PRECLINICAL AND CLINICAL STUDY ON

PADARTHAMARAI

(PUNDAREEGA KUTTAM)

(DISSEPTION SUBJECT)

For the partial fulfillment of the requirement to the Degree of

DOCTOR OF MEDICINE (SIDDHA)

BRANCH III - SIRAPPU MARUTHUVAM

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INTRODUCTION

The Tamil speaking southern peninsular region undertook a systematic study of the nature and its elements from which they had developed a highly systematized medicine which is now known “Siddha Medicine”. Siddha system is well founded under the basic principles of nature and its elements. The Siddha system originated from 18 Siddhars headed by 'Agathiyar'.

Prevention and Treatment are the basic aim of the siddha system of medicine, where as the Siddha system has in addition to the transcendental motivation of that rigor to be called the immortality is the body. Siddha System is a vast and unique system which defines health as a perfect state of Physical, Psychological, Social and Spiritual well being of an individual. The system not only deals with medicine, but with spirituality, righteous way of living, rejuvenation and its main aim is attainment of perfection. This is clearly mentioned in the following verse of Thirumanthiram;

"c l kg h; m o p e; c a p h; m o p h j
j p k g l n k a o h d k; N r u t k; k h l h t;
c l k j g t s h f f k; c g h a k; m w e N j
C l k j g t s h j N d; c a p t s h j N j N d"
- j n k e j p k; (724)

Siddha system of medicine is mainly based on the Thrithodam theory. The thrithodam namely Vatham, Pitham and Kabam circulate in the bodily system in different proportions which helps to maintain the vitality of the body. When these vital humours become abnormal or when their mutual harmony is disturbed it leads to ill-health.
Siddha system is very effective in chronic disorders especially skin diseases and rheumatological problems. Siddha system elaborately deals with 18 types of kuttam and their treatments. Among these, Padarthamarai (Pundareega kuttam) is one of the common disease which affects the human beings. That's way, the author has selected the disease Padarthamarai for his dissertation with the following trial medicines.

**PARANGICHAKKAI CHOORANAM - INTERNAL**

**NEERADIMUTHU PASAI - EXTERNAL**

Padar Thamarai is one of the commonest skin problems and it needs special attention because of its troublesome itching and recurrence. According to the following verse it is known that the disease is mainly occurs due to the disturbance of Vatham humour,

\[ \text{“} t \text{ } k \text{ } y \text{ } k \text{ } y \text{ } \text{“} \]

- Nji uah

Siddhar Yugi, in his text clearly charted out the 18 types of kuttam under the broad heading of Kuttam. In modern science the symptoms and signs of Padar thamarai (Pundareega kuttam) is correlated with Tinea.
AIM AND OBJECTIVES

The main objective of this study is to highlight the therapeutic efficacy of siddha drugs by conducting a clinical trial on disease ‘Padar thamarai’ with ‘Parangichakkai Chooranam’ as internal medicine and ‘Neeradimuthu Pasai’ as external medicine to the scientific community and the sub objectives of my study are:

- To collect various literatures and modern text books as literal evidences regarding the disease PADAR THAMARAI
- To expose the unique diagnostic methods mentioned by Siddhars
- To know the extent of correlation of the disease with age, sex, socio-economical status, habit, family history and Paruva kaalam (Seasons).
- To have a complete study of a disease Padar Thamarai under the heading of Mukkutram, Udalkattugal, Enn vagai thervu etc., in order to evaluate the pathogenesis, pathology of Padar Thamarai.
- To have a detail clinical investigation and to utilize the possible diagnostic tools in the confirmation of the diagnosis and prognosis of the disease.
- To analyse the trial drugs by biochemical studies.
- To study the factors like diet, land, climatic condition and personal hygiene in relation with Padarthamarai.
- To make an awareness among the people about the prevention of the disease.
SIDDHA ASPECTS
PADAR THAMARAI

1. **rpwG kUJ t k; E hy pl; $ wWggb**
   - gl h j k h i u N e ha h d j R j k h f N a j j f; F s p f h j t h b k; L g G> n j h i l> , L f F K j y a , l q f s g y; n t F t h c z h f p ; f h Z t j x U t i f N j h y; N e h a h F k;
   - N k Y k; K f j j k O g g b; n f h s S k; M z f s f F K f j j y; c z h f p y . n j h w w f; $ b a i t > m j p e i k r r y; , U f F k;
   - M i l f s h Y k> K f k; k O g G k; f j j p h s Y k; g u t f p l w d. N e h a; f z l , l k; r p e j h t j f u i k e m k l d h t j> t u k G f l b v h p r Y l d; f h Z k> n r h w a r; n r a A k> n r h w e j h y; f h e j Y z h F k; r g g i l f s; j b j j g i d k u g g l l N g h y R u R u g g F , U F F k;

2. **T. V. r h k g r k; g a j s a t h f s p l; $ wWggb**
   - Characterized by eruption of inflamed vesicles or scales spreading on the body as an orbicular lotus leaf – ringworm infection.
   - The affected area shows reddish brown or mild black coloured patches with well defined specified margins burning sensation with severe itching.

   The meaning of Padar thamarai is mentioned as follows:
   - gl h - j d g k> N e h a> g l U j y;
   - j h k i u - f k y k> G e l u P k;
   - It is a kind of skin disease that spreads like ring worm.

3. **rp r h u j e j B k; 2k; g h f k; i t j j p r e j h k z p E hy pl; $ wWggb**
   - gl h j k i u a h d j N f j j y; g y & g q f s h r p e j e i k r r y; v L f F k; t a h f F u f s; N g h y j; N h d w p j p l n t L f F k; e h s F F e h s; g u F k;
4. jdtej pwp $ wWgb

"M b d n j h a j r; n r g g h a h j p; r h ; f S z h a j;
 j p g g l f ; f g b y t z z Q ; n r h a j e m g h p a j G z z h y;
 , b g g l n g H W j N H W k Q r a t m z q f h z g y;
 k l g g b a i d a k H N j t y p U G z l h P k;" - jdtej pwp

ý The base or margin of patches are thickened
ý Burning Sensation is present
ý Sometimes they are red in colour
ý Oozing is present
ý The patches sometimes become lacerated or vesiculo papule

5. khd K Uff pak; E hy pl; $ wWgb

"eL t d; n t S j j y; m U F r h j j y;
 j p l T N h d w y; n t k k y; N e h j y;
 j k i u K l N g h y; n r k K i s g u t y;
 j b j j y; n f h O j j y; F U j p r R o h O f y;
 t p u t p i l e j G z g l y; v D k p t
 j k i u n j h O t p l; F w m a d n k h o g;" - khd K Uff pak;

ý The patches are white in the center, and red in the margin
ý Burning sensation followed by pain is present in the patches
ý The patches spread like the thorn of the lotus flower
ý The patches are thickened
ý Sometimes blood and pus oozed from the affected patches

AETIOLOGY:

1. j h th 7 y hpl; $ wWgb

"t p h h k a z ; t h W t p q f p a F l l q N s;
 R a h j p f m e j p R o d; N k f j j h y H W K;
 g a h p k z Z s g g y t z b d h n y l L k;
 e p a h j p G O e h y h a; e p l y p h F l l N k;"
• Six types of kuttam are caused by kiranthi and megam.
• Eight types are caused by insects in the soil.
• Four types are caused by worms.

2. F Uehb $ wWggb>

1 “f $k$a$h; tej Nj H k; ngUf Tz L
  n$ $j j d; g$ $j i d f; f pkkhf
  nghU$k$t U$k; t hAnt y y hq; f $k$a$hNy
  GOf rb Nghy; f HZ k$ $k$a$hNy
  nrU$k$p U$k; g Tj j q$ $f s; f $k$a$hNy
  Nj f k$ $g; nrH$h$; F l$ k; f $k$a$hNy
  J U$k$t UQ; RN$ f q; f $k$a$hNy
  #1 rKld; f p$ $gghy; nj h o; nrat N u’

2) “F l$ k$ t $f ugh$ $f eP i y
  RN$ f q; j j h; h$ $j n$ l$ j; j bgG $ h F k;
  k l$ wNk f $k$ pm d W kUTk; Ngh
  ti faahf; f $k$pl$ t $eP; nr d W
  F l$ Kld; Nj fnky y h k; g w F k; Ngh
  F o$ o$aahf; f $k$pl$ f ; nf hs S kG s p
  j l$ wNk f $k$pl$ ehy; tej
  r f y F l$ k; t $f ugh$ $r h w w h N k”

The above two verses indicate that skin diseases are caused by microorganisms and worms infestations

3. mfj j p$H f d k f h z l j j pl; gb>

  “$r h e j F l$ nk f L $ F i w Nehafs; tej
  Nj $fs; k y $j mU$k$ n$ haj y;
  j $ $e j r$ $n r e j $ i j f s; nr a j y;
  j $ e j j k dj ne$ e j $U h f e j hN$;
  j l$ d w n$ a t U j; j i d a p p$ j y;
  r$ $ h d $ $h$ $h h f s; j i k g g p j y;
  f l$ d w e e j t d k; GQ nr b f s; n t l l y;
  f $k k l h r$ p$ j p; f R h $h N y
  A n d d w T l k n g y y h k; ngh L g; ngh h h
  A I y; n t S j J f; F i w N e h a h A j p Q r p e j k’;”
4. khd K Uff p K k; gpl t UkhW gf H pl y w >

“kWj j Tz Tfs; kəj pəz y;
aff klffy; fUeΦrWj jy;
kWΓG K jyant Orp Φs; jLj y;
kθ; Gy hy; vs $ kφ f ggl Tz z y;
gfy; kφ J a γ y; , UT J a γ h i k”

5. j d t ej Φp

“mwp p l Wpt dp Q; Nru fhuk; Grφ fy hY k;
j i wpl wn j H hj nj hdi w nj H | i t Grφ fy hY k;
Fi wnfhz l epj j kqj f Fykqj f alffy hY k;
eph wnfhz l nghma hY k kj epj j Ngry hY k;”

“ejp j Gyj η h w; Nrhkpep y nf lg; gµf φ fy hY k;
c ejp j Ght h n[ d kheij μ ght jj hY k;
rej pφ f wggkj h j qfis F u j y hY k;
nj heij p j F l l Nu f k; nj hLF nkd WI uj N j hi k d Nd hi”

6. A f k d p$ wWggb>

“t p kg N η kφ ej c / z ej d d hY k;
kφ ej rPs j j hY kowr η hY k;
tskgN t eijj hy; thej p hY k;
kfj j hd ngz Nz hL Kurj hY k;
f p skgN t f My rqfs; kφ j y hY k;
Nfbahd thffq; fsi l j y hY k;
j skgN t kNf m η s; j t η k z fs;
rehj p μ; gusthy; kφ q Fl l k;”

“Fllej hd; gj md ll t uN t nj d p v
FUEπ η j > r η εj j k i WNA h; εj j
j pl ej hd; N j i j j; j h i z f; FNUj k;
nt ggy hw; ωd l hw; guj huj j
mllej hd hirahy il f; f y j j
mgf hη j mf j pguNj r p j d i d
tll ej hd; it j y hw; fwgo phi
 tej η Nk gj md ll F ll ej hnd”
Excessive heat and cold, laziness, excessive sleep in day time, unbridled sexual indulgence, robbery etc. These habits are supposed to be the factors which lowers the immune mechanism of the body (iyarkkai vanmai) and makes the body liable to diseases.

- Excessive intake of food items which are hard to digest, imbalanced food and vomiting, frequent intake of food mixed with stone and hair.

- Prolonged mental depression, intention to spoil others, greedy, abusing god and noble people, neglecting orphans and beggars, cursing the elders and soon. These were the causes mentioned by Yugi.
Types of kuttam:

According to Yugi Vaithiya Chinthamani – 800, kuttam has been classified into 18 types.

"K j j hd; Fl| e j hd; gj pod l f k;
K d øhd A fp hed; nr hy y f; Nf s h a;
G j j h F k; Ge h f Fl| j Nf h L
ngh Uf p w t m Ng h f f; Fl| k h F k;
gj j h F k; ghkf Fl| k>r r h k Fl| k;
gf hd F u F k;r f u Fl| k;
f j j h F k; f ø l b z f Fl| k>m T j kguf Fl| k>
nf b a h d k z y Fl| k kh nk d Nd
Fl| k h k; ghg; ghp Fl| nk h L
F b y k h k; t p hr F; Fl| k h F k;
t l k h k; i t a j p Fl| nk h L
kUt y h q; f B g Fl| r k j y
j p l k h e; Nj j j U F; Fl| Nk h L
r p j k h > F l| Q r f h U Fl| e;
J l l k h Q; RN j h l e>j d nd h m l h f r;
Rak gh d gj pod l Fl| k h N r"

The eighteen types are:

1. Pundareega kuttam.
2. Virpodaga kuttam.
4. Gajasaruma kuttam.
5. Karna kuttam.
8. Avudhumbaram.
10. Abarisa kuttam.
11. Visarchika kuttam.
12. Vibaathika kuttam.
15. Thethru kuttam.
17. Sathaaru kuttam.
18. Swetha kuttam.

A fp K d p H S wWggb:

"Gz I h F k;
"$ LN k j k i u a p l; G t p o; Ngh y;
F t p j N k f W g N g h L n t S g g h F k;
N j L N k r p g G g y t h z k h F k;
J p T k j t h u j n r h i d a p w; g d d p;
T h L N k m a p D w g j j p a h p;
T U j j k h T z i h p N e h T k h F k;
N gh L N k r h B j f s; K f q f s; f h j;
G z I h P F; F l j j p l; G j i k j h nd."

ý Characterized by eruption of inflamed vesicles or scales spreading on the
body as an orbicular lotus leaf.
ý Affected part becomes whitish, reddish or blackish in colour.
ý Lesions are well defined with intense itching and burning sensation.
ý Borders are slightly elevated and spreading in nature.

PROGNOSIS:

Pundareega kuttam is stated as curable type by Siddhar Dhanvantri Vaithiyam

According to the text ‘Yugi Vaithiya Chinthamani – 800’.

"F l j e j h d; g j p d l b y r h j p e j h d;
$ w f N f s; t p w; N g h f g k f ; F l j k;
f p j e j h d; f r r U k F l j N c h L;
f p b l b z F l j k; T j k g u F l j e j h D k;
j p l k h e; j j p f; F l j N c h L;
n r a; j P j k h F l j q; f p g F l j k;
J l e j h d; k f e j r j h U F l j k;
r k f p h l b z F l j k; r h j p a h n k d N d."

- A#pi t j j a r a j h k z p 800
The following ten types are said to be curable.

1. Virpodaga kuttam.
2. Baama kuttam.
5. Avudhumbaram
7. Sarmathala kuttam.
8. Thethru kuttam.
10. Sathaaru kuttam.

According to the text ‘Dhanvantri Vaithiyam’:

“Gz | j j ; J Ut ś Ns H L rj H k; Gz | HPej j Hz L t m Ngh k> ghkHl d> rHj y k> nt z F l l q;
   c z bU f H f > eej p r p J i k ayr F l l k;
   N t z b a t a h N a H L k; gj m d hd W k; t H p J ff H l z.”

The following 11 types are stated as curable types of kuttam.

1. Thethru kuttam
2. Sathaaru kuttam.
3. Pundareega kuttam.
4. Virpotaka kuttam.
5. Baama kuttam.
8. Venkuttam.
10. Alasa kuttam.
11. Vipaathika kuttam
DIAGNOSIS:

Diagnosis is based upon three main principles. They are;

1. Poriyaal arithal (Inspection )
2. Pulanaal arithal (Palpation)
3. Vinathal (Interrogation)

Physician’s Pori and pulan are used as tools for examining the pori and pulan of the patient in arriving at a clinical diagnosis of the disease.

Ennvagai thervugal (eight diagnostic tools):

Siddhars have developed a unique method of diagnosing the disease is Ennvagai Thervugal. They are;

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

Clinical approch of Padar thamarai by Ennvagai Thervugal:

1. NAADI (PULSE):

Among the three thodams vatham and pitham are mainly affected in Padar thamarai. Stress and strain will provoke the pitham which may affect the Prasaga pitham which is responsible for the nature of skin, its moisture and complex with erythematous skin lesions. Involvement of vatham may produce itching. Involvement of kabam, skin and its appendix are affected and there may be excessive formation of scales and deformity of nails in chronic stage

I. According to Theraiyar:

“t jó ky jó Nkd pfl hj ”

Vatham is considered as the main cause which affects the complexion of the skin and strength of our body.
II. According to Dhanvantthri:

The three thodams i.e. vatham, pitham, kabam get deranged and affect nerves, blood, hormones, muscles, skin and causes "Kuttam". This is mentioned in the following verse:

```
Kd;dpa thjgpj;jr; rNyj;Jkd %dW kqf k;
gpd;dpNa jhWf;fhAs s eukgpw, gpNk rpj
kz;zpa ,u;j;k; j z z R khqf p e; Nj hynf Lj Nj
add;pa t d dq; f hZ khf ahw; F l j Nk`
```

III. According to Jeevarakshamirtham

Due to high intake of food pitham increases and affects samanan, pithakabam, pithavatham, mukuttram. These affected kuttram individually or in combination, affect the body and blood and also affects the path of pithakabam and in turn affects urine and other wastes in our body and cause kuttam finally. The three thodams gets deranged and affect the skin, blood, muscles, bones etc and finally cause kuttam. Worms also take part in the cause of kuttam.

Naadi nadai in padarthamarai

The deranged three thodams in padarthamarai noi is manifested as increased kabha thodam and association of excessive heat with vatha thodam.

2. SPARISAM (SENSE OF TOUCH):

The features of warmth, chillness, dryness, roughness of the skin, oozing, sweating, tenderness, fissures, depigmentation changes in the skin, swelling, emaciation are examined by sparisam.

In Padarthamarai, the skin becomes hyperpigmented, with well-defined borders with central clearing nature.

3. NAA (TONGUE):

Colour of the tongue, dryness, coated tongue, excessive salivation, redness, ulceration, fissure, pallor, yellowish discolouration, malignant outgrowth, taste variations, speech and deviation of the tongue, the conditions of the teeth and gums are to be noted.

In Padarthamarai sometimes tongue may be noticed as flour coated tongue.
4. NIRAM (COLOUR):

Changes in the colour of the skin, teeth, eyes, nails, and lips due to mukkutra derangement are to be noticed, hypo or hyper pigmentation is also to be noted.

In Padarthamarai, skin is hyper-pigmented, erythematous, macular, slightly raised, well defined lesions with centre clearing nature.

5. MOZHI (VOICE):

Examination of mozhi includes clarity of speech, speech disturbances, crying, high or low pitched voice, slurring or incoherent speech, scanning speech, talk associated with hallucination, undue argument, breathlessness, nasal voice or hoarseness of voice, wheezing etc., to be examined.

In Pundareega kuttam, no change is seen in speech.

6. VIZHI (EYES):

The motor and sensory activities of eyes are to be noted. Also any abnormal

7. MALAM (FAECES):

Colour change indicating and mukkutram derangement, hyperemia, ulceration, bluish discolouration, response to pupil, pallor, protrusion, sunken eyes, and sharpness of vision, excessive lacrimation, angle of eyes, subconjunctival bleeding, visual disturbances are to be noted.

In Padarthamarai, no change is seen regarding eyes. Colour, froth, consistency, quantity, odour, frequency, constipation, presence of mucus, blood and undigested matter in the stool are to be noticed In Padarthamarai, no change is seen regarding malam.

8. MOOTHIRAM (URINE):

It is a special diagnostic method of Siddha. Determination of Neerkuri and Neikuri in moothiram were done.

Neikuri:

Collection of urine for neerkuri and neikuri examination:

Prior to the day of urine examination, the patient is instructed to take a balanced diet and quantities of food must be proportionate to his routine intake. The patient should have no disturbed sleep. After waking up in the morning, the first urine voided
will be collected in a clear wide mouthed glass container and is subjected to analysis of neerkuri and neikuri within 1 ½ hrs. The specimen is kept open in a glass dish or china clay container. It is to be examined under direct sunlight without shaking the vessel. Drip one drop of gingelly oil on the surface and observe keenly the spreading pattern within few minutes and diagnosis is made as follows,

- If the oil spreads like a snake – Vatha neer.
- If the oil spreads like a ring – Pitha neer.
- If the oil remains as such and if floats like a pearl – Kaba neer.
- If the oil spreads like ring in the snake - Thontha neer.
- If the oil spreads like snake in the ring - Thontha neer.
- If the oil spreads like pearl in the snake - Thontha neer.
- If the oil spreads like pearl in the ring - Thontha neer.

In Padarthamari, Thontha Neer was noted in most of the cases.

In Neerkuri:

Voided urine has to be examined, the following characters;

- Niram (Colour)
- Edai (Specific gravity)
- Manam (Smell)
- Nurai (Frothy nature)
- Enjal (Quantity of urine voided).
Apart from these, the frequency of urination, abnormal constituents such as proteins, presence of blood, pus, renal calculus, crystals etc., also to be examined.

**In Padar thamarai patients, straw or hey coloured urine is noticed.**

**Udal Kattugal**

Human body is made up of 7 udal kattugal which are important for the structure and function of the body. In case of pundareega kuttam, among the seven udal kattugal (seven physical constituents) saaram and senneer are commonly affected.

**LINE OF TREATMENT:**

In accordance with the Siddha system of medicine, certain basic principles are followed before starting the specific drug therapy. These principles are initially followed to balance the deranged kutrams i.e., vatham, pitham and kabam. They are purgation, vomiting, and application of drugs in the eyes to neutralize the deranged vatham, pitham and kabam respectively.

1. **Purgation:** Virechana Boopathy Pills 2 (OD) in empty stomach.

2. **Aga Maruthuvam:** Parangichakkai Chooranam -5 Gms; Twice a day with honey.

3. **Pura Maruthuvam:** Neeradimuthu Pasai - For external application.

4. **Sirappu Maruthuvam:** Patients are also advised to follow pranayamam, yogam and asanams for the speedy cure and prevention of recurrence.

   a. **Yogam:** Yogam is a way of life, an integrated system of education, for the body, mind of inner spirit. Patients were advised to do yoga to bring down their stress and strain. Asanams which are advised to the patients were,

   1. **Padmasanam**
   2. **Savasanam**
   3. **Gnayiru vanakkam (Surya Namaskkaram)**

These asanams helps to prevent and cure skin diseases. These techniques were very helpful in relieving the stress and strain of the patients.
b. Pranayamam:

It is a form of kayakalpa method and by practicing this, one can prevent many diseases. All the patients were advised to do the regular practice of

1. Omkara pranayamam
2. Sleeping pranayamam.

KAAPU (PREVENTION):

- Take bath daily and avoid bathing in lake, pond.
- Use warm water for bath.
- Use green gram powder or "Nalangu Maa" instead of soap for bath.
- Wash in dresses with disinfectant solution and dry in direct sunlight.
- Avoid stress and strain totally.
- Asked to wear fresh dry and cotton clothes.
- Advised to trim the nails.
- Use antiseptic lotion and padigi like astringent mixed water after shaving.

PATHIYAM:

"gj;jpa;j pl HN y Dy D z | HF k; kUej
   gj;jpaq;fs Nghdhy; gy d NghF k; - gj;jpa;j gy;
   gj;jpnK nt wpj Uk; gz bH F M j y pl hy;
   gj;jpnK c jj pmad W gHt" - Nj i uah; nt z gh

During diseased condition and consumption of medicines, diet restrictions or pathiyam should be strictly followed. These are prescribed to normalize the deserved thodams and to potentiate the drugs.

ACCORDING TO PADHARTHA GUNA CHINTHAMANI:

"ngUF Q; Nr hs kW qF k; ngUq; f kG
   t uF fH Ud; t hi oap l; f lma HL
   ci unf hs; gh f w nFs pmW kB; c z bby;
   t Dp j haf; f ugdD kF ej Nj" - gj Hj j F z rpj Hkz p
**DIET:**

- Patient was strictly instructed to avoid all the non-vegetarian food items except goat’s meat.
- To avoid bitter substances like bitter guard, leaves of agathi and Gingely oil, brinjal, jack fruit, maize, flat bean, great pumpkin.
- Salt and tamarind restriction.

**KANMA NIVARthy (EXPIATION)**

\[“NgW aₚ i k , d gk; %gG
gp rff hL aₚ t a Hk; f Ut g i k G”\]

Kanmam occurs by birth itself. According to Agasthiyar Kanma Kandam - 300 the kanma nivarthy can be attained by the following:

1. Gardening
2. Digging wells for common use.
3. Constructing temples.
MODERN ASPECTS

SKIN

The skin or cutis is very essential to life. The skin is anatomically and physiologically specialized boundary lamina. It is major organ of the body, forming about 8% of its total mass and having an area of between 1.2 to 2.2 m². In total thickness ranges from about 1.5 to 4 mm.

ANATOMY

Skin covers the entire external surface of the body including the external auditory meatus and lateral aspect of tympanic membrane. It is continuous with the mucosa of the alimentary, respiratory and urogenital tract at their respective orifices, where the specialized skin of mucocutaneous junction occurs; it also fuses with the conjunctiva at the lacrimal puncta.

Structurally skin is a complex and highly specialized as might be expected of the major interspace between the body and its environment. Microscopically it is formed as an intimate association between two distinct tissues;

Keratinized stratified squamous epithelium superficially the "epidermis" and a deeper layer of moderately dense connective tissue, the "dermis". Because of this combination it is within limits a most effective barrier against microbial invasion and dehydration and against mechanical, chemical osmotic, thermal, photic damage.

Epidermis

The epidermis is formed of non-vascular stratified epithelium. Its usual thickness is between 0.07 mm and 0.12 mm. The epidermis is mainly two divisible into two main systems; they are keratinising (or) malpighian system (keratinocytes), which forms the bulk, and the pigmentary system (melanocytes) that produces the pigment. There are five layers in the epidermis.

1. Stratum Germinativum (or) Stratum Basale

This is the deepest portion of the epidermis and is composed of columnar cells placed perpendicular to the skin surface. The whole of the epidermis germinates from this stratum, hence the name stratum germinativum.

2. Stratum malpighii (or) The Prickle Cell Layer

It is superficial to the basal cell layer, and is composed of several layers of polyhydral cells connected to each other by intercellular bridges.
3. **Stratum Granulosum**

It is superficial to the stratum malpighii. It is composed of flat, fusiform cells that are one to three layers thick. These cells contain irregular, granules of keratohyalin and lysosomal enzymes and cystine rich proteins.

4. **Stratum lucidum**

It is superficial to the stratum granulosum, is the pale, wavy, looking layer. This layer contains refractile droplets of eleidin.

5. **Stratum corneum**

This is the most superficial layer, the outer surface of which is exposed to the atmosphere. It consists of many layers of non-nucleated, flattened and cornified cells.

6. **Basal lamina (Basement membrane)**

The basement membrane acts as an anchor for the epidermis but allows movement of cells and nutrients between the dermis and epidermis.

**Dermis**

The dermis that is bounded distally by its junction with the epidermis and proximally by the subcutaneous fat. The basis of the dermis is a supporting matrix (or) ground substance in which polysaccharides; the matrix contains two kinds of proteins. They are

- **Collagen** - Which has great tensile strength
- **Elastin** - Which has considerable elasticity

Hair follicles, various types of sebaceous and sweat glands, plain muscle fibres, and sensory end organs like pacinian and adipose tissue are seen in the microscopic section of the dermis.

The dermis contains few cells, which are fibro blasts, mast cells, histocytes (or) macrophages, lymphocytes (or) other leucocytes and melanocytes. In the deeper layer of dermis, then in arterio-venous anastomosis surrounded by sphincter, the group of smooth muscles under autonomic control.

**Sweat glands**

These are found in all areas of the skin. The sweat glands originate as down growths from the dermis. THIS consists of a single unbranched tube that terminates in the form of a coil in the mid-corium. The coil is the secretory segment and is lined by a single layer of epithelial
cells. The duct runs straight upwards from it to the epidermis, which it transverses in a corkscrew manner to open on the surface at the pore. The latter is converted by a loose meshwork of horn cells.

**Sebaceous glands:**

They are situated in the upper half of the corium. The sebaceous glands are derived from the epithelial cells of the hair follicles and are present everywhere in the skin except on the palms and soles.

They are multilobulated and covered by a connective tissue capsule within, which is a layer of small epithelial cells. As these cells mature towards the centre of the lobules they enlarge, their cytoplasm becoming arranged in a delicate network surrounding globular of fat (sebum). Towards the duct the whole cell disintegrates, lobulating its fat, the glands therefore being classified as a Nolocrine glands.

**Apocrine glands:**

They occur in the axillae, areola and nipples of breasts, umbilicus, around the anus and the genitalia. The myo-epithelial cells are highly developed and more abundant in these glands. They are specialized sweat glands, and their secretion is odoriferous with a secondary sexual significance.

**Hair**

Hair is found on almost every part of the body surface except on the palms and the soles, the dorsal surface of the terminal phalanges, the inner surface of the labia, inner surface of the prepeuce and the glans penis. Hair growth and development is under endocrine control.

Hair is made of hard keratin and is analogous to nail. The hair matrix, a layer of specified epidermal cells, capping the papilla, forms it the two structures making up the hair bulb. Melanocytes are present in the matrix and form the pigment of hair. The portion of the hair below the surface of the scalp is known as the hair root. Above the surface of the scalp, the hair is composed of the medulla, cortex and cuticle.

The medulla consists of seven rows of soft keratin, but it is discontinuous (or) even absent in most human hairs. The cortex is the main structural component and is made up of tightly packed fusiform keratinised cells.
**Nails:**

These are semi-transparent, plates-like horny structures, covering the dorsal surfaces of the distal phalanges of the fingers and toes. The nail is composed of many layers of flattened keratinized cells fused into a homogenous mass.

The anterior border encroaches upon the nail plate as a flattened keratinous, the cuticle and forms a protective barrier against irritants and infection.

**Blood Vessels:**

The blood supply of the skin originates from a large number of arterioles forming anastomosis in the deepest part of the cortex. From here single vessels run upwards and form a second network in the upper cortex. Finally terminal arterioles ascend into the papillae ending in capillary loops; which drain into connecting venules. The blood is returned to the large veins in the subcutaneous tissue.

**Lymphatics:**

The skin contains a rich network of lymphatics, which drain into a few larger vessels in the hypodermis.

**Nerve Supply:**

The nerve supply of the skin consists of a motor sympathetic portion derived from the sympathetic ganglia and sensory spinal portion arising from the dorsal root ganglia. The sympathetic fibres innervate the blood vessel, erector pilorum muscles and apocrine duct, where the fibres are adrenergic and cause contraction.

**PHYSIOLOGY**

1. **Protective Function**

Skin protects the penetration of harmful substances and bacterial invasions. The epidermis and subcutaneous fat play roles in the protective functions. Another is to protect against sunlight by synthesis of melanin pigment.

2. **Immunological Function**

The skin is the front line of the defenses of the body. In essence the defense involves, the protection of antibody - complex, multi hair proteins that bind with the offensive antigens. Langerhan cells probably play a crucial role in the contact sensitization, immuno surveillance against viral infections and neoplasms.
3. Sensory Functions

The skin is richly supplied with nerves and various types of specialized sensory end organs, which provide information regarding environmental changes, so that the body can then adjust its activities accordingly. In some animals, the hair at certain situations have specialized sensory receptors located at the bases of the hair follicles that serve to enhance sensory appreciation.

4. Secretions and Excretion

The skin possesses various types of glands, which pour secretions on the surface. The more important glands are sweat and sebaceous glands. The eccrine glands which are scattered all over the body surface secrete a thin, transparent, watery fluid, known as true sweat; while the apocrine glands secrete a thicker, rather milky and odoriferous solution.

Sweat in its composition consists of 1.2% solids and 98.8% water. The important substances excreted in it are sodium chloride, sodium phosphate, sodium bicarbonate, keratin and a small amount of urea. The skin can also excrete certain drugs administered to the individual, for example mercury, arsenic, iodine etc.

The sebaceous glands of the skin secrete sebum, which is composed of fatty acids, cholesterol, alcohols etc. Fatty acids have a mild fungistatic activity. The sebum acts as a lubricant for the drying effects of the atmosphere.

5. Gaseous exchange through Skin

A small amount of gaseous exchange occurs through the skin. In man the amount of \( \text{CO}_2 \) exchanged through the skin is negligible compared to the amount exhaled from the lungs.

6. Storage Function of Skin

Blood is stored in the rich sub papillary plexus of the dermis, about one litre. The skin is also a good storehouse of ergosterol that is irradiated, by the ultra violet light of the sun and converted into vitamin D. The junction between dermis and hypodermis has a considerable capacity for storing fat and permanent store of subcutaneous adipose tissue. Certain substances like glucose and chloride also acts as a reservoir for topically applied corticosteroids (or) other hormones that absorbed slowly for many days from the skin surface.
7. Endocrine Function

Hair follicles and sebaceous glands are the targets for androgenic steroids secreted by the gonads and the adrenal cortex and melanocytes and directly influenced by polypeptide hormones of the pituitary.

8. Body Heat Regulation

The skin plays the most important role in the regulation of heat loss. It loses heat to the external environment in three ways: by conduction, by radiation and by evaporation. Heat loss by the first two mechanisms takes place when the environmental temperature is lower than that of the skin. Heat loss by evaporation mainly means the amount of heat spent by the body to evaporate the sweat from the surface of the skin. About 90% of the total heat the skin regulates loss of the body.

The heat loss through the skin is regulated by various physiological mechanisms that include the reaction of the cutaneous vessels. The reaction of the smooth muscle fibers of the skin and Perspirations.

9. Absorption

The skin can absorb substances dissolved in fatty solvents like vitamins and hormones. Inflammation greatly increases the skin permeability substances that are completely insoluble in water and lipids do not penetrate.

10. Synthesis of vitamin D

Vitamin D is synthesised in the skin as a result of exposure to ultra violet 'B' (UVB) radiation and, since it is carried in the blood attached to a binding protein to exercise a specific effect at a different site. Vitamin D5 is essential for skeletal development, and it contains antirachitic properties. Vitamin D3 is formed principally in the stratum spinosum and the stratum basale, from the precursor 7 - dehydrocholesterol by way of a provitamin D3 (2, 5).

FUNGII

The importance of Fungi

Fungi were long regarded as primitive or degenerate members of the plant kingdom, but their independence as group is now universally recognized. Since they are incapable of photosynthesizing their own organic food requirements from C02 and water, they must exist as saprophytes or parasites.
Between 50,000 to 1,000,000 species are known, some are aquatic, some are marine but a majority is terrestrial. Most fungi are saprophytic and play an important role in nature by returning to the soil nutrients originally by higher plants. Their ability to transform sugar into alcohol and Carbon-di-oxide, along utilized in brewing and baking. Their capacity for producing antibiotics, for example Penicillin has long been recognized and exploited.

In agriculture fungal pathogens are responsible for losses amounting to perhaps 10% of the world's crops. Fungi can also harm man more directly by producing mycotoxins, by acting as allergens and by direct tissue invasion.

**Fungal biology**

Fungi are Eucaryotic microorganisms

**Sub division:** Ascomycotina  
**Genus:** Arthoderma  
**Family:** Gymnosaceae

Fungi differ from the higher plants in structure, nutrition and reproduction. Fungi and bacteria are like in lacking chlorophyll and therefore being unable to photosynthesize, but differ from each other in many ways. In size, in cytoplasmic and morphologic complexity fungi greatly exceed bacteria.

**Fungi**

Fungal cell wall is rigid usually composed of chitin, glucan and mannoproteins. The cytoplasmic membrane of fungi contains sterols principally ergosterol, which are the target sites of action for the major classes of antifungal drugs.

Fungi may be unicellular for example; the yeast, or the cellular units may be connected together to form long filaments of hyphae as in the common moulds. In the terms of intracellular organization yeast and moulds are essentially similar and certain conditions some yeast may become filamentous and some moulds may grow multiply as yeast. This ability to change their form is known as **dimorphism** and is highly characteristic of some pathogenic fungi, e.g. Blastomycesdermatitidis, Histoplasma Capsulatum.

The hyphae are usually divided into cells by cross walls or septa, when the interwoven mass of hyphae remaining loosely arranged, it is known as **mycelium**.
This undifferentiated mycelium forms the basic vegetative body or **thallus** and is often inconspicuous. It is the development of various structures, from or on the hyphae for purposes of propagation perennation that give the characteristic features associated with fungi grown on culture media.

The distinctive surface colours and textures of any moulds are due to the formation in great numbers of minute **spores**, which are capable of being spread easily and thus initiating new growths. Spores differ from species to species.

**Reproduction**

Fungus reproduces its generation by 2 ways.

- Asexual reproduction
- Sexual reproduction

Normally the rapid vegetative growth, which follows successful colonization, gives way to the production of a sexual reproduction. Ultimately the loss of nutrient source or the onset of other adverse conditions is accompanied by changes appropriate to survival and a low level of metabolic activity leads to sexual reproduction.

**1) Asexual reproduction**

- Vegetative spores (chlamydospores/Arthrospore)
  - Sporophores (spore bearing hyphae)
    - Mitotic nuclear division
    - Asexual spores

Asexual spores vary in size, shape, colour and complexity. A fungus may produce more than one type of asexual spore.

**Types:**

1. Microspore: Microconidium
2. Macrosore: Macroconidium
3. Sporangiospore: Spores borne endogenously
4. Conidiospore: Spores borne exogenously or conidia
2) Sexual reproduction

Sexual reproduction involves the fusion of two nuclei and subsequent meiosis reduction division. Fungi are often haploid and meiosis takes place following fusion, except in certain yeast the diploid state is relatively short lived. This stage of life cycle is known as the Perfect state or telomorph.

According to different methods of asexual reproduction the fungi are classified into four classes.

- **Zygomycets**: eg. Microur sp. Rhizopus sp.
- **Ascomycets**: eg. Arthroderme sp.
- **Basidiomycets**: eg. Mushroom, Toadstools
- **Fungi imperfecti**: eg. Candida sp., Microsporum sp.,
  (Deuteromycets) Trichophyton sp., Histoplasma Capsulatum.

**Classification of disease caused by fungi (Mycoses):**

1. **Cutaneous/superficial mycoses**: Infections that involve only the skin and its appendages, eg. Dermatophytosis.
2. **Systemic mycoses**: Fungal infections; that spread via lymphohematogenous dissemination to involve one or more organs, such as lungs, skin, liver, spleen and CNS. eg. Candidiasis.
3. **Endemic mycoses**: Prone to cause disease due to altered host defence.

**Definition**

Dermatophytosis represents the superficial infection of Keratinized tissue caused by dermatophytes. (Dermatophytes - are related fungi capable of causing skin changes of the type known as ringworm).

**History**

The study of dermatophytosis has been aided by the superficial nature of its clinical manifestations. These infections were described in the earliest historic accounts. "Tinea" a name that remains today, literally refers to an insect larva (clothes moth) that was thought by the Romans to be the cause of the infection.

In 1800s - The organism responsible for favus cultured.
1910 - **Sabouraud** (Father of modern medical mycology) - classification of dermatophytes and observation are made (clinical and therapeutic)

**EPIDEMIOLOGY**

**Agent Factor:**

A. *The dermatophytes represent 39 closely related species in 3 imperfect genera.*

1. Microsporum
2. Trichophyton
3. Epidermophyton

B. **Depending upon their natural habits dermatophytes may be classified as**

1. **Geophilic organisms**
   
   Adopted for soil habitation sporadically infest human and less pathogenic for humans. Example: Microsporum cookie, N. fulvum, Tinea ajellos.

2. **Zoophilic organisms**
   
   Primarily infect higher animals but can be transmitted to humans sporadically, eg.
   
   a) Microsporumcanis - Dog, cattle, cat sheep, pigs, rodents, monkeys.
   
   b) Microsporumdistortum - Dog, cat, horse, monkey
   
   Causes severe inflammation. But more readily curable.
   
   Domestic animal and pets are increasing source of this infection.

3. **Anthropophilic organisms:**
   
   Often epidemic in nature, have adapted to infect humans.
   
   The cause mild but chronic lesion and transmission by direct contact or through fomities.
   
   Host differences play a role in the Epidemiology of anthropophilic infections.

C. **Endemic areas (Geographical Location)**

   Dermatophytosis occurs throughout the world but certain types of disease and some species of fungi show geographically restricted distribution. Eg. Microsporummannum - Cuba (Endemic region) T. Concentricum - India, Pacific Islands, Ceylon, Central and South America.

**Host Factors**

   Host differences play a role in the epidemiology of anthropophilic infections. Intercurrent diseases, altered host defence system are important host factors.
Other Factors

1. **Age**: Anthropophilictineacapitis occurs more in children.

2. **Sex and Race**:
   
   I. Black male children appeared to be particularly susceptible.
   
   II. Females - Tricophyton Tineacapitis when occurring in adults is common for the Female.
   
   III. Males - Tineacruris more common in males. The causes for the sex differences in infection may be explained partially by females are less frequently exposure to an environment conducive to the spread of the organism, (eg. athletic organizations, military service, and hotels) when these factors are equalized; the incidence of tinea in women approaches that in men.

   The location of the dermatophytosis is partially dependent on climatic condition of the area and the customs of the resident population, eg. Tineapedis -more common in areas where all wearing shoes. In locations where the inhabitants were sandals or go bare foot the infection is markedly less common.

**Common predisposing factors or conditions**

Overcrowding, poor personal hygiene, low socio economic condition.

Interruption in anatomical barriers, (burns and endotracheal tubes) or indwelling foreign bodies (catheter, prosthetic heart valves/joints) granulocytic dysfunction, secondary to hematological malignancies (leukaemia) or cytotoxic chemotherapy, depressed cell mediated immunity associated with organ transplantation, AIDS or immunosuppressive therapy, (corticosteriods therapy) and diabetic ketoacidosis, intravenous drug abuses.

Fungi are facultative pathogens, (only in the presence of certain adjuvant factors like trauma, maceration, warmth, lack of fresh air and sunlight to a part, previous infection, sensitation and debility).

Importance of the body's basic resistance (condition of the soil) must be appreciated in comparison with the causative organism and fungi, or which undo stress has been laid in the part.

**Pathogenesis**

Presence of a suitable environment on host skin is of critical importance in the development of clinical dermatophytosis. Trauma in addition, increased hydration on the skin with maceration is important.
Occlusion with a nonporous material increases the temperature and hydration of the skin and interferes with the barrier function of the stratum corneum, (eg. wearing non-porous shoes definitely contributes to the developement of Tineapedis). In tropical climates non-acclimatized subjects often develop lesions of Tineacorporis, in part because of occlusive clothings.

Stage

If the host is inoculated under suitable conditions, the first phase of dermatophyte invasion involves the adherence of infectious spores to keratinocytes on the stratum corneum. In vitro this process is completed after 2 hours of contact.

There follow several stages through which the infection progresses.

1. A period of incubation
2. Enlargement followed by refractory period
3. Stage of involution.

A. During incubation period; a dermatophyte grows in the stratum corneum, sometimes with minimal clinical signs of infection. A carrier state has been postulated when the presence of a dermatophyte is detected on the normal skin by Potassium Hydroxide examination or culture. During the early (i.e. incubation) phase of dermatophyte infections, organisms are present but are clinically silent. Only a limited number of these patients will develop clinical disease during follow-up-period. These individuals presumable represent true carriers.

Once infection is established in the Stratum corneum, two factors are important in determining the size and duration of the lesion.

There are,

1. Rate of growth of the organism.
2. Epidermal turnover rate.

The fungal growth rate must equal or exceed the epidermal turnover rate or the organism will be shed quickly.

The inflammatory response at the rim of the lesion stimulates an epidermal turn over in an effort to shed the organisms.

Lag periods between the initiation of the infection, lost inflammatory response and the increased epidermal turn over are known as refractory periods.
Following this, only the organisms at the inflammatory rim are being shed, while those just ahead maintain the infection.

The centre of the lesion has relatively few organisms in contrast to the 'battle ground' of the peripheral rim.

**Stage of involution**

The affinity of dermatophytes for keratin is the sine quanon of their existence. Different species of dematophyte are attracted to different types of keratin.

- e.g. T Rubrum - Seldom attacks hair but frequently involves nails and glabrous skin.
- E. Floccosum - rarely involves nails and never intacts hair.

Keratinases and other proteolytic enzymes are produced by dermatophytes. There is a significant correlation between inflammation and enzyme production.

The host immunologic response and also enzyme or toxins produced by the organism account for the clinical findings in dermatophytosis. Other factors are probably involved, but they have not been elucidated yet.

**Histopathology**

The clinical appearance of ringworm infection is the result of combination of direct damage to the keratinized tissues by the fungus and the inflammation host response.

Ringworm infection may mimic other skin disease. Trichophytonrubrum in particular shows hyperkeratosis, patchy parakeratosis, hyper or hypogranulosis, spongiosis, mononuclear invasion, and mild or moderate acanthosis accompanying dermal infiltrate of lymphocytes and histiocytes is largely perivascular.

The picture may be more inflammatory with superficial crusting and acute inflammatory changes in the epidermis and become vesicular to the extent of mimicking acute contact dermatitis.

Another picture is granuloma faciable type of reaction in which the epidermis and upper dermis are normal but the mid dermis has an infiltration proximal to dilated blood vessels.

Pustular reaction includes subcorneal changes and follicular lesion. The folliculitis and perifolliculitis are due to fungal reminants in the follicles.
Inflammatory changes ranges from spongiosis of the outer roof sheath to deep perifollicular granulomatous inflammation showing necrosis induced by fragments of hair exuded from disrupted follicles.

Most of the inflammatory changes are thought to be mediated by immune reaction. T.rubrum is a fairly potent direct activatory of complement by the alternative pathway and possibly other endogenous pathways.

**Annular lesions:**

In a classical annular ringworm lesion, the growing edge is marked by inflammatory changes in the skin. In the central area of the inflammation subsides following elimination of the fungus mycelium. Outward growth continues in preference to any attempt at centripetal recolonization.

The epidermal turnover rate is normal within the ring, but 4 times more in the inflamed zone, central clearance is often partial and in Tineaimbricata, successive waves of fungal growth occur in skin previously cleared, but progress is again centrifugal.

**Immunology of Ring Worm**

Dermatophytes are chemotactic and they can activate the alternative pathway of complement activation. The antigen diffuses from the stratum corneum to stimulate sensitized lymphocytes. Inflammatory mediators and lymphokines are produced by their cells and probably act on the host cells rather than on the dermatophyte. Because of this response, the epidermal barrier is abrogated.

The production of cytokines by keratinocytes such as IL-I have not been investigated in the mobilization of neutrophil defense. Neutrophils and monocytes can kill dermatophyte conidia. This actively depends on both intra and extra cellular mechanisms and the generation of respiratory burst is an important stage in this process.

The generation of antibodies to dermatophytes plays a major role in defense, patients with widespread infection such as Tineaimbricata may have high antibody titter, and low titter of SIR (Serum Inhibitory factor), the presence of elevated levels of IgE in particular is associated with chronicity, and so, the cell mediated immune response typically leads to inhibition, no complete destruction of the dermatophyte.

In man the appearance of inflammation in ringworm correlates with type IV with the development of delayed type skin reactivity to Trichophtin. Chronic infections are associated
with poor T-lymphocyte mediated response to specific fungal antigen suggesting that depression of responses is responsible for the poor clinical response. The developing of cellular immunity via sensitized T-Lymphocytes is a key factor in immunological defense. After the development of cell mediated immunity the infected area becomes less inflammatory and eventually spontaneously involves. If a second infection with the same organism is produced in the same subject at a later time, the site becomes inflammatory very early and resolves relatively quickly.

There is an association between the presence of atopy and chronic dermatophytosis with persistent disease, having atopy (usually asthma or hayfever) as well as immediate type of hypersensitivity and raised IgE level. Patient with this atopic chronic - dermatophytosis syndrome are capable of delayed hypersensitivity skin test reaction, but these reaction are inhibited by the more sensitive preceding type I response.

Modulation by T-Lymphocyte either locally or systemically may be responsible or include activation of histamine responsive suppressor cells. Other studies have demonstrated the antagonistic effects of histamine on the cell-mediated immune response. This finding has important therapeutic relevances as the use of an H₂ histamine blocker (cimetidine) may prevent this antagonism and so enhance the patients own delayed hypersensitivity reaction.

Dermatophyte antigen affects expression of T-Lymphocyte responses. Chronic infection due to T.rubrum produce dry type infection associated with poor lymphocyte transformation responses compared to other dermatophytes.

**Non-Immunological Defence against Ring Worm**

Apart from immune mechanisms, there are various host factors, which are important in determining, whether or not particular individual infected with a fungus or if infected whether that infection clears spontaneously.

**Epidermal Integrity**

Normal intact dry epidermis is resistant to dermatophyte infection. Mild trauma to scalp, more severe trauma to the feet or maceration by occlusion have always been required to achieve infection.

**Epidermal turnover**

When the invading dermatophyte to retain a bridgehead on the host must invades through stratum corneum or hair or nail at a rate atleast equal to that at which these tissues grow outwards. Whether the very fast growing epidermis of the psoriatic plaque in the psoriatic subject
is more resistant to fungal infection is not reliably known. Successful experimental inoculation of dermatophytes into psoriatic plaque has been reported but the occlusion used had some inhibiting effect on epidermal turnover.

**Saturated fatty acids**

Some saturated fatty acids with 7,9,11 & 13 carbon chains abstracted from adult hair and derived from sebum were inhibitory to fungi. Due to their presence on their skin in post pubertal children may account for the spontaneous resolution of tineacapitis after this age and the rarity of infections in adults.

**Age, Sex, Genetic and Racial Factors**

There may be racial difference of susceptibility but they are not clear-cut. Negroid skin seems to be relatively less susceptible to fungal infection that the Caucasoid. In Tinea imbricata a genetic susceptibility factor inherited as an autosomal recessive has been suggested.

**Endocrine and Metabolic Factors**

No reliable evidence that the diabetic patient is a especially susceptible to dermatophyte infection. In malnutrition and in Cushing syndrome the apparently diminished resistance to infection is attributable to depressed cellular immunity.

**Temperature**

Exception of T-verrucosum, all dermatophytes grow poorly at 37°C. This factor alone may be responsible for the lack of deep invasion by this group of organism.

**Completing organisms and co-pathogens**

Penicillin like antibiotics shown by certain dermatophyte species might be taken as evidence for an antagonistic relationship between the fungi and the normal skin. Staphylococcus act, as a co-pathogen increasing the degree of inflammation in fungal infection.

**CLINICAL FORMS OF RINGWORM INFECTION:**

**Classification of Tinea**

Clinical forms of ringworm infections are classified traditionally according to the site of the body infected.

They are:

1. Tineacapitis - Ringworm of the scalp (or) Tineatonsurans.
2. Tineabarbae - Ringworm of the beard
3. Tinea corporis - Ringworm of the body (or) Tinea circinata
4. Tinea manuum - Ringworm of the hand.
5. Tinea unguium - Ringworm of the nail
6. Tinea cruris - Ringworm of the groin, dhobie's itch, Jocket Itch.
7. Tinea pedis - Ringworm of the foot, athlete's foot.

<table>
<thead>
<tr>
<th>Clinical forms of Ringworm infection</th>
<th>Name of the organism</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Tinea capitis</td>
<td>Microsporum canis, M.audounii, Trichophyton tonsurans, M. verrucosum.</td>
</tr>
<tr>
<td>2. Tinea barbae</td>
<td>T. mentagrophytes, T. Verrucosum, M. canis, T. rubrum</td>
</tr>
<tr>
<td>4. Tinea cruris</td>
<td>Epidermophyton floccosum, T. rubrum, T. mentagrophytes.</td>
</tr>
<tr>
<td>5. Tinea manuum and Tinea pedis</td>
<td>T. rubrum, T. mentagrophytes, E. floccosum.</td>
</tr>
</tbody>
</table>

Tinea/Ring worm is a group name for a highly contagious, segmented mycelial fungus; there are three distinct genera in this group.

1. **Epidermophyton:**
   Affects only human skin, there is only one important species E. floccosum.

2. **Trichophyton:**
   More virulent than others. It affects the hair, the glabrous skin, as well as the nails; it includes both the human and animal species.
   Important species are T. Rubrum, T. Mentagrophytes, T. Violaceum, T. Verrucosum and T. Schoenleint.

3. **Microsporum**
   It affects mainly the hair and less commonly, the glabrous skin. The important species are: M. audounii (Human variety), M. canis, M. lanosum (Animal varieties)

**Causes the most fungal infections of skin**
Trichophyton rubrum.
CLINICAL FEATURES

TINEA CORPORIS (TINEA CIRCINATA)

Definition

All dermatophyte infection of glabrous skin with exclusion of certain specific location i.e. palms, soles and groin.

Epidemiology

Transmission is by direct contact with other infected individuals or by infected animals, clothing and furniture. Under appropriate environmental condition (warmth, humidity), a reservoir of infection on the feet or elsewhere may be the source of Tineacorporis. In children the infection is due to zoophilic organism transmitted by contact with pets (especially cats and dogs).

Clinical Manifestation

1. Typical annular lesion with an active, erythematous and sometimes vesicular border with central clearing.
2. In T.rubrum and in T.imbricata infection the centre shown concentric rings.
3. In T.rubrum confluent plaques of infection may occur. Polycyclic lesions are also seen frequently.
4. When the infection is due to a zoophilic organism the lesions are commonly seen on exposed skin (head, neck, face and arms).
5. When the infection due to anthropophilic organism, occurs in occluded areas or in areas of trauma (perifolliculitis of the legs in women may be associated with leg shaving)

DIFFERENTIAL DIAGNOSIS

1. Annular lesions of Psoriasis:
   Silvery scales, candle grease sign. Typical lesions of elbow, knees, scalp and nails.

2. Nummular Eczema
   No active inflammatory border, Bilaterally symmetrical patches, Usually on limbs in winter.

COMPLICATIONS

Extension of the infection down the hair follicles. (More difficult to cure) Pyoderma Dermatophytid reaction
PROGNOSIS

Treatment should be continued for 1-2 week after clinical curing. Usually responds promptly to conservative topical therapy within 4 weeks or to antifungal drugs by mouth.

TINEA CRURIS

Tineacruris is a dermatophytosis involving the groin area and include infections of the genitalia, pubic area, perineal and perianal skin.

Epidemiology

Direct contact, trauma are the mode of transmission.

It is almost exclusively a male dermatophytosis depend on several factors. Indirect transmission occur through contact with non living objects that carry infected scales like bed lines, towels, articles of clothing, and even bed pans of urinals.

Clinical Manifestation

A. Well-marginated raised border that may be composed of multiple erythematous papulo vesicles.
B. Pruritis, pain may be present if the involved area is macerated or secondarily infected.
C. Often thigh adjacent to the scrotum is the tissue site involved.
D. Chronic scratching may cause lichenification.
E. Weeping, maceration and areas of pustulation may exist.
F. Irritant contact dermatitis may be present if sensitization of irritating topical products has been used in treatment.

Differential Diagnosis

1. Candidiasis - Bright red and marked by satellite papules and pustules out side the main border of the lesion.
2. Seborrhoeic dermatitis - Often involves with face, sternum and axillae.
3. Intertrigo - More red, less scaly and present in obese individuals in moist body folding.
4. Psoriasis - Distinct plaques on other sites of the body.

Prognosis

Responds promptly to topical or systemic treatment. It may leave behind Post - Inflammatory hyperpigmentation.
TINEA CAPITIS

More frequent in boys than girls. Ringworm of the scalp in which the essential feature in invasion of hair shafts by a dermatophyte fungus.

There are three varieties.

1. Scaly variety

   The commonest, caused by microsporum. A circular patch or patches of partial alopecia with thin greyish scales. Broken lustreless stubs of hair

2. Kerion variety

   Caused by Trichophyton. In the beginning small boil like lesion with little oozing and no pus. Later red, painless, boggy swellings are produced, and have no pus. Lesions are irregularly distributed on the scalp along the area of partial alopecia.

3. Black-Dot variety

   Caused by Trichophyton. Appearance of black dots and it can always be detected at the periphery of the lesion. Alopecia may look almost complete

Carrier state in tinea capitis

A carrier is a person who does not have clinical signs of tinea capitis but has a positive culture from the scalp. In families in whom tinea capitis is identified, the carrier rate is around 30%. The presence of these carriers will reduce the cure rate for tinea capitis if they are not treated concomitantly.

Differential Diagnosis

1. Seborrhoeic dermatitis:

   Uncommon in children, 2-8 years of age. In this age range seborrhoeic dermatitis is rare.

2. Alopecia Areata:

   Well defined patches of Complete alopecia. Absence of dull, broken hair and greyish scales, presence of "exclamation mark" hair.

3. Impetigo:

   Culture positive for staphylococcus aureus.

Prognosis:

Tinea capitis should be treated whenever detected. Rarely permanent alopecia may result in kerion variety.
TINEA PEDIS AND TINEA MANUUM

Tineapedis is a dermatophyte infection of the feet;
Tineamanuum is a dermatophyte infection of palms, and interdigital areas of the hand.

Epidemiology

Infection is common during the summer months and in tropical or sub tropical climates. Incidence of Tineapedis is definitely higher in any population that wears occlusive shoes. Infection rate is increased using commonal bath or pools. It is an exogenously transmitted infection in which cross infection among susceptible individuals readily occurs.

The rate of infection is much higher in closed communities like athletic teams, military organization and boarding schools.

Clinical Manifestations

1. Tineapedis may present as one of 4 clinically accepted variants. Chronic infection is the most common and is characterised by fissuring, scaling, and maceration in the interdigital or sub digital areas.
2. The lateral (ie. 4th to 5th or 3rd to 4th) toe webs are the most common sites of infection. From here infection may spread to the sole or instep of the foot, but it seldom involves the dorsum.
3. Aggravating factor is warmth and humidity.
4. Hyperhidrosis may be an underlying problem and should be treated along with the dermatophytosis.

1st type; Interspace showed maceration, white hyperkeratosis or erosions with increasing patients symptomatology, an overgrowth of the bacterial flora including gram - negative was noted. It was found that the clinical picture of symptomatic "athlete's foot" results from the interaction of bacteria and dermatophyte.

2nd type: Chronic papulosquamous pattern usually bilateral, characterised by minimal inflammation, diffuse scaling over the soles. In addition to the feet the hands may be involved as well as multiple toenails. A common presentation is, "One hand, two feet presentation observed with T.rubrum infection".

3rd Type: Vesiculo bullous type caused by T.mentagrophytes.

4th type: Acute ulcerative variant associated with maceration, weeping of ulceration, obvious white hyperkeratosis and a pungent odour is characteristically present. This infection is often complicated by a secondary bacterial overgrowth (especially gram negative bacteria)
Differential Diagnosis
Psoriasis - Repeated fungal culture give negative result.
Contact dermatitis - Often involves the dorsal surface of feet.

**TINEA BARBAE OR TINEA SYCOSIS (BARBER'S ITCH)**
It is a fungal infection limited to the coarse hair - bearing beard and moustaches area of men.

**Epidemiology**
Tinea barbae is by definition seen only in males. Contaminated barber’s razors or clippers transmitted it from person to person. The infection is by exposure to animals like cattle and dogs.

**Clinical Manifestations**
They are 3 clinical types
1. Inflammatory or kerion like
2. Superficial or sycosiform type
3. Circinate spreading type

1. **Inflammatory type**
   Unilateral lesions, common areas of involvement are chin, neck, maxillary and submaxillary areas. Upperlip is usually spared.
   The lesions are nodular and boggy associated with weeping of seropulent material with crusting. Perifollicularpustulation is observed.

2. **Superficial type**
   Typically resembles a bacterial folliculitis. Diffuse erythema associated with perifollicular papules and pustules

3. **Circinatetinea**
   There is an actively spreading vesiculopustular border with central scaling; there may be a relative sparing of hair in this variant. Atypical tineabarbae may also see especially if the course of the disease is altered by corticosteriod or other therapy.

**Differential Diagnosis**
Sycosisbarbae: Chronic congestion of the skin of the beared region with superficial follicular pustules.

**Prognosis**
Prognosis is good as regards complete cure. Scarring and alopecia however are the end results of the inflammatory type.
TINEA UNGUIUM

Synonyms: Onychomycosis

Tineaungium is clinically defined as a dermatophyte of the nail plate.

Epidemiology:

Approximately 30% of patients with dermatophyte infections on other parts of their body also have tineaungium. Fungal nail infections are always exclusively an adult disease, because the faster nail growth in children appears to make infection more difficult. Infection is higher in men than women though the number of cases affecting the toenails is increased in women due to their narrow toed shoes allow increasing crowding off and greater burden of wet work performed by females. Fungal nail infections are more chronic and recalcitrant to therapy and these infections provide an endogenous source for reinfection of the feet.

Clinical Manifestations

1. Distal subungualonychomycosis (DSO)

Whitish or yellowish discolouration at the free edge of the nail or near the nailfold. As the infection progresses subungual hyperkeratosis may lead to an operation of nail plate and nail bed. Fungi invade the nail plate from the ventral surface and in time the entire nail may become friable and discoloured. Subungual debris also provides a site for opportunistic secondary infection.

2. Proximal subungualonychomycosis (PSO)

First clinical sign of the type is whitish-to-whitish brown areas on the proximal part of the nail plate. The area may gradually enlarge to affect the entire nail.

3. White Superficial Onychomycosis (WSO)

White colour on the surface of the toenails. The surface of the nail is usually rough and friable, as the "eroding fronds" of the organisms remain quite superficial. T.mentagrophyte produces WSO.

Clinical manifestations:

- The condition is very rarely bilateral and symmetrical.
- Tinea affects first the free edges of the nail.
- Opaque, brittle and deformed nail or nails and hyperkeratotic debris under free edges characterize tineaungium.
• There is no pain and itching.
• The diagnosis is confirmed by the demonstration of fungus in the hyperkeratotic debris and nail cuttings.

**DIFFERENTIAL DIAGNOSIS:**

- **Psoriasis:**
- **Moniliasis**
- **Paronychia**
- **Leprosy:**

**TINEA NIGRA**

A superficial dermatomycosis caused by Phaeoanellomyces (Exophiala) werneckii. This is a dematiaceous (pigment-producing) fungus. It causes an asymptomatic tan, brown, or black patch on the palms or soles. Demonstrating pigmented hyphae on a KOH examination of the lesion makes the diagnosis. Tineanigra has been confused with acrallentiginous melanoma.

**TINEA FAVOSA (OR) FAVUS**

It is a chronic mycotic infection of the scaly glabrous skin and or nails characterized by the formation of yellowish crusts within the hair follicles (scutula) and eventuating in a cicatrical alopecia.

**Epidemiology**

Favus is typically a chronic infection that begins early in life and commonly extends into adulthood. This is predominant in rural areas associated with poor hygiene and malnutrition. Relatively intimate and prolonged contact is probably required for transmission. Cleanliness with the removal of hairs or other sources of infection is an important factor on controlling the disease.

**Etiology:**

Common dermatophytes producing favus is T.schoenleini.

**Clinical Feature**

Scutula are found in most cases of favus. They gradually expand form a yellowish - red papule to form a yellowish, cup shaped structured that may become 1 cm or more in diameter. A single, lusterless, dry hair pierces the center of the scutulum, the colour (yellowish) is due to the invasion of the hair by multiple intrapilar hyphae.
If the scutulum is removed from its attachment to the epidermis, an oozing, erythematous base is noted. When hygienic conditions are lacking, a characteristics "Mousey" odour may be appreciated.

In the classic presentation lesions appear in a patchy distribution on the scalp and coalesce of polycyclic in shape. The center of the infected area becomes extensively scarred and almost totally devoid of hair. Besides scalp, favus may involve glabrous skin and nails. In later stages a cicatrical alopecia may be present.

**Majocchi’s granuloma** is a follicular abscess produced when a dermatophyte infection penetrates the follicular wall into the surrounding dermis. Patients usually present with one or more tender boggy papules or plaques on the legs or, less commonly, arms. Pus may be seen drar from the hair follicle. Trichophytonrubrum or T. mentagrophytesare the species most co-isolated from these lesions. Treatment should consist of an oral antifungal agent.

**Tinea incognito**

This is the name given to extensive ringworm with atypical appearance due to the inappropriate use of topical corticosteroids. The corticosteroids suppress the protective inflammatory response of the skin to the ringworm fungus allowing it to spread and alternating its appearance.

**LABORATORY DIAGNOSIS OF THE SUPERFICIAL MYCOSIS**

**Dermatophytosis**

Although, the diagnosis of superficial fungal infection can be strongly suspected on clinical grounds, it is usually prudent and sometimes essential to seek laboratory aid. Direct microscopic examination, culture of selective materials, and woods lamp examination should be made whenever possible.

**Collection Specimens.**

In dermatophyte infections, the active border of the lesion contains the viable organisms and is most likely to give positive results. It must be scraped with a sterile scalpel and any hair stubs should be plucked with sterile forceps. Once collected, specimen should be examined rapidly or placed in dry containers, such as clean dishes or paper envelopes; a folded piece of black paper is most appropriate. In Tinea unguium, the nail bed is raised at the distal end and the powdery debris is removed from under the nail with a slightly curved needle.
Skin Scrapping

The specimen is cleaned in 10-20% potassium hydroxide. Microscopic examination is carried out using low-power and high-power lenses of direct microscopy.

Scraping of the skin are examined as for hair. Spores can be differentiated from artifacts because they are of uniform size, and hypae are differentiated from fibres by being branched. In onychomycosis, part of the nail is cleaned in 10% potassium hydroxide overnight to dissolve away the keratinous material and allow the fungal elements to be seen that penetrate through the epidermal scales. Round or barrel-shaped spores are also found.

The material is first placed on a glass slide, and then 1 or 2 drops of 10-20% potassium hydroxide (KOH) are added. A fungal stain such as chlorazol black E may be added to the preparation to aid visualization of the fungal elements. The hyphae of dermatophytes will be septate and typically demonstrate branching. Mosaic hyphae actually represent thickened stratum corneum cell walls. True hyphae cross the cell walls of keratinocytes and do not conform to the contour of keratinocytes.

Sabouraud's dextrose agar:

A nonselective culture medium consisting of peptone, dextrose, agar, and distilled water. It allows the growth of bacteria as well as pathogenic and nonpathogenic yeast and molds.

This may be required not only to confirm the diagnosis but also to identify the species of the causative fungus.

Woods lamp examination

A Wood's lamp is a light that uses long wave ultraviolet light. When an area of scalp that is infected with tinea (a type of ringworm fungus) is viewed under a Wood's light, the fungus glows (green yellow fluoresces). This test may be done to detect the presence of a fungal scalp or skin infection.

A Wood's light is an ultraviolet light source that emits in the spectrum of 325-400 nm. This light was used extensively for the diagnosis of tineacapitis when Microsporum audouini was the major cause of this disorder. However, it is of limited usefulness today since most cases are now produced by Trichophyton tonsurans, which is not fluorescent.

The fluorescence is caused by pteridine. The fungi responsible for fluorescent are; Tinea capitis, T. Schoenleinii, M. Canis, M. Audouinii, M. Distortum, T. Ferrugineum
**Histopathological examination**

Histopathological examination of a periodic acid Schiff stained section reveals hyphae and spores in the horny layer. Furthermore, the hypo-pigmented areas are characterized by a normal number of melanocytes whose dendrites are filled with small, sparsely melanized melanosomes. Also the number of melanosomes is reduced in many of the keratinocytes. This is explained by an abnormal maturation of melanosomes and partial block in their transfer to keratinocytes.

**Preventive Measures of Ring Worm Infections**

The skin should be kept dry, since skin favours the growth of fungi.

1. The essential factor in prevention is personal hygiene.
2. Dry the skin carefully after bathing or after perspiring heavily, and let it dry for 10-15 minutes before dressing.
3. Socks should be changed frequently.
4. Loose-fitting underwear is advisable.
5. Cutting of nail.
6. Sandals Open toed chapels should be worn if possible.
PROPERTIES OF THE TRIAL DRUGS (INTERNAL)

1. PARANGI CHAKKAI

Botanical Name : Smilax Chinensis Linn.
Family : Lilliaceae
English Name : China root
Part used : Root

Organoleptic Characters:
- Taste : Inippu (Sweet)
- Potency : Seetham (Cold)
- Pirivu : Inippu (Sweet)

General properties:

Actions:
- Alterative
- Antisyphilitic
- Aphrodisiac
- Depurative

2. SIVANAR VEMBU

Botanical Name : Indigofera aspalathoides, vehl ex DC
Family : Papilionaceae
English name : Indigo plant
Part used : Leaf, stem, root, flower

Organoleptic Characters:
- Taste : Kaippu (Bitter)
- Potency : Veppam (Heat)
- Privu : Kaarppu
General properties:

Stimulant
Demulcent

3. CHANGANVER PATTAI

Botanical Name: Azima tetracantha, Lam.
Family: Salvadoraceae.
English Name: Mistletoe berry thorn, Four Spined mehita.
Part Used: Leaf, Root, Milk

Organoleptic Characters:

Taste: Kaippu (Bitter)
Potency: Veppam (Heat)
Privu: Karppu

General properties:

Stimulant
Demulcent
Diuretic
Stimulant
Astringent
Tonic
Antiperiodic
Expectorant
4. VELLARUGU

Botanical Name : Enicostemma axillare.(Lam) Raynal
Family : Gentianaceae
Part Used : Poondu

Organoleptic Characters:

<table>
<thead>
<tr>
<th>Taste</th>
<th>Kaippu</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potency</td>
<td>Veppam</td>
</tr>
<tr>
<td>Privu</td>
<td>Karppu</td>
</tr>
</tbody>
</table>

General Properties:

Actions:

ª Stomachic
ª Tonic
ª Alterative
ª Laxative
ª Febrifuge

5. KARUMBU

Botanical Name : Saccharum officinarum.Linn
Family : Gramineae (Poaceae)
English Name : Sugarcane,Noble cane
Part Used : Karuppancharu

Organoleptic Characters:

<table>
<thead>
<tr>
<th>Taste</th>
<th>Inippu(Sweet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potency</td>
<td>Seedham</td>
</tr>
<tr>
<td>Privu</td>
<td>Inippu</td>
</tr>
</tbody>
</table>
General Properties:

அடுள்ள மரத்தின் காப்பு வகை

பொருளில் எதிர்ப்பிற்கு பாதுகாப்பு-அதிகத்

திறுத்த உதடை நீர் கொலைதிறன்

பாதுகாப்பு வகை. (அ.5)

Actions:

™ Antiseptic
™ Demulcent

PROPERTIES OF TRIAL DRUGS (EXTERNAL)

6. NEERADI MUTHU

Botanical Name : Hydnocarpus laurifolia (Dennst) Sleumer.
Family : Flacourtiaceae
English name : jangli almond.,marothi tree,Chaulmugra
Part used : Seed

Organoletic Characters:

Taste : Kaippu
Potency : Veppam
Privu : Karppu

General Properties:

நீர்நிலையில் நீர் வைத்திருக்கும்

பொருளில் பெரும் பாதுகாப்பு-காற்றிறது

பாதுகாப்பு ! பிறைத் பெரும் மீன்பாறையை

குழுப்படுகை காற்றிறும் வகை. (அ.5)

Actions:

™ Alterative
™ Stimulant
™ Detergent
™ Parasiticide
7. KASA- KASA

Botanical Name : Papaver Somniferum, linn.
Family : Papaveraceae.
English Name : Opium poppy, Poppy casules.
Part Used : Seed

Organoleptic Characters:

Taste : Inippu
Potency : Veppam
Privu : Inippu

General Properties:

Actions:

™ Sedative

8. KOPPARAI THENGAI

Botanical Name : Cocos Nucifera.
Family : Arecaceae
English Name : Coconut palm, coconut tree.
Part Used : Kaai

Organoleptic Characters:

Taste : Thuvarppu
Potency : Thatppam
Privu : Karppu

General Properties:
Actions:

- Refrigerant
- Aperient
- Nutrient
- Diuretic

9. KATTU –CHIRAKAM

Botanical Name : Vernonia anthelmintica willd.
Family : Asteraceae
English Name : Purple fleebane
Part Used : Seed

Organoleptic Characters:

- Taste : kaippu
- Potency : Veppam
- Privu : kaarppu

General properties:

- Anthelmintic
- Stomachic
- Tonic
- Diuretic
- Antiperiodic
- Alterative

10. ARUNJ-CHIRAKAM

Botanical name : Nigella sativa.Linn
Family : Ranunculaceae
English Name : Black Cumin;Small Fennel
Part Used : Seed
Organoleptic Characters:

Taste : Kaippu  
Potency : Veppam  
Privu : Kaarppu

General Properties:

Actions:

Carminative  
Diuretic  
Anthelmintic  
Stomachic  
Emollient

11. KARPOKARISI

Botanical Name : Psoralea corylifolia.Linn  
Family : Fabaceae  
English Name : Babchi Seeds  
Part Used : Seed

Organoleptic characters:

Taste : Kaippu  
Potency : Veppam  
Privu : Kaarppu

General properties:

Actions:

Laxative  
Stimulant

(அ.ட)
12. BRAHMATHANDU VITHAI

Botanical Name : *Argemone Mexicana* Linn
Family : Papaveraceae
English Name : The maxican poppy; The Yellow thistle
Part Used : Seed

**Organoleptic Characters:**
- **Taste** : Kaippu
- **Potency** : Veppam
- **Privu** : kaarppu

**General properties:**

**Actions:**
- Laxative
- Sedative
RAW DRUGS - EXTERNAL MEDICINE

Nigella sativa. Linn

Cocos nucifera

Hydnocarpus laurifolia (Dennst) Sleumer

Papaver Somniferum, linn

Argemone Mexicana. Linn

Psoralea corylifolia. Linn

Vernonia anthelmintica willd
RAW DRUGS - INTERNAL MEDICINE

Smilax chinensis Linn

Indigofera aspalathoides, vehl ex DC

Azima tetracantha,Lam

Enicostemma axillare.(Lam) Raynal

Saccharum officinarum,Linn
TRIAL DRUG
PRANGICHA KKAI CHOORANAM

NEERADIMUDHU PASAI
STANDARD OPERATING PROCEDURES:
Internal Medicine: PARANGICHAKKAI CHOORNAM

Ingredients:

1. Parangichakkai (Smilax china .Linn ) - 8 palam (280 Gms)
2. Sivanar vembu (Indigofera aspalathoides.vahl ex DC ) - 4 palam (140 Gms)
3. Changan verpattai (Azima tetracantha, Lam ) - 2 palam (70 Gms)
4. Vellarugu (Enicostemma axillare.(Lam)Raynal ) - 2 palam (70 Gms)

Source of trial medicine:

The raw drugs for the preparation of Parangichakkai Choornam and Neeradimuthu Pasai will be purchased from a well reputed country shop and the purchased drugs were authenticated by the authorities of Botany, National Institute of Siddha..

Method of preparation:

The purified Parangichakkai # is dried and made into choornam. Then the other three drugs such as Sivanar vembu (Indigofera aspalathoides.vahl ex DC), Changan ver pattai (Azima tetracantha, Lam), Vellarugu (Enicostemma axillare. (Lam) Raynal) were dried in sunlight and made into fine powder (choornam); and is mixed with the above parangichakkai choornam. Along with the choornam 10 palam (i.e 350 gm) sugar is mixed and it is kept inside the pot for 10 days in Thaaniya pudam*

Drug storage:

The trial drugs Parangichakkai Choornam (Int) is stored in clean plastic container and Neeradimuthu Pasai (Ext) is stored in another clean plastic container.

Dispensing:

The choornam is given in powder form in packets and paste is given in plastic container.
# PURIFICATION OF PARANGICHAKKA:
(Reference: Chikitcha Rathina Deepam; Page no117)

**Drugs used for purification of Parangichakkai:**

Sadura kalli (Euphorbia antiquorum. Linn.) - 1 thookku (1.7 Kg)
Thiruku kalli (Euphorbia tirucalli)   - 1 thookku (1.7 Kg)

Sadurakalli and Thirukugalli are made into small pieces and are taken in one mud pot. Then 21.44 litres. (16 Padi) water is poured into the pot and the mouth of the pot will be covered with thin cloth. The Parangichakkai will be made into small pieces and kept over the cloth, then it will be covered by another mud pot with the same size. This instrument is subjected to heat for 6 hrs (Two Saamam) then allowed for boiling. Then the pieces of Parangichakkai are dried in shade then made into chooranam.

* Thaaniya pudam:

It is a unique process mentioned in Siddha; in which the prepared medicines will be placed inside the cereals in a particular period especially paddy. After that only the medicines can be used for therapeutic purpose.

**EXTERNAL MEDICINE:**

**NEERADIMUTHU PASAI:**
(Reference: Siddha Materia Medica – Medicinal plants division Page no 533-534).

**Ingredients:**

1. Neeradimuthu (Hydnocarpus laurifolia dennst. Sleumer)
2. Kasakasaa (Papaver somniferum. Linn)
3. Kopparai (Cocos nucifera)
4. Kaattu seragam (Vernonia anthelmintica. Willd)
5. Karunseragum (Nigella sativa.Linn)
6. Karpogi vithu (Psoralea corylifolia.Linn)
7. Brahmathandu vithai (Argemone mexicana.Linn)

   - Equal quantity
Method of preparation:

The above ingredients will be made into powder and then will be mixed with Pulitha neer (Vinegar) and made into a paste.

YOGAM TECHNIQUES TO BE USED FOR THE PATIENTS:

- Meditative postures
- Padmasanam
- Vajrasanam
- Pranayamam (Mathrika Pranayamam and Omkhara Pranayamam, Nithirai Pranayamam-SOS)
- Poorana shanthi Aasanam

TRIAL DRUGS:

**Internal medicine:** PARANGICHAKKAI CHOORNAM

(Reference: Chikitcha Rathina Deepam; Page no117)

**Dosage:** 5 gm b.i.d

**Adjuvant:** Honey.

**Duration:** 30 days

**External medicine:** NEERADIMUTHU PASAI

(Reference: Siddha materia medica - medicinal plants division; Page 533-534)

**Dosage:** Q.S

STUDY DESIGN

**STUDY TYPE:**

Pilot study

**STUDY PLACE:**

Ayothidoss Pandithar Hospital,
National Institute of Siddha, Chennai-47.

**STUDY PERIOD:**

12 months
SAMPLE SIZE:

40 patients [20 OP + 20 IP].

Out of the 20 OP patients, 10 patients will be treat only with external medicines and remaining 10 will be treated with both internal and external medicines. Out of the 20 In-patients 10 patients will be given Yogam treatment along with trial medicine and the remaining 10 will be given trial medicines only.

SUBJECT SELECTION:

Patients reporting with symptoms of inclusion criteria will be subjected to screening test and documented using screening proforma.

INCLUSION CRITERIA:

- Age: 20 - 60.
- Sex: Both Male and Female.
- Typical distribution of the lesions on the face, axilla, body, inguinal regions and nails.
- Well defined raised margin.
- Marked itching.
- Clearance in the central area of the lesion.
- Willing to sign the informed consent stating that he/she will consciously stick to the treatment during 30 days but can opt out of the trial of his/her own conscious discretion
- Willing to give blood and urine sample for laboratory investigations

EXCLUSION CRITERIA:

- Lesions with secondary infections
- Deep type of Tinea barbae.
- Any other systemic diseases
- VDRL Positive cases
- Diabetes
- Hypertension
- Leprosy
WITHDRAWAL CRITERIA

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

• Poor patient compliance & defaulters.

• Patient turned unwilling to continue in the course of clinical trial.

TESTS AND ASSESSMENTS

A. Clinical assessment
B. Siddha assessment
C. Routine investigation.

a. CLINICAL ASSESSMENT:
   • Site
   • Colour
   • Size
   • Shape
   • Border
   • Itching
   • Erythema
   • vesicles
   • Papule

b. ROUTINE INVESTIGATIONS:

BLOOD
   Hb
   Total RBC Count
   ESR
   Blood sugar

URINE
   Urine sugar
   Albumin
   Deposits
c. RENAL FUNCTION TESTS
   Urea
   Creatinine
   Uric acid

d. LIVER FUNCTION TESTS
   Serum total bilirubin
   Direct bilirubin
   Indirect bilirubin
   Serum Alkaline phosphatases
   SGOT
   SGPT

SIDDHA SYSTEM EXAMINATION:

EN VAGAI THERVUGAL:
   1. Naadi
   2. Sparisam
   3. Naa
   4. Niram
   5. Mozhi
   6. Vizhi
   7. Malam
   8. Moothiram
      Neikkuri:
      Neerkkuri:
STUDY ENROLLMENT

Patients reporting at the OPD with the clinical symptoms of Hyperpigmented elevated patches, itching, burning sensation etc will be examined clinically for enrolling in the study based on the inclusion and exclusion criteria.

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

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

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

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

CONDUCT OF THE STUDY:

Purgation with Virechana Boopathy Tablet– 2 Nos early morning with hot water will be given for balancing the deranged mukkutram a day before treatment.

The trial drugs Parangichakkai Choornam (Internal Medicine) and Neeradimuthu Pasai (External Medicine) are given for 30 days. OP patients should visit the hospital once in 7 days. At each clinical visit clinical assessment is done and prognosis is noted. For In Patients the trial drug is given for 30 days and the clinical assessment will be done daily. 10 In patients will be given Yogam treatment along with their internal medicines. The remaining 10 In patients will not be given Yogam treatment. The patients were advised to follow the specific dietary regimen during their treatment period. The results will be compared at the end of the study. Laboratory investigations are done 0 day & 30th day of the trial. For In patients, who are not in a situation to stay in the hospital for a long time, are advised to attend the OPD for further follow-up. Siddha investigations like Neer kuri and Nei kuri will be carried over. After the end of the treatment, the
patient is advised to visit the OPD for another 2 months for follow-up. If any trial patient who fails to collect the trial drug on the prescribed day but wants to continue in the trial from the next day or two, he/she will be allowed, but defaulters of one week and more will not be allowed to continue and be withdrawn from the study with a fresh case being included.

**DATA COLLECTION FORMS:**

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

- **FORM I**: Screening Proforma
- **FORM II**: History taking Proforma
- **FORM III**: Clinical Assessment Proforma
- **FORM IV**: Clinical assessment during & after Trial
- **FORM V**: Laboratory Investigation Proforma
- **FORM VI.a**: Information sheet
- **FORM VI.b**: Consent Form
- **FORM VI.c**: Dietary advice Form
- **FORM VII**: Withdrawal Form
- **FORM VIII**: Drug compliance Form
- **FORM IX**: Adverse reaction Form

**DATA ANALYSIS:**

After enrolling the patient in the study, a separate file will be maintained for each and every patient and all forms and other information will be kept in the file. The screening forms will be filed separately. All collected datas will be statistically analysed by Sr. Research Officer (Statistics) for logical errors and incompleteness of data to avoid any bias. No modification in the results is permitted for unbiased reports. Then final report will be generated.

**OUTCOME**

**PRIMARY OUTCOME:**

- **Grade 1**: Turning to normal skin
- **Grade 2**: Reduction of hyperpigmentation
- **Grade 3**: Reduction of size and oozing
- **Grade 4**: Reduction of itching
- **Grade 5**: No improvement
SECONDARY OUTCOME:
The effect of Drugs + Yogam ---

Grade 1 : Turning to normal skin
Grade 2 : Reduction of hyperpigmentation
Grade 3 : Reduction of size and oozing
Grade 4 : Reduction of itching
Grade 5 : No improvement

ADVERSE EFFECT/SERIOUS EFFECT MANAGEMENT:
If the trial patient develops any adverse reactions, he/she would be immediately withdrawn from the trial and proper management will be given in OPD of National Institute of Siddha.

ETHICAL ISSUES

1. The internal drug was mentioned in the List of books of Drugs and Cosmetics Act 1940. Hence no preclinical and toxicity studies will be carried out.
2. The patient will be informed about the treatment and other procedures in his vernacular language. After getting the consent only (language understandable to the patient) they will be enrolled in the study.
3. 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.
4. The data collected from the patient will be kept confidential.
5. Treatment will be provided free of cost.
6. If any adverse reactions occur it will be reported to the Pharmaco-vigilance committee of NIS. And they will be advised to take treatment at the OPD of National Institute of Siddha.
OBSERVATION AND RESULTS

Results were observed with respect to the following criteria.

1. Sex distribution
2. Age distribution
3. Kaalam distribution
4. Noi utranilam
5. Noi utrakaalam
6. Food habits
7. Occupational status
8. Socio economic status
9. Mode of onset
10. Aetiological factors
11. Duration of illness
12. Gunam
13. Site of lesion
14. Clinical features
15. Mukkutra theory
16. Udalthathukkal
17. Ennvagaithervugal
18. Neerkuri, Neikuri
19. Gradation of results
1. GENDER DISTRIBUTION

<table>
<thead>
<tr>
<th>SL. No.</th>
<th>Sex</th>
<th>No. of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Male</td>
<td>28</td>
<td>69%</td>
</tr>
<tr>
<td>2.</td>
<td>Female</td>
<td>12</td>
<td>31%</td>
</tr>
</tbody>
</table>

Inference:

Out of 42 patients; 69% belong to male and 31% belong to female.
2. AGE DISTRIBUTION

<table>
<thead>
<tr>
<th>SI. No.</th>
<th>Age</th>
<th>No. of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>20-30</td>
<td>22</td>
<td>51%</td>
</tr>
<tr>
<td>2.</td>
<td>31-40</td>
<td>13</td>
<td>31%</td>
</tr>
<tr>
<td>3.</td>
<td>41-50</td>
<td>3</td>
<td>7%</td>
</tr>
<tr>
<td>4.</td>
<td>51-55</td>
<td>4</td>
<td>9%</td>
</tr>
<tr>
<td>5.</td>
<td>56-60</td>
<td>1</td>
<td>2%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td><strong>42</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Inference:

Among 42 patients 51% belong to 20-30 years, 31% belong to 31-40 years, 7% belong to 41-50 years and 9% belong to 51-55 and 2% belong 55-60.
3. KAALAM DISTRIBUTION

<table>
<thead>
<tr>
<th>SI. No.</th>
<th>Kaalam</th>
<th>No. of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>VathaKaalam</td>
<td>21</td>
<td>50%</td>
</tr>
<tr>
<td></td>
<td>(1-33 years)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>PithaKaalam</td>
<td>21</td>
<td>50%</td>
</tr>
<tr>
<td></td>
<td>(33-60 years)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Inference:

Among 42 patients, 50% belong to vathakaalam, 50% pithakaalam.
4. NOI UTRA NILAM:

<table>
<thead>
<tr>
<th>SI. No.</th>
<th>Thinai</th>
<th>No. of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Kurinji</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2.</td>
<td>Mullai</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3.</td>
<td>Marutham</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4.</td>
<td>Neithal</td>
<td>42</td>
<td>100%</td>
</tr>
<tr>
<td>5.</td>
<td>Paalai</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Inference:**

Among 42 patients, 100% of patients were from Neithalnilam.
5. NOI UTRA KAALAM:

<table>
<thead>
<tr>
<th>SI. No.</th>
<th>Paruvakaalam</th>
<th>No. of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Kaarkaalam</td>
<td>16</td>
<td>38 %</td>
</tr>
<tr>
<td></td>
<td>Aavani &amp; Purataasi (Aug - Oct)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Koothirkaalam</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Ippasi &amp; Karthigai (Oct - Dec)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Munpanikaalam</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Markazhi &amp; Thai (Dec - Feb)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Pinpanikaalam</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Maasi &amp; Panguni (Feb - Apr)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Elavenilkaalam</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Chithirai &amp; Vaikasi (Apr - Jun)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Muthuvenilkaalam</td>
<td>26</td>
<td>62%</td>
</tr>
<tr>
<td></td>
<td>Aani&amp;Aadi) (Jun - Aug)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Inference:**

Among 42 cases, 62% of the cases had the onset of disease in Muthuvenir kaalam and 38% of cases had the onset of disease in Kaar kaalam.
6. FOOD HABITS:

<table>
<thead>
<tr>
<th>SL. No.</th>
<th>Food Habits</th>
<th>No. of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Vegetarian</td>
<td>5</td>
<td>12%</td>
</tr>
<tr>
<td>2.</td>
<td>Non vegetarian</td>
<td>37</td>
<td>88%</td>
</tr>
</tbody>
</table>

Inference:
Out of 42 cases 12% belong to vegetarian diet and 88% belong to non-vegetarian diet.

7. SOCIO ECONOMIC STATUS:

<table>
<thead>
<tr>
<th>SL.No</th>
<th>Socio Economic Status</th>
<th>No. of cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Poor</td>
<td>10</td>
<td>14%</td>
</tr>
<tr>
<td>2</td>
<td>Middle class</td>
<td>16</td>
<td>38%</td>
</tr>
<tr>
<td>3</td>
<td>Rich</td>
<td>16</td>
<td>38%</td>
</tr>
</tbody>
</table>

Inference:
Out of 42 patients, 14% of cases belong to poor socio economic status and 38% of cases belong to Moderate class38 % belongs to rich.
8. OCCUPATIONAL STATUS:

<table>
<thead>
<tr>
<th>SL. NO</th>
<th>OCCUPATION</th>
<th>No. OF CASES</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Student</td>
<td>6</td>
<td>15%</td>
</tr>
<tr>
<td>2</td>
<td>Home maker</td>
<td>8</td>
<td>19%</td>
</tr>
<tr>
<td>3</td>
<td>Coolie</td>
<td>3</td>
<td>7%</td>
</tr>
<tr>
<td>4</td>
<td>Software</td>
<td>3</td>
<td>7%</td>
</tr>
<tr>
<td>5</td>
<td>Business</td>
<td>5</td>
<td>12%</td>
</tr>
<tr>
<td>6</td>
<td>Painter</td>
<td>2</td>
<td>5%</td>
</tr>
<tr>
<td>7</td>
<td>Mech.operator</td>
<td>2</td>
<td>5%</td>
</tr>
<tr>
<td>8</td>
<td>Yoga teacher</td>
<td>1</td>
<td>2%</td>
</tr>
<tr>
<td>9</td>
<td>Accountant</td>
<td>1</td>
<td>2%</td>
</tr>
<tr>
<td>10</td>
<td>Cylinder carrier</td>
<td>1</td>
<td>2%</td>
</tr>
<tr>
<td>11</td>
<td>Sales executive</td>
<td>2</td>
<td>5%</td>
</tr>
<tr>
<td>12</td>
<td>Vector controller</td>
<td>1</td>
<td>2%</td>
</tr>
<tr>
<td>13</td>
<td>Postman</td>
<td>1</td>
<td>2%</td>
</tr>
<tr>
<td>14</td>
<td>Unemployee</td>
<td>6</td>
<td>15%</td>
</tr>
</tbody>
</table>

Inference

Among 42 cases 15% belong to Student, 19% belong to Home maker, 7% belong to Coolie, 7% belong to Software, 12% belong to Business, 5% belong to Painter, 5% belong to Mech.Operator, 2% belong to Yoga teacher, 2% belong to Accountant, 2% belong to Cylinder carrier, 5% belong to Sales executive, 2% belong to Vector controller, 2% belong to Postman and 15% Unemployees.
9. MODE OF ONSET

<table>
<thead>
<tr>
<th>SL. No</th>
<th>Mode of onset</th>
<th>No of cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sudden</td>
<td>6</td>
<td>14%</td>
</tr>
<tr>
<td>2</td>
<td>Gradual</td>
<td>36</td>
<td>86%</td>
</tr>
</tbody>
</table>

Inference:

Out of 42 cases, the mode of onset is Sudden in 14% of the cases and gradual onset in 86% of the case.

10. ETIOLOGICAL FACTORS:

<table>
<thead>
<tr>
<th>SL. No</th>
<th>Etiological factors</th>
<th>No of cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Personal hygiene</td>
<td>30</td>
<td>71%</td>
</tr>
<tr>
<td>2</td>
<td>Close contact with affected persons</td>
<td>1 2</td>
<td>29%</td>
</tr>
</tbody>
</table>

Inference

Among 42 cases, 71% had the etiology of poor personal hygiene and 29% had history of close contact with affected persons.
11. DURATION OF ILLNESS:

<table>
<thead>
<tr>
<th>SL. No</th>
<th>Duration</th>
<th>No. of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1 week</td>
<td>2</td>
<td>5%</td>
</tr>
<tr>
<td>2.</td>
<td>3 weeks</td>
<td>2</td>
<td>5%</td>
</tr>
<tr>
<td>3.</td>
<td>1 – 6 month</td>
<td>18</td>
<td>42%</td>
</tr>
<tr>
<td>4.</td>
<td>6 month – 1 year</td>
<td>4</td>
<td>10%</td>
</tr>
<tr>
<td>5.</td>
<td>2 years</td>
<td>4</td>
<td>10%</td>
</tr>
<tr>
<td>6.</td>
<td>3 years</td>
<td>4</td>
<td>10%</td>
</tr>
<tr>
<td>7.</td>
<td>4 years</td>
<td>1</td>
<td>2%</td>
</tr>
<tr>
<td>8.</td>
<td>5 years</td>
<td>1</td>
<td>2%</td>
</tr>
<tr>
<td>9.</td>
<td>More than 5 years</td>
<td>6</td>
<td>14%</td>
</tr>
</tbody>
</table>

**Inference:**

Among 42 cases, 5% patients suffered for 1 week, 5% patients suffered for 3 weeks, 42% of cases suffered for 1-6 months, 10% of cases for 6 months to 1 year, 10% of cases for 2 years, 10% of cases for 3 years, 2% of cases for 4 years and 2% of cases suffered for more than 5 years.
12. GUNAM:

<table>
<thead>
<tr>
<th>SL. No.</th>
<th>Gunam</th>
<th>No. of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Sathuvagunam</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2.</td>
<td>Rajogunam</td>
<td>42</td>
<td>100%</td>
</tr>
<tr>
<td>3.</td>
<td>Thamogunam</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Inference:

100% of cases had Rajogunam.

13. SITE OF LESION

<table>
<thead>
<tr>
<th>SL. No.</th>
<th>Site of lesion</th>
<th>No. of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Waist, lower abdomen, hip, thigh, gluteal and groins</td>
<td>30</td>
<td>71%</td>
</tr>
<tr>
<td>2.</td>
<td>Upper limb &amp; lower limb</td>
<td>2</td>
<td>5%</td>
</tr>
<tr>
<td>3.</td>
<td>Axilla, trunk</td>
<td>4</td>
<td>10%</td>
</tr>
<tr>
<td>4.</td>
<td>Neck &amp; shoulder</td>
<td>6</td>
<td>14%</td>
</tr>
</tbody>
</table>

Inference:

Out of 42 cases 71% cases had lesion in waist, lower abdomen, hip, thigh, gluteal and groins. 5% had lesion in Upper limb & lower limb, 10% in Axilla, trunk, 14% in Neck & shoulder region.
### 14. CLINICAL FEATURES

<table>
<thead>
<tr>
<th>SI. No.</th>
<th>Clinical features</th>
<th>No. of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Itching</td>
<td>42</td>
<td>100%</td>
</tr>
<tr>
<td>2.</td>
<td>Border well defined</td>
<td>42</td>
<td>100%</td>
</tr>
<tr>
<td>3.</td>
<td>Erythema</td>
<td>40</td>
<td>95%</td>
</tr>
<tr>
<td>4.</td>
<td>Hyperpigmentation</td>
<td>38</td>
<td>90%</td>
</tr>
<tr>
<td>5.</td>
<td>Vesicles</td>
<td>10</td>
<td>23%</td>
</tr>
</tbody>
</table>

**Inference:**

Out of 42 cases, 100% had itching, 100% had well defined border, 95% had erythema, 10% had vesicle 90% had pigmentation.
15. THRI THODAM THEORY

According to the Siddha theory, the three chief constituents of the body vatham, pitham and kabam and its classification changes from the normal phenomenon and causes pathological state due to varied aetiology. Hence the derangement of doshams in Pundareegakuttam is tabulated as follows.

a) Table illustrating the derangement of Vatha:

<table>
<thead>
<tr>
<th>SL. No.</th>
<th>Classification of Vatha</th>
<th>No. of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Pranan</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2.</td>
<td>Abanan</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3.</td>
<td>Udhanan</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4.</td>
<td>Samanan</td>
<td>42</td>
<td>100%</td>
</tr>
<tr>
<td>5.</td>
<td>Viyanan</td>
<td>42</td>
<td>100%</td>
</tr>
<tr>
<td>6.</td>
<td>Nagan</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>7.</td>
<td>Koorman</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>8.</td>
<td>Kirukaran</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>9.</td>
<td>Devathathan</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>10.</td>
<td>Dhananjayan</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Inference:

Among 42 patients, 100% of cases had deranged viyanan and samanan.

b) Table illustrating the derangement of Pitham:

<table>
<thead>
<tr>
<th>SL. No.</th>
<th>Classification of Pitham</th>
<th>No. of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Anarpitham</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2.</td>
<td>Ranjagam</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3.</td>
<td>Sathagam</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4.</td>
<td>Alosagam</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5.</td>
<td>Prasagam</td>
<td>42</td>
<td>100%</td>
</tr>
</tbody>
</table>

Inference

Among 42 patients, 100% of cases had deranged prasagam
### 16. UDALTHATHUKKAL

<table>
<thead>
<tr>
<th>SL .No.</th>
<th>Udalthathukkal</th>
<th>No. of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Saaram</td>
<td>42</td>
<td>100%</td>
</tr>
<tr>
<td>2.</td>
<td>Senneer</td>
<td>42</td>
<td>100%</td>
</tr>
<tr>
<td>3.</td>
<td>Oon</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4.</td>
<td>Kozhuppu</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5.</td>
<td>Enbu</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>6.</td>
<td>Moolai</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>7.</td>
<td>Sukkilam / Suronitham</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Inference:**

Out of 42 cases, 100% of the cases had derangement in saaram and senneer.

### 17. EN VAGAI THERVUGAL

<table>
<thead>
<tr>
<th>SL . No.</th>
<th>EnnvagaiThervugal</th>
<th>No. of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Naadi</td>
<td>Vatha Pitham</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pitha Vatham</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vatha Kapham</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pitha kabam</td>
<td>1</td>
</tr>
<tr>
<td>2.</td>
<td>Sparisam</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3.</td>
<td>Naa</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4.</td>
<td>Niram</td>
<td>40</td>
<td>100%</td>
</tr>
<tr>
<td>5.</td>
<td>Mozhi</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>6.</td>
<td>Vizhi</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>7.</td>
<td>Malam</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>8.</td>
<td>Moothiram</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Inference:**

48% of the cases had VathaPitham. 16% of the cases had Pitha Vatham 29% of the cases had Vatha Kapham 2% of the cases had Pithakabam.
18. NEERKURI, NEIKURI

<table>
<thead>
<tr>
<th>SL. No.</th>
<th>Type of Test</th>
<th>No. of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Neerkuri : Straw colored urine</td>
<td>18</td>
<td>100%</td>
</tr>
<tr>
<td>2</td>
<td>Neikuri Iyya Neer</td>
<td>16</td>
<td>88%</td>
</tr>
<tr>
<td></td>
<td>Vali Neer</td>
<td>2</td>
<td>12%</td>
</tr>
<tr>
<td></td>
<td>Azhal Neer</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Inference:**

Out of 18 cases, 100% of the cases had Straw coloured urine. 88% had shown Iyya Neer, 2% had shown Vali Neer.

19. A. GRADATION OF RESULTS.

<table>
<thead>
<tr>
<th>SL. No.</th>
<th>Grade</th>
<th>No. of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Grade – 1 Turning to normal skin</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>Grade – 2 Reduction of hyperpigmentation</td>
<td>30</td>
<td>71%</td>
</tr>
<tr>
<td>3</td>
<td>Grade – 3 Reduction of size and oozing</td>
<td>10</td>
<td>24%</td>
</tr>
<tr>
<td>4</td>
<td>Grade – 4 Reduction of itching</td>
<td>2</td>
<td>5%</td>
</tr>
<tr>
<td>5</td>
<td>Grade – 5 No improvement</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Inference:**

Out of 42 cases results of 71% cases were Grade - 2 (Reduction of hyperpigmentation), 24% of the cases were Grade – 3 (Reduction of size and oozing) and 5% of the cases were Grade – 4 (Reduction of itching).
B. GRADATION OF RESULT WITH YOGA:

<table>
<thead>
<tr>
<th>SL. No.</th>
<th>Grade</th>
<th>No. of Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Grade – 1 Turning to normal skin</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>Grade – 2 Reduction of hyperpigmentation</td>
<td>7</td>
<td>74%</td>
</tr>
<tr>
<td>3</td>
<td>Grade – 3 Reduction of size and oozing</td>
<td>3</td>
<td>26%</td>
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<tr>
<td>4</td>
<td>Grade – 4 Reduction of itching</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td>Grade – 5 No improvement</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Inference:

Out of 10 patients 74% cases were Grade-2 (Reduction of hyperpigmentation), 26% of the cases were Grade – 3 (Reduction of size and oozing).
### LIST OF OUT PATIENTS BEFORE TREATMENT:

<table>
<thead>
<tr>
<th>S No</th>
<th>Pt No</th>
<th>Name</th>
<th>Age / Sex</th>
<th>Hb gm/dl</th>
<th>T.WBC cu/mm</th>
<th>DC cells/cumm</th>
<th>Total RBC</th>
<th>ESR ½ hr</th>
<th>Blood sugar</th>
<th>BUrea mg / dl</th>
<th>S creatinine mg / dl</th>
<th>Urine Albu</th>
<th>Sug</th>
<th>PC</th>
<th>EC</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>C 92828</td>
<td>Mr. John Kannan</td>
<td>52 – M</td>
<td>13.1</td>
<td>6600</td>
<td>68 27 5</td>
<td>4.1 14 / 32</td>
<td>91 105</td>
<td>-</td>
<td>17</td>
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<td>Nil</td>
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<td>2-4</td>
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<tr>
<td>2</td>
<td>C 64146</td>
<td>Miss. Sudha</td>
<td>23 – F</td>
<td>12</td>
<td>7400</td>
<td>59 30 11 4</td>
<td>6 / 12</td>
<td>92 -</td>
<td>-</td>
<td>14</td>
<td>0.4</td>
<td>Nil</td>
<td>Nil</td>
<td>4-5</td>
<td>4-5</td>
</tr>
<tr>
<td>3</td>
<td>C 92019</td>
<td>Mr. Kumar</td>
<td>40 – M</td>
<td>13.4</td>
<td>8200</td>
<td>58 36 4 4.7</td>
<td>2 / 4</td>
<td>109 -</td>
<td>-</td>
<td>22</td>
<td>0.6</td>
<td>Nil</td>
<td>Nil</td>
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<td>1-2</td>
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<tr>
<td>4</td>
<td>C 91410</td>
<td>Mrs. Ramalakshni</td>
<td>40 – F</td>
<td>12.7</td>
<td>8700</td>
<td>69 27 4 3.9</td>
<td>6 / 12</td>
<td>106 -</td>
<td>-</td>
<td>17</td>
<td>0.5</td>
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<td>Nil</td>
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<td>1-2</td>
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<td>27 – M</td>
<td>14.7</td>
<td>7000</td>
<td>59 36 5 4.5</td>
<td>2 / 6</td>
<td>108 127</td>
<td>-</td>
<td>21</td>
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<td>Nil</td>
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<td>2-4</td>
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<td>6</td>
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<td>Mr. Siva Subramaniam</td>
<td>33 – M</td>
<td>15.3</td>
<td>6600</td>
<td>69 25 6 4.8</td>
<td>2 / 6</td>
<td>- - 90</td>
<td>23</td>
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<td>2-3</td>
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<tr>
<td>7</td>
<td>C 72487</td>
<td>Mr. Raj</td>
<td>40 – M</td>
<td>14.8</td>
<td>5600</td>
<td>64 29 7 4.9</td>
<td>2 / 6</td>
<td>- - 97</td>
<td>19</td>
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<td>2-4</td>
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<tr>
<td>8</td>
<td>C 68940</td>
<td>Mrs. Mubeen Sultana</td>
<td>40 – F</td>
<td>11.8</td>
<td>6800</td>
<td>65 30 5 4.4</td>
<td>2 / 4</td>
<td>- - 111</td>
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<tr>
<td>9</td>
<td>C 70211</td>
<td>Mrs. Yasmin</td>
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<td>11.7</td>
<td>9200</td>
<td>75 20 5 4.1</td>
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<td>- - 78</td>
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<td>4-5</td>
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<td>Mr. Sriram</td>
<td>23 – M</td>
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<td>9500</td>
<td>59 33 8 4.8</td>
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<td>100 130</td>
<td>23</td>
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<td>Nil</td>
<td>Nil</td>
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<td>7900</td>
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<td>66 29 5 4.3</td>
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<td>13</td>
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<td>Mr. Elumalai</td>
<td>34 – M</td>
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<td>6000</td>
<td>56 39 5 5.1</td>
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<td>S No</td>
<td>Pt No</td>
<td>Name</td>
<td>Age / Sex</td>
<td>Hb gm/dl</td>
<td>T.WBC cu/mm</td>
<td>DC cells/cumm</td>
<td>Total RBC</td>
<td>ESR ½ hr</td>
<td>Blood sugar</td>
<td>BUrea mg / dl</td>
<td>S creatinine mg / dl</td>
<td>Urine</td>
<td>Deposit</td>
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<td>11200</td>
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<td>5.1</td>
<td>6 / 14</td>
<td>-</td>
<td>-</td>
<td>108</td>
<td>14</td>
<td>0.4</td>
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<tr>
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<td>Mr. Maheshkumar</td>
<td>23 – M</td>
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<td>7700</td>
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<td>80</td>
<td>104</td>
<td>-</td>
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<td>C 82618</td>
<td>Mr. Jalaludeen</td>
<td>42 – M</td>
<td>16</td>
<td>9800</td>
<td>61 32 7</td>
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<td>2 / 4</td>
<td>-</td>
<td>-</td>
<td>85</td>
<td>30</td>
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<td>24</td>
<td>AQ6949</td>
<td>Mr. Gopikrishna</td>
<td>23 - M</td>
<td>15.9</td>
<td>5700</td>
<td>56 41 3</td>
<td>4.9</td>
<td>2 / 6</td>
<td>80</td>
<td>90</td>
<td>-</td>
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<tr>
<td>25</td>
<td>C 80305</td>
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<td>Mr. BanerjiRao</td>
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<td>0.1</td>
<td>0.3</td>
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<td>28</td>
<td>28</td>
<td>27</td>
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</tbody>
</table>
BEFORE TREATMENT

AFTER TREATMENT

OP/IP NO: C28304
NAME: VINOTH
AGE/SEX: 30/M

OP/IP NO: AQ6949
NAME: GOPIKRISHNA
AGE/SEX: 21/M
DISCUSSION

The clinical entity of Padar Thamari is more or less similar to that of Tinea infection in modern medicine. It is a dermatological condition which is characterized by hyperpigmented well defined patch or patches of scaling, vesicles and pustules with inflammation most marked at the periphery of the lesion and the lesions are spreading in nature like an orbicular lotus leaf. Anatomy and physiology of skin and aetiology, clinical features etc., of the disease are discussed.

Author collected information largely from ‘Siddha Maruthuvam – Sirappu’, ‘Gurunaadi nool’, ‘Dhanvanthri Vaidhyam’ and ‘Agathiyar Kanma Kaandam’ in which the Siddha methods of diagnosis have been dealt with. Before and after the course of treatment, the patients were subjected to laboratory investigations and photographs were taken.

ETIOLOGY:

The causative factors of the disease can be found out from the history given by the patients, their diet, habits, occupation, mental stress and other signs and symptoms. The present study shows the disease is caused due to poor hygiene.

GENDER DISTRIBUTION:

Out of 42 patients 69% belongs to male 31% belongs to female.

AGE DISTRIBUTION:

Among 42 patients 51% belongs to 20-30 years, 31% belongs to 31-40 years, 7% belongs to 41-50 years, 9% belongs to 51-55 years, 2% belongs to 55-60 years.

DIETARY HABITS:

Out of 42 cases 12% belongs to vegetarian diet and 88% belongs to non-vegetarian diet.

KAALAM DISTRIBUTION:

Among 42 cases 50% belong to Vatha kaalam 50% belong to Pitha kaalam.

OCCUPATIONAL DISTRIBUTION:

Among 42 cases 15% belongs to student, 19% belongs to home maker, 7% belongs to software, 12% belongs to mech. Operator, 2% belongs to yoga teacher, 2% belongs to cylindrical carrier, 5% belongs to sales executive, 2% belongs to vector controller, 2% belongs to postman, 15% are unemployees.
SOCIO-ECONOMIC DISTRIBUTION:
Among 42 cases 14% belongs to poor socio economic status, 38% belongs to moderate, 38% belongs to rich socio economic status.

MODE OF ONSET:
Out of 42% cases 14% are sudden onset, 86% are of gradual onset.

ETIOLOGICAL DISTRIBUTION:
Out of 42 patient 71% are affected by personal hygiene, 29% by close contact.

DURATIONAL DISTRIBUTION:
Among 42 cases 5% are suffered for 1 week, 5% for 3 week, 42% for 1-6 months, 10% for 2 years, 10% for 3 years, 2% for 4 years, 2% for 4 years, 14% for more than 5 years.

SYMMETRY DISTRIBUTION:
5% in upper and lower limb, 7% in waist, hip thigh gluteal region, 10% in axilla, trunk, 14% in neck and shoulder.

NOI UTRA KAALAM:
Among 42 cases, 62% of the cases had the onset of disease in Muthuvenir kaalam and 38% of cases had the onset of disease in Kaar kaalam.

NOI UTRA NILAM:
Among 42 cases, 100% of patients were admitted to the trial from neithal.

REFERENCE OF MUKKUTRAM
1. VATHAM
Viyanan and Samanan were affected in all the cases (100%).

2. PITHAM
In all the 42 (100 %) patients, Prasakam was affected. Prasakam is responsible for the complexion of the skin.

3. KABAM
Changes reported in kabam in all the 42 patients.

UDAL KATTUGAL:
Saaram and Senneer which are responsible for the colour of the skin were affected in all the 42 (100 %) cases.
ENVAGAI THERVUGAL:

Niram was affected in all the 42 (100 %) cases.

GRADATION OF RESULTS AFTER TREATMENT:

Out of 42 cases results of 71% cases were Grade – 2(Reduction of hyperpigmentation), 24% of the cases were Grade – 3(Reduction of size and oozing) and 5% of the cases were Grade – 4(Reduction of itching).

GRADATION OF RESULTS WITH YOGA:

Out of 10 patients 74% cases were Grade –2(Reduction of hyperpigmentation), 26% of the cases were Grade – 3(Reduction of size and oozing).

MANAGEMENT:

‘Viresanathaal vatham thaazhum’

In Siddha System before starting the treatment it is necessary to bring the Mukkutram to equilibrium. By giving purgation vitiated vatham come to normal condition.

I DAY - Virechana Boopathi Tablet -2 O.D given in the early morning.

DRUGS:

II DAY - Internal Medicine: Parangichakkai chooranam – 5gms with honey

External Medicine: Neeradimuthu Pasai

Patients were instructed to take the medicines regularly and apply the external medicine twice a day. It was ensured that the diet restrictions imposed were followed properly by the patients.

These specific drugs for the dissertation work were prepared by the author in the supervision of Faculty members of Gunapadam in the Gunapadam practical laboratory, National Institute of Siddha. Bio-chemical Analysis was also done in the Bio chemistry laboratory of National Institute of Siddha.
SUMMARY

- **Padar Thamarai** has been chosen for the dissertation work by the author. Various literatures have been collected from Siddha and modern literatures.

- Preclinical analyses in biochemical aspects was conducted for the trial drug **Parangi chakkai chooranam**. 42 patients of both sex and in age group between 20 to 60 were selected for the study.

- 12 cases were treated in Inpatient ward at least for minimum 15 days and followed up in the outpatient department after discharge. 30 cases were treated in the outpatient department for 30 days.

- All the details about the study and the drugs were informed to the patients in their vernacular language and consent forms duly signed by them were obtained from them. Before starting the treatment, the blood samples of the selected patients were subjected to investigation and photographs of the lesions were taken.

- A day before starting the treatment purgation was given by administering **Virechana Boopathi Tablet - 2 O.D** with hot water in the early morning to normalise the thrithodam.

- From the second day onwards **Parangichakkai chooranam – 5gms B.I.D.** along with honey was given internally and **Neeradimuthu pasai-QS** for external use were given to the patients.

- Diet restrictions were strictly imposed during the treatment period. Every 8th day the patients were assessed for clinical improvement and adverse effects. On the 30th day photographs were repeated. The improvement was assessed.

- During the course of treatment there were no adverse effects or unwanted drug reactions such as nausea, abdominal discomfort. Hence the trial drugs were considered as safe.
CONCLUSION

The treatment was given for Padar thamarai on the basis of principles of Siddha system deranged Thri Thodams were corrected by the trials medicine given to the Padar thamarai.

The present clinical study reveals that the trial drug showed Grade - 2 (Reduction of hyper pigmentation) improvement in 71% of the cases, Grade 3 (Reduction of size and oozing) improvement in 24% of the cases, Grade 4 (Reduction of itching) improvement in 5% cases.

There was no adverse effects were reported during the study. Hence the trials drugs are considered as safe. The preparation of Internal and External Medicine were simple also. It is concluded that the trial drugs were therapeutically effective against Padar Thamarai.
1. Thirumanthiram
2. Noi naadal noi mudhal naadal- dr.shanmugavelu
3. Siddha maruthuvam sirappu
4. Indian materia medica
5. Padharthaguna vilakkam
6. Yugi vaithiya chinthamani
7. Agathiyar kanma kaandam
8. Dhanvanthiri vaithiyam
9. Gunapadam mooligai vaguppu
11. Chikitcha Rathina Deepam.
12. Wealth of India.
13. Dr.Nadkarni’s Indian Materia Medica.
18. Davidson’s principles and practice of Medicine.
23. Roxburgh’s common skin disease, Dr. Ronald marks
24. Practice of Dermatology, Dr.P.N.Behl,M.B.B.S. F.R.C.P.
CERTIFICATE

This is certify that the project title Preclinical... and Clinical...
Study in Parangichakkal... and... D.A.S, Thamarat... has been approved by the IAEC.

Name of Chairman/Member Secretary IAEC: Prof. Dr. M. Narayanan Narayanan

Name of CPCSEA nominee: Dr. B. Jayarajan Nave

Chairman/Member Secretary of IAEC: 

CPCSEA nominee: 

(Kindly make sure that minutes of the meeting duly signed by all the participants are maintained by Office)
<table>
<thead>
<tr>
<th>Name: Dr. M. Sathishkumar Reg: 3102204</th>
</tr>
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<tbody>
<tr>
<td>Title: Paramedical and Clinical Study on Paavamichakkaal Chendpam (internal medicine) and Neesollimuthu Rasai (external medicine) for the treatment of Padas Durais (endometriosis)</td>
</tr>
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</table>

**DEISION**

<table>
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<tr>
<th>Opinion of the Institutional Ethics Committee – Please Check one</th>
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</thead>
<tbody>
<tr>
<td>Approval</td>
</tr>
<tr>
<td>Disapproval</td>
</tr>
</tbody>
</table>

Signed: [Signature] (Please delee as appropriate, Chairperson, Secretary)

Date of review: [Date]

**Modifications needed**

The research proponent is hereby informed that the Institutional Ethics Committee will require the following:
1. All adverse drug reactions (ADRs) that are both serious and unexpected to be reported promptly to the IEC within 7 working days
2. The progress report to be submitted to the IEC at least annually
3. Upon completion of the study, a final study status report needs to be submitted to the IEC
This Certificate is awarded to Dr. M. SATHISHKUMAR

for participating as a Delegate in the VI Workshop on
"Research Methodology & Biostatistics"
organized by the Department of Silathur Medical University
from 12th September 2011 to 16th September 2011.

Dr. SATISHKUMAR

69, Annal, Gundy, Chennai-600 102
NATIONAL INSTITUTE OF SIDDHA, CHENNAI – 600047
CERTIFICATE OF BOTANICAL AUTHENTICITY

Certified that the following plant drugs used in the Siddha formulation Parangichakkai Chooranam (Internal) and Neeradimuthu Pasai (External) for the treatment of Pundareega Kuttam (Tinea infection) taken up for Post Graduation Dissertation studies by Dr. M. Sathishkumar, M.D.(S), II year, Department of Sinappu Maruthuvam, 2011-12, are identified and authenticated through Visual inspection / Experience, Education & Training/ Organoletic characters/ Morphology / Micromorphology / Taxonomical/ Microscopical methods.

Smilax china Linn. (Liliaceae), Root
Indigofera aspalathoides Vahl ex DC. (Fabaceae), Whole plant
Azima tetracantha Linn. (Salvadoraceae), Root
Enicostemma littorale Blume (Gentianaceae), Whole plant
Hydnocarpus laurifolia (Dennst.) Sleumer
Papaver somniferum Linn. (Papaveraceae), Seed
Cocus nucifera Linn. (Arecaceae), Dried kernel
Centratherum anthelminticum (Willd.) Kuntze (Asteraceae), Seed
Nigella sativa Linn. (Ranunculaceae), Seed
Psoralea corylifolia Linn. (Fabaceae), Seed
Argemone mexicana Linn. (Papaveraceae), Seed

Certificate No: NIS/MB/51/2012

Date: 12-6-12

Authorized Signatory

[Signature]
Dr. D. Aravind, M.D(S), M.Sc.
Assistant Professor
Department of Medicinal Botany
National Institute of Siddha
Chennai - 600 047, INDIA
Principle:

Acute toxicity was carried out in Swiss albino mice with a single exposure of 10 times of the recommended therapeutic dose of test compound the study duration will be 14 days.

Animal species : Swiss albino mice  
Age / Weight / Size : 6 weeks. Mice-20-25 gms.  
Gender : Both male and female  
Number of Animals : Mice: 10  
Acclimatization Period : 7 Days  
Clinical dose : 162 mg/day

<table>
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<tr>
<th>S.No</th>
<th>Group</th>
<th>No of mice</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Vehicle control (saline)</td>
<td>10 (5 male, 5 female)</td>
</tr>
<tr>
<td>2</td>
<td>Toxic dose</td>
<td>10 (5 male, 5 female)</td>
</tr>
<tr>
<td></td>
<td>10X therapeutic dose</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1620mg)</td>
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</table>

Test Animals

Test animals were obtained from the animal laboratory of the King institute, Chennai and stocked at National institute of siddha, Chennai. All the animals were kept under standard environmental condition (27± or – 2 degree c). The animals had free access to water and standard pellet diet (Sai Durga foods pvt.ltd, Bangalore). The principles of laboratory animal care were followed and the Institutional ethical committee approved the use of animals and the study design. (1248/ac/09/CPCSEA/February/ 2012)
Route of administration:

Oral route was selected, because it is the normal route of clinical administration.

Test substance and vehicle

The Parangichakkai Chooranam is Brown in colour. The test substance is insoluble in water, in order to obtain and ensure the uniformity in drug distribution the drug is dissolved by aqueous Tween 80 solution (10%).

Administration of doses

Parangichakkai chooranam was suspended in aqueous Tween 80 solution (10%), with uniform mixing and it was administered to the groups in a single oral dose. The control groups were received equal volume of the vehicle. The animals were weighed before giving the drug. The dose level was calculated according to body weight, and surface area. Since the clinical dose was 162mg/day it was converted to animal dose (1620mg) and then administered. The principle of laboratory animal care was followed.

Observations

Observations were made and recorded systematically and continuously observed as per the guideline after substance administration. The animals were monitored for behavioural parameters like

1. Awareness
   - Alertness
   - Visual placing
   - Stereotype
   - Passivity

2. Mood
   - Grooming
   - Restlessness
   - Irritability
   - Fearfulness

3. Motor activity
   - Spontaneous activity
- Reactivity
- Touch response
- Pain response.

Animals were observed for body weight and mortality for 14 days. If animals died during the period of study, the animals were sacrificed. At the end of the 14\textsuperscript{th} day all animals were sacrificed and necropsy was done.

**Body Weight**

Individual weight of animals was determined before the test substance was administered and daily for 14 days. Weight changes were calculated and recorded. At the end of the test, surviving animals were weighed and sacrificed.

**Results:**

Parangaichakkai chooranam at the dose 1620mg/animal did not exhibit any mortality in mice. No behavior changes were noted for the first 4 hours and for the next 24 hours and throughout the study period of 14 days. No weight reduction was noted before and after the acute study duration. Reflexes were found to be normal before and after the study. All other observations were found to be normal before and after the study. In Necropsy, the organs of the animal such as, Liver, Heart, Lungs, Pancreas, Spleen, Stomach, Intestine, Kidney, Urinary bladder, Uterus all appeared normal.
**BIO -CHEMICAL ANALYSIS OF PARANGICHAKKAI CHOORANAM**
**ANALYSED AT NATIONAL INSTITUTE OF SIDDHA**

<table>
<thead>
<tr>
<th>S.No</th>
<th>EXPERIMENT</th>
<th>OBSERVATION</th>
<th>INFERENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Physical Appearance of sample</td>
<td>Light brown in colour</td>
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<tr>
<td>2.</td>
<td><strong>Solubility:</strong></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>a. A little (500mg) of the sample is shaken well with distilled water.</td>
<td>Sparingly soluble</td>
<td>Presence of Silicate</td>
</tr>
<tr>
<td></td>
<td>b. A little (500mg) of the sample is shaken well with con. HCl/Con. H$_2$SO$_4$</td>
<td></td>
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<tr>
<td>3.</td>
<td><strong>Action of Heat:</strong></td>
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</tr>
<tr>
<td></td>
<td>A small amount (500mg) of the sample is taken in a dry test tube and heated gently at first and then strong.</td>
<td>White fumes evolved</td>
<td>Presence of Carbonate</td>
</tr>
<tr>
<td>4.</td>
<td><strong>Flame Test:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>A small amount (500mg) of the sample is made into a paste with con. HCl in a watch glass and introduced into non-luminous part of the Bunsen flame.</td>
<td>No Bluish green lame appeared.</td>
<td>Absence of Copper</td>
</tr>
<tr>
<td>5.</td>
<td><strong>Ash Test:</strong></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>A filter paper is soaked into a mixture of sample and dil. cobalt nitrate solution and introduced into the Bunsen flame and ignited</td>
<td>No Yellow colour flame</td>
<td>Absence of sodium</td>
</tr>
</tbody>
</table>

**Preparation of Extract:** 5gm of Parangichakkai chooranam is weighed accurately and placed in a 250ml clean beaker and added with 50ml of distilled water. Then it is boiled well for about 10 minutes. Then it is cooled and filtered in a 100ml volumetric flask and made up to 100ml with distilled water.
<table>
<thead>
<tr>
<th>S.No</th>
<th>EXPERIMENT</th>
<th>OBSERVATION</th>
<th>INFERENCE</th>
</tr>
</thead>
</table>
| 1.   | **Test For Sulphate:**  
a. 2ml of the above prepared extract is taken in a test tube to this added 2ml of 4% dil ammonium oxalate solution | No Cloudy appearance present | Absent of Sulphate |
| 2.   | **Test For Chloride:**  
2ml of the above prepared extracts is added with 2ml of dil-HCl is added until the effervescence ceases off. | No cloudy appearance present | Absent of Chloride |
| 3.   | **Test For Phosphate:**  
2ml of the extract is treated with 2ml of dil.ammoniummolybdic acid and 2ml of con.HNO3 | Cloudy yellow appearance present | Presence of Phosphate |
| 4.   | **Test For Carbonate:**  
2ml of the extract is treated with 2ml dil. magnesium sulphate solution | No Cloudy appearance present | Absent of Carbonate |
| C    | **Test For Nitrate:**  
1gm of the substance is heated with copper turning and concentrated H2So4 and viewed the test tube vertically down. | No Brown gas is evolved | Absence of Nitrate |
| 6.   | **Test For Sulphide:**  
1gm of the substance is treated with 2ml of con. HCL | No rotten Egg Smelling gas evolved | Absence of Sulphide |
| 7.   | **Test For Fluoride & Oxalate:**  
2ml of extract is added with 2ml of dil. acetic acid and 2ml dil.calcium chloride solution and heated. | No Cloudy appearance | Absence of fluoride and oxalate |
| 8.   | **Test For Nitrite:**  
3drops of the extract is placed on a filter paper, on that-2 drops of dil.acetic acid and 2 drops of dil.Benzidine solution is placed. | Shows Characteristic changes | Presence of Nitrite |
9. **Test For Borate:**
   2 Pinches(50mg) of the substance is made into paste by using dil.sulphuric acid and alcohol (95%) and introduced into the blue flame.  
   | Bluish green colour flame not appeared | Absence of borate |

**II. Test For Basic Radicals**

1. **Test For Lead:**
   2ml of the extract is added with 2ml of dil.potassium iodine solution.  
   | No-yellow precipitate is obtained. | Absence of lead |

2. **Test For Copper:**
   a. One pinch(50mg) of substance is made into paste with con. HCl in a watch glass and introduced into the non-luminous part of the flame.  
   | No blue colour flame | Absence of copper |

3. **Test For Aluminium:**
   To the 2ml of extract dil.sodium hydroxide is added in 5 drops to excess.  
   | No characteristic changes | Absence of aluminium |

4. **Test For Iron:**
   a. To the 2ml of extract add 2ml of dil.ammonium solution  
   b. To the 2ml of extract 2ml thiocyanate solution and 2ml of con HNo3 is added  
   | Red colour appeared | Presence of Iron |

5. **Test For Zinc:**
   To 2ml of the extract dil.sodium hydroxide solution is added in 5 drops to excess and dil.ammonium chloride is added.  
   | White precipitate is not formed | Absence of Zinc |

6. **Test For Calcium:**
   2ml of the extract is added with 2ml of 4% dil.ammonium oxalate solution  
   | No cloudy appearance and white precipitate is obtained | Absence of calcium |

7. **Test For Magnesium:**
   To 2ml of extract dil.sodium hydroxide solution is added in drops to excess.  
   | No white precipitate is 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 are added.  
   No Brown colour appeared  
   Absence of ammonium

9. **Test For Potassium:**
   A pinch(25mg) of substance is treated of with 2ml of dil.sodium nitrite solution and then treated with 2ml of dil.cobalt nitrate in 30% dil.glacial acetic acid.  
   Yellowish precipitate is obtained.  
   Presence of Potassium

10. **Test For Sodium:**
    2 pinches(50mg) of the substance is made into paste by using HCl and introduced into the blue flame of Bunsen burner.  
    No Yellow colour flame appeared  
    Absence of Sodium

11. **Test For Mercury:**
    2ml of the extract is treated with 2ml of dil.sodium hydroxide solution.  
    Yellow precipitate is obtained  
    Absence of Mercury

12. **Test For Arsenic:**
    2ml of the extract is treated with 2ml of dil.sodium hydroxide solution.  
    No brownish red precipitate is obtained  
    Absence of Arsenic

### III. Miscellaneous

1. **Test For Starch:**
   2ml of extract is treated with weak dil.Iodine solution  
   No Blue colour developed  
   Absence of starch

2. **Test For Reducing Sugar:**
   5ml of Benedict's qualitative solution is taken in a test tube and allowed to boil for 2 minutes and added 8 to 10 drops of the extract and again boil it for 2 minutes. The colour changes are noted.  
   Brick red colour is developed  
   Presence of reducing sugar

3. **Test For The Alkaloids:**
   a) 2ml of the extract is treated with 2ml of dil.potassiumlodide solution.  
      Red colour developed  
      Presence
   b) 2ml of the extract is treated with 2ml of ...
<table>
<thead>
<tr>
<th></th>
<th>Test For Tannic Acid:</th>
<th></th>
<th>Test For Unsaturated Compound:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2ml of extract is treated with 2ml of dil.ferric chloride solution</td>
<td></td>
<td>To the 2ml of extract 2ml of dil.Potassium permanganate solution is added.</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td><strong>No black precipitate is obtained</strong></td>
<td>5.</td>
<td><strong>Potassium permanganate is not decolourised</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Absence of Tannic acid</td>
<td></td>
<td>Absence of unsaturated compound</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Test For Amino Acid:</th>
<th></th>
<th>Test For Type Of Compound:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2 drops of the extract is placed on a filter paper and dried well. 20ml of Biurette reagent is added.</td>
<td></td>
<td>2ml of the extract is treated with 2 ml of dil.ferric chloride solution.</td>
<td></td>
</tr>
</tbody>
</table>
| 6. | **No Violet colour developed** | 7. | **No green colour developed**  
**No red colour developed**  
**No violet colour developed**  
**No blue colour developed.** |   |
|   | Absence of amino acids |   | Absence of oxy quinolepinephrine and pyrocatechol.  
Anti pyrine, Aliphatic amino acids and meconic acid are absent  
Apomorphine salicylate and Resorcinol are absent  
morphine, Phenol cresol and hydrouinonear e absent |   |
Preliminary Qualitative Phyto chemical tests procedure and interpretation of results

<table>
<thead>
<tr>
<th>S.NO</th>
<th>CONSITUENTS</th>
<th>INFERENCES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Silicate</td>
<td>Present</td>
</tr>
<tr>
<td>2.</td>
<td>Carbonate</td>
<td>Present</td>
</tr>
<tr>
<td>3.</td>
<td>Nitrite</td>
<td>Present</td>
</tr>
<tr>
<td>4.</td>
<td>Potassium</td>
<td>Present</td>
</tr>
<tr>
<td>5.</td>
<td>Iron</td>
<td>Present</td>
</tr>
<tr>
<td>6.</td>
<td>Alkaloids</td>
<td>Present</td>
</tr>
<tr>
<td>7.</td>
<td>Phosphate</td>
<td>Present</td>
</tr>
<tr>
<td>8.</td>
<td>Reducing sugar</td>
<td>Present</td>
</tr>
<tr>
<td>9.</td>
<td>Sulphate</td>
<td>Absent</td>
</tr>
<tr>
<td>10.</td>
<td>Chloride</td>
<td>Absent</td>
</tr>
<tr>
<td>11.</td>
<td>Nitrate</td>
<td>Absent</td>
</tr>
<tr>
<td>12.</td>
<td>Oxalate</td>
<td>Absent</td>
</tr>
<tr>
<td>13.</td>
<td>Fluoride</td>
<td>Absent</td>
</tr>
<tr>
<td>14.</td>
<td>Borate</td>
<td>Absent</td>
</tr>
<tr>
<td>15.</td>
<td>Lead</td>
<td>Absent</td>
</tr>
<tr>
<td>16.</td>
<td>Aluminium</td>
<td>Absent</td>
</tr>
<tr>
<td>17.</td>
<td>Zinc</td>
<td>Absent</td>
</tr>
<tr>
<td>18.</td>
<td>Calcium</td>
<td>Absent</td>
</tr>
<tr>
<td>19.</td>
<td>Magnesium</td>
<td>Absent</td>
</tr>
<tr>
<td>20.</td>
<td>Ammonium</td>
<td>Absent</td>
</tr>
<tr>
<td>21.</td>
<td>Sodium</td>
<td>Absent</td>
</tr>
<tr>
<td>22.</td>
<td>Mercury</td>
<td>Absent</td>
</tr>
<tr>
<td>23.</td>
<td>Arsenic</td>
<td>Absent</td>
</tr>
<tr>
<td>24.</td>
<td>Starch</td>
<td>Absent</td>
</tr>
<tr>
<td>25.</td>
<td>Sulphide</td>
<td>Absent</td>
</tr>
<tr>
<td>26.</td>
<td>Tannic Acid</td>
<td>Absent</td>
</tr>
<tr>
<td>27.</td>
<td>Unsaturated compound</td>
<td>Absent</td>
</tr>
<tr>
<td>28.</td>
<td>Amino Acid</td>
<td>Absent</td>
</tr>
<tr>
<td>29.</td>
<td>Type of compounds</td>
<td>Absent</td>
</tr>
</tbody>
</table>
FORM 1 - SCREENING AND SELECTION PROFORMA

1. OP NO: ..............................................................

2. NAME: .............................................................

3. AGE: ........  4. GENDER: ......................

5. OCCUPATION: ..............................................  6. INCOME: .........................

7. ADDRESS: ......................................................

......................................................

......................................................

8. CONTACT NO: ..............................................

INCLUSION CRITERIA:

- Age: 20-60
- Sex: Both Male and Female.
- Typical distribution of the lesions presenting on following parts of the body such as face, axilla, body, inguinal regions and nails except head.
- Well defined raised margin with clearance in the central area of the lesion.
- Marked itching.
- Willing to sign the informed consent stating that he/she will consciously stick to the treatment during 30 days.
- Willing to give blood and urine samples for laboratory investigations.
EXCLUSION CRITERIA

- Lesions with secondary infections
- Deep type of Tinea barbae.
- Sexually transmitted disease
- Diabetes
- Hypertension
- Leprosy
- Any other systemic diseases

ADMITTED TO TRIAL

YES [ ] NO [ ]

If yes, serial No: [ ]

Date:
Station:
Signature of the Investigator:

Signature of the Lecturer: Signature of the HOD
Preclinical and clinical study on PARANGICHAKKAI CHOORNAM (Internal Medicine) and NEERADIMUTHU PASAI (External Medicine) for the treatment of PADAR THAMARAI (Pundareega Kuttam)

FORM II - HISTORY PROFORMA ON ENROLLMENT

1. SERIAL NO OF THE CASE: .....................

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

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

6. COMPLAINTS & DURATION:

7. HABITS:

SMOKING

YES / NO  If yes, specify duration  ------ yrs------months

TOBACCO CHEWING

YES / NO  If yes, specify duration  ------ yrs------months

ALCOHOLISM

YES / NO  If yes, specify duration  ------ yrs------months
8. ALLERGY TO DRUG:

9. FAMILY HISTORY:

Whether this problem runs in family?

1. Yes ☐ 2. No ☐

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

1. _______________
2. _______________
3. _______________

10. DIETARY HABIT:

1. Vegetarian ☐
2. Non-vegetarian ☐

11. MENSTRUAL HISTORY:

Date:
Station:
Signature of the Investigator:

Signature of the Lecturer: Signature of the HOD
Preclinical and clinical study on PARANGICHAKKAI CHOORNAM (Internal Medicine) and NEERADIMUTHU PASAI (External Medicine) for the treatment of PADAR THAMARAI (Pundareega Kuttam)

FORM III - CLINICAL ASSESSMENT ON ENROLLMENT

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

5. NAME: ------------------------------  6. AGE: ---------  7. GENDER: -----

8. DATE OF INITIAL ASSESSMENT: ----------------------

9. GENERAL EXAMINATION:

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

     Yes No

8. Pallor : ☐ ☐ ☐
9. Jaundice : ☐ ☐ ☐
10. Clubbing : ☐ ☐ ☐
11. Cyanosis : ☐ ☐ ☐
12. Pedal Oedema : ☐ ☐ ☐
13. Lymphadenopathy : ☐ ☐ ☐
14. Jugular venous pulsation : ☐ ☐ ☐
10. SYSTEMIC EXAMINATION:

<table>
<thead>
<tr>
<th></th>
<th>Normal</th>
<th>Abnormal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Cardio-vascular system</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Respiratory system</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Gastro-intestinal system</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Central nervous system</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Uro-genital system</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Endocrine system</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

11. SIDDHA SYSTEM OF EXAMINATION

1. THEGI (TYPE OF BODY CONSTITUTION):

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

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

   1. Kurinji (Hilly terrain)        
   2. Mullai (Forest range)         
   3. Marutham (Plains)             
   4. Neithal (Coastal belt)        
   5. Paalai (Arid regions)         

3. KAALAM:

   1. Kaar kaalam       
   2. Koothir kaalam   
3. Munpani kaalam
4. Pinpani kaalam
5. Ilavenil kaalam
6. Muthuvenil kaalam

4. GUNAM:
1. Sathuvam
2. Rasatham
3. Thamasam

5. PORIPULANGAL (SENSORY ORGANS):

<table>
<thead>
<tr>
<th></th>
<th>0\textsuperscript{th} day</th>
<th>8\textsuperscript{th} day</th>
<th>16\textsuperscript{th} day</th>
<th>24\textsuperscript{th} day</th>
<th>31\textsuperscript{st} day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mei (Skin)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vai (Tongue)</td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Kann (Eye)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mooku (Nose)</td>
<td></td>
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<td></td>
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<tr>
<td>Sevi (Ear)</td>
<td></td>
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</tbody>
</table>

6. KANMENDRIYAM (MOTOR ORGANS)

<table>
<thead>
<tr>
<th></th>
<th>0\textsuperscript{th} day</th>
<th>8\textsuperscript{th} day</th>
<th>16\textsuperscript{th} day</th>
<th>24\textsuperscript{th} day</th>
<th>31\textsuperscript{st} day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kai (upper limb)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kaal (lower limbs)</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
Vai (Speech) | | | | | |
Eruvai (excretory organs) | | | | | |
Karuvai (reproductive organs) | | | | | |

7. KOSANGAL (SHEATH):

<table>
<thead>
<tr>
<th></th>
<th>Before treatment</th>
<th>After treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annamaya Kosam</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pranamaya Kosam</td>
<td></td>
<td></td>
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<tr>
<td>Manomaya Kosam</td>
<td></td>
<td></td>
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<tr>
<td>Vignanamaya Kosam</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ananthamaya Kosam</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

8. UYIR THATHUKKAL (THREE HUMOURS):

8a. VALI:

<table>
<thead>
<tr>
<th></th>
<th>0th day</th>
<th>8th day</th>
<th>16th day</th>
<th>24th day</th>
<th>31st day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Praanan (Uyirkkaal)</td>
<td></td>
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</tr>
<tr>
<td>Abaanan(Keezhnokkunkaal)</td>
<td></td>
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<tr>
<td>Viyaanan(Paravukaal)</td>
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</tr>
<tr>
<td>Udhaanan(Melnokkunkaal)</td>
<td>Before treatment</td>
<td>After treatment</td>
<td></td>
<td></td>
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<tr>
<td>------------------------</td>
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<tr>
<td>Samaanan(Nadukkaal)</td>
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<tr>
<td>Naagan</td>
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<td>Koorman</td>
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</tr>
<tr>
<td>Kirukaran</td>
<td></td>
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</tr>
<tr>
<td>Devathathan</td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Dhananjeyan</td>
<td></td>
<td></td>
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</table>

**B) AZHAL**

<table>
<thead>
<tr>
<th>Analakam(aakkanal)</th>
<th>Before treatment</th>
<th>After treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ranjakam(Vanna eri)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Saathakam (Atralangi)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prasakam (Ullolithee)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aalosakam(Nokkazhal)</td>
<td></td>
<td></td>
</tr>
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</table>

**C) IYAM**

<table>
<thead>
<tr>
<th>Avalambagam(Aliaiyam)</th>
<th>Before treatment</th>
<th>After treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kilethagam(Neerppeiyam)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pothagam(Suvaikaaniyam)</td>
<td></td>
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</tr>
<tr>
<td>Tharpagam(Niraiviyan)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Santhigam(Ontriiyam)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
9. SEVEN UDAL THATHUKKAL: (SEVEN SOMATIC COMPONENTS)

<table>
<thead>
<tr>
<th></th>
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<th>After treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saaram</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Senneer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oon</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kozhuppu</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enbu</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moolai</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sukkilam/ Suronitham</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

10. ENVAGAI THERVU: [EIGHT TYPES OF EXAMINATION]

I. NAADI: [PULSE PERCEPTION]

<table>
<thead>
<tr>
<th>Days</th>
<th>Naadi nadai</th>
</tr>
</thead>
<tbody>
<tr>
<td>0th day</td>
<td></td>
</tr>
<tr>
<td>8th day</td>
<td></td>
</tr>
<tr>
<td>16th day</td>
<td></td>
</tr>
<tr>
<td>24th day</td>
<td></td>
</tr>
<tr>
<td>31st day</td>
<td></td>
</tr>
</tbody>
</table>

II. SPARISAM:

<table>
<thead>
<tr>
<th>0th day</th>
<th>8th day</th>
<th>16th day</th>
<th>24th day</th>
<th>31st day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warmth/ Cold/Normal</td>
<td>Warmth/ Cold/Normal</td>
<td>Warmth/ Cold/Normal</td>
<td>Warmth/ Cold/Normal</td>
<td>Warmth/ Cold/Normal</td>
</tr>
</tbody>
</table>
### III. NAA: [TONGUE]

<table>
<thead>
<tr>
<th></th>
<th>Before treatment</th>
<th>After treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Taste</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coating</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fissure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dryness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glossitis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### IV. NIRAM: [COMPLEXION]

1. Vadham  
2. Pitham  
3. Kabam

### V. MOZHI: [VOICE]

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

### VI. VIZHI: [EYES]

<table>
<thead>
<tr>
<th>0\textsuperscript{th} day</th>
<th>8\textsuperscript{th} day</th>
<th>16\textsuperscript{th} day</th>
<th>24\textsuperscript{th} day</th>
<th>31\textsuperscript{st} day</th>
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</thead>
<tbody>
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<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th></th>
<th>Before treatment</th>
<th>After treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consistency</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stool bulk</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constipation (Irugal)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------------------</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Diarrhoea (Ilagal)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### VIII. URINE EXAMINATION

<table>
<thead>
<tr>
<th>NEERKKURI</th>
<th>0th day</th>
<th>8th day</th>
<th>16th day</th>
<th>24th day</th>
<th>31st day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Niram [Colour]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Edai [Sp.gra]</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Manam [Odour]</td>
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<tr>
<td>Nurai [Froth]</td>
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<tr>
<td>Enjal [Deposits]</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>NEIKKURI</th>
<th>0th day</th>
<th>8th day</th>
<th>16th day</th>
<th>24th day</th>
<th>31st day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serpentine Pattern</td>
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<tr>
<td>Annular/Ringed Pattern</td>
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<tr>
<td>Pearl beaded Pattern</td>
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<tr>
<td>Other Pattern</td>
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</tbody>
</table>
11. SEVEN UDAL THATHUKKAL: (SEVEN SOMATIC COMPONENTS)

<table>
<thead>
<tr>
<th></th>
<th>Before treatment</th>
<th>After treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saaram</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Senneer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oon</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kozhuppu</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enbu</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moolai</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sukkilam/ Suronitham</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Preclinical and clinical study on PARANGICHAKKAI CHOORNAM (Internal Medicine) and NEERADIMUTHU PASAI (External Medicine) for the treatment of PADAR THAMARAI (Pundareega Kuttam)

**FORM IV - CLINICAL ASSESSMENT DURING AND AFTER TRIAL**

1. OP/ IP NO: ........... 2. SL. NO: ........ 3. NAME: ..............................................

<table>
<thead>
<tr>
<th></th>
<th>0(^{th}) day</th>
<th>8(^{th}) day</th>
<th>16(^{th}) day</th>
<th>24(^{th}) day</th>
<th>31(^{st}) day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Colour</td>
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<tr>
<td>Size</td>
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<tr>
<td>Shape</td>
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<tr>
<td>Border</td>
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<tr>
<td>Itching</td>
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</tr>
<tr>
<td>Erythema</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Vesicle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Papule</td>
<td></td>
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<td></td>
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<td></td>
</tr>
</tbody>
</table>

Date:  
Station:  
Signature of the Investigator: 

Signature of the Lecturer:  
Signature of the HOD
Preclinical and clinical study on PARANGICHAKKAI CHOORNAM (Internal Medicine) and NEERADIMUTHU PASAI (External Medicine) for the treatment of PADAR THAMARAI (Pundareega Kuttam)

**FORM V- LABORATORY INVESTIGATIONS**

<table>
<thead>
<tr>
<th>Blood Investigations</th>
<th>Normal Values</th>
<th>Before trmt</th>
<th>After trmt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hb (gm/dl)</td>
<td>M:12-15</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>W:11.5-14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T.WBC (cells/Cu.mm)</td>
<td>4000-11000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**DIFFERENTIAL COUNT (%)**

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Polymorphs</td>
<td>40-75</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lymphocytes</td>
<td>20-40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monocytes</td>
<td>2-10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eosinophils</td>
<td>1-6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basophils</td>
<td>0-1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>T.RBC (million cells/Cu.mm)</th>
<th>M:4.0-5.5</th>
<th>W:3.5-4.5</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>ESR (mm/hour)</th>
<th>½ hr.</th>
<th>1 hr.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M:6-12</td>
<td>W:7-18</td>
</tr>
<tr>
<td>Blood Investigations</td>
<td>Normal Values</td>
<td>Before trmt</td>
</tr>
<tr>
<td>---------------------------</td>
<td>---------------</td>
<td>-------------</td>
</tr>
<tr>
<td><strong>Blood glucose (mg/dl)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fasting</td>
<td>70-110</td>
<td></td>
</tr>
<tr>
<td>PP</td>
<td>80-140</td>
<td></td>
</tr>
<tr>
<td>Random</td>
<td>80-120</td>
<td></td>
</tr>
<tr>
<td><strong>RFT (mg/dl)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blood urea</td>
<td>16-50</td>
<td></td>
</tr>
<tr>
<td>Serum creatinine</td>
<td>0.6-1.2</td>
<td></td>
</tr>
<tr>
<td><strong>LFT (mg/dl)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total bilirubin</td>
<td>0.2-1.2</td>
<td></td>
</tr>
<tr>
<td>Direct bilirubin</td>
<td>0.1-1.2</td>
<td></td>
</tr>
<tr>
<td>Indirect bilirubin</td>
<td>0.2-0.7</td>
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</tr>
<tr>
<td>SGOT</td>
<td>0-40</td>
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<tr>
<td>SGPT</td>
<td>0-35</td>
<td></td>
</tr>
<tr>
<td>Alkaline phosphatase</td>
<td>80-290</td>
<td></td>
</tr>
<tr>
<td><strong>Urine investigation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Albumin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fasting sugar</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PP sugar</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deposits</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Date:  
Station:  
Signature of the Investigator:  
Signature of the Lecturer: 
Signature of the HOD
தீவு கிறித் மத்தியசு திணக்காமதம், சோழகுடை ராம் குரு, புதத்தியாசத் சுகாதீரமானது

பல காவல்கள் (புதத்தியாசத் குரு) நூலியாசத் சுகாதீரமானது கிறித் மத்தியசு திணக்காமதம்
(புதத்தியாசத் குரு) புதத்தியாசத் சுகாதீரமானது கல்லல் புழுவுடன்
சுகாதீரம் முதிர்விக்காமத இரவு புழுவுடன்

தீவு கிறித் மத்தியசு திணக்காமதம் பத்து: ர. பா. சிற்றுக்கு

தீவு கிறித் மத்தியசு திணக்காமதம்

தீவு கிறித் மத்தியசு திணக்காமதம்

பல காவல்கள் (புதத்தியாசத் குரு) நூலியாசத் சுகாதீரமானது
18 பலகத் சுகாதீரமானது சுகாதீரமானது சுகாதீரமானது
சுகாதீரமானது கல்லல், சிற்று, சிற்று சிற்று, சிற்று சிற்று
சுகாதீரமானது கல்லல், கல்லல் சுகாதீரமானது
சுகாதீரமானது

$\frac{3}{4} - \text{மின்சார்} = \text{தோற்று} + \text{தோற்று} + \text{தோற்று} + \text{தோற்று}$
$\text{ச்சிற்று} + \text{ச்சிற்று} + \text{ச்சிற்று} + \text{ச்சிற்று}$

$\frac{3}{4} - \text{மின்சார்} = \text{தோற்று} + \text{தோற்று} + \text{தோற்று} + \text{தோற்று}$
125
அல்லாஹ்வினுடைய மகாராஜகி புரியார்

பெருமாள் புரியார் பெருமாள்

பெருமாள் புரியார்க்கு புரியார் பெருமாள்

பெருமாள் புரியார் பெருமாள் பெருமாள்

பெருமாள் புரியார் பெருமாள்


ேதசியசி

வன, ஒசைன

அேயாதியபதமவைனப்பட

தாமைர(டகட)

ணாகசிதமகள(பரகிசைரண, நரபைச)

கடறிகான

அப்பெருமாள் புரியார்

- ெைலை யெய்தூ யெய்தூ

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வ்றாலாறிய ஒசைனேல

பெருமாள் புரியார்


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வ்றாலாறிய ஒசைனேல

பெருமாள் புரியார்


Preclinical and clinical study on PARANGICHAKKAI CHOORNAM (Internal medicine) and NEERADIMUTHU PASAI (External Medicine) for the treatment of PADAR THAMARAI (Pundareega Kuttam)

FORM VI.A.– (INFORMATION SHEET)

Name of the Principal Investigator: Dr. M. SATHIISHKUMAR

Part – A Information Sheet

Padarthamarai is one among the 18 types of kuttam. It principally affects the skin especially face, axilla, body, inguinal region and nails causing a severe itching and burning sensation. It is a highly contagious disease. This condition is being treated in NIS with many Siddha formulations. As a part of M.D(S) research programme and developing new efficacious medicine, I proposed to study the efficacy of PARANGICHAKKAI CHOORNAM (Internal), NEERADIMUTHU PASAI (External) formulations for treating the condition. This formulation has been mentioned in Siddha literature and empirical evidence with contemporary tools is required for documentation.

Trial medicines will be given free of cost. The duration of treatment period is 30 days. The patient’s have to visit the OPD of NIS hospital once in every 7 days and collect the drugs for 7 days. The diagnostic tests will be carried out free of cost. I will assess the effect of treatment after completion of 30 days of treatment using clinical and laboratory parameters.

In this regard, I need to ask few questions. I will maintain confidentiality of the patient’s comments and data obtained from him/her. 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 the patient for taking part in this study. The patient can choose not to answer any specific question. There is no specific benefit for the patient’s if they take part of in this study, but they will be under our clinical monitoring and specific attention will be given. Taking part in this study may be of benefit to the community, as it may help us to develop medicine for Padarthamarai. During the treatment if any adverse symptoms like passing loose stools,
irritation in the stomach, indigestion occur, shall be reported to NIS and treatment will be given in NIS hospital for relief. The patient’s will be allowed to withdraw from the study at any stage of treatment period, if they are not interested to continue and they will receive our usual treatment without any condition.

The information collected in the study, will be kept confidential. I may ask the patient’s some questions through a questionnaire. We will not write the patient’s name on different forms which are sent to different investigating / analysis sections and we will use a code instead given by principal investigator. Only the principal investigator will know the key to this code which will be kept in safe custody. If a patient agrees to be a participant in this study, he / she will be screened as per the study protocol.

If they wish to find out more about this study before taking part, they can ask or contact Dr.M.SATHISHKUMAR, P.G scholar cum principal investigator of this study, attached to the National Institute of Siddha, Chennai (Mobile No. 9962403457). You can also contact the chairman / Member Secretary of ethics committee, national Institute of Siddha, Chennai-600047, Tel No.: 914422411611, for rights and Participation in the study.
FORM VI.B. - CERTIFICATE OF CONSENT

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

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

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

Date:
Signature of the participant

In case of illiterate participant

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

Date:
Signature of a witness:

Left thumb impression of the Participant

(Selected by the participant bearing no connection with the survey team)
Preclinical and clinical study on PARANGICHAKKAI CHOORNAM (Internal medicine) and NEERADIMUTHU PASAI (External Medicine) for the treatment of PADAR THAMARAI (Pundareega Kuttam)

FORM IV.C. - DIETARY ADVICE FORM

§ 9 ఇ , ఇ ఉ ఎంటో షీ 1/2 ఎ అ (Diet to be included):

ఉ ఎంటో (Vegetables):

ఓ ఓి ఇ 3ఓ ఔ ఇ (Unripe drumstick)

ఉ ఓి ఇ 3ఓ ఔ ఇ (Unripe Dolichos bean)

ఓి ఉ 1/4 (Cissus quadrangularis,Linn)

ఉ ఔ ఇ  (Carrot, Doucos carota)

ఓిఔ ఇ (Beet Root, Beta vulgaris)

ఏ ఎంటో (Greens):

ఉ ఔ ఇ (trailing eclipta [Eclipta prostrate] )

ఉ ఔ ఇ 3ఓ ఔ ఇ (Sessile plant [Alternanthera sessilis] )

ఓ ఓి ఉ 1/2 ఔ ఇ 3ఓ ఔ ఇ (Black night shade[Solanum nigrum] )

ఓ ఓి ఇ 3ఓ ఔ ఇ (Leaves of Drumstick [Moringa oleifera] )

ఓ ఔ ఇ 3ఓ ఔ ఇ (Portuiaca quadrifida,Linn)

ఔ ఔ ఇ 3ఓ ఔ ఇ (Amaranthus tricolor,Linn)

ఉ ఔ ఇ (Curry leaves [Coriandrum sativum, Linn])

ఉ ఔ ఇ (Mentha piperita, Linn)

ఉ ఎంటో (Fruits):

ఉ ఔ ఇ 3ఓ ఔ ఇ (Pomegranate)

ఉ ఔ ఇ 3ఓ ఔ ఇ (Apple)

ఉ ఔ ఇ 3ఓ ఔ ఇ (Banana)

ఉ ఔ ఇ 3ఓ ఔ ఇ (Dates)

ఉ ఔ ఇ 3ఓ ఔ ఇ (Fig)
¾èi ò ½ (Grapes)

½j , i óÅi (Guava [Psidium guajava.Linn] )

¿i Åø (Jambul [Syzygium cumini] )

Ái ¿ ¾èi ò ½ (Dry Grapes)

¾è É âi , ü (Seeds):

Öì ìy , δ É Å Åá¢ Åì , , ü (Sprouted grains)

§ò iÅi Å§ (Soya beans)

Áio¾Áó(Fenugreek seeds [Trigonella foenum graecum] )

« ò ½ Áó (Non-vegetarian diet):

Áó âi ðî í , Éç ëÅó (Goat`s meat, liver)

±Ö ò ÔÅì, f (Bone marrow)

ÁüÉì Å (Others):

Åì É | Åó Åó(Palm jaggery)

Ái ø (Milk)

¾èi , § Áñ È Åì , ü (Diet to be avoided)

§ , i Åè , É¢ Å§, ¿ñ í , , òÅi (Hen meat, Fish, Crab, Dryfish)

§ Åì , ¼ì Å (Ground nut [Arachis hypogaea] )

±ò Ü (Sesame seeds [Sesamum indicum] )

ÈòÅi ¿ìç(Papaya [Carica papaya] )

« ý É iò ç(Pine Apple [Ananas comosus] )

¿i ¿ Áñ ; ½ ø (Gingelly oil)

ÈòØÔ iÅi Ôü , ü (Products of sour taste)

±Ö Âì ½ (Lemon [Citrus limon] )

¾ä , i éç( Tomato, Cape gooseberry [Physalis minima] )

ÈòØÔ ¾èi, § Åi (Sour curd,butter-milk)
° Ú, í ö (Pickles)
| Àñ § Àì, ö (Sexual intercourse)
| ÀüÈ¢ À, Àì í (Betle leaves, Areca-nut)
| Ö¬, À ç À (Tobacco)
| ÂD « Ö ó D ¥ ø (Alcohol)

ÂÔ ò D Â « È ô ” Á (Medical advice):

Affected body parts should be treated with the given paste, and it should be cleaned with luke warm water.

Clean and neat white dresses should be worn
FORM VII - WITHDRAWAL FORM

1. SERIAL NO : ..................

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


6. DATE OF TRIAL COMMENCEMENT: ..................

7. DATE OF WITHDRAWAL FROM TRIAL: .................

8. REASONS FOR WITHDRAWAL:

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

Date: 
Station: 
Signature of the Investigator: 

Signature of the Lecturer: Signature of the HOD
NATIONAL INSTITUTE OF SIDDHA
AYOTHIDOSS PANDITHAR HOSPITAL
CHENNAI – 600 047.

POST - GRADUATE DEPARTMENT OF SIRAPPU MARUTHUVAM

Preclinical and clinical study on PARANGICHAKKAI CHOORNAM (Internal Medicine) and NEERADIMUTHU PASAI (External Medicine) for the treatment of PADAR THAMARAI (Pundareega Kuttam)

FORM VIII - DRUG COMPLIANCE FORM

SERIAL NO:
PATIENT'S NAME:

DRUG NAME: PARANGICHAKKAI CHOORNAM

FOR OPD

<table>
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<th>Day</th>
<th>Date</th>
<th>Morning</th>
<th>Evening</th>
<th>Day</th>
<th>Date</th>
<th>Morning</th>
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<td>On 8th day-Date:</td>
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<td>On 24th day-Date:</td>
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FOR IPD

Day 1      Day 2
Day 3      Day 4
Day 5      Day 6
Day 7      Day 8
Day 9      Day 10
Day 11     Day 12
Day 13     Day 14
Day 15     Day 16
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<td>Day 30</td>
</tr>
</tbody>
</table>

Date:
Station:
Signature of the Investigator:

Signature of the Lecturer:    Signature of the HOD
Preclinical and clinical study on PARANGICHAKKAI CHOORNAM (Internal Medicine) and NEERADIMUTHU PASAI (External Medicine) for the treatment of PADAR THAMARAI (Pundareega Kuttam)

FORM IX - ADVERSE REACTION FORM

SERIAL NO:

OP/IP NO:

NAME:…………………………………    AGE: …… GENDER: ……..

DATE OF TRIAL COMMENCEMENT: ………………………....

DESCRIPTION OF ADVERSE REACTION:

Date:
Station:
Signature of the Investigator:

Signature of the Lecturer:                         Signature of the HOD