted as dryness, hot or cold sensation, excessive sweat] in 25(62.5%) cases and 23(57.5) were improved after the treatment

- **Malam** was affected [noted as constipation] in 20(50%) before the treatment and 18 (45%) caseswere improved after the treatment.

- **Naadi:** According to this study, among 40 cases, Pithavaatham naadi was observed in 15 cases, kabhavatham naadi was observed in 13 cases and kabhapitham was observed in 12 cases, before the treatment. After the treatment 37 cases in

Pithavatham naadi, 1 case in Pitham naadi and 2 case in Vathapitham naadi were observed.

- **Neikkuri:** Of the 40 patients, 25 [62.5 %] cases were observed in Pithaneer and remaining 18(45 %) cases were observed in Vathaneer before the treatment and 13 [32 %] cases were observed in Pithaneer and 25(62.5 %) cases were observed in Vathaneer after the treatment.

SUMMARY

The aim of the study was clinical evaluationof the siddha drug formulation CHITRAMUTTI NEI (INT) in Azhalpandu [Iron Deficiency Anaemia].

Institutional Ethical Committee approval was obtained before the commencement of the trial by submitting the well defined protocol and proforma. [Reg No: F.No.NIS/6-20/IEC/15-16]

CTRI registration number:ctri2018/01/011179 The raw drugs were collected from the reputed raw drug market in Chennai.

Raw herbs were authenticated at Assistant Professor, Department of Medicinal Botany, NIS.

The medicine was prepared as per the standard operating procedure in Gunapadam laboratory, NIS.

The Qualitative Analysis was evaluated at of Biochemistry laboratory, NIS..The report showed the presence of Iron and other Minerals such as sulphate, calcium, carbonate , etc.,

The HPTLC of Chitramutti nei was evaluated at captain srinivasamurthy regional ayurvedha drug development institute, Arumbakkam, Chennai showed the fingerprint at UV 254 nm showed highest peak in 8th peak (max44.76% area 63.80%) which could serve as a marker and it is responsible for biological action.

TLC&HPTLC- HPTLC- finger print of Chitramuttinei could serveas a marker and which is responsible for expression of its biological and clinical actions. HPTLC was carried out in UV at 254nm,UV at 366nm to establish the finger printing profile and to show the possibly active phyto chemical constituents. The prepared medicine was subjected to clinical trial at OPD of NIS.

Among the 130 patients screened in the OPD of Department of Maruthuvam, 40 patients who satisfied the inclusion and exclusion criteria were selected and all were females.

Clinical diagnosis of Azhalpandu was made by Siddha and Modern methodology.

After obtaining the Informed Consent from the selected patients, they were administered with chitramutti nei 4ml twice a day with Hotwater, before meals for 45 days with specific diet restrictions.

A day before the commencement of the treatment, 200mg. of Agasthiyar kuzhambu with ginger juice to normalize the deranged Pitha Thaathu.

All cases 40 were treated in OPD .

Assessments and required Lab Investigations were carried out as per protocol and the concerned data was recorded in the proforma.

Followups of the patient for next 2 months in the OPD after the trial period were also carried out, without the trial drug.

The Statistical analysis showed the datas obtained from the Hematological parameters were statistically significant.

Both Hematological and Clinical improvement of the patient was noted. In this Clinical study, the efficacy of the drug in increasing the Hb level was noted in 32(80%) patients. No adverse effects were reported during or after the course of treatment.

CONCLUSION

The therapeutic dose of chitramutti nei [4ml-Neikkarandi] mentioned in Chikicha Rathna Deepam is the safety dose level for clinical trial.

From the Biochemical studies, chitramutti nei possesses Iron, carbonate, calcium, ammonium, silicate, sulphate, fluoride, oxalate, starch and alkaloid.

Adverse reaction of the drug was not observed during the course of the study.

In the clinical trial, Out of 40 cases 32(80%) cases showed good improvement, 6(15%) cases moderate improvement , 2 (5%)cases poor improvement and some of the important siddha parameters are stated below.

From the Stastical studies, the Mean ± Standard deviation for Haemoglobin before treatment is 9.22 and after treatment is 10.05 which is statistically significant ($p<0.0001$).

From Clinical studies, it is clear that Azhal pandunoi is caused due to derangement of Pitham followed by derangement of Vatham and Kabam. Both objective and subjective improvements were observed in the sample of 40 patients.

The Siddha formulation chitramutti nei has been proved clinically to be haematinic(80%).

Hence I conclude, the drug is found to be there peutically efficacious, and it can be explored in large sample size for further research in near future.

NATIONAL INSTITUTE OF SIDDHA, CHENNAI – 47

AYOTHIDASAR PANDITHAR HOSPITAL

DEPARTMENT OF MARUTHUVAM

A Clinical evaluation of siddha formulation CHITRAMUTTI NEI (INT) in the treatment of AZHAL PAANDU (IRON DEFICIENCY ANAEMIA)

Principal Investigator: **Reg. No:**

FOR M I - SCREENING & SELECTION PROFORMA

1. SERIAL NO : **2. OP /IP NO: ----------**

3. NAME: …… 4. AGE/GENDER: …….....

5. OCCUPATION: …… **6. INCOME: ……**

7. CONTACT NOS; ----------

8. INCLUSION CRITERIA

- Age15-55 of both sexes Yes/No
- Hb less than normal range ie.,men:7-12gms/dl,Women:7-11gms/dl Yes/No
- Clinical symptoms of Pallor, Breathlessness, Palpitation, Anorexia, Giddiness, Numbness, Glossitis, lassitude, Fatigue, koilonychias, etc., Yes/No

Patient willing to undergo blood investigations Yes/No

- Patient willingness for consent to include in the trial Yes/No

9. EXCLUSION CRITERIA:

Pregnancy and lactation	Yes	No	Epilepsy	Yes	No
Severe systemic illness (CA,RA)	Yes	No	Hypertension	Yes	No
Inherited defects(Aplastic anemia, Sickle cell anemia, Thalassemia)	Yes	No	Renal disease	Yes	No
Hyperthyroidism/Hypothyroidism	Yes	No	Diabetes mellitus	Yes	No
Worms infestation	Yes	No	Cardiac disease	Yes	No

10.ADMITTED TO TRAIL

YES NO

If Yes, OPD IPD

Serial NO:

Date:

Station:

Signature of the Investigator:

Signature of the Lecturer: **Signature of the HOD**

NATIONAL INSTITUTE OF SIDDHA, CHENNAI – 47

AYOTHIDASAR PANDITHAR HOSPITAL

DEPARTMENT OF MARUTHUVAM

A Clinical evaluation of siddha formulation CHITRAMUTTI NEI (INT) in the treatment of AZHAL PANDU (IRON DEFICIENCY ANAEMIA)

Principal Investigator: **Reg. No:**

FORM II-CLINICAL RECORD FORM

1. Serial No of the case: _____
2. Name: _____ 3. Gender: Female/male
4. Age (years): _____DOB: Date ☐☐ Month ☐☐ Year ☐☐☐☐
5. Address:
6. Occupation:
7. Religion : H /C /M / O
8. Income :
9. Educational Status: A) Illiterate B) Literate
10. Height: cms 11. Weight kg
12. Complaints and Duration:

_____

_____

_____

13. **HABIT OF**

A) Smoking . Yes ☐ duration _____ years; number- .No ☐

B) Tobacco chewing .Yes ☐ duration _____ years No ☐

C) Betel chewing . Yes ☐ duration _____ years No ☐

D) Alcoholism Yes ☐ duration _____ years; Quantity-ml No ☐

14. **DRUG HISTORY**: Had the patient been treated before with Allopathic drug?

☐ YES ☐ NO

15. **DIETARY STYLE** ☐ Pure vegetarian ☐ Non-vegetarian ☐ Mixed diet

16. MARITAL STATUS: ☐ Married ☐ Unmarried

No of children ☐ male: ☐ female: ☐

17. FAMILY HISTORY:

Whether this problem runs in family? ☐ Yes ☐ No

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

---

18. MENSTRUAL HISTORY: Regular / Irregular / Menopause

19. BOWEL HABITS & MICTURITION: Normal

History of habitual constipation ☐ Yes ☐ No

History of frequent diarrhoea ☐ Yes ☐ No

History of frequent dysuria ☐ Yes ☐ No

20. PSYCHOLOGICAL STATE:

☐ Normal ☐ Anxiety ☐ Depression

21.SIDDHA SYSTEM OF EXAMINATION:

ENVAGAI THERVU:[EIGHT-FOLD EXAMINATION]

I.NAADI: [PULSE PERCEPTION]

	0th day	9th day	18th day	27th day	36nd day	46th day
Vali						
Azhal **Iyyam**						
Vali Azhal						
Azhal vali **Iyya vali**						
Vali Iyyam						
Azhal Iyyam **Iyya Azhal**						

II.NAA:[TONGUE]

	0th day	9th day	18th day	27th day	36th day	46th day
Colour	normal/ Red pale/yellow	normal/ Red pale/yellow	normal/ Red pale/yellow	normal/ Red pale/yellow	normal/ Red pale/yellow	normal/ Red pale/yellow
Taste	Sweet/Sour/ Pungent/ Bitter/None	Sweet/Sour/ Pungent/ Bitter/None	Sweet/Sour/ Pungent/ Bitter/None	Sweet/Sour / Pungent/ Bitter/None	Sweet/Sour/ Pungent/ Bitter/None	Sweet/Sour/ Pungent/ Bitter/None
Coating	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent
Fissure	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent

Saliva	Normal/ Increased/ Decreased	Normal/ Increased/ Decreased	Normal/ Increased/ Decreased	Normal/ Increased/ Decreased	Present/ Absent	Present/ Absent
Dryness	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent
Glossitis	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent
Baldness	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent

III.NIRAM:[COMPLEXION]

0th day	**9th day**	**18th day**	**27th day**	**36th day**	**45th day**
Dark/pale/ Yellow tinted/ wheatish brown	Dark/pale/ Yellow tinted/ wheatish brown	Dark/pale/ Yellow tinted/ wheatish brown	Dark/pale/ Yellow tinted/ wheatish brown	Dark/pale/ Yellow tinted/ wheatish brown	Dark/pale/ Yellow tinted/ wheatish brown

IV.MOZHI:[VOICE]

0th day	**9th day**	**18th day**	**27th day**	**36th day**	**46th day**
Medium/ High/ Low pitched	Medium/ High/ Low pitched	Medium/ High/ Low pitched	Medium/ High/ Low pitched	Medium/ High/ Low pitched	Medium/ High/ Low pitched

V.VIZHI:[EYES] (Lower palpebral conjunctiva)

0th day	**9th day**	**18th day**	**27th day**	**36nd day**	**46th day**
normal/ Red pale/yellow	normal/Red pale/yellow	normal/Red pale/yellow	normal/ Red pale/yellow	normal/ Red pale/yellow	normal/ Red pale/yellow

VI. MALAM:[BOWEL HABITS / STOOLS]

	0th day	9th day	18th day	27th day	36nd day	46th day
Colour	Dark/pale/ yellow/ Red	Dark/pale/ yellow/ Red	Dark/pale/ Yellow/ Red	Dark/pale/ yellow/ Red	Dark/pale/ yellow/ Red	Dark/pale/ yellow/ Red
Consistency	Solid/ Semisolid/ Watery	Solid/ Semisolid/ Watery	Solid/ Semisolid/ Watery	Solid/ Semisolid/Watery	Solid/ Semisolid/ watery	Solid/ Semisolid/Watery
stool bulk	Normal/ Reduced	Normal/ Reduced	Normal/ Reduced	Normal/ Reduced	Normal/ Reduced	Normal/ Reduced
Constipation	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent
Diaarhoea	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent

VII.MOOTHIRAM:[URINE EXAMINATION]

Neerkkuri	0th day	9th day	18th day	27th day	36nd day	46th day
Niram [Colour]	Yellow/ Red/ White/ Straw Coloured Crystal clear	Yellow/ Red/ White/ Straw coloured/ Crystal clear	Yellow/ Red/ White/ Straw coloured/ Crystal clear	Yellow/ Red/ White/ Straw coloured/ Crystal clear	Yellow/ Red/ White/ Straw coloured/ Crystal clear	Yellow/ Red/ White/ Straw coloured/ Crystal clear
Manam[Odour]	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent
Nurai[Froth]	Nil/ Reduced/ Increased	Nil/ Reduced/ Increased	Nil/ Reduced/ Increased	Nil/ Reduced/ Increased	Nil/ Reduced/ Increased	Nil/ Reduced/ Increased
Edai[Sp.gravity]	Normal/	Normal/	Normal/	Normal/	Normal/	Normal/

	Increased/ Reduced	Increased/ Reduced	Increased/ Reduced	Increased/ Reduced	Increased/ Reduced	Increased/ Reduced
Enjal[Deposits]	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent	Present/ Absent
Volume	Normal/ Increased/ Reduced	Normal/ Increased/ Reduced	Normal/ Increased/ Reduced	Normal/ Increased/ Reduced	Normal/ Increased/ Reduced	Normal/ Increased/ Reduced

Neikkuri	**0th day**	**9th day**	**18th day**	**27th day**	**36nd day**	**46th day**
Serpentine fashion						
Annular/ Ringed fashion						
Pearl beaded fashion						
Mixed fashion						
Other fashion						

VIII. SPARISAM:[PALPATORY PERCEPTION]

0th day	**9th day**	**18th day**	**27th day**	**36nd day**	**46th day**
Warmth/ Hot/ cold/ Sweat	Warmth/ Hot/cold/ Sweat	Warmth/Hot /cold/ Sweat	Warmth/Hot/ cold/ Sweat	Warmth/Hot /cold/ Sweat	Warmth/Hot /cold/ Sweat

THEGI:[TYPE OF BODY CONSTITUTION]

Vatham predominant		Kabam predominant	
Pitham predominant		Thondha udal	

NILAM: [LAND WHERE PATIENT LIVED MOST]

Kurinji ☐ Mullai ☐ Marutham ☐ Neithal ☐ Paalai ☐

(Hilly terrain) (Plains) (Coastal belt) (Aridregions) (Forest range)

KAALAM: [SEASON]

☐ Kaarkalam ☐ Pinpanikalam

☐ Koothirkalam ☐ Ilavenil

☐ Munpanikalam ☐ Muthuvenil

GUNAM:[CHARACTER]

☐ Sathuvam ☐ Rasatham ☐ Thamasam

IYMPORIGAL:[SENSORY ORGANS]

	0th day	**9th day**	**18th day**	**27th day**	**36nd day**	**46th day**
Mei [Skin **Vaai [Buccalcavity]** **Kan [Eyes]**	**Normal/ Affected**	**Normal/ Affected**	**Normal/ Affected**	**Normal/ Affected**	**Normal/ Affected**	**Normal/ Affected**
Mooku[Nose]						
Sevi [ear]						

IYMPULANGAL:[MOTOR ORGANS]

	0th day Normal/ Affected	9th day Normal/ Affected	18th day Normal/ Affected	27th day Normal/ Affected	36nd day Normal/ Affected	46th day Normal/ Affected
Kai [upperlimb]						
Kal [lowerlimb] **Vai[Buccal cavity]** **Eruvai** **[excretory organ]**						
Karuvai **[Reproductive organ]**						

KOSAM:[SHEATHS]

	0th day	9th day	18th day	27th day	36nd day	46th day
	Normal/ Affected	Normal/ Affected	Normal/ Affected	Normal/ Affected	Normal/ Affected	Normal/ Affected
Annamaya kosam **Praanamaya Kosam**						
Manonmayakosam **Vingyanamaya osam** **Anandhamaya kosam**						

MUKKUTRAM:[AFFECTION OF THREE HUMORS]

VATHAM:

	0th day	**9th day**	**18th day**	**27th day**	**36nd tday**	**46th day**
Praanan	**Normal/ Affected**	**Normal/ Affected**	**Normal/ Affected**	**Normal/ Affected**	**Normal/ Affected**	**Normal/ Affected**
Abaanan Samaanan						
Udhaanan Viyaanan Naahan						
Koorman Kirukaran Devathathan						
Dhananjeyan						

B) PITHAM:

	0th day	**9th day**	**18th day**	**27th day**	**36nd day**	**46th day**
Analapitham	**Normal/ Affected**	**Normal/ Affected**	**Normal/ Affected**	**Normal/ Affected**	**Normal/ Affected**	**Normal/ Affected**
Prasakam Ranjakam Aalosakam						
Saathakam						

C) KABAM:

	0th day Normal/ Affected	9th day Normal/ Affected	18th day Normal/ Affected	27th day Normal/ Affected	36nd day Normal/ Affected	46th day Normal/ Affected
Avalambagam **Kilethagam** **Pothagam**						
Tharpagam **Santhigam**						

SEVEN DHATHUS:[SEVEN SOMATIC COMPONENTS]

	0th day Normal/ Affected	9th day Normal/ Affected	18th day Normal/ Affected	27th day Normal/ Affected	36nd day Normal/ Affected	46th day Normal/ Affected
Saaram[chyme] **Senneer[Blood]**						
Oon[Muscle] **Kozhuppu[Fat]**						
Enbu[Bones]						
Moolai[Bonemarrow] **Sukkilam/** **Suronitham** **[Genital discharges]**						

SYSTEMIC EXAMINATION:

	0th day	9th day	18th day	27th day	36nd day	46th day
CardioVascular System **Respiratory System** **Gastrointestinal System** **Central Nervous System**						
Endocrine System						

GENERAL EXAMINATION:

	0th day	9th day	18th day	27th day	36nd day	46th day
Height (cms) **Weight (kg)**						
Temperature(°F) **Pulse rate (per min)** **Heart rate (per min)**						
Respiratory rate(per min)						
Blood pressure(mm/Hg)						
Pallor **Jaundice**						
Cyanosis						
Lymphadenopathy **Pedal edema**						
Clubbing **Jugular vein pulsation**						

CLINICAL SYMPTOMS:

	0th day	9th day	18th day	27th day	36nd day	46th day
Fatigue						
Pallor **Anorexia** **Tachycardia**						
Palpitation **Giddiness** **Breathlessness**						
Pungent or bitter taste of tongue						
Angular stomatitis						
Glossitis **Lack of concentration**						
Hair fall						
Numbness **Tingling sensation**						
Amenorrhoea **Oligomenorrhoea** **Oedema**						
Koilonychia						

Date: **Station:**

Signature of the Investigator:

Signature of the Lecturer: **Signature of the HOD;**

NATIONAL INSTITUTE OF SIDDHA, CHENNAI – 47

AYOTHIDASAR PANDITHAR HOSPITAL

DEPARTMENT OF MARUTHUVAM

A Clinical evaluation of siddha formulation CHITRAMUTTI NEI (INT) in the treatment of AZHAL PAANDU (IRON DEFICIENCY ANAEMIA)

Principal Investigator: **Reg. No:**

FORM-III LABORATORY PARAMETERS-CHART

1. Serial No: _____ 2. Reg No: _____

3. Name: _____ 4.Age: _____ years 5.Gender: Male/Female

BLOOD INVESTIGATION		**0th DAY Date:**	**46th DAY Date:**	**NORMAL VALUES**
HB (gms%)				**M:13-18 ;W:11.5- 16.5**
T.RBC(milli/cu.mm)				**M:4.5-6.5;W:3.5-5.5**
ESR (mm)	**½ hr.**		-	
	1 hr.			**M:0-10 ;W:0-20**
MCV(fl or cu.µ)				**76-96**
PCV (%)				**M:40-55 ;W:35-45**
MCH (pg)				**27-33**
MCHC (gm/dl)(%)				**31-35**
SERUM FERRITIN(µg/L)				**M:20-400 ;W:8-200**
MORPHOLOGY OF RBC				**Normocytic Normochromic**
T.WBC (cu.mm)				**4000-11,000**
DIFFERENTIAL COUNT (%)	**Polymorphs**			**40-75**
	Lymphocytes			**20-35**
	Monocytes			**2-10**
	Eosinophils			**1-6**
	Basophils			**0-1**

BT (per min)				**1-3**
Clotting time				**3-8**
Platelets(lak/ cubic mm)				**1,50000-500000**
Blood glucose (mg/dl)	**Fasting**			**80-120**
	PP			**<140**
	Random			**<140**
Lipid profile (mg/dl)	**Serum cholesterol**			**150-250**
	HDL			**30-60**
	LDL			**Up to 130**
	VLDL			**40**
	TGL			**Up to 160**
RFT (mg/dl)	**Blood urea**			**16-50**
	Serum creatinine			**0.6-1.2**
	Serum Uric acid			**M:3-9 ;W: 2.5-7.5**
LFT (mg/dl)	**Total bilirubin**			**0.3-1**
	Direct bilirubin			**0.1-0.3**
	Indirect bilirubin			**0.2-0.8**
	Serum total protein			**6-8**
	Serum Albumin			**3.5-5.5**
	Serum globulin			**2-3.5**
	Fibrinogen(g/dl)			**0.2-0.4**
	Serum calcium			**9-11**
	Serum phosphorous			**2-5**
	SGOT (IU/L)			**6-18**
	SGPT (IU/L)			**3-26**
	Alkaline phosphatase (kings Å units)			**3-12**

Urine investigation	Before TMT Date:	After TMT Date:
Neer kuri		
Niram		
Manam		
Nurai		
Edai		
Enjal		
Nei kuri		
Albumin		
Sugar F		
Sugar PP/ R		
Deposits		
Motion test		
Ova		
Cyst		
Occult blood		

Date:

Station:

Signature of the Investigator:

Signature of the Lecturer: **Signature of the HOD**

NATIONAL INSTITUTE OF SIDDHA, CHENNAI – 47

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DEPARTMENT OF MARUTHUVAM

A Clinical evaluation of siddha formulation CHITRAMUTTI NEI (INT) in the treatment of AZHAL PAANDU (IRON DEFICIENCY ANAEMIA)

FORM IV (DRUG COMPLIANCE FORM)

Name: **Reg No:** **Serial No:** **DRUG NAME:CHITRAMUTTI KIRUTHAM**

On 1st day-Date: Drugs issued: (Nos) / Drugs returned: (Nos)

On 9th day-Date: Drugs issued: (Nos) / Drugs returned: (Nos)

On18 th day-Date: Drugs issued: (Nos) / Drugs returned: (Nos)

On 27th day-Date: Drugs issued: (Nos) / Drugs returned: (Nos)

On36 th day-Date: Drugs issued: (Nos) / Drugs returned: (Nos)

On 45th day-Date: Drugs issued: (Nos) / Drugs returned: (Nos)

Day	Date	Morning	Evening	Day	Date	Morning	Evening
Day 1				Day25			
Day2				Day26			
Day3				Day27			
Day4				Day28			
Day5				Day29			
Day6				Day30			
Day7				Day31			
Day8				Day32			
Day9				Day33			
Day10				Day34			

Day11				Day35			
Day12				Day36			
Day13				Day37			
Day14				Day38			
Day15				Day39			
Day16				Day40			
Day17				Day41			
Day18				Day42			
Day19				Day43			
Day20				Day44			
Day21				Day45			
Day22							
Day23							
Day24							

Signature of the Investigator:

Signature of the Lecturer: Signature of the HOD

NATIONAL INSTITUTE OF SIDDHA, CHENNAI – 47

AYOTHIDASAR PANDITHAR HOSPITAL

DEPARTMENT OF MARUTHUVAM

A Clinical evaluation of siddha formulation CHITRAMUTTI NEI (INT) in the treatment of AZHAL PANDU (IRON DEFICIENCY ANAEMIA)

FORM V – INFORMATION SHEET

Name of the Principal Investigator: Dr.M.S.SHAKILA

Name of the Institution : National Institute of Siddha,
Tambaram Sanatorium
Chennai- 47.

- I, Dr.M.S.Shakila Studying M.D(S) in National Institute of Siddha, Chennai. The disease called Azhal paandu (Iron deficiency of anaemia) symptoms, like pallor, giddiness, fatigue, anorexia, hair fall. This condition is being treated is NIS with many siddha formulations. As a part of M.D(S) research programme and developing new efficacious medicine, we propose to study the Chitramutti nei formulation for treating the condition. This formulation has been mentioned in siddha literature and empirical evidence with contemporary tools is required for documentation. You can receive medicines free of cost Chitramutti nei 4ml BD twice a day for 9 days in a duration of 45 days The diagnosis tests will be carried out free of cost. We will assess the effect of treatment after completion of 45 days of treatment using clinical and lab parameters.

- In this regard, we need to ask you few questions. We will maintain confidentiality of your comments and data obtained from you. There will be no risk of disclosing your identity and no physical, psychological or professional risk is involved by taking part in this study.

- Taking part in this study is voluntary. No compensation will be paid to you for taking part in this study. You can choose not to answer any specific question. There is no specific benefit for you if you take part in the study, but you will be under our clinical monitoring and specific attention will be given for your health. Taking part in the study may be of benefit to the community, as it may help us to develop medicine for Azhal paandu, In case of any adverse symptoms which is expected for few patients during the treatment, shall be reported to PIs and care will be taken in NIS for relief. You can withdraw from the study at the midst of treatment period, if you are not interested to continue and you will receive our usual treatment without condition.
- The information we will collect in this study, will remain between you and the principal investigator. We will ask you a few questions through questionnaire. We will not write your name on different forms which sent to other investigation forms investigating/analysis sections and we will use a code instead given by the principal investigator. Only the principal investigator will know the key to this code which will be kept in safe custody. If you agree to be a participant in this study, you will be screened as per the study protocol.

- 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.M.S.Shakila Studying M.D(S) scholar cum principal investigator of this study, attached to the National Institute of Siddha, Chennai (Mobile phone no:8681918617). You can also contact the Chairman/Member-secretary of Ethics committee, National Institute of Siddha, Chennai – 600047, Tel no: 91-44-22411611, for rights and participation in the study.

தேசிய சித்த மருத்துவ நிறுவனம், சென்னை 47

அயோத்திதாசர் பண்டிதர் மருத்துவமனை

அழல் பாண்டு நோய்க்கான சித்த மருந்தின் சிற்றாமுட்டி நெய்

பரிகரிப்புத் திறனைக் கண்டறியும் மருத்துவ ஆய்விற்கான தகவல் படிவம்.

FORM V- தகவல் படிவம்

முதன்மை ஆராய்ச்சியாளர் பெயர் : மரு.மீ.சு.ஷகிலா

நிறுவனத்தின் பெயர் : தேசிய சித்த மருத்துவ நிறுவனம்

தாம்பரம் சானட்டோரியம்

சென்னை 47

மரு.மீ.சு.ஷகிலா ஆகிய நான் தேசிய சித்த மருத்துவமனையில் பட்ட மேற்படிப்பு பயின்று வருகிறேன். அழல் பாண்டு என்னும் நோயானது சித்த மருத்துவத்தில் சிவப்பணுக்கள் குறைவதனால் ஏற்படகூடிய நோய். - து பரவ கூடிய நோய் அல்ல. இந்நோய்க்கு தேசிய சித்த மருத்துவமனையில் பல சித்த மருந்துகள் பயன்படுத்தப்பட்டு வருகின்றது. சித்த மருத்துவ பட்ட மேற்படிப்பில், ஆய்வின் ஒரு பகுதியாக புதிய மருந்துகளை பயன்படுத்தும் நோக்கில் சிற்றாமுட்டி நெய்

மருந்தினை இந்நோய்க்கு வழங்க பரிந்துரை செய்கிறோம். இந்த மருந்தின் செய்முறை, அளவு, மற்றும் மருத்துவ பயன்கள் அனைத்தும் அங்கீகரிக்கப்பட்ட சித்த மருத்துவ நூலில் கூறப்பட்டுள்ளது. எந்தவித கட்டணமுமின்றி தாங்கள் இந்த மருந்தினை பெற்றுக்கொள்ளலாம். இந்த ஆய்வில் மருந்து உட்கொள்ளும் காலம் 45 நாட்கள் ஆகும். வாரம் ஒருமுறை தேசிய சித்த மருத்துவமனைக்கு நேரில் வந்து 9நாட்களுக்கான மருந்தினை பெற்றுக்கொள்ள வேண்டும். இந்த ஆய்வு சம்பந்தமான ஆய்வக பரிசோதனைகள் கட்டணமின்றி செய்யப்படும்.45நாட்கள் மருந்து உட்கொள்ளும் காலம் முடிந்த பிறகு நோய்க்கான குறிகுணங்கள் மற்றும் ஆய்வக பரிசோதனைகள் இவற்றின் முடிவுகளின் அடிப்படையில் மருந்தின் பரிகரிப்புத்திறன் கண்டறியப்படும்.

இந்த ஆய்வு சம்பந்தமாக சில கேள்விகளை தங்களிடம் கேட்க இருக்கிறேன். தங்களிடமிருந்து பெறப்படும் கருத்துக்கள் மற்றும் குறிப்புகள் அனைத்தும் நம்பிக்கையாக பதிவு செய்யப்படும்.இந்த ஆய்வில் தங்களை உட்படுத்திக்கொள்வதின் மூலம் எந்த வகையிலும் பாதிப்புக்குள்ளாக மாட்டீர்கள் என உறுதி அளிக்கிறேன்.

எந்தவித வற்புறுத்தலுமின்றி, இந்த ஆய்வில் பங்கேற்கவும், இந்த ஆய்வு சம்பந்தமாக கேட்கப்படும் கேள்விகளுக்கு பதில் கூறவும் தங்களுக்கு முழு சுதந்திரம் அளிக்கப்படுகிறது. இந்த ஆய்வில் பங்கேற்பதற்கு எந்த சன்மானமும் வழங்கப்படமாட்டாது. ஆனால், ஆய்வு முழுவதும் எனது மேற்பார்வையிலும், தங்கள் உடல்நலன் குறித்த தனி கவனத்திலும் ஆய்வு மேற்கொள்ளப்படும். அழல் பாண்டு நோய்க்கான புதிய மருந்தின் பரிகரிப்புத்திறனை

சமூகத்திற்கு உணர்த்தும் வகையில் இந்த ஆய்வு மேற்கொள்ளப்படுகிறது.இந்த ஆய்வினைத் தொடர தங்களுக்கு விருப்பம் இல்லையெனில், எப்பொழுது வேண்டுமானலும் ஆய்வின் இடையில் விலகிக்கொள்ளவும், இம்மருத்துவமனையில் வழங்கப்படும் இந்நோய்க்கான வழக்கமான மருந்துகளை பெற்றுக்கொள்ளவும் அறிவுறுத்தப்படுகிறீர்கள்.

இந்த ஆய்வில் சேகரிக்கப்படும் விபரங்கள் அனைத்தும் தங்களுக்கும் முதன்மை ஆராய்ச்சியாளரான எனக்கும் இடையில் இரகசியமாக வைக்கப்படும். கேள்வி பதில் வடிவத்தில் தங்களிடம் கேள்விகள் கேட்கப்படும். அனைத்துப் படிவங்களிலும் தங்களின் பெயர் தவிர்க்கப்பட்டு ஆய்வாளரால் தங்களுக்கென தனிக் குறியீடு வழங்கப்படும். அந்தக் குறியீடு ஆய்வாளருக்கு மட்டுமே தெரிந்ததாக இருக்கும். நீங்கள் இந்த ஆய்வில் பங்கேற்க விருப்பப்பட்டால், திட்ட வரைவு படி தேர்வு செய்யப்படுவீர்கள்.

நீங்கள் இந்த ஆய்வில் பங்கேற்கும் முன், இந்த ஆய்வினைப் பற்றிய மேலும் விபரங்கள் பெற வேண்டுமென விருப்பப்பட்டால், இந்த ஆய்வின் முதன்மை ஆராய்ச்சியாளர் மற்றும் தேசிய சித்த மருத்துவமனை, பட்ட மேற்படிப்புத்துறை மாணவர் மரு.மீ.சு.ஷகிலா ஆகிய என்னை 8681918617 என்ற எண்ணில் தொடர்பு கொள்ளலாம். மேலும், நீங்கள் இந்த ஆய்வில், உங்களது பங்கேற்பு மற்றும் உரிமை பற்றி தெரிந்து கொள்ள தேசிய சித்த மருத்துவமனை, தலைவர்/செயற்க்குழு உறுப்பினர் அவர்களையும்

91-44-22511611 என்ற எண்ணில் தொடர்பு கொள்ளலாம்.

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NATIONAL INSTITUTE OF SIDDHA, CHENNAI -47

AYOTHIDASS PANDITHAR HOSPITAL

DEPARTMENT OF MARUTHUVAM

An Open clinical study to evaluate the therapeutic efficacy of *CHITRAMUTTI NEI* *in the treatment of AZHAL PANDU/ IRON DEFICIENCY ANAEMIA*

FORM VI A - CONSENT FORM

Certificate by Investigator

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

Date: Signature:

Name:

Consent by Patient

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

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

I, exercising my free power of choice, hereby give my consent to be included .As a subject in the clinical trial of **Chitramuttinei**for the management of **Azhalpandu**(IronDeficiencyAnaemia)

Date: Patient Signature:

Patient Name:

Date: Signature of Witness:

Name:

Relationship:

தேசிய சித்த மருத்துவ நிறுவனம்

அயோத்திதாஸர் பண்டிதர் மருத்துவமனை,சென்னை-47

பட்டமேற்படிப்பு மருத்துவத்துறை

IV A- ஒப்புதல் படிவம்

ஆய்வாளரால் சான்றளிக்கப்பட்டது

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

தேதி : **கையொப்பம்:**

இடம்: **பெயர்** :

நோயாளியின் ஒப்புதல்

என்னிடம் இந்த மருத்துவ ஆய்வின் காரணத்தையும், மருந்தின் தன்மை மற்றும் மருத்துவ வழிமுறைப் பற்றியும், தொடர்ந்து எனது உடல் இயக்கத்தை கண்காணிக்கவும், அதனை பாதுகாக்கவும் பயன்படும் மருத்துவ ஆய்வுக்கூட பரிசோதனைகள் பற்றி திருப்தி அளிக்கும் வகையில் ஆய்வு மருத்துவரால் விள்க்கிக் கூறப்பட்டது.

நான் இந்த மருத்துவ ஆய்வின் போது, காரணம் எதுவும் கூறாமல், எப்பொழுது வேண்டுமானாலும் இந்த ஆய்விலிருந்து என்னை விடுவித்து கொள்ளும் உரிமையை தெரிந்திருக்கின்றேன்.

நான் என்னுடைய சுதந்திரமாக தேர்வு செய்யும் உரிமையைக் கொண்டு **அழல் பாண்டு** நோய்க்கான சிற்றாமுட்டி நெய் மருந்தின் பரிகரிப்புத் திறனைக் கண்டறியும் மருத்துவ ஆய்விற்கு என்னை உட்படுத்த ஒப்புதல் அளிக்கிறேன்.

தேதி: **கையொப்பம்:**

இடம்: **பெயர்** :

தேதி: **சாட்சிக்காரர் கையொப்பம்:**

இடம்: **பெயர்** :

AYOTHIDASAR PANDITHAR HOSPITAL

DEPARTMENT OF MARUTHUVAM

A Clinical evaluation of siddha formulation CHITRAMUTTI NEI (INT) in the treatment of AZHAL PAANDU (IRON DEFICIENCY ANAEMIA)

FORM VII - (WITHDRAWAL FORM)

1) S. NO: ---------- 2) OPD/ IPD NO: ---------- 3)REG NO:

4) NAME: ---------- 5) AGE: --------- 6) GENDER: M/F------

Date of trial commencement:

Date of withdrawal from trial:

REASONS FOR WITHDRAWAL:

- Long absence at reporting : Yes/ No
- Irregular treatment: Yes/ No
- Shift of locality : Yes/No
- Increase in severity of symptoms: Yes/No
- Complication/Adverse reactions if any: Yes/No
- Poor patient compliance: Yes/No

FORM VIII [Azhal pandu-chitramutti nei]

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

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

Peripheral Center code: **State:**

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

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

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

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

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

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

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

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

b) Dietary Restrictions if any

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

d) Any other relevant information.

5. Treatment provided for adverse reaction:

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

Recovered:	Not recovered:	Unknown:	Fatal:	If Fatal Date of death:
Severe: Yes / No.	Reaction abated after drug stopped or dose reduced: Reaction reappeared after re introduction:			
Was the patient admitted to hospital? If yes, give name and address of hospital				

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

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

Hepatic Renal Cardiac Diabetes Malnutrition

Any Others

9. H/O previous allergies / Drug reactions:

10. Other illness (please describe):

11. Identification of the reporter:

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

Signature of the reporter: **Date:**

Please send the completed form to:

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

The Director

National Institute of Siddha,

(Pharmacovigilance Regional Centre For Siddha Medicine),

Tambaram, Sanatorium, Chennai-600 047.

(O) 044-22381314 Fax : 044 – 22381314

Website : www.nischennai.org

Email: nischennaisiddha@yahoo.co.in

*** ***

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

Date:

Station:

Signature of the Investigator:

Signature of the Lecturer:

NATIONAL INSTITUTE OF SIDDHA, CHENNAI – 47

AYOTHIDASAR PANDITHAR HOSPITAL

DEPARTMENT OF MARUTHUVAM

A Clinical evaluation of siddha formulation CHITRAMUTTI NEI (INT) in the treatment of AZHAL PAANDU (IRON DEFICIENCY ANAEMIA)

FORM IX- DIETARY ADVICE FORM

IEC NO: NIS/IEC

DIET ADVICE:

To add in food:

- Tender Brinjal
- Tender country bean
- Pepper
- Garlic
- Anise seed
- Ginger
- Onion
- Green Peas
- Chick pea or Bengal gram
- Easily digestible food
- soups

To avoid :

Tamarind

- Tea
- Coffee
- Betel chewing
- Tobacco chewing
- Alcohol

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DEPARTMENT OF MARUTHUVAM

A Clinical evaluation of siddha formulation CHITRAMUTTI NEI (INT) in the treatment of AZHAL PAANDU (IRON DEFICIENCY ANAEMIA)

FORM VIII- DIETARY ADVICE FORM

IEC NO: NIS/IEC

சேர்க்க கூடிய உணவுகள்:

- கத்தரிபிஞ்சு
- அவரைபிஞ்சு
- மிளகு
- பூண்டு
- சீரகம்
- இஞ்சி
- வெங்காயம்
- பட்டானி
- கொண்டைகடலை
- எளிதில் செரிக்கும் உணவுகள்
- சூப் வகைகள்

சேர்க்க கூடாதவைகள்:

- புளி, தேநீர், ஆகியவை சேர்க்க கூடாது.
- வெற்றிலை, பாக்கு போட கூடாது.
- புகையிலை போட கூடாது.
- மது அருந்துதல் கூடாது.

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

F.No.NIS/6-20/IEC/15-16 Dt: 14.10.2016

CERTIFICATE

Address of Ethics Committee: National Institute of Siddha, Tambaram Sanatorium, Chennai-600047, Tamil Nadu, India	
Principal Investigator: Dr. M.S..Shakila – I year, Dept.of Maruthuvam	
Protocol Title:- A Clinical evaluation of Siddha drug "Chitramutti Nei" (Internal) in the treatment of Azhal Pandu (Iron Deficiency Anaemia).	
Documents filed	1) Protocol, 2) Data Collection forms
Clinical trial Protocol (others – Specify)	**Yes-(M.D-Dissertation)**
Informed consent documents	**Yes**
Any other documents	-
Date of IEC approval & its number	**NIS/IEC/2016/11-06/ 14.10.2016**

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

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

(Dr.V.Subramanian)
Chairman

(Prof.Dr.V.Banumathi)
Member Secretary

NATIONAL INSTITUTE OF SIDDHA CHENNAI 600 047

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

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

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

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

"RESEARCH METHODOLOGY & BIOSTATISTICS"

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

Organized by the Department of Siddha

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

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

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

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

Clinical Trial Details (PDF Generation Date :- Mon, 29 Jan 2018 06:12:27 GMT)

CTRI Number	CTRI/2018/01/011179 [Registered on: 08/01/2018] - **Trial Registered Prospectively**
Last Modified On	07/01/2018
Post Graduate Thesis	Yes
Type of Trial	Interventional
Type of Study	Siddha
Study Design	Single Arm Trial
Public Title of Study	Clinical study of siddha medicine "Chitramutti Nei" in the treatment of Azhal Pandu(Iron deficiency anemia)
Scientific Title of Study	A clinical evaluation of siddha drug "Chitramutti Nei" (Internal) in the treatment of Azhal Pandu (Iron deficiency anemia)

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	DrMSShakila
Designation	PG Scholar
Affiliation	National Institute of Siddha
Address	National institute of Siddha Department of Maruthuvam Tambaram Sanatorium Kanchipuram Department of Maruthuvam Tambaram Sanatorium Kanchipuram Kancheepuram TAMIL NADU 600047 India
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Details Contact Person (Scientific Query)

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Details Contact Person (Public Query)	
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Source of Monetary or Material Support

Source of Monetary or Material Support
> National Institute of Siddha Tambaram sanatorium Chennai 47

Primary Sponsor

Primary Sponsor Details	
Name	Ayothidoss Pandithar Hospital
Address	National institute of Siddha Tambaram Sanatorium Chennai 47
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
DrMSShakila	Ayothidoss Pandithar Hospital	Room no 1 Department of Maruthuvam National institute of Siddha Tambaram Sanatorium Kanchipuram Kancheepuram TAMIL NADU	8681918617 04422381314 shakilav2010@gmail.com

Details of Ethics Committee

Name of Committee	Approval Status	Date of Approval	Is Independent Ethics Committee?
Institutional Ethical Committee	Approved	14/10/2016	No

Regulatory Clearance Status from DCGI

Status	Date
Not Applicable	No Date Specified

Health Condition / Problems Studied

Health Type	Condition
Patients	Azhal Pandu (Iron deficiency anemia)

Intervention / Comparator Agent

Type	Name	Details
Comparator Agent	Nil	Nil
Intervention	Chitramutti Nei	4 ml of Chitramutti Nei will be given twice a day along with hot water for a period of 45 days

Inclusion Criteria

Inclusion Criteria	
Age From	15.00 Year(s)
Age To	55.00 Year(s)
Gender	Both
Details	Hb level less than normal range, For male : 7-12gms/d1{13-18gms/d1}. For female :7-11gms /d1{11.5-16.5gms/d1}. Patient willing to undergo blood investigation. Patient willing to sign the informed consent stating that he/she will conscientiously stick to the treatment during 48days but can opt out of the trial of his/her own conscious discretion.

Exclusion Criteria

Exclusion Criteria	
Details	Hypertension.pregnancy and lactation. presence of any associated

	severe systemic illness.(e.g. CA,RA) Endocrine disorder(Thyroid abnormality,Diabetes mellitus) Cardiac disease.Renal disease.Inherited defects (sickle cell anemia, Thalassemia,Aplastic anemia) Patient not willing to give blood sample. Epilepsy.Worm infestation.
Method of Generating Random Sequence	Not Applicable
Method of Concealment	Case Record Numbers
Blinding/Masking	Open Label

Primary Outcome

Outcome	Timepoints
Primary outcome is mainly assessed by comparing the pre and post treatment Hemoglobin level, of the trial patient.	45 days

Secondary Outcome

Outcome	Timepoints
Secondary outcome is assessed by comparing the following parameters,before and after the treatment.reduction of clinical symptoms.changes in complete blood count.changes in serum ferritin level	45 days

Target Sample Size	**Total Sample Size=**40 **Sample Size from India=**40
Phase of Trial	Phase 2
Date of First Enrollment (India)	12/01/2018
Date of First Enrollment (Global)	No Date Specified
Estimated Duration of Trial	**Years=**1 **Months=**0 **Days=**0
Recruitment Status of Trial (Global)	Not Applicable
Recruitment Status of Trial (India)	Not Yet Recruiting
Publication Details	None yet
Brief Summary	It is a single non randomized open - label trial to determine the efficacy and safety of Chitramutti nei in patients with Azhal Pandu (Iron deficiency Anemia). In this trial 40 Iron deficiency Anemia patients will be recruited and the trial drug will be administered 4 ml twice a day along with hot water for a period 45 days. During the study period all the study related data will be recorded and documented in a separate trail master file for each patients. During the trial period if any adverse effect will be noticed and referred to pharmacovigilance department in NIS and further management will also be given in NIS OPD and IPD. The entire trial will be monitored by the research monitoring committee of NIS. During this trial all the safety and efficacy parameters will be recorded in the CRF. After completion of the trial all the study related data will be analysed statistically. The outcome of this trial will be published in Indian Journal of Medical Research.

THE TAMIL NADU Dr.M.G.R. MEDICAL UNIVERSITY, GUINDY, CHENNAI-32

DEPARTMENT OF SIDDHA

XXI WORKSHOP ON "RESEARCH METHODOLOGY AND BIO STATISTICS"

Attendance Certificate

This is to certify that Dr M.S. SHAKILA of National Institute of Siddha, Tambaram Sanatorium, Chennai-600 047 has attended the WORKSHOP ON "RESEARCH METHODOLOGY AND BIO STATISTICS" from 25.04.2016 to 29.04.2016 at The Tamil Nadu Dr MGR Medical University, Chennai-32.

Dr.N.Kabilan
Prof & Head, Dept. of Siddha

NATIONAL INSTITUTE OF SIDDHA, CHENNAI – 600047

BOTANICAL CERTIFICATE

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

Pavonia zeylanica Cav. (Malvaceae), Whole plant
Curcuma longa Linn. (Zingiberaceae), Finger rhizome
Terminalia chebula Retz. (Combretaceae), Fruit
Phyllanthus emblica Linn. (Euphorbiaceae), Fruit
Terminalia belerica Roxb. (Combretaceae), Fruit
Andrographis paniculata (Burm.f.) Wall.ex Nees (Acanthaceae), Whole plant
Madhuca longifolia(Linn.) Macbride. (Sapotaceae), Root bark

MEDICINAL BOTANY CHENNAI 600 047 National Institute of Siddha

Certificate No: NISMB3112017

Date: 25-10-17

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

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