PART I

A Study On

THAETRAN KARPAM

(Strychnos potatorum)

FOR PAANDU NOI

PART II

A Study On

PEENISA CHOORNAM

FOR PEENISAM

Dissertation submitted to

THE TAMIL NADU DR.M.G.R. MEDICAL UNIVERSITY, CHENNAI

In partial fulfillment of the requirement
For the degree of

DOCTOR OF MEDICINE (SIDDHA)

BRANCH - II – GUNAPADAM

DEPARTMENT OF GUNAPADAM
GOVERNMENT SIDDHA MEDICAL COLLEGE
CHENNAI - 600 106

SEPTEMBER - 2008

BONAFIDE CERTIFICATE

Certified that this Thesis titled **"A STUDY ON THAETRAN KARPAM AND PEENISA CHOORNAM"** is the bonafide work of **Dr.A.ASVINI** Reg. No: 32051601 who carried out the dissertation work under my supervision. Certified further, that to the best of my knowledge, the work reported herein does not form part of any other thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

Place: Chennai

Date :

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Dedicated to
My Parents
and
The Almighty
Who made all this possible
without my realising it...

CONTENTS

PART - 1

A STUDY ON THAETRAN KARPAM

INTRODUCTION

""PØ£zøu ²shõÀ Põ¯® AÈ¯õx
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The above verses of Thirumoolar bring out the importance and unique nature of Kalpa medicines in a nut shell. They are considered the elixirs of life.

According to Siddhars the human body is a replica representing the entire universe. The criteria by which the origin of an organism depends on 96 thathuvas or constituent principles. To elevate the soul on its spiritual journey the siddhars formulated an applied alchemy, the Kaya kalpam.

The kaya kalpa – A preamble

Kaya – Body, mind and psyche

Kalpa – transmutation.

Kayakalpa is a transformative approach to health and consciousness to prevent diseases and to use chronic illness. Besides rejuvenating the body it also possess prophylactic action. According to Siddha Materia Medica kaya kalpa formulations include herbs, minerals and the animal kingdom.

In general karpam is classified into two pothu karpam and sirapu karpam.

The drug selected – Thaetran Karpam comes under Sirapu Karpam. According to Siddhars when taken as a Karpa medicine it treats diseases like **Paandu,** Magodharam, Soolai, Moolam, Perumbadu and many other diseases very efficienctly.

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These verses of Thaerayar and Agathiar bring out efficacy of Thaetran in treating several diseases as a Karpa medicine. As quoted in ‘Agathiar Attavanai Vaagadam’ Thaetran Karpam can be used in the treatment of Paandu noi when administered along with ghee.

According to WHO Paandu “(Anaemia) is the world's second leading cause of disability and thus one of the most serious global public health problems. It affects over half of pre-school children and pregnant women in developing countries and atleast 30-40% in industrialized nations. In poorer, malaria endemic countries it is one of the commonest preventable causes of death in children under 5 years and pregnant women.

Reducing the burden of the disease will make a major contribution to achieving several on millennium development goals. Since the greatest burden of the disease falls on the most "hard to reach" individuals, any program that aims to reduce it will need to be accessible by these groups. Primary health care policies and programmes must be cornerstone of health care systems. Intervention which have been shown to impact on Paandu noi include

improving nutrition and iron status and treating helminth and malaria infections"

To tackle the varied aspects of Paandu (anaemia) wherein the main problem lies in malnutrition Kalpa medicines of Siddha literature is the best option. Despite the availability of an array of treatment in other systems there’s still a heavy dependence on herbal medicines for the treatment of Paandu noi.

Present study was undertaken to evaluate the efficacy of the Thaetran in treating Paandu noi.

AIM

To evaluate the efficacy of **Thaetran karpam** in the management of **Paandu.**

OBJECTIVES

- To identify the crude drug and to study the pharmacongnostic features of the seed which include macroscopic and microscopic details of the part used as medicine.
- To subject the drug to phytochemical and biochemical analysis.
- To study the antimicrobial activity of the drug.
- The study of pharmacological activity and acute toxicity of the drug.
- To evaluate the efficacy of the drug clinically.
- To analyse all the above study results to evaluate the efficacy of the drug.

REVIEW OF LITERATURE

Gunapadam Aspect

÷uØÓõß[1]

Botanical Name : Strychnos potatorum Linn[11]

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Strychnos potatorum (Botanical aspect)[11,12,48]

FAMILY : Loganiaceae

VERNACULAR NAMES:

Eng	:	Clearning nut tree, clearing nut
Hindi	:	Nirmali, Nelmal, Chilli, Kavi,
Marathi	:	Nirmal
Punjabi	:	Nirmal
Kannada	:	Cilu : Cilledabija, Katakam
Malayalam	:	Tettamaram, tettamparai
Sanskrit	:	Katakah, Ambuprasadah
Tamil	:	Tettamaram, Tettankotai
Telugu	:	Kataka nu, Indupacettu
Bengali	:	Nirmal
Gujarati	:	Nirmal

Bentham and Hooker Classification[31]

Kingdom	-	Plant kingdom
Division	-	Phanerogams
Class	-	Dicotyledons
Subclass	-	Gamopetalae
Series	-	Bicarpellatae
Order	-	Gentianales
Family	-	Loganiaceae
Genus	-	Strychnos
Species	-	potatorum

Habit:

Deciduous forests of West Bengal, Central and South India upto 1200m.

Description:

A medium sized, deciduous, glabrous tree about 12 m in height with cracked and scaly black bark and irregularly fluted trunk.

Leaves :

Simple, opposite, elliptic, acute, upto 15 cm long and 6.25 cm broad, transverse nerves about 4 pairs joining the second pair of ribs to the midrib, glabrous, shining.

Flowers:

White, fragrant, axillary cymes

Fruits:

Ovoid or globose, glabrous berries, black when ripe

Parts used:

Seeds

ACTION AND THERPEUTIC USES

The seeds possess

- **Tonic**
- stomachic
- Demulcent and emetic properties

- Used in the treatment of diarrohea, diabetes, gonorrhoea etc.
- They are of primary importance in the treatment of eye diseases, particularly conjunctivitis.
- The leave are used as poultice for maggot – infested ulcers.
- Rendered bark is useful in cholera.

CHEMICAL CONSTITUENTS[13]

An alkaloid – diaboline, sterols – ß silosterol, stigmasterol, oleonalic acid, a saponin containing oleanolic acid, galactose and mannose are isolated from seeds. Galactose and mannose are also isolated as free sugar from the seed. Indole alkaloids galacto mannan and galactan are found in the ratio 1:1.7.

Phytochemical studies of strychnos potatorum

PHYSIO CHEMICAL PROPERTIES

Analysis of finely powdered seeds gave:

Foreign matter	Not more than 2%
Total ash	Not more than 2%
Acid insoluble ash	Not more than 0.5%
Alcohol	soluble extractive – Not less than 1%
Water	soluble extractive – Not less than 5%
Moisture	8.26%
Nitrogen	1.33%
Sucrose	1 – 2%

Quantitative estimation of phytochemicals in the seeds

	Metabolites	Results in %
1	Alkaloids	1.3
2	Flavonoids	0.021
3	Phenols	0.059
4	Tannins	18.00
5	Saponins	4.741

Alkaloids are the lead molecules of therapeutic importance of Thaetran which have been proved to be having properties such as hypotensive activity, anti convulsant activity, anti protozoal, antimicrobial and anti malarial activities.

The data generated from the experimental studies have provided the chemical basis for the wide use of Thaetran for various ailments.

Studies of Strychnos potatorum Linn seeds[44]

Hepatoprotective and antioxidant actions of Strychnos potatorum Linn. Seeds in $CC1_4$ – includes acute hepatic injury in experimental rats. Hepatic injury was achieved by injecting 3 ml/kg of CCl4 in equal proportion with olive oil. Both SPP (seed powder) and SPE (aqueous extract) at the doses 100 and 200 mg/kg p.o offered significant ($P < 0.001$) hepatoprotective action by reducing the serum marker enzymes likes SGOT (serum glutamate oxalo acetate transaminase) and SGPT (Serum glutamate pyruvate transminase. They also reduced levels of serum bilirubin. Reduced enzymic and non enzymic antioxidant levels and elevated lipid peroxide levels were restored to normal by administration of SPP and SPE. Histopathological studies further confirmed the hepatoprotective activity of SPP and SPE when compared with the CCl4 treated control groups. The results obtained were compared with Silymarin (50 mg /kg p.0) the standard drug. In conclusion the SPE (200 mg/kg p.o) showed significant hepatoprotective activity similar to that of the standard drug.

Studies on the antiulcerogenic potential of S.potatorum Linn. seeds[47] on aspirin plus pyloric ligation (Aspirin + pL) at two doses 100 and 200 mg/kg p.o prevented ulcer formation by decreasing acid secretory activity and increasing mucin activity in rats. The anti-ulcerogenic potential was further confirmed by histopathological studies of stomach mucosa. Compared with Std Ranitidine. The mucoprotective action of SPP and SPE may be due to the presence of polysaccharides in the seeds.

Studies on anti diarroheal activity of Strychnos potatorum[47]

Methanol extract of seeds (MESP) – 100, 200 and 400 kg p.o) significantly inhibited the frequency of defaecation and reduced the wetness of faecal droppings in castor oil induced diarroheal. Also decreased the propulsion of charcoal meal from the GI tract.

Studies on diuretic activity

Methanol extract of the seeds (600 mg/kg)[47] exhibited significant diuretic activity. Excretion of cations (Na and K ions) and chloride ions also were significant compared with standard Furosemide.

MATERIALS AND METHODS

METHODOLOGY FOR PHARMACOGNOSY STUDY[14]

Mature seeds Strychnos potatorum Linn. (Fam. Loganiaceal) were purchased from chennai drug market and identified by Dr.Sasikala Ethirajulu, Botanist, Central Research Institute for Siddha, Arumbakkam, Chennai – 106.

The seeds of Strychnos potatorum were fixed in formalin – acetic – acid – alcohol and later stored in 70% ethanol. They were dehydrated through tertiary butyl alcohol series and embedded in paraffin work in the usual way. Microtome sections 10 to 16 µm thick were stained with safranin-fast green combination. All permanent slides after staining were dehydrated by employing graded series of ethyl alcohol and xylol and mounted in Canada balsam (Johansen, 1940). Embroys were dissected out after soaking the seeds for 24 hrs. in distilled water.

Photomicrographs were made at different magnifications depending upon the anatomical details to be brought out. Photomicrography was done on Nikon Eclipse E200 microscopic unit.

RESULT

Macroscopic

Seed upto 8 mm dia., circular, bluntly lenticular, shiny with short, appressed silky hairs, cream-white in colour with a slightly prominent ridge round the border, no bitterness.

Microscopic

Shows testa, consisting of 2 or 3 layers, thick walled, elongated, lignified sclerenchymatous cells covered with numerous, cylindrical, unicellular lignified, trichomes having basal portion ramified. Outer endosperm composed of 3 to 8 layers of thick walled, elongated palisade – like cells arranged in rows, an inner endosperm composed of thin-walled, oval to polygonal, parenchymatous cells having numerous small aleurone grains and oil globules.

Powder

Creamish – yellow, shows fragments of testa, trichomes, endosperm cells and oil globules.

PREPARATION OF CHOORNAM

THAETRAN KARPAM (Strychnos potatorum)

COLLECTION OF THE DRUG

The drug selected Thaetran Karpam (Thaetran Kottai Choornam) has been mentioned as good remedy for Paandu noi in Agathiar Attavanai Vagadam p-30.

The seeds were obtained from an indigenous drug store and identified by a botanist.

PREPARATION AND STORAGE

Purification

The seeds were washed in fresh water, cleaned thoroughly and were allowed to dry in shade.

The seeds were then further purified by soaking in cow's milk for about 25 mins and then washed and dried in shade. They were then boiled in the juice of Amaranthus tricolor, washed and were allowed to dry in shade.

Preparation of choornam

The dried seeds were fried and made into fine powder and sieved through a white cloth (Vasthira kaayam). Then it was purified by steam – cooking in milk (Pittavial method). The same was later powdered and sieved again and preserved.

Storage of Choornam

The choornam was stored in a clean airtight container.

Administration of the drug

Route of administration	:	Enteral
Dosage	:	1 gm twice a day
Vehicle	:	5 ml of Ghee

ANTI MICROBIAL STUDY

Method

The anti-microbial activities of different extracts of THAETRAN KARPAM were studied by Disc diffusion method against the following organisms.

1. *Streptococcus mutans*
2. *Staphylococcus aureus*
3. *Escherichia Coli*
4. *Klebsiella pneumoniae*
5. *Pseudomonas aeruginosa*

Extracts of Thaetran Karpam were used in the concentration of 100, 50 and 25 µl using their respective solvents. Ciprofloxacin, (5 mcg/disc) used as standard. The disc diffusion method was employed for the screening of anti-bacterial activity.

Disc diffusion method

A suspension of organism was added to sterile soya bean casein digest agar media at 45°C, the mixture was transferred to sterile petridishes and were allowed to solidify. Sterile discs, 5mm in diameter, dipped in solutions of different extracts, standard and a blank was placed on the surface of agar plates. The plates were left standing for one hour at room temperature as a period of pre incubation diffusion to minimize the effects of variation in time between the applications of the different solutions. Then the plates were incubated at 37°C for 18 hours and observed for anti-bacterial activity. The diameter of zones of inhibition were observed and measured. The average area of zones of inhibition were calculated and compared with that of standard's.

RESULTS FOR ANTIMICROBIAL STUDY

Zone of inhibition in mm

Organism	Standard drug ciprofloxacin 50 mcg/disc	Test drug (Thaetran Karpam µl/disc)		
		Zone of inhibition in mm		
		25 µl	50 µl	100 µl
Strep. mutans	30	14	17	20
Staph. aureus	31	16	19	22
E.coli	30	15	18	20
K.pneumoniae	30	18	21	24
Ps aeruginosa	30	14	20	23

Standard used for bacteria

Ciproflaxacin Hcl, 5 mcg / disc

Sample concentration

1.5 gm / 150 ml of solvent. 25 µl, 50 µ & 100 µl/ disc

14 mm - Low sensitivity, 15 mm – Moderate above 16 mm – Highly sensitive.

Inference

Thaetra Karpam was found to be highly sensitive to strep. mutans, stap. aureus, E.coli, K.pneumoniae and Ps aeruginosa.

IDENTIFICATION OF THE CONSTITUENTS OF THAETRAN KARPAM BY PHYTOCHEMICAL TESTS

The drug powder and various extracts of Thaetran Karpam were subjected to chemical tests for identification of its active constituents.

Test for alkaloids

A small portion of the solvent, free chloroform, alcoholic and aqueous extracts were treated separately with few drops of dilute Hcl and filtered. The filtrate may be tested carefully with alkaloidal reagents such as,

a.	Mayer's reagent	-	Yellow precipitate
b.	Dragendroff's reagent	-	Orange brown precipitate
c.	Wagers' reagent	-	Reddish brown precipitate

Test for Carbohydrates

Molisch's test

Filterate was treated with 2-3 days of 1% alcoholic alpha-napthol solution and 2 ml of concentrated H_2SO_4 was added along the sides of the test tube. Appearance of brown ring at the junction of 2 liquids show the presence of carbohydrates.

Test for Glycosides

Another portion of Thaetran Karpam was hydrolysed with Hcl for few hours on a water bath and the hydrolysate was subjected to legal's Berntragers' test to detect the presence of glycosides.

a. Legal's test

To the hydrosylate, 1 ml of pyridine and few drops of sodium nitro prusside solution were added and then it was made alkaline with sodium hydroxide solution. Appearance of pink to red colour shows the presence of glycosides and aglycones.

Lieberman burchard test

1 gm of the extract of Thaetran Karpam was dissolved in few drops of dry acetic acid. 3 ml of acetic anhydride was added followed by few drops of concentrated sulphuric acid. Appearance of bluish green colour shows the presence of phytosterol.

Test for saponins

The extracts of Thaetran Karpam was diluted with 20 ml of distilled water and it was agitated on a graduated cylinder for 15 minutes. The formation of 1 cm layer of foam shows the presence of saponins.

Test for Tannins and Phenolic compounds

Small quantities of various extracts were taken separately in water and tested for the presence of phenolic compounds and tannis by adding 2 ml of 10% lead acetate and 2 drops of $FeCl_3$ solution. Presence of tanin and phenolic compounds is denoted by white precipitate and blue black colour respectively.

Test for proteins and free amino acids

Small quantities of various extracts of Thaetran Karpam were dissolved in a few ml of water and treated with Hindryin reagent. Appearance of purple color shows the presence of proteins and free amino acids.

Test for flavanoids

With aqueous sodium hydroxide solution the extract gives blue to violet colour if anthocyanins are present, yellow colour if flavones are present, yellow, to orange if flavanones are present.

Test for Tannic Acid

The extract is treated with ammonium molybdate and conc. HNO_3, formation of blue black precipitate indicates the presence of tannic acid.

METHODOLOGY FOR BIO-CHEMICAL ANALYSIS

Preparation of extract

5 gm of Thaetran Karpam was weighted accurately and placed in a 250 ml clean beaker and added with 50 ml of distilled water. Then it was boiled well for about 10 mins. Then it was cooled and filtered in a 100 ml volumetric flask and made upto 100 ml with distilled water.

Test for Calcium

2 ml of extract was taken in a clean test tube. To this 2ml of 4% ammonium hydroxide solution was added. Presence of calcium is denoted by formation of a white precipitate.

Test for Iron (ferric)

The extract was treated with glacial acetic acid and potassium ferrocyanide. Presence of ferric iron is denoted by a blue colour.

Test for Iron (Ferrous)

The extract was treated with conc. HNO_3 and ammonium thiocyanate. (Presence of Ferrous iron is denoted by formation of a blood red colour) dilute ferric chloride solution (5%). The formation of violet colour shows the presence.

Test for sulphate

2 ml of the extract was added to 5% barium chloride solution. Presence of sulphate is denoted by formation of a white precipitate.

Test for Chloride

The extract was treated with silver nitrate solution. The presence of chloride is denoted by formation of a white precipitate.

Test for Carbonate

The extract was treated with concentrated Hcl. If carbonate is present, it is denoted by effervescence.

Test for Phosphate

Te extract was treated with ammonium molydate and conc. HNO_3. If phosphate is present, it is denoted by the formation of a yellow precipitate.

Test for unsaturation

1 ml of Potassium permangnate solution is added to the extract. The presence of unsaturation is denoted by decolourisation.

RESULTS FOR ACID, BASIC RADICALS AND PHYTOCHEMICAL SCREENING OF THAETRAN KARPAM

The following constituents were present.

Acid radicals

Sulphate

Basic radicals

Calcium

Iron (ferrous)

Phytochemicals

Tannic acid

Sugar (trace)

Alkaloids

Steroids

Proteins

Tannins

Phenols

Flavonoids

Saponins

Aminoacid

Glycosides

Miscellaneous

Unsaturation present.

QUANTITATIVE ANALYSIS

Equipment used : Absorption Spectrometer (AAS)

Make : Varian, Australia

S.No.	Test Parameter	Results
1	Iron as Fe	373.0 mg /kg

Inference

The sample had 373.0 mg/kg of iron.

METHODOLOGY FOR THIN LAYER CHROMATOGRAPHY

2g of the sample was soaked in 20 ml of rectified spirit (90%) for 18 hrs and boiled for 10 mins and filtered. The filtrate was concentrated and made upto 5 ml. 25µl of alcoholic extract was applied on Merck Aluminium plate pre-coated with Silica gel $60F_{254}$ of 0.2 mm thickness along with the ingredients using Linomat IV applicator. The plate was developed in Toluene; ethyl acetate 5:1..5 v/v. The plate was visualized UV 254 and 366 nm. The plate was then dipped in Vanillin – Sulphuric acid and heated in air oven at 105°C till the spots appeared.

TLC TEST RESULTS

Sl.No.	UV 254 nm		UV 366 nm		With spray reagent	
	Colour	Rf	Colour	Rf	Colour	Rf
1	-	-	Blue	0.11	Grey	0.11
2	-	-	-	-	Grey	0.22
3	Grey	0.28	Dark Blue	0.28	Grey	0.28
4	Grey	0.42	Blue	0.42	Grey	0.42
5	Grey	0.50	Blue	0.50	Grey	0.50
6	-	-	Blue	0.56	-	-
7	-	-	Blue	0.69	Grey	0.67
8	-	-	-		Grey	0.75
9	-	-	-		Grey	0.83

INFERENCE

The Rf values for Strychnos potatorum were found to be 0.28, 0.42, 0.50 with UV 254 nm, 0.11, 0.28, 0.42, 0.50, 0.56, 0.69 with UV 366 nm and 0.11, 0.22, 0.28, 0.42, 0.50, 0.67, 0.75, 0.83 with spray reagent.

PHARMACOLOGICAL STUDIES

Preparation of drug for dosing

All drugs used for the study was suspended each time with 1% (w/v) solution of sodium carboxy methyl cellulose before administration.

Drugs and chemicals

Histamine hydrochloride and fine chemicals used in these experiments were obtained from Sigma Chemicals company, U.S.A. Other analytical grade chemicals were obtained from S.d. Fine Chemicals Ltd., Mumbai.

Experimental animals

Colony inbred animals strains of wistar rats of either sex weighing 200 - 250 g were used for the pharmacological studies and Swiss albino mice weighing 20 – 25g were used for toxicological studies. The animals were kept under standard conditions 12:12 (day/night cycles) at 22^0C room temperature, in polypropylene cages. The animals were fed on standard pelleted diet (Hindustan Lever Pvt Ltd., Bangalore) and tap water *ad libitum*. The animals were housed for one week in polypropylene cages prior to the experiments to acclimatize to laboratory conditions. The experimental protocol was approved by the Institutional Animal Ethical Committee (IAEC).

Acute oral toxicity study

Acute oral toxicity was conducted as per the OECD guidelines (Organization of Economic Cooperation and Development) 423 (Acute Toxic Class Method). The acute toxic class method is a stepwise procedure with 3 animals of a single sex per step. Depending on the mortality and /or moribund status of the animals, on the average 2-4 steps may be necessary to allow judgment on the acute toxicity of the test substance. This procedure results in the use of a minimal number of animals while allowing for acceptable data based scientific conclusion.

The method uses defined doses (5, 50, 300, 2000 mg/kg body weight) and the results allow a substance to be ranked and classified according to the Globally Harmonized System (GHS) for the classification of chemicals which cause acute toxicity

Swiss albino mice of the same weighing 20-25 g were fasted overnight, but allowed water *ad libitum*. Since the formulation Thaetran Karpam is relatively non toxic in clinical practice the highest dose of 2000 mg/kg/p.o (as per OECD guidelines “Unclassified”) was used in the acute toxicity study.

The animals were observed closely for behavioural toxicity, if any by using FOB (Functional observation battery).

Results for Acute oral toxicity study

Thaetran karpam at the dose of 2000mg/kg/po did not exhibit any mortality in rats. As per OECD 423 guidelines the dose is said to be “Unclassified” under the toxicity scale. Hence further study with higher doses was not executed.

Studies on haematinic activity

Adult wistar rats of either sex weighing 200 – 250 g were taken. 12 – 16 hrs before the experiment began the rats were fasted but water was made available – *ad libitum.* The initial blood parameters were noted. The animals were randomly divided into 3 groups of 6 animals each.

Group 1 served as the control group and was orally given 10 ml/kg body wt of distilled water. Group 2 served as the standard group and was orally given (fefol capsules). Group 3 served as the and the test group was administered the test drug Thaetran Karpam at the dose of 500 mg/kg body wt for 15 days and results were tabulated.

Effect of Thaetran karpam on Haematological parameters after 15 days repeated oral dosing (500 mg/kg)

Groups	Hb (gm/100ml)	RBC (millions/cu.mm)	WBC (Cells/ comm.)
Control	8.51 ± 2.049	2.898 ± 0.609	5438.33 ± 3.78 ^{ns}
Thaetran karpam	10.66 ± 0.930***	3.532 ± 0.303 **	5132.00 ± 3.01 ^{ns}
Std fefol	13.5 ± 0.862	6.562 ± 0.962	8537.00 ± 3.05

N=6; Values are expressed as mean ± S.D followed by Students Paired 'T' Test

***P<0.001 as compared with that of control,

**P<0.003 as compared with that of control,

Ns – non significant when compared to control groups .

Groups	PCV %	MCV	MCH
Control	28.25 ± 1.101	89.8 ± 0.670	30.33 ± 0.117
Thaetrankarpam	35.0 ± 0.836^{ns}	90.67 ± 0.497^{ns}	30.43 ± 0.526 ^{ns}
Std. fefol	51.3 ± 3.23	110.95 ± 0.927	37.52 ± 2.72

n=6; Values are expressed as mean ± S.D followed by Students Paired 'T' Test
ns – non significant when compared to control groups .

Inference

In the present study 15 days continuous administration of the TK at the dose of 500 mg/kg/p.o showed significant increase in Hb% of animals with a concurrent increase in RBC count. However there wasnt any significant rise in PCV, MCV, MCH levels.

CLINICAL ASSESSMENT

About the disease

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Selection of patients

The clinical study of Paandu Noi was carried out in out patient department of Arignar Anna Govt. Hospital of Indian Medicine and Homeopathy, Arumbakkam, Chennai.

Cases from both sexes of varying age groups were selected. All the cases were carefully examined before treatment for correct diagnosis and ruled out any other co-existing systemic illness.

Criteria for selection

Age : All age groups

Sex : Both gender

I. Inclusion criteria

1. Pallor of skin and nail beds
2. Loss of appetite
3. Fatigue
4. Patients having haemoglobin level 7 – 9 mg/dL

II. Exclusion criteria

1. Haemorrhoids
2. Haematuria
3. Haemoptysis
4. Repeated epistaxis
    a. Pregnant women
    b. Lactating mothers

iii. Withdrawal criteria

1. Irregular treatment
2. Irregular visit

Study design

Open clinical trial

Treatment schedule

Dosage : Thaetran Karpam – 1 g

Vehicle : 3 ml of Ghee / twice a day after food

Duration : 48 days

Investigation parameters

The presence of anaemia was confirmed in all patients by means of blood picture

TC

DC

ESR

Hb

Urine analysis for

Albumin

Sugar

Deposits

Stools examination for

Ova

Cyst

Occult blood

Occult blood ruled out for any systemic illness. Diagnosis was done on the basis of Siddha principles such as Envagai Thervugal and mukkutra

verupadu, 40 patients who were moderately anaemic were treated as out patients. They were adviced to attend the OP once in a week for follow up and general observation.

Medical advice and Diet

They were advised to take food that was easily digestible and readily absorbed.

Observation and results of clinical study

The clinical study was subjected to 40 selected cases. The following parameters were observed during the course of treatment.

Age

Sex

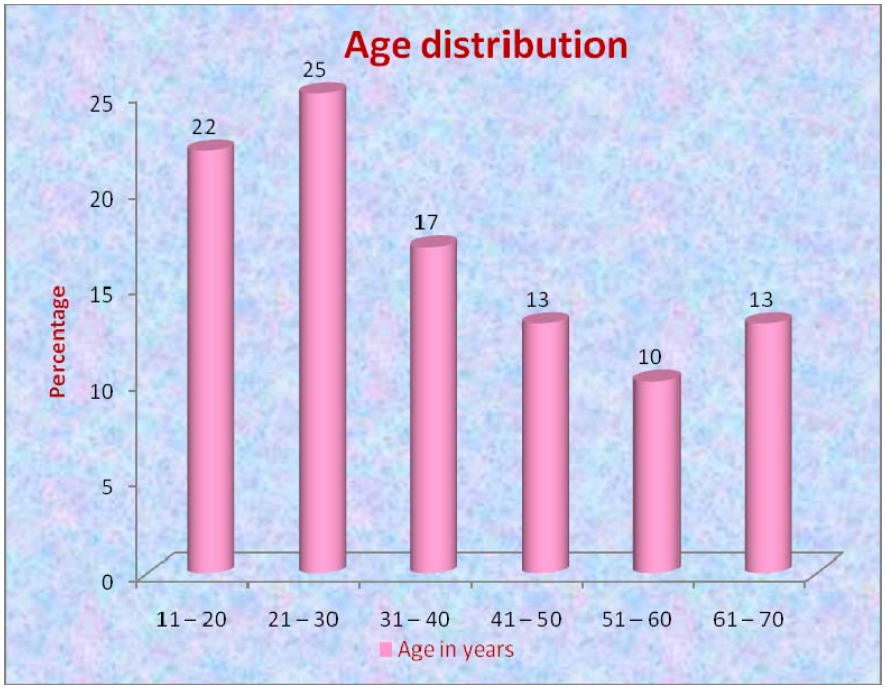
Socio – economic status

Diet and Habit

Occupational status

Age Distribution

Sl.No.	Age in Years	No.of Patients	Percentage %
1.	11 – 20	9	22
2.	21 – 30	10	25
3.	31 – 40	7	17
4.	41 – 50	5	13
5.	51 – 60	4	10
6.	61 – 70	5	13

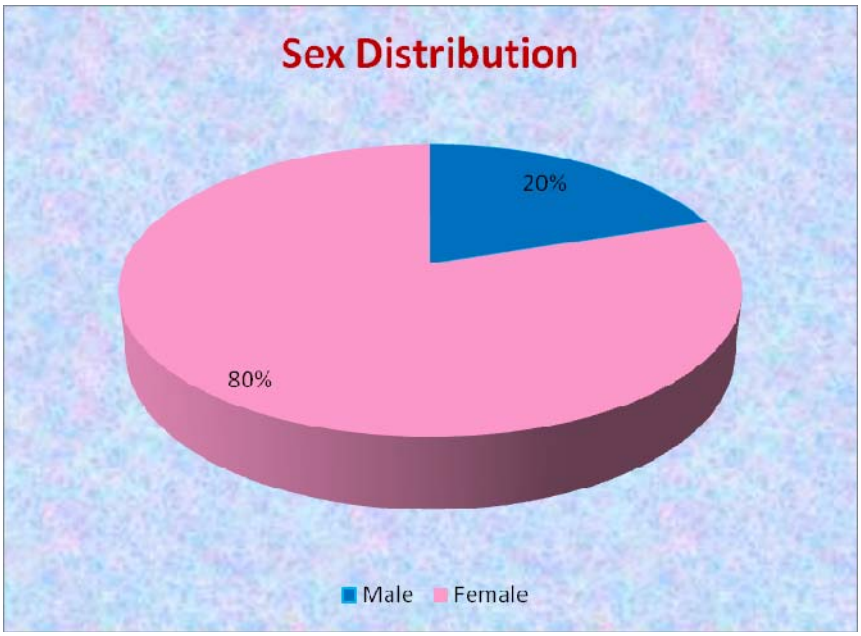


Inference

Among 40 patients, 10% of the patients belonged to the age group of 51 – 60, 13% of the patients belonged to the age group of 41 – 50 another 13% of the patients belonged to the age group of 61 – 70, 22% of the patients belonged to the age group of 21 – 30, 25% of the patients belonged to the age group of 11 – 20.

Sex Distribution

Sl. No.	Sex	No.of Patients	Percentage %
1.	Male	8	20
2.	Female	32	80

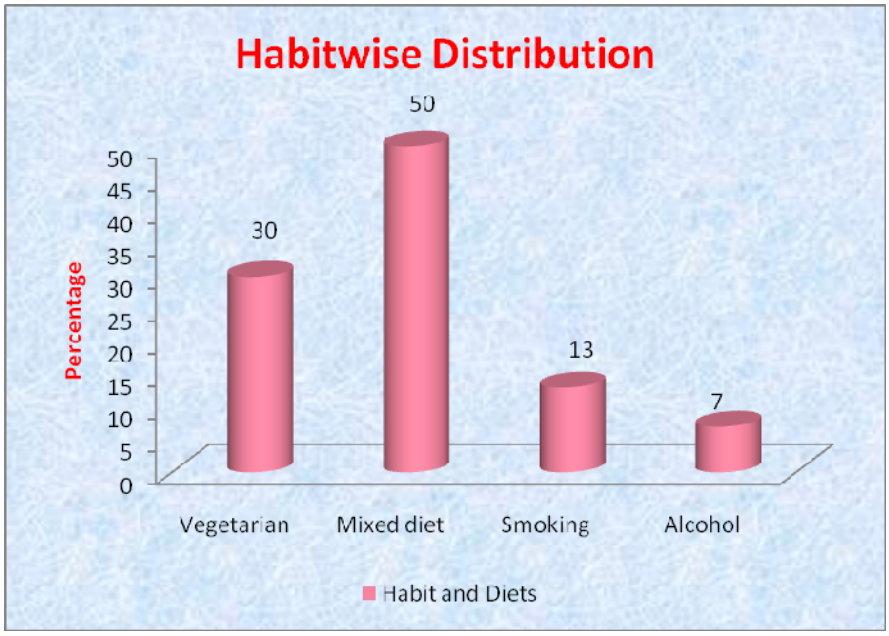


Inference

80% of the patients were women and children and 20% were men. Most of the men were older in the age group of 60 – 70.

Habit wise distribution

Sl.No.	Habit and Diets	No. of Patients	Percentage %
1.	Vegetarian	12	30
2.	Mixed diet	20	50
3.	Smoking	5	13
4.	Alcohol	3	7

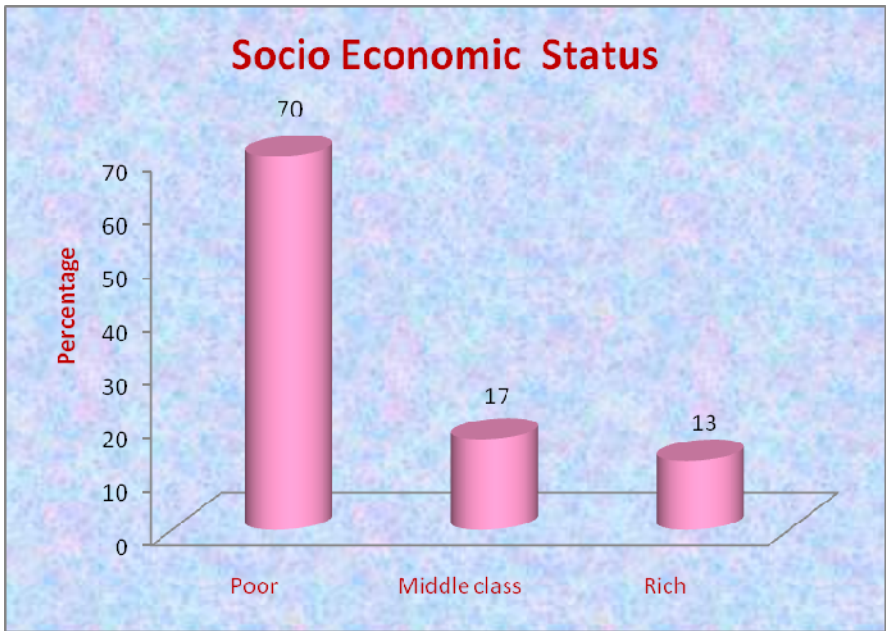


Inference

This table shows that food and habit do not show any influence in case of anaemia. Among 40%, 50% had mixed diet, 30% had vegetarian food, 13% were smokers and 3% were alcoholics.

Socio economic status

Sl.No.	Socio economic status	No.of Patients	Percentage %
1.	Poor	28	70
2.	Middle class	7	17
3.	Rich	5	13

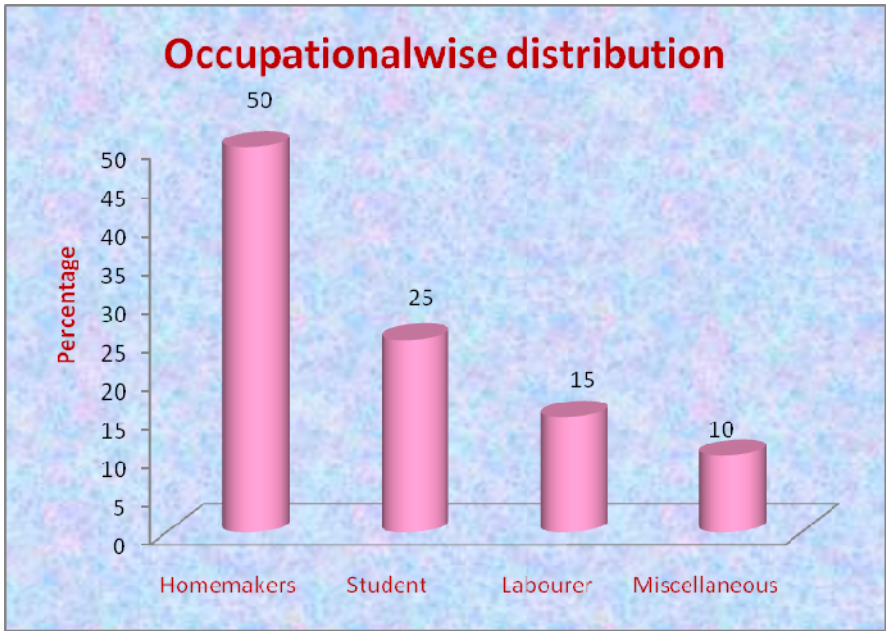


Inference

Among 40 patients, 70% were poor, 17% belonged to the middle class and 13% were rich.

Occupation wise distribution

Sl.No.	Occupation	No.of Patients	Percentage %
1.	Homemakers	20	50
2.	Student	10	25
3.	Labourer	6	15
4.	Miscellaneous	4	10

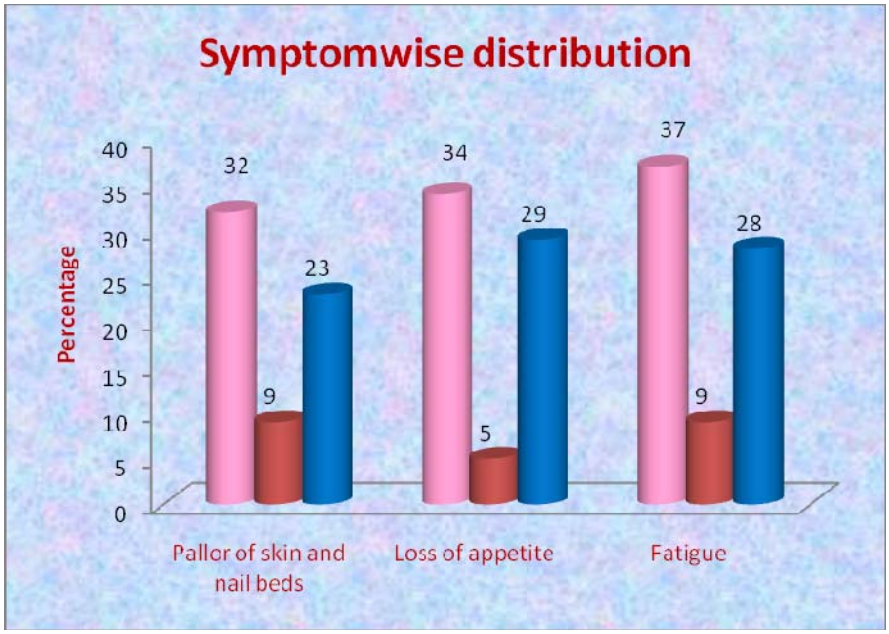


Inference

Occupation did not seem to have any influence in anaemia. Since the majority were women and children they were mostly home makers, and school or college students.

SYMPTOM WISE DISTRIBUTION

Sl.No.	Symptoms	Before treatment	After treatment	Improvement	Percentage %
1.	Pallor of skin and nail beds	32	9	23	72
2.	Loss of appetite	34	5	29	85
3.	Fatigue	37	9	28	76

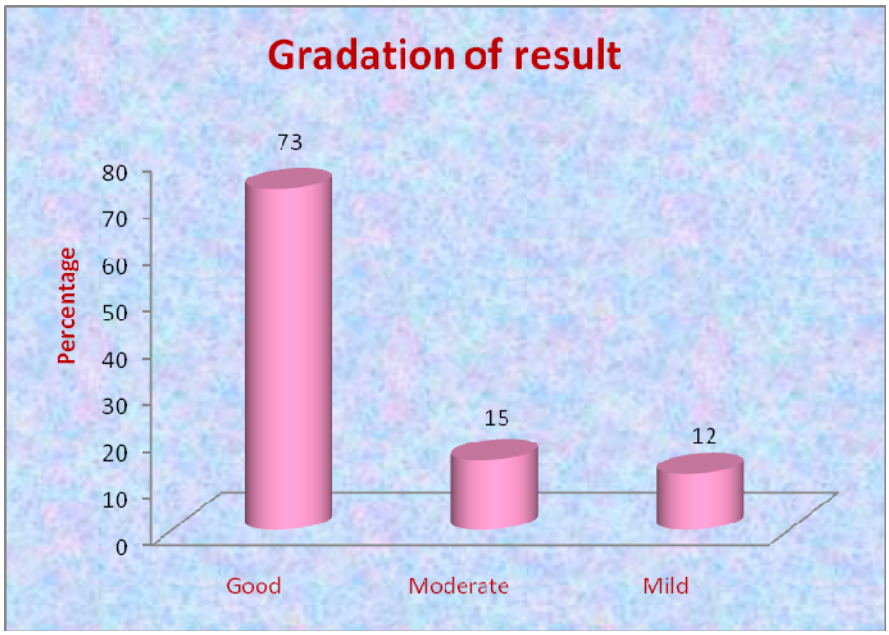


Inference

Patients with the parameters of pallor of skin and conjunctiva, loss of appetite and fatigue were taken. Among 32 patients with pallor 23 showed improvement, among 34 patients with of appetite 29 developed good appetite and among 37 patients with fatigue 28 showed good improvement.

Gradation of result

Sl.No.	Grade	No.of Patients	Percentage %
1.	Good	29	73
2.	Moderate	6	15
3.	Mild	5	12



Inference

Among the 40 cases, 73% cases showed good results, 15% of cases showed moderate results and 12% cases showed mild results.

Development of good appetite and reduction of pallor, fatigue within 3 weeks was considered as good improvement.

Improvement in 2 or more symptoms within 4 – 5 weeks was considered moderate. Improvement in less than 2 symptoms after 6 weeks was considered mild.

Haemoglobin in mg

Sl. No.	Name	Age/Sex	OP No.	Date	BT	AT	d Difference	d^2
1.	Sargunam	39/F	9876	19.10.07	8	11	3	9
2.	Yasodha	59/F	2439	29.10.07	8.5	11	2.5	6.25
3.	Kamini	18/F	2989	31.10.07	8.5	9	0.5	0.25
4.	Naveena	19/F	3597	27.11.07	7	10	3	9
5.	Anuradha	19/F	6133	12.11.07	9	9	0	0
6.	Sekar	60/M	4423	5.11.07	7.5	9	1.5	2.25
7.	Thangam	22/F	7665	16.11.07	8	13	5	25
8.	Subbulakshmi	55/F	7663	16.11.07	8	11	3	9
9.	Leela	23/F	8.47	17.11.07	8.5	9.5	1	1
10.	Ramesh	50/M	8267	17.11.07	6.5	8	1.5	2.25
11.	Kamakshi	25/F	8269	17.11.07	7.5	9.5	2	4
12.	Jaya	23/F	9104	20.11.07	9	10.5	1.5	2.25
13.	Agalya	15/F	956	26.11.07	7.5	9	1.5	2.25
14.	Sivamani	30/M	3190	1.12.07	6.5	9.5	3	9
15.	Uma	17/F	1973	28.11.07	7.5	11	3.5	12.25
16.	Kasthuri	45/F	3730	3.12.07	7	8.5	1.22	2.25
17.	Manju	12/F	3964	4.12.07	9	9.5	0.5	0.25
18.	Raguraj	64/M	9126	18.12.07	9	9	0	0
19.	Loganathan	85/M	9515	20.12.07	8.5	10	1.5	2.25
20.	Puspha	38/F	166	22.12.07	9	10.5	1.5	2.25
21.	Janani	15/F	1917	27.12.07	8.5	9	0.5	0.25
22.	Jothi	36/F	7098	11.1.08	8.5	10	1.5	2.25
23.	Dhanam	43/F	87.2	18.1.08	9	10	1	1
24.	Shanmugam	70/F	9889	22.1.08	6.5	9.5	3	9
25.	Bakianathan	65/M	9965	22.1.08	7	10	3	9
26.	Dhesamma	35/F	353	23.1.08	8.5	10.5	2	4
27.	Gayathri	19/F	771	24.1.08	8.5	9.5	1	1
28.	Banurega	36/F	796	24.1.08	9	11	2	4

Sl. No.	Name	Age/Sex	OP No.	Date	BT	AT	d Difference	d^2
29.	Sellammal	55/F	773	24.1.08	9	10	1	1
30.	Kamalammal	60/F	1646	27.1.08	9.5	10	0.5	0.25
31.	Meenakshi	65/F	2668	29.1.08	8.5	10	1.5	2.25
32.	Suharbanu	28/F	45	30.1.08	10	10	0	0
33.	Dhayalan	35/F	3432	31.1.08	8.5	11	2.5	6.25
34.	Sasikala	65/f	545	31.1.08	9	9.5	0.5	0.25
35.	Kasiamma	65/F	3758	1.2.08	6.5	9	2.5	6.25
36.	Bhavani	35/M	8975	18.2.08	7	10	3	9
37.	Saraswathi	40/F	6728	6.3.08	10.5	14	3.5	12.25
38.	Latha	42/F	6003	4.3.08	8.5	9	0.5	0.25
39.	Srinidhi	28/F	6776	6.3.08	7.5	8	0.5	0.25
40.	Priya	18/F	3603	27.2.08	9	11.9	2.5	6.25
	Total				329	399	70	175.5

Methodology for statistical analysis

The paired ‘t’ test is used for the analysis of paired data. The observed difference in each pair is calculated. The ‘t’ is determined by the following formula.

$$t = \frac{\bar{d}}{\sqrt{\frac{s^2}{n}}}$$

where $\bar{d}$ is the mean of the differences is each pair. S is the standard deviation of the observed differences and n is the number of matched pairs. The number of degrees of freedom is (n -1).

$$\bar{d} = \frac{20}{40} = 1.75$$

$$s^2 = \frac{\Sigma d^2 - \frac{\Sigma d^2}{n}}{h-1} = 0.0766$$

$$t = \frac{\bar{d}}{\sqrt{s^2/n}} = \frac{1.75}{\sqrt{\frac{0.0766}{40}}} = 9.505$$

For t = 9.505 at 39 degrees of freedom P < 0.001. Therefore Theatran karpam has brought about a statistically highly significant increase in Hb content.

Statistical analysis of subjective parameters observed before and after treatment

S.No.	Parameter	Percentage			Statistical test criterion	Probability values	Significant
		Before treatment	Improvement after Treatment	Difference			
1.	Pallor of skin and conjunctiva	40.0 ± 3.5777	23.0 ± 2.6833	17.0 ± 0.012	27.386	P < 0.000	*** significant
2.	Loss of appetite	34.0 ± 3.5777	29.0 ± 3.5777	5.0 ± 0.982	23.278	P < 0.001	*** significant
3.	Tiredness	37.0 ± 4.4721	28.0 ± 2.6833	9.0 ± 0.338	20.266	P < 0.000	*** significant

n = 40; values are expressed as mean ± S.D followed by student one sample ‘t’ test.

(***) P < 0.001 (**) P < 0.003 as compared with that of before and after treatment.

Thus the improvement in symptoms of pallor, loss of appetite and tiredness after treatment with Thaetran karpam is statistically significant.

DISCUSSION

Paandu remains one of the major global health problems, with higher prevalence in children and women of low socio-economic class.

According to Agathiar as mentioned in Agathiar attavanai vaagadam Thaetran karpam is used to treat paandu noi.

As per Siddha system Paandu noi is due to the derangement of Kabha Kutram.

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The taste of Thaetran (Strychnos potatoram seeds) is Kaippu (Vayu + Aagayam) and it has veppa veeriam.

According to Kanusamiam

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According to this verse, Karppu, Thuvarpu and Kaippu Suvai balances the imbalanced Kabha kutram. So the Kaippu Suvai of thaetran equalises the imbalanced Kobha kutram. Morever Vayu bhootham is said to strengthen the body and enhance the general well – being of the human body. Thus Thaetran helps in treating paandu noi in a dual way.

Pharmacognositic studies of the powder showed fragments of testa, trichomes, endosperm cells and oil globules.

The antimicrobial study of Thaetran karpam shows it is sensitive to Staphylococcus aureus, E.coli, Klebsiella Pneumoniae, pseudomonas aeruginosa, streptococcus mutans. Patients with Paandu noi generally have lower immunity and they are susceptible to all opportunistic diseases. Theatran itself being a good anti microbial agent helps in protecting them from these infections.

Biochemical analysis of thaetran showed the presence of calcium and iron.

Quantitative analysis shows the presence of 373.0 mg/kg of iron (Fe iron which is a very important constituent of haemoglobin and plays an important role in the formation of the haem part of haemoglobin. The iron in Thaetran helps in the haematopoetic functions of iron.

Phytochemical analysis shows the presence of steroids, proteins, alkaloids, glycosides, tanins, saponins and flavanoids.

Bio flavonoides

Bio – ‘life’ (Greek)

Flavo – ‘flavouring agent’ yellow colouring pigments of fruits and flowers.

Oeides - ‘in the form’ (Greek)

Meaning ‘life in the form of yellow colouring agents’

Flavonoides are very good antioxidants. American medical Association prescribes flavonoides as one of the important dietary supplements for anaemia. They promote the capillary resistance to haemorrhaging.[30]

Further studies on qualitative estimation of S.potatorum shows the presence of Alkaloids (1.3%), flavonoids (0.021%) phenols (0.059%) tanins (18.00%) and saponins (4.741%).

Good and well balanced nutrition is the basis for the proper functioning of the haematopoitic system. All such nutrients including steroids proteins and flavanoides are present in thaetran. So they play a role in enhancing the haematopoietic system.

Literature has shown that oral ingestion of any medicinal compound or drug can alter the normal range of haematological parameters. These alterations can be either positive or negative. In this study most of the effect recorded for the seeds of Thaetran karpam is positive[44].

It is possible that it contains active principles like haematopoetic like principles (or) contain active biological principles stimulating haematopoitins (erythropoetin, leucopoetin, thrombopoetin). However isolation of active principles in extract and elucidation of their mechanism would constitute further studies. The active biological principle may be responsible for its haematopoetic effect.

Liver plays an important role in erythropoisis. Blood proteins for example clotting factors and albumins are produced in liver. Blockage of biliary system produces haemolytic anaemia and jaundice. Studies shows the very efficient hepatoprotective activity of Strychnos potatorum. This may play a positive role in enhancing its use in Paandu noi.

Karpa medicine of Siddha medicine are said to have very good antioxidant properties. Further Strychnos potatorum Linn. is a proven antioxidant. Studies have shown that, in children with low haemaglobin level there is increased oxidant stress which may be the reason for platelet aggregation in them and antioxidants is widely used to combat the problem. Thus the antioxidant property of Strychnos helps reduced the oxidant stress and in turn the platelet aggregation.

Acute toxicity study shows Thaetran at the dose of 2000 mg/kg/p.o did not exhibit any mortality in rats.

The pharmacological study shows chronic administration of Thaetran at the dose of 500 mg/kg/p.o. showed significant increase in Hb% of animals with concurrent increase in RBC count.

The clinical study has been conducted on 40 patients. Among them, 23 patients who had pallor of skin and conjunctiva showed good improvement at the end of 6 weeks. 29 patients developed good appetite within 2 weeks and 28 patients who had fatigue and breathlessness showed good improvement in 4 weeks.

Invariably most of the patients developed good appetite. Thaetran has stomachic and digestive properties according to siddha literature. This may be attributed to the increased absorption in the GI tract.

From the above studies Thaetran has been proved to be clinically effective against Paandu noi.

Overall results lend support to the literature evidence to use Thaetran karpam in Paandu.

Gradual withdrawal of the medication was done and the follow-up was done for 2 more weeks.

SUMMARY

- The trial drug Thaetran karpam was selected for paandu noi based on evidence in siddha literature.
- It is a herbal drug easily available, economical and preparation is simple.
- The single drug was purified prepared as choornam and stored.
- Pharmacognositcal study was carried in Central Research Institute for Siddha, Chennai – 106 and pharmacological studies were carried out in C.L. Baid Mehta College of Pharmacology Thorapakkam, Chennai.
- Rf values were determined by T.L.C.
- Phytochemical test showed the presence of alkaloids, sugar, steroids, proteins, tanins, phenols, flavonoids, saponins, aminoacid, glycosides and tannic acid.
- Biochemical analysis showed the presence of calcium, iron.
- Anti microbial study proved it to be an effective antibacterial agent.
- Acute toxicity studies showed Thaetran did not exhibit any mortality in rats at 2000 mg/kg.
- Animal experiments revealed that this drug is effective in improving the Hb and RBC levels in blood. It has good haematinic activity.
- The administration of Thaetran karpam for 42 days did not produce any side effects.

- Clinical trials showed Thaetran is effective in raising Hb levels upto 2 – 4 mg and effective in treating all the symptoms of paandu noi when treated for 48 days.

- Out of 40 patients 32 showed better response in reductive of symptoms pallor, loss of appetite and fatigue.

CONCLUSION

Thaetran karpam has significant haematinic property in animal studies. Anti microbial studies shows it is potent anti-bacterial agent. From the clinical study it is concluded that Thaetran karpam moderately rises Hb and RBC levels and is clinically effective in treating Paandu noi. It did not produce any adverse effects during chronic administration. Thaetran karpam needs further study with regard to the mechanism of action to develop it as a potent haematinic agent.

PART II

A STUDY ON PEENISA CHOORNAM

INTRODUCTION

Infections of the Upper Respiratory Tract (URIs) have a tremendous impact on public health. They are among the most common reasons for visits to primary health care providers, and although the illness are typically mild, their high incidence and transmission rates place them among the leading causes of time lost from work or school. Non specific URI are a broadly defined group of disorders that collectively constitute the leading cause of ambulatory care, visits.

In this fast developing world, rapid growth of industrialization and globalisation inspite of their positive effect seem to take heavy toll on the health of human beings in various aspects. This rapid growth of industries and machineries pollute the atmosphere with a lot of toxic substances. With the change in dietary patterns and very high increase in pollution diseases especially of the respiratory system and allergies are on the rise. Peenisam is one such disease which is on sudden rise due to pollution and unhealthy dietary habits.

Even though minority of cases are cause by bacteria, URI s are the leading diagnosis for which antibiotics are prescribed largely. The enormous consumption of antibiotics for these illness has contributed to the rise in antibiotic resistance among common community acquired pathogens – a trend that in itself has had a tremendous impact on public health.

With the more and more problems like resistance to antibiotics arise Siddha system of medicine provide the best alternative.

One of the disease that falls under this category is Peenisam mentioned in Siddha literature. Though it is hardly ever fatal it is one of the most debilitating diseases that affects one's day to day activities.

The drug choosen is "Peenisa choornam" mentioned in Sarabendhirar Siraroga sigichai. The efficacy of the drug in treating the disease has been studied in the following work.

AIM

To evaluate the efficacy of Peenisa choornam in the management of Peenisam.

OBJECTIVES

- To subject the trial drug to phytochemical and biochemical analysis.
- To study the antimicrobial activity of the drug.
- To study the acute toxicity and pharmacological activity of the drug.
- To ascertain the clinical efficacy of the drug for the management of Peenisam.
- To analyse all the above study results to evaluate the efficacy of the drug.

REVIEW OF LITERATURE

Solanum surattense[11,48]

Family : Solanaceae

Synonyms : S.xanthocarpum

Vernacular Names

Eng : Yellow berried nightshade

Hind : Kateli

Kan : Nelagulle

Sans : Kantakari, Nidigdhika

Tam : Kantattiri

ACTION AND THERAPEUTIC USES

Anti-inflammatory, digestive, antihelmintic, diuretic, expectorant, febrifuge and aphrodisiac. Root is an expectorant used in the treatment of cough and asthma.

Chemical constituents

- A new sterol carpestrol benzoate, scopoletin, esculin, esculetin, solasodine, solasonine solamargine and β solamargine isolated.

- Pharmacological studies on this herb have been shown that aqueous and alcoholic extracts of the plant posses hypotensive effect which is partly inhibited by atropine;

- Both glycoalkaloid and fatty acid fractions of the extract cause liberation of histamine from chopped lung tissue.

- The beneficial effect of the drug on bronchial asthma may be attributed to the **depletion of histamine** from bronchial and lung tissue and its expectoration action due to **inorganic nitrate content**.

- Extracts of the whole plant show **anti viral activity** against Ranikhet disease virus and also sarcoma 180 in the mice.

- Extracts of shoot and fruit show **antibacterial activity** against **staphylococcus aureus** and **E.coli** in phosphate buffer.

Psh[Pzv¶ – Solanum Surrattense[11]

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11. £g\vU uUQku®[22]

Rhus succedanea

Family : Anacardiaceae

Vernacular names

English	:	The galls
Hindi & Bengali	:	Kakra – singi
Tel	:	Kakeera - sryngi
Tamil	:	Karkadaga singi
Kannada	:	Karkata - shringi
Marathi	:	Kakada - shingi

Parts used :

Galls : Horn like galls are caused on the branch by some insects

Action and therapeutic uses

The galls are reported to possess astringent, tonic, **expectorant** and stimulant properties. Used in treating diarrohea and dysentry in children.

Chemical constituents

Gallotanin is the main polyphenol present in sapwood, fisetin, fustin, gallic and ellagic acids, garbanzol, sulfuetin are present.

Rhus flavone, amento flavone, agat hisflavone, cupressuflavone and mesuaferrones A and B isolated.

PºUPhP][Q – Rhus succedanea[1]

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4. Tè£õsh (§\o) ÷»Q¯®[26]

Clerodendrum serratum[13]

Family : Verbenaceae

Vernacular names

English	:	Beetle killer
Hindi	:	Bharangi
Kanada	:	Gantabarangi
Malayalam	:	Cerutekku
Sans	:	Bharngi, Kharasakah
Tam	:	Sirutekku
Tel	:	Gantubharangi

Action and therapeutic uses

Anti-inflammatory, digestive, carminative, stomachic and anthelmintic **expectorant,** antispasmodic, stimulant. Used in dyspepsia, helminthiasis, skin diseases, cough, asthma, bronchitis, leucoderma.

Chemical constituents

Et.OH (50%) extract of plant hypotensive.

Et.OH (50%) of aerial parts spermic and CNS depressant

Studies on Clerodendrum serratum[54]

In vitro and in vivo **immunomodulatory activity** of aqueous extracts of clerodendrum serratum. roots.

The aqueous extract of Clerodendrum serratum has been investigated its immunomodulatory activity. The phytochemical screening revealed presence of

D-Mannitol, stigma sterols, three triterpenoids, oleionolic acid, queretaric acid cerrategenic acid.

Macrophages treated with the extract exhibited increased acid phosphatase and myeloperoxidase activity as well as significant increase in production of nitric oxide (NO) hydrogen peroxide (H_2O_2) and O_2. Administration of CSAQ at doses of 100 and 200 mg /kg p.o in mice significantly increased carbon clearance index and ovalbumin induced delayed type hypersensitivity (DTH).

]Ö÷uUS – Clerodendrum serratum[4]

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Picrorhiza kurroa[23]

Family : Scrophulariaceae

Vernacular names

English	:	Picrorhiza
Sanskrit	:	Katurka
Tamil	:	Katukarogini
Bengali	:	Katiki
Arab	:	Khanekhaswad
Hindi	:	Katuka, Kuru
Mal	:	Katurohini

Action and therapeutic uses

In small dose it is a bitter stomachic and laxative and in large doses a cathartic. It is reputed as an antiperiodic and cholagogue.

Chemical constituents

Extracts increased bile flow in dog, alcoholic extract was effective in chronic carbon – tetrachloride induced hepatotoxicity, in rat.

Structure of kutkin isolated from roots, apocyanin, picroside also isolated. Crystattin kutkin shown to be a stable mixed crystal of picroside I and new glucoside- kutkoside.

Hypolipemic effect of aqueous extracts of pilrorrhiza kurroa in hyperlipemic mouse model with hepatoprotective effect : A prevention study[55]

Hypolipemic effect of the aqueous extract of P.kurroa was observed in high feeding hyperlipemic mouse at doses of 50, 100 and 200 mg/kg, orally

once a day for 12 weeks. Alanine transferase (ALT), low density lipoprotein, levels were significantly reduced for the treatment. On the contrary serum HDL level seems not affected by P.kurroa water extract.

Anti carcinogenic study[56]

P.kurroa has shown to reduce formation of liver cancer due to chemical exposure in animal studies. Kutkin is a combination of active herbal constituents – Picrosides I, II and III and kuthoside kutkin's antioxidant activity has been shown to decrease levels of lipid peroxidases and hydroperoxidases, free radical producing agents, and help facilitate the recovery of SOD, a powerful antioxidant in the liver needed to prevent oxidative damage.

PkS÷µõQo – Picrorrhiza Kurroa[1]

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Nardostachys jatamansi

Family : Valerianaceae

Vernacular names

Sanskrit	:	Jatamansi
Hindi	:	Jatamansi
Bengali	:	Jatamansi
Marathi	:	Jatamavshi
Gujarati	:	Jata mashi
Tamil	:	Sadamanjil

Action and therapeutic uses

Antispasmodic, antipyretic, stimulant and diuretic. Used in the treatment of epilepsy and hysteria. Useful in intestinal inflammation, diseases of the blood and ulcers.

Chemical constituents

Nardostachone, seychellene and seychelane, jatamasic acid isolated seychalane found to be a mixture of 2 epimers, norseychelanone, patchouli alcohol and α- β patchoulenes, isolated from roots. Actinidine isolated from rhizomes.

Studies on N.jatamansi

Cardio protective efficacy of N.jatamansi on mitochondrial respiration and lysosomal hydrolases was studied during Doxorubicin induced myocardial injury in rats. This could be mediated possibly through its antioxidant effect as well as by the attenuation of the oxidative stress.

Anti convulsant activity

Ethanol Extract of the root of N.jatamans was studies for its anticonvulsant activity and neurotoxicity, alone and in combination with phenytoin in rats. The results demonstrated significant increase in the seizure threshold by Nardostachys jatamansi root extract against maximal electro shock seizures.

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Nardostachys Grandiflora

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Sodium chloride impura[23]

Vernacular Names

Eng	:	Rock Salt Bay Salt Sea Salt Sodium Chlorate
Arab	:	Mil –he-Tabazard
Sanskrit	:	Saindhava
Pension	:	Namaka – sang
Hindi	:	Sendhalon Sedhalon
Gujarati	:	Sindhaluna
Telugu	:	Saindha lavanam
Tamil	:	Indu-uppu
Malayalam	:	Inter – upper
German	:	Natrium Chlorium

Characters : It is found as small white Crystalline grains or transparent cubes

It is brownish white externally and white internally.

It has a pure saline taste and burns with a yellow flame.

Action and therapeutic uses

In small doses it is highly carminative stomachic and digestive. It promotes the appetite and assists digestion and assimilation.

In larger does it is cathartic, in large doses it is emetic.

It is given in dyspepsia and other abdominal disorders.

Sodium Chloride Impura[2]

Rock Salt

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MATERIALS AND METHODS

PREPARATION OF CHOORNAM

Collection of the drug

The drug selected is Peenisa choornam as mentioned sarabendirar siragroga sigichai p.119. The raw drugs were all obtained from an indigenous drug store, chennai and identified by a botanist.

Preparation and storage

The raw drugs Kadukurohini (Picrorhiza Kurroa), Sirutekku (Clerodendrum serratum), Karkadagasingi, (Rhus succedanea), Sadamanjil (Nardostachys Jatamansi), Kandangkathri (Solanum surrattense) were all washed infresh water to remove impurities, cleaned thoroughly and were allowed to dry in shade.

Rock salt was soaked in Kaadi neer for 3 days, dried in the sun and then powered.

Preparation of Choornam

The dried drugs were all fried lightly and taken in the following quantities:

(P.Kurroa) Kadukurohini	-	3 parts
(R.succedena) Karkadasingi	-	3 parts
(Solanum Surrattense) Kandangkathiri	-	1 part
(C. serratum) Sirutekku	-	1 part
(N. Jatamansi) Sadamanjil	-	1 part
(Rock salt) Indhuppu	-	1part

They were then made into fine powder and sieved through a white cloth (Vasathira Kaayam). Then it was purified by steam cooking in milk (Pittavial method). The same was later powdered and sieved again and preserved.

Storage of Choornam

The choornam was stored in a clean air tight container.

Administration of the drug

Route of administration	:	Enteral
Dosage	:	1 gm twice a day
Vehicle	:	Honey
Duration	:	48 days

ANTI MICROBIAL STUDY

Method

The anti-microbial activities of different extracts of PEENISA CHOORNAM were studied by Disc diffusion method against the following organisms.

1. *Staphylococcus aureus*
2. *Escherichia Coli*
3. *Candida albicans*
4. *Klebsiella pneumoniae*
5. *Pseudomonas aeruginosa*

Extracts of Peenisa Choornam were used in the concentration of 100, 50 and 25 µl using their respective solvents. Ciprofloxacin, (50 mcg/disc) used as standard. The disc diffusion method was employed for the screening of anti-bacterial activity.

Disc diffusion method

A suspension of organism was added to sterile soya bean casein digest agar media at 45°C, the mixture was transferred to sterile petridishes and were allowed tosolidify. Sterile discs, 5mm in diameter, dipped in solutions of different extracts, standard and a blank was placed on the surface of agar plates. The plates were left standing for one hour at room temperature as a period of pre incubation diffusion to minimize the effects of variation in time between the applications of the different solutions. Then the plates were incubated at 37°C for 18 hours and observed for anti-bacterial activity. The diameter of zones of inhibition were observed and measured. The average area of zones of inhibition were calculated and compared with that of standard's.

Zone of inhibition in mm

Organism	Standard drug ciprofloxacin 50 mcg/disc	Test drug (Peenisa choornam µl/disc)		
		Zone of inhibition in mm		
		25 µl	50 µl	100 µl
Staph. aureus	29	13	18	20
E.coli	28	15	17	18
K.pneumoniae	30	12	18	19
Ps aeruginosa	30	14	17	19
C.albicans	32	15	18	22

Standard used for bacteria ciproflaxacin HCl, 5 mcg/disc.

Standard used for fungus ciproflaxacin HCl, 50 mcg/disc.

Sample concentration

1.5 gm / 150 ml of solvent

25 µl, 50µl & 100 µl/disc.

14 mm low sensitivity, 15mm: moderate, 16 mm & above : Highly sensitive

Thaetran karpam was found to be highly sensitive to staph aureus, E.coli, K.pneumonia and Ps aeruginosa.

Identification of the constituents of Peenisa Choornam by Phytochemical tests

The drug powder and various extracts of Peenisa Choornam were subjected to chemical tests for identification of its active constituents.

Test for alkaloids

A small portion of the solvent, free chloroform, alcoholic and aqueous extracts were treated separately with few drops of dilute Hcl and filtered. The filter may be tested carefully with alkaloidal reagents such as,

a.	Mayer's reagent	-	Yellow precipitate
b.	Dragendroff's reagent	-	Orange brown precipitate
c.	Wagers' reagent	-	Reddish brown precipitate

Test for Carbohydrates

Molisch's test

Filterate was treated with 2-3 days of 1% alcoholic alpha-napthol solution and 2 ml of concentrated H_2SO_4 was added along the sides of the test tube. Appearance of brown ring at the junction of 2 liquids show the presence of carbohydrates.

Test for Glycosides

Another portion of Peenisa Choornam was hydrolysed with Hcl for few hours on a water bath and the hydrolysate was subjected to legal's Berntragers' test to detect the presence of glycosides.

a. Legal's test

To the hydrosylate, 1 ml of pyridine and few drops of sodium nitro prusside solution were added and then it was made alkaline with sodium hydroxide solution. Appearance of pink to red colour shows the presence of glycosides and aglycones.

Test for phytosterol

Lieberman burchard test

1 gm of the extract of Peenisa Choornam was dissolved in few drops of dry acetic acid. 3 ml of acetic anhydride was added followed by few drops of concentrated sulphuric acid. Appearance of bluish green colour shows the presence of phytosterol.

Test for saponins

The extracts of Peenisa Choornam was diluted with 20 ml of distilled water and it was agitated on a graduated cylinder for 15 minutes. The formation of 1 cm layer of form shows the presence of saponins.

Test for proteins and free amino acids

Small quantities of various extracts of Peenisa Choornam were dissolved in a few ml of water and treated with Hindryin reagent. Appearance of purple color shows the presence of proteins and free amino acids.

Test for flavanoids

With aqeous sodium hydroxide solution the extract gives blue to violet colour if anthocyanins are present, yellow colour if flavones are present, yellow, to orange if flavanones are present.

Test for Tannic Acid

The extract is treated with ammonium molybdate and conc. HNO_3, formation of blue black precipitate indicates the presence of tannic acid.

Test for Tannins and Phenolic compounds

Small quantities of various extracts were taken separately in water and tested for the presence of phenolic compounds and tannis by adding 2 ml of 10% lead acetate and 2 drops of $FeCl_3$ solution. Presence of tanin and phenolic compounds is denoted by white precipitate and blue black colour respectively.

METHODOLOGY FOR BIO-CHEMICAL ANALYSIS

Preparation of extract

5 gm of Peenisa Choornam was weighted accurately and placed in a 250 ml clean beaker and added with 50 ml of distilled water. Then it was boiled well for about 10 mins. Then it was cooled and fittered in a 100 ml volumetric flask and made upto 100 ml with distilled water.

Test for Calcium

2 ml of extract was taken in a clean test tube. To this 2ml of 4% ammoniaym hydroxide solution was added. Presence of calcium is denoted by formation of a white precipitate.

Test for Iron (ferric)

The extract was treated with glacial acetic acid and potassium ferrocyanide. Presence of ferric iron is denoted by a blue colour.

Test for sulphate

2 ml of the extract was added to 5% barium chloride solution. Presence of sulphate is denoted by formation of a white precipitate.

Test for Chloride

The extract was treated with silver nitrate solution. The presence of chloride is denoted by formation of a white precipitate.

Test for Carbonate

The extract was treated with concentrated Hcl. If carbonate is present, it is denoted by effervescence.

Test for Phosphate

Te extract was treated with ammonium molydate and conc. HNO_3. If phosphate is present, it is denoted by the formation of a yellow precipitate.

Test for unsaturation

1 ml of Potassium permangnate solution is added to the extract. The presence of unsaturation is denoted by decolourisation.

Test for Iron (Ferrous)

The extract was treated with conc. HNO_3 and ammonium thiocyanate. (Presence of Ferrous iron is denoted by formation of a blood red colour) dilute ferric chloride solution (5%). The formation of violet colour shows the presence.

Results for acid basic radicals and phytochemical screening for Peenisa choornam

The following constituents were present

Acid radicals

Sulphate (trace)

Phosphate

Basic radicals

Iron (Ferrous)

Phytochemicals

Tannic acid

Sugar

Steroids (trace)

Proteins

Tannins

Phenols

Saponins

Aminoacid

Glycosides

Miscellaneous

Unsaturation present

Quantitative Analysis

Equipment used : Atomic Absorption Spectrometer (AAS)
Make : Varian, Australian

Sl.No.	Test Parameter	Results
01	Zinc as Zn	43.5 mg/kg
02	Selenium as Se	110.0 mg/kg

The sample had 43.5 mg/kg of Zn and 110.0 mg/kg of Se

PHARMACOLOGICAL STUDIES

MATERIALS AND METHODS

Preparation of drug for dosing

All drugs used for the study was suspended each time with 1% (w/v) solution of sodium carboxy methyl cellulose before administration.

Drugs and chemicals

Histamine hydrochloride and fine chemicals used in these experiments were obtained from Sigma Chemicals company, U.S.A. Other analytical grade chemicals were obtained from S.d. Fine Chemicals Ltd., Mumbai.

Experimental animals

Colony inbred animals strains of wistar rats of either sex weighing 200 – 250 g were used for the pharmacological studies and Swiss albino mice of single sex weighing 20 - 25 g were used for toxicological studies. The animals were kept under standard conditions 12:12 (day/night cycles) at 22^0C room temperature, in polypropylene cages. The animals were fed on standard pelleted diet (Hindustan Lever Pvt Ltd., Bangalore) and tap water *ad libitum*. The animals were housed for one week in polypropylene cages prior to the experiments to acclimatize to laboratory conditions. The experimental protocol was approved by the Institutional Animal Ethical Committee (IAEC).

Acute oral toxicity study

Acute oral toxicity was conducted as per the OECD guidelines (Organization of Economic Cooperation and Development) 423 (Acute Toxic Class Method). The acute toxic class method is a stepwise procedure with 3 animals of a single sex per step. Depending on the mortality and /or moribund status of the animals, on the average 2-4 steps may be necessary to allow judgment on the acute toxicity of the test substance. This procedure results in the use of a minimal number of animals while allowing for acceptable data based scientific conclusion.

The method uses defined doses (5, 50, 300, 2000 mg/kg body weight) and the results allow a substance to be ranked and classified according to the Globally Harmonized System (GHS) for the classification of chemicals which cause acute toxicity

Swiss albino mice of single sex weighing 20-25 g were fasted overnight, but allowed water *ad libitum*. Since the formulation peenisa choornam is relatively non toxic in clinical practice the highest dose of 2000 mg/kg/p.o (as per OECD guidelines “Unclassified”) was used in the acute toxicity study.

The animals were observed closely for behavioural toxicity, if any by using FOB (Functional observation battery).

Result for Acute oral toxicity study

PC at the dose of 2000mg/kg/po did not exhibit any mortality in rats. As per OECD 423 guidelines the dose is said to be “Unclassified” under the toxicity scale. Hence further study with higher doses was not executed.

Analgesic activity

Tail Flick method

Withdrawal of tail (Tail Flick) for noxious thermal (radiant heat) can be used for screening drugs with analgesic activity. Radiant heat can be generated by passing electrical current through nichrome wire mounted in an analgesiometer.

Wistar albino rats of either sex weighing between 200 – 250 g were assigned into 3 groups of 6 animals each. Group I – received distilled water, Group 2 – received the standard drug diclofenac sodium, Group III – received the test drug peenisa choornam.

The base of the tail of the test rats is placed on a nicrome wire. The tail withdrawal for the radiant heat (flicking response) is taken as the end point. Normally the rats and mice withdraw their tails within 3 – 5 secs. A cutoff time of 10 – 12 secs is used to prevent damage to the tail. Any animal failing to withdraw its tail in 3-5 secs is rejected from the study.

The reaction time of test drug, standard and control are taken at intervals of 30, 60 and 120 mts. A reaction time (withdrawal time) increment of 2-5 secs more than the control animals can be considered for analgesic activity of the drug.

Table

Analgesic activity of (PC) using Tail flick Plate Method

Groups	Paw flick response (Sec)			
	0 min (Sec)	**30 min (Sec)**	**60 min (Sec)**	**120 min (Sec)**
Control	2.266± 0.396	2.293± 0.96	2.36±0.367	2.482± 0.653
PC	2.266 ± 0.391	3.083 ± 0.450 ***	4.533 ± 0.388 ***	5.103 ± 0.7995 ***
Standard dic. sodium 5 mg/kg/po	2.266 ± 0.391	3.53 ± 0.450	4.533 ± 0.388	5.803 ± 0.7995

n=6, Values are expressed as mean ± S.D using followed by paired T – test

***P<0.001 as compared with control.

Inference

The drug formula PC exhibited significant Analgesic activity (P<0.001) when compared to control in tail flick method. The analgesic response was exhibited only at the end of 60 and 120 mts after drug administration that may be due to the delayed absorption of the phytoconstituents responsible for the analgesic activity.

Anti inflammatory activity

Anti inflammatory activity was evaluated in acute model of inflammation.

Acute model

Carrageenan induced hind paw edema

The carrageenan assay procedure was carried out according to the method of Wintar *et al.* (1962). Wistar albino rats of either sex weighing between 200-250 g were assigned into 3 groups of 6 animals each. Group I – received distilled water, Group II – received standard drug dic. sodium, Group – 3 received the test drug peenisam choornam.

Edema was induced by injecting 0.1 ml of 1% solution of carrageenan in saline into the plantar aponeurosis of the left hind paw of the rats. The extracts, reference drug and the control vehicle (distilled water) were administered 60 min prior to the injection of the carrageenan. The volumes of edema of the injected and contra lateral paws were measured at +1, 3 and 5 hrs after induction of inflammation using a plethysmometer (Bhatt *et al*., 1977) and percentage of anti-inflammatory activity was calculated.

Anti inflammatory activity of Peenisam choornam induced end paw edema in rats

Groups	Paw volume (ml) by mercury Displacement at regular interval of time					
	0min	**30min**	**60min**	**120min**	**240min**	**15 hrs**
Control	1.566 ± 5.164	1.883 ± 7.528	2.033 ± 5.164	2.183 ± 7.528	2.33 ± 8.946	2.516 ± 9.832
Peenisam choornam (500mg/kg. p.o.,)	1.683 ± 0.1472 ^{ns}	1.808 ± 0.1497^{ns}	2.0 ± 0.303^{ns}	2.08 ± 8.944***	1.85 ± 0.197***	1.566 ± 0.1366***
Standard (Dic.Sodium 5 mg/kg/po)	0.835 ± 0.065***	1.315 ± 0.069***	1.128 ± 0.049***	1.011 ± 0.056***	0.896 ± 0.048***	0. 85 ± 0.054 ***

n=6; Values are expressed as mean ± S.D followed by paired T – test .
ns - Non significant as compared with control;
P< 0.000 (***) as compared with control.

Inference

In the acute phase inflammation model (carrageenan induced hind paw edema) PC showed significant (P<0.001) anti-inflammatory activity. In this study also the anti-inflammatory response was noticed at the end of 120 mts of administration whereas standard drug diclofenac sodium exhibited immediate response. This again may be due to the delayed absorption of the phyto constituents present in the drug from the intestine.

Antihistaminic activity

Antagonistic action of PC in Guinea pig ileum contraction

Histamine is an autocoid having many physiological effects in the system. Histamine has spasmogenic response in g.pig ilium. Histamine by acting on H_1 receptor of smooth muscle causes contraction which can be recorded by a kymograph. Drugs acting as H_1 receptor antagonists, block the contraction of histamine in g.pig ileum.

G.pig ileum is dissected out and placed in the watch glass containing Tyrode solution. Dissect out the ileum and clean the contents of the ileum by pushing the Tyrode solution into the lumen of the ileum.

2 – 3 cm long ileum is taken and mounted to the tissue holder of the organ bath containing Tyrode solution maintained at 32 – 34^0C and bubbled with a mixture of CO_2 + air.

A tension of 0.5 g is applied to the lever and the tissue is allowed to equilibrate for 30 mts before adding drugs. Record concentration dependent response (10 μg – 80μg) due to histamine using a frontal writing lever. Add the test drug in different concentrations (2 μg - 5μg) to the tissue bath and repeat the concentration- response curve of histamine in the presence of the test drug. Calculate the % inhibition of contraction by the test drug.

Effect of the Peenisa choornam on histamine induced contractions of guinea pig ileum

S. No	Treatment					
	Histamine µg/ml	**Mean contraction (M mol)**	**Peenisa choornam µg/ml**	**Mean contraction M mol**	**% inhibition of Histamine**	**Std. mepyramine**
1.	10.0	50.666 ±6.214	10.0	11.0 ± 2.756***	22.0	9.867 ± 0.875
2.	20.0	55.5 ± 1.872	20.0	14.66 ± 3.076***	26.3	16.35 ± 2.182
3.	40.0	61.0 ± 7.183	40.0	27.33± 6.121***	44.7	25.481 ± 4.312
4.	80.0	64.50 ± 6.892	80.0	33.667 ± 5.609***	51.5	35.562 ± 6.213

n=6; Values are expressed as mean ± S.D followed by paired T – test

*** ($p<0.001$) when compared with control.

Inference

Peenisa choornam showed antihistaminic activity when tested in guinea pig ileum. There was a dose dependent inhibition by Peenisa choornam on contractions of guinea pig ileum induced by histamine. The gradual antagonistic reduction on (in %) of the amplitude of contraction after dosing with 10, 20, 40 µg of Peenisa choornam was 34, 53, and 74.1 respectively against the amplitude of contraction with increasing dose of histamine (10-40 µg /ml of bath).

CLINICAL ASSESSMENT

The drug Peenisa choornam has been chosen to treat the disease Peenism.

About the disease

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SELECTION OF PATIENTS

The clinical study for the disease Peenisam was carried out in the out patient department of Arignar Anna Govt. Hospital of Indian Medicine and Homeapathy, Arumbakkam, Chennai.

40 cases from both the sexes of varying age group were selected.

Including criteria

1. Rhinitis
2. Sneezing
3. Nasal congestion
4. Pain – PNS

Excluding criteria

1. Opthalmic headache
2. Migraine
3. Septal deviation
4. Middle ear infection – otitis media

Withdrawal criteria

1. Irregular treatment
2. Irregular visit

Study design

Open clinical trial

Enrollment and method of study

Patients with the above inclusion criteria was enrolled in the study after recording the basic parameters date and time 1 g of Peenisa choornam with 5 ml of honey was given twice a day after food for a duration 48 days. The patients were adviced to visit once in seven days for follow up and general observation, related to dose adaptation. Parallel clinical parameters were recorded.

The efficacy followup was taken at the end of 48 days.

Treatment schedule

Peenisa Choornam – 1 g twice a day after food

Vehicle – 5 ml of honey for 6 weeks

Duration - 48 days

Investigation

Blood routine

TC

DC

ESR

Hb

X-ray - PNS

Diet and medical advice

1. The patients were advised to avoid known allergens

2. Avoid smoking, cold stuff known allergic and irritating smells

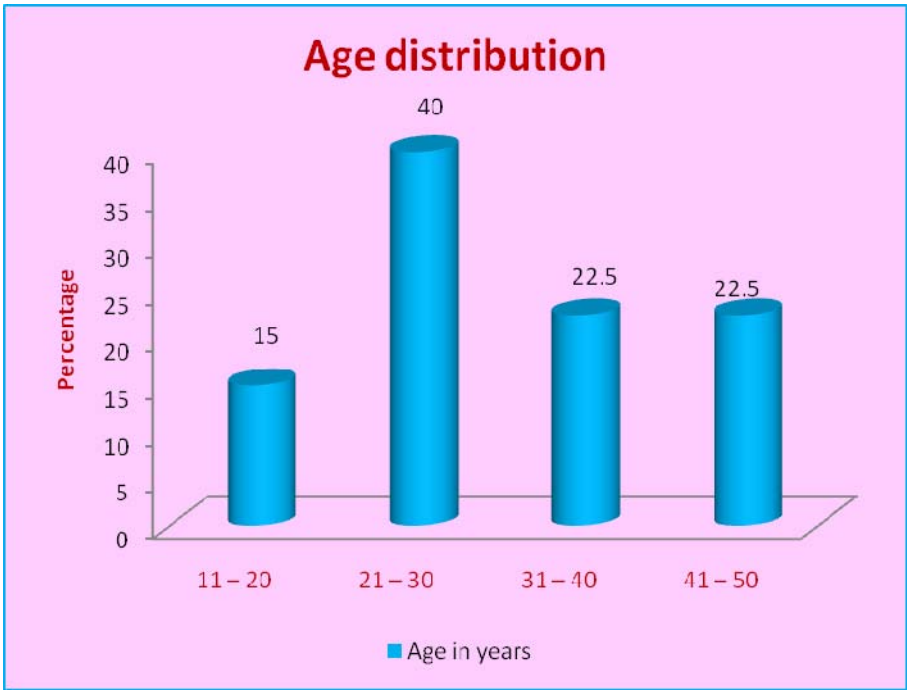
3. To avoid cold, damp climate and advised precautionary measures to be taken in cold climates.

Observation and results of clinical study

1. Age
2. Sex
3. Socio – economic status
4. Personal habits
5. Occupational status

Age Distribution

Sl.No.	Age in Years	No.of Patients	Percentage %
1.	11 – 20	6	15
2.	21 – 30	16	40
3.	31 – 40	9	22.5
4.	41 – 50	9	22.5

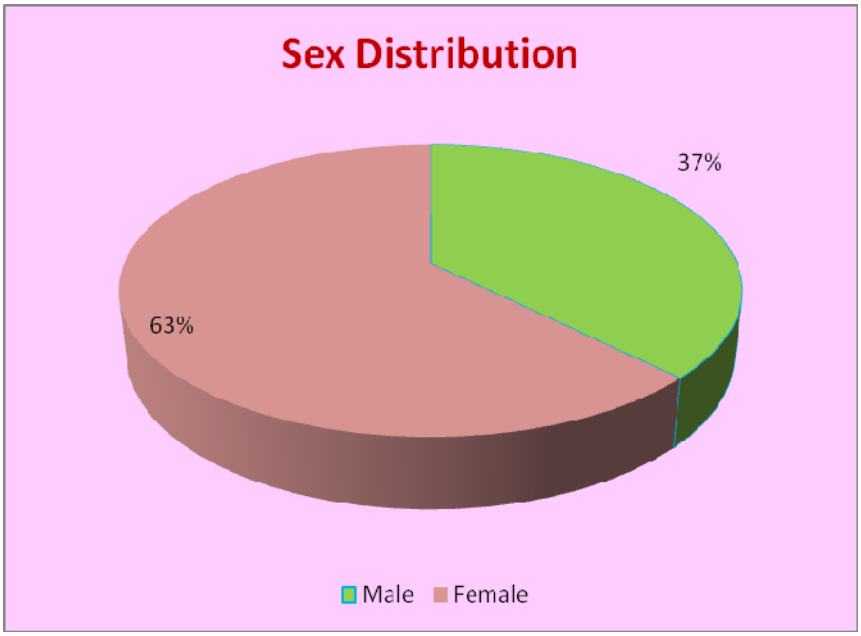


Inference

Among 40 patients, 40% of the cases lie in the age group of 21 – 30, 20% of cases belong to the age group of 31 – 40 and another 20% belong to the age group of 41 – 50 age group while 15% belong to the age group 11 – 20.

Sex Distribution

Sl.No.	Sex	No.of Patients	Percentage %
1.	Male	15	37.5
2.	Female	25	62.5

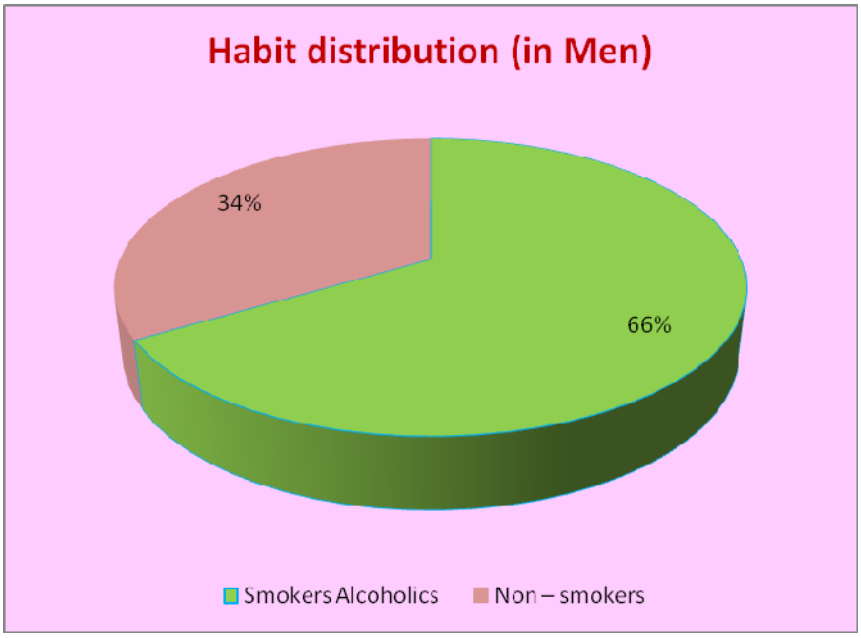


Inference

Among 40 patients 15 (37.5%) were male and 25 (62.5%) were female. The table shows women more prone to peenisam than men.

Habit distribution (in Men)

Sl.No.	Habit and Diets	No.of Patients	Percentage %
1.	Smokers Alcoholics	10	66.5
2.	Non – smokers	5	33.5

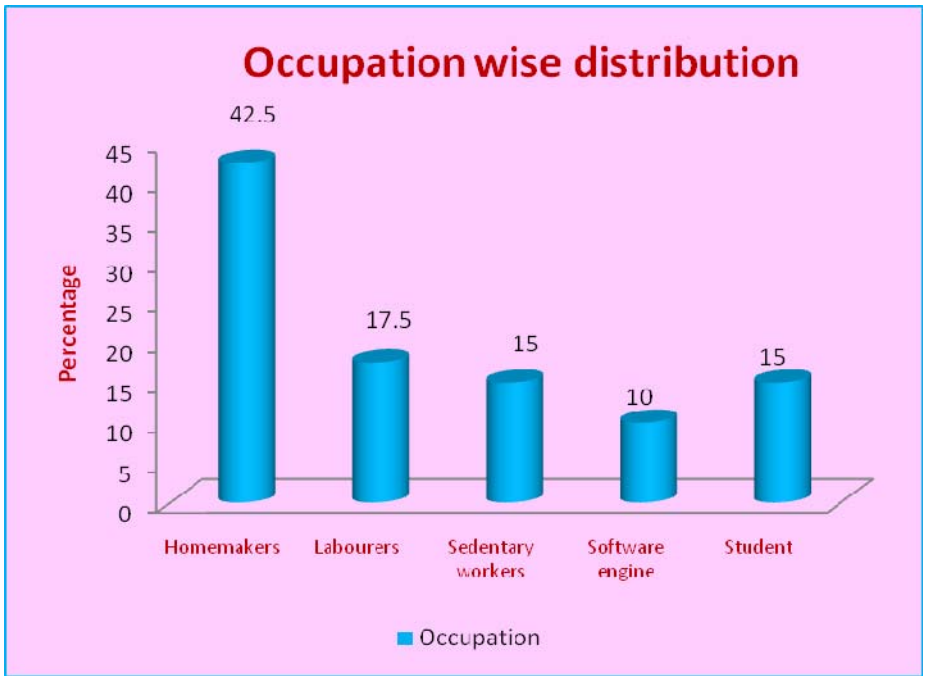


Inference

Among men who had sinusitis 66% were smokers and 33% were non smokers. Smokers seemed to be prone to sinusits.

Occupation wise distribution

Sl.No.	Occupation	No. of cases	Percentage
1.	Homemakers	17	42.5
2.	Labourers	7	17.5
3.	Sedentary workers	6	15
4.	Software engine	4	10
5.	Student	6	15

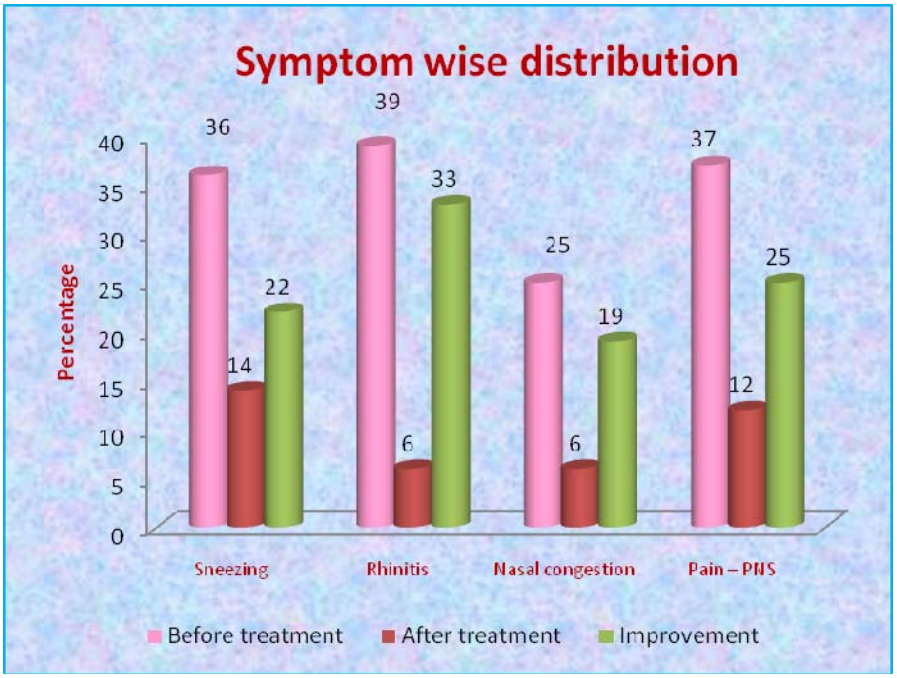


Inference

Occupation seemed to have a strong influence in peenisam. A major chunk is formed by People who do sedentary jobs especially people dealing computers eg. software engineers and computer mechanics.

Symptom wise distribution

Sl.No.	Symptoms	Before treatment	After treatment	Improvement	Percentage %
1.	Sneezing	36	14	22	61.11
2.	Rhinitis	39	6	33	84.6
3.	Nasal congestion	25	6	19	76
4.	Pain – PNS	37	12	25	67.56

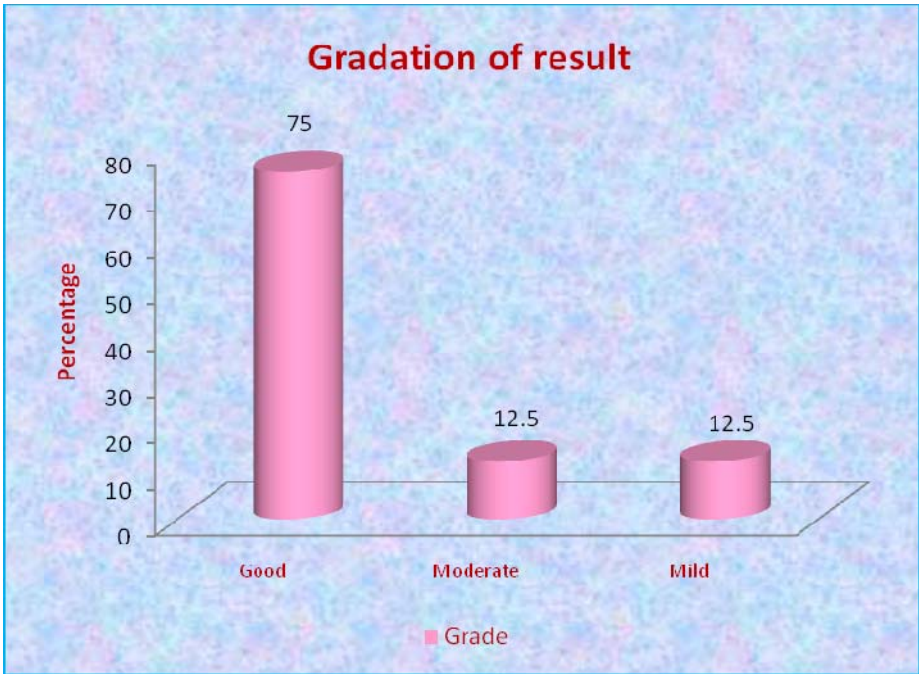


Inference

In the 40 patients, among 36 who had sneezing, 22 should good improvement. Among 39 who had Rhinitis, 33 should good improvement, among 25 who had Nasal congestion, 19 should good improvement, among 37 who had pain in the PNS, 25 should good improvement.

Gradation of result

Sl.No.	Grade	No.of Patients	Percentage %
1.	Good	30	75
2.	Moderate	5	12.5
3.	Mild	5	12.5



Inference

Patients who showed improvement from symptoms like rhinitis, nasal congestion sneezing and PNS pain within 3 weeks were considered to be having good improvement.

Patient who showed improvement in 2 -3 symptoms after 4 weeks were considered to be having moderate improvement.

Patients who showed improvement in one or 2 symptoms after 6 weeks were considered to be having mild improvement.

Among the 40 cases, 75% cases show good improvement, 12.5% of cases show moderate results, 12.5 of cases show mild, results.

Statistical analysis of subjective parameters observed before and after treatment of patients

S.No.	Parameter	Percentage			Statistical test criterion	Probability values	Significant
		Before treatment	Improvement After Treatment	Different			
1.	Sneezing	36.0 ± 5.3666	22.0 ± 3.5777	14.0 ± 0.012	16.432	P < 0.000	*** significant
2.	Rhinitis	39.0 ± 6.2610	33.0 ± 4.4721	6.0 ± 0.327	15.258	P < 0.001	*** significant
3.	Nasal congestion	25.0 ± 4.4721	19.0 ± 4.0332	6.0 ± 0.327	13.693	P < 0.000	*** significant
4.	Pain – PNS	37.0 ± 4.4721	25.0 ± 2.6833	12.0 ± 3.323	20.266	P < 0.000	*** significant

n = 40; values are expressed as mean ± S.D followed by student one sample ‘t’ test.

(***) P < 0.001 (**) P < 0.003 as compared with that of before and after treatment.

Thus the improvement in symptoms sneezing, rhinits, nasal congestion and pain in the PNS after treatment by Peenis a choornam is statistically significant.

DISCUSSION

According to Sarabendirar siraroga sigichai Peenisa choornam is used to treat peenisam.

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The anti bacterial activity of Solanum surrattense has been proved against E.coli, S.aureus. It accounts for the antibacterial activity of Peenisa choornam.

The anti microbial study of Peenisa choornam shows it is highly sensitive of E.coli, candida albicans, Klebsiella penumoniae, staphylococcus aureus and pseudomonas areuginosa.

The bacteria most often responsible for acute suppurative sinuisitis are staph aures, kleb pneumonia, H. influenzae, Peenisa choornam is highly effective for most of these organisms. So it is a highly effective antimicrobial agent for peenisam.

Biochemical and phytochemical analysis shows the presence of phenols, tannins, glycosides, trace of steroid, iron, phosphate and tannic acid.

Quantitative analysis shows the presence of zinc and selenium which are highly effective antioxidants used in the treatment of peenisam.

Acute toxicity study shows Peenisa choornam at the dose of 2000 mg/kg/p.o did not exhibit any mortality in rats.

Pharmacological study shows Peenisa choornam showed significant inhibition of histamine induced contraction of g.pig ileum and have significant anti-inflammatory and analgesic properties.

Its anti – inflammatory and analgesic properties possibly effectively heals the inflammed sinuses and nasal passages and is responsible for the reduction of pain in paranasal sinuses.

Allergic symptoms like sneezing and rhinitis are due to histamine Peenisa choornam has effective anti-histaminic action that reduces these symptoms. Solanum surrattense one of the constituents of peenisa choornam has been proved for its anti-histaminic activity.

During the clinical study, among men 66% who showed better improvement were non smokers and the rest were smokers.

This may be due to impaired ciliary movement and thickening of secretions. An adult produces approx. one litre of mucus a day in the nose and sinuses, most of which is carried through the nasal passages backward and then swallowed.

This constant cleansing mechanism is facilitated by microscopic hairs called cilia. Cigarette smoke slows down the sweeping action of cilia. The thin mucus blanket that covers the nose and sinus lining thickens and post nasal drainage can become quite thick and noticeable. Smokers are less likely than non smokers to have the same degree of prognosis after treatment.

Occupation did seem to have a strong influence on the disease. A considerable percentage was formed by software engineers and computer mechanics. This would have been due to allergens accumulated in the closed air-conditioned rooms. Uncleaned carpets and furniture’s in the room and the uncleaned air filteres of these rooms are said to trigger these symptoms in a lots of patients (This is also referred to as “sick building syndrome”). The immuno modulatory effects of Clerodendrum serum a constituent Peenism choornam possibly plays a role in enhancing the body’s defence mechanism against these day to day allergens.

The clinical study has been conducted on 40 patients. Among them, among the patients who had sneezing 61% showed good improvement.

Among the patients who had Rhinitis 84.6% showed good improvement.

Among the patients who had nasal congestion 76% showed good result.

Among those who had the pain in the paranasal sinuses 67% showed good improvement.

From the clinical study peenisa choornam was found to be effective in treating all the symptoms of peenisam.

The results of the above studies support the literature evidence that peenisa choornam is an effective drug in treating peenisam.

SUMMARY

- Peenisa choornam was selected to treat peenisam based on evidence in Siddha literature.
- All the constituents are easily available in the market, economical and the preparation is simple.
- The drug was purified prepared as Choornam and stored.
- Pharmacological studies were carried out at C.L. Baid Mehta college of pharmacology, Thorapakkam, Chennai.
- Phytochemical and biochemical analysis shows the presence of phosphate , tannic acid, iron trace of sulphate, sugar and steroids, proteins, tanins, phenols, saponis, aminoacid and
- Antimicrobial study proved it to effective against strep. pyogenes, staph aureus, K.pneumonia, P. aeruginosa and candida albican.
- Acute toxicity studies shows peenisa choornam did not exhibit any mortality in rats.
- Animal experiments proved that the drug has significant anti-histaminic, anti inflammatory and analgesis properties.
- Clinical trial showed peenisa choornam is effective in treating symptom like sneezing, rhinitis, nasal, congestion and pain of paranasal sinuses.
- Out of 40 patients 33 showed good improvement.

CONCLUSION

Peenisa choornam has significant anti-inflammatory analgesic and anti-histaminic activity in animal studies. Anti microbial studies shows it has potent antibacterial and antifungal activity. Evidences above and clinical study conclude beyond doubt that Peenisa choornam is clinically very effective in treating peenisam. Peenisa choornam needs further studies with regard to the mechanism of action to develop it as a potent anti-hisaminic.

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II A – CROSS SECTIONAL MICROSCOPIC VIEW OF

Strychnos potatorum seeds

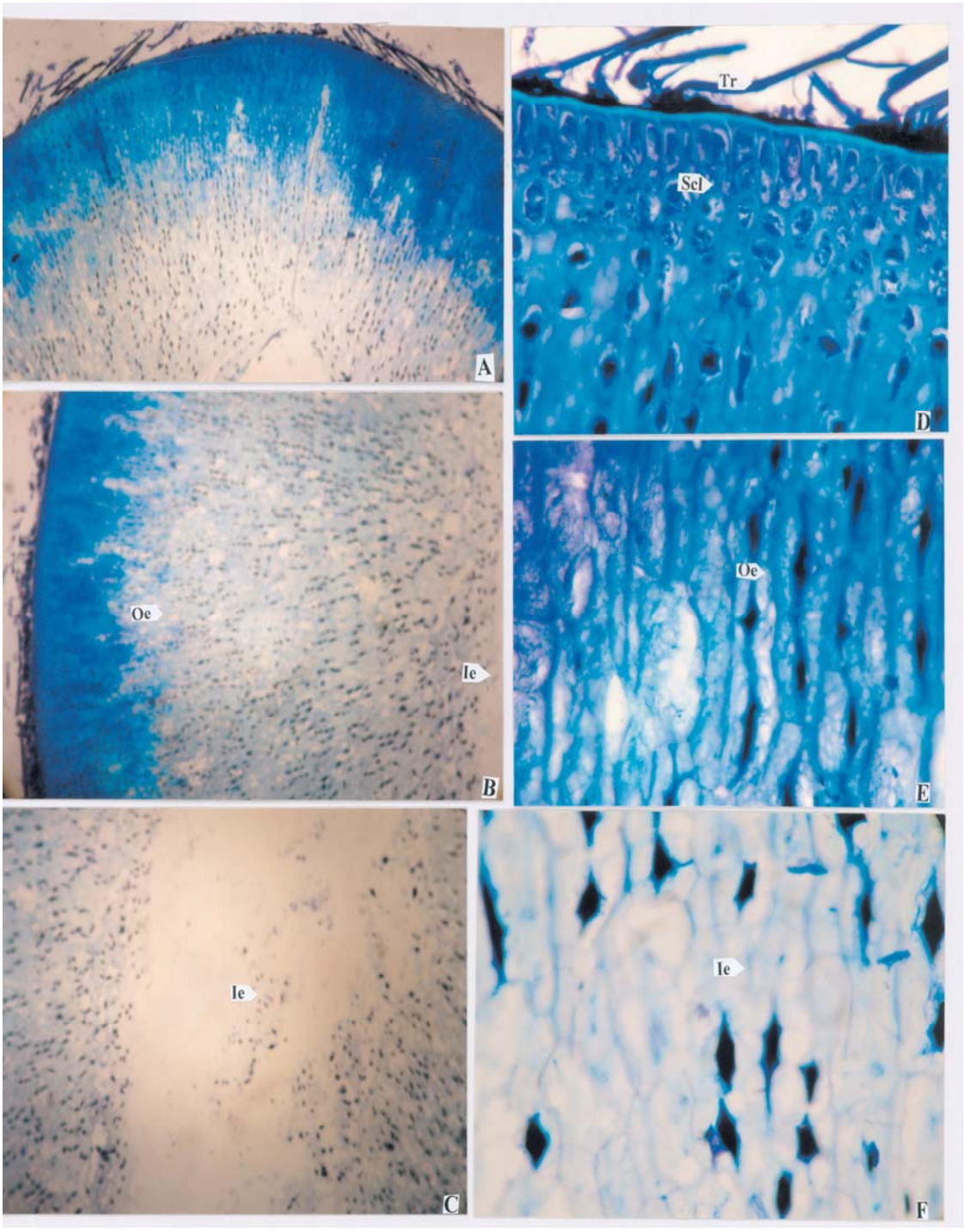


Fig IA - Plant

Fig II A - T.S of seed – outer region

B - T.S. of seed – middle region

C - T.S of seed - central region

D - T.S of seed showing testa & trichomes

E - Middle region – enlarged showing endosperm cells

F - Central region – enlarged

Abbreviations

Ie - Inner endosperm

Oe - Outer endosperm

Scl - Sclerendryma cell

Tr - Trichome

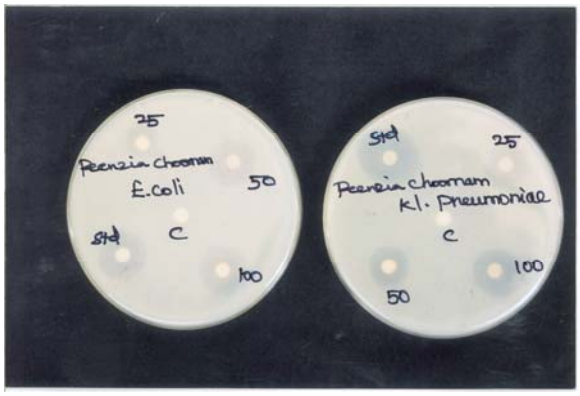
Strychnos potatorum

Thaetran karpam

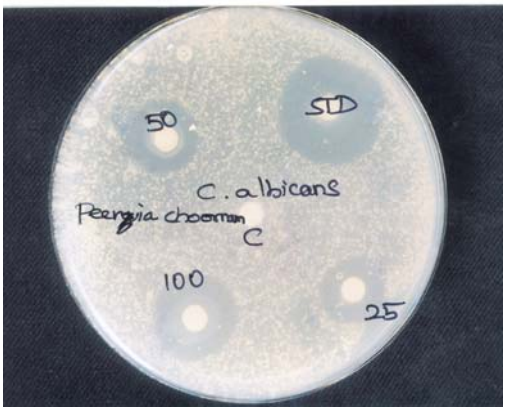
ANTI MICROBIAL STUDY

ZONE OF INHIBITION

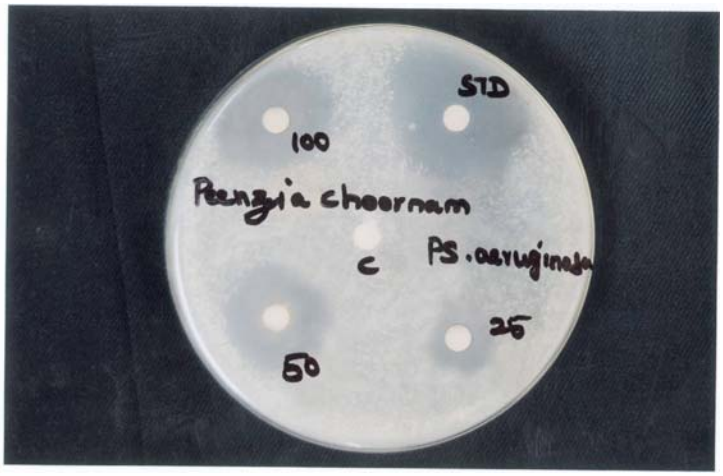
E.coli **kl.pneumoniae**



C.albicans **St. aureus**

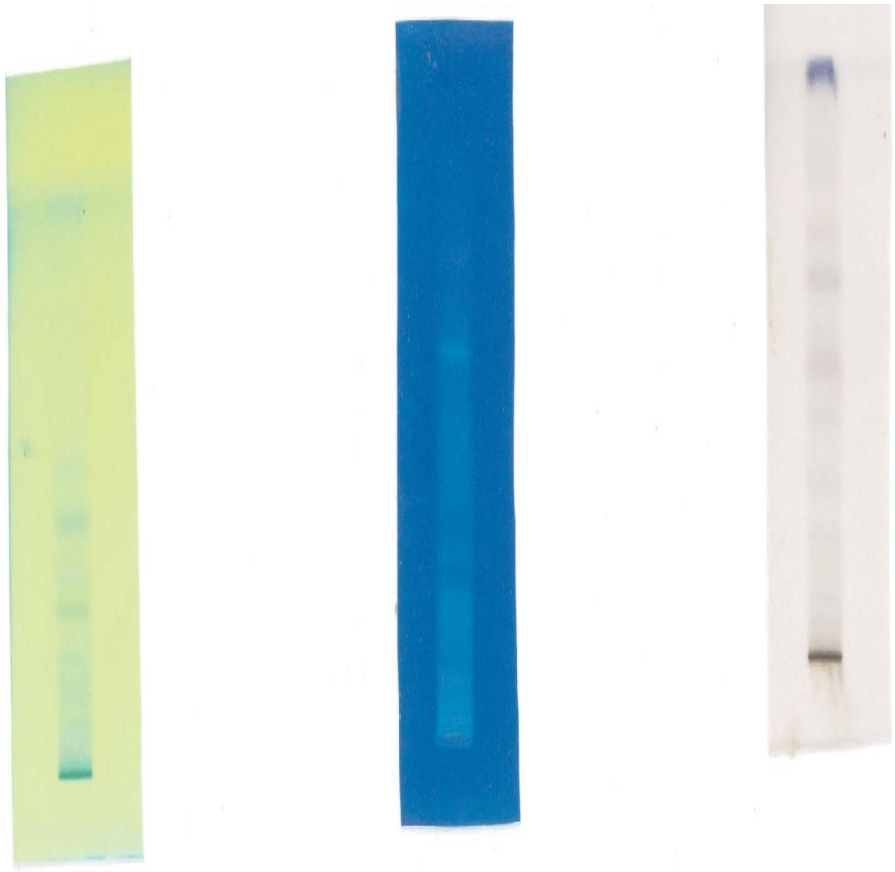


PS. aeruginosa



TLC of Strychnos potatorum

λ 254 nm **λ 366 nm** **With spray reagent**



Sodium Chloride impura

Rhus succedenae

Nardostachys jatamansi

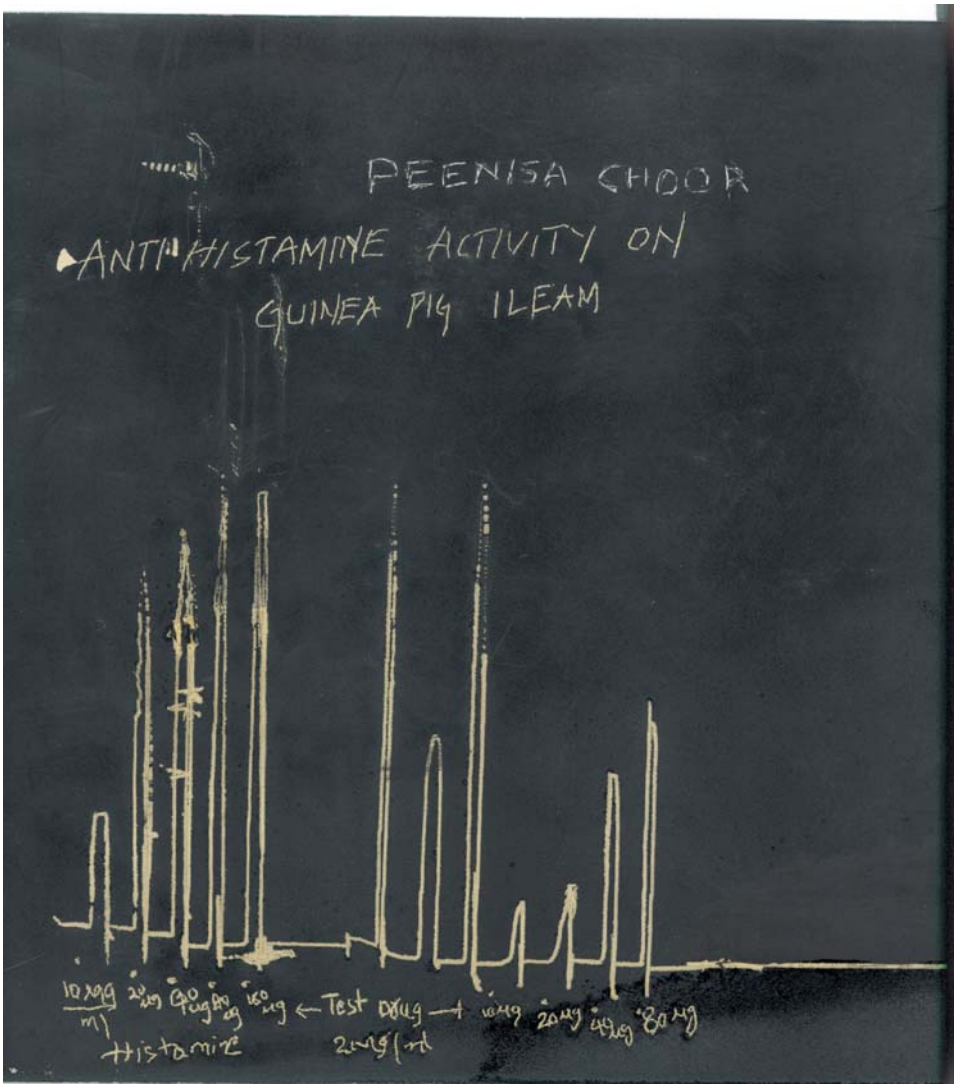
Picrorrhiza Kurroa

Clerodendrum serratum

Solanum surrattense

Peenisa choornam

Anti Histaminic Activity



IA – Strychnos potatorum

OBSERVATION AND RESULTS
CLINICAL STUDY ON PEENISA CHOORNAM IN THE MANAGEMENT OF PEENISAM

Sl. No.	OP No.	Name Age /Sex	Complaint	Duration	BT AT	Investigation														Result
						Blood									Se	Urine			Xray PNS	
						TC cell/cu.mm	DC %			ESR		Hb	Sug	Urea	CL	Sug	Alb	Dep		
							P	L	E	½	1									
1.	3642	Thiripura Sundari 20/F	Sneezing, Rhinitis nasal congestion PNS pain present	12.11.07 24.12.07	BT	10,000	64	32	4	4	9	10.5	87	18	157	Nil	Nil	Occ. pus cells	Bilateral maxillary haziness– Bilateral maxillary sinusits	Sneezing and congestion absent Rhinitis and pain present
					AT	9,900	56	30	4	4	7	10	85	17	155	Nil	Nil	Occ. pus cells		
2.	3598	Kumaresan 19/M	Pain PNS sneezing nasal congestion present	2.11.07 20.12.07	BT	9,700	59	34	7	15	34	10	88	18	157	Nil	Nil	Occ. pus cells	Frontal haziness – Frontal sinusitis	Congestion pain and sneezing reduced
					AT	9,500	56	30	5	10	30	9.5	80	19	159	Nil	Nil	Occ. pus cells		
3.	3948	Sathika 15/F	Rhinitis nasal congestion PNS pain present	3.11.07 4.1.08	BT	10,800	58	35	7	9	23	11.8	78	16	152	Nil	Nil	Few epi cells	Maxillary sinusitis	Congestion pain and rhinitis absent
					AT	10,000	52	34	6	7	20	12	80	17	154	Nil	Nil	Few epi cells		
4.	6313	Devi 31/F	Nasal congestion and pain PNS present	12.11.07 4.2.08	BT	10,700	63	30	7	12	20	11	95	16	148	Nil	Nil	2-4 epi cells	Left maxillary haziness - left maxillary sinusitis	Congestion moderately reduced pain absent
					AT	9,900	59	30	5	10	20	11.5	89	15	150	Nil	Nil	Occ. Pus Cells		
5.	953	Nirmal 26/M	Sneezing PNS pain, rhinitis present	26.11.07 21.1.07	BT	9,200	58	34	8	12	25	9	92	18	149	Nil	Nil	Occ. Pus Cells	Bilateral maxillary haziness – Maxillary sinusitis	Sneezing pain rhinitis reduced
					AT	9,000	54	32	5	12	20	9.5	90	17	154	Nil	Nil	Occ. Pus cells		
6.	1611	Mary 42/F	Sneezing, pain (PNS) rhinitis present	27.11.07 31.1.08	BT	10,200	63	31	6	4	30	10	89	16	150	Nil	Nil	Occ. Pus Cells	Bilateral maxillary Haziness – maxillary sinusitis	Sneezing present PNS pain reduced
					AT	10,000	54	30	5	10	20	9	90	15	152	Nil	Nil	Occ. Pus Cells		

Sl. No.	OP No.	Name Age /Sex	Complaint	Duration	BT AT	Investigation														Result
						Blood									Se	Urine			Xray PNS	
						TC cell/cu.mm	DC %			ESR		Hb	Sug	Urea	CL	Sug	Alb	Dep		
							P	L	E	½	1									
7.	1626	Lakshmi 40/F	Rhinitis, sneezing, congestion pain PNS present	27.11.07 22.1.08	BT	10,300	62	34	4	15	34	10.5	122	18	147	Nil	Nil	Occ. Pus Cell	Maxillary haziness - maxillary sinusitis	Rhinitis present congestion reduced
					AT	10,200	60	36	5	20	40	9.5	110	19	152	Nil	Nil	Few epi cells		
8.	1913	Lakshmi 50/F	Sneezing, nasal congestion and PNS Pain present	28.11.07 20.2.08	BT	9,800	60	34	6	20	47	10	115	17	152	Nil	Nil	Few epi cells	Right maxillary sinusitis	Congestion sneezing reduced PNS pain present
					AT	9,500	54	32	4	10	20	10	120	19	154	Nil	Nil	Few epi cells		
9.	1983	Geetha 27/F	Sneezing, Rhinitis, nasal congestion pain PNS present	28.11.07 31.1.08	BT	10,000	64	31	5	12	20	11	135	20	149	Nil	Nil	Occ pus cells	Bilateral maxillary haziness – Bilateral maxillary sinusitis	Sneezing reduced congestion present
					AT	9,000	52	30	4	10	15	10	140	18	148	Nil	Nil	Few epi cells		
10.	1946	Usha 30/F	PNS pain nasal congestion Rhinitis	28.11.07 24.7.08	BT	9,700	58	35	7	4	7	10	110	16	150	Nil	Nil	Occ Pus cell	Frontal and bilateral maxillary sinusitis	Congestion reduced pain present
					AT	9,400	52	31	5	10	20	10	120	15	147	Nil	Nil	1-2 epi cells		
11.	3126	Vasantha 48/F	PNS pain and congestion present	1.12.07 18.1.08	BT	9,000	53	42	5	5	12	9	90	19	137	Nil	Nil	Occ. pus cells	Bilateral maxillary sinusitis	Pain and Congestion absent
					AT	9,100	50	34	5	10	20	8.5	120	18	140	Nil	Nil	Occ. pus cells		
12.	3181	Menaka 25/F	Sneezing, Rhinitis nasal, pain PNS congestion present	1.12.07 26.2.08	BT	9,500	54	30	4	8	15	9.5	140	17	145	Nil	Nil	Occ pus cells	Bilateral frontal sinusitis	Sneezing and rhinitis reduced congestion present
					AT	9,300	57	38	5	10	15	10	125	19	157	Nil	Nil	Occ pus cells		

Sl. No.	OP No.	Name Age /Sex	Complaint	Duration	BT AT	Investigation														Result
						Blood									Se	Urine			Xray PNS	
						TC cell/cu.mm	DC %			ESR		Hb	Sug	Urea	CL	Sug	Alb	Dep		
							P	L	E	½	1									
13.	5242	Vasanth 24/M	Sneezing congestion PNS pain present	7.12.07 26.2.08	BT	9,400	57	39	4	2	3	9	210	17	152	Nil	Nil	Occ Pus cells	Left maxillary haziness – left maxillary sinusitis	Pain congestion and sneezing reduced
					AT	9,300	54	32	5	5	10	10	125	18	155	Nil	Nil	Occ pus cell		
14.	5252	Amudha 33/F	Pain PNS sneezing rhinitis present	7.12.07 21.2.08	BT	10,100	64	32	4	20	44	10.5	110	19	140	Nil	Nil	Occ Pus cell	Bilateral maxillary sinusitis	Pain rhinitis relieved sneezing present
					AT	9,800	51	30	4	15	30	10	90	17	138	Nil	Nil	Occ Pus cell		
15.	5559	Logeshwari 20/F	Pain PNS rhinitis nasal congestion present	8.12.07 26.2.08	BT	9,700	58	36	6	5	9	10.5	200	19	155	++	Nil	2-4 epi cells	Left maxillary haziness – Left maxillary sinusitis	Pain and rhinitis reduced
					AT	9,700	56	30	4	10	20	9.5	120	17	141	Nil	Nil	Occ. Pus cells		
16.	7049	Hariharan 20/M	Congestion sneezing rhinitis pain PNS present	12.12.07 6.2.08	BT	9,000	57	38	5	5	11	12	80	20	140	Nil	Nil	Occ pus cells	Frontal sinusitis	All symptoms reduced
					AT	9,800	54	14	5	10	16	11	88	23	155	Nil	Nil	Few epi cell		
17.	861	Bhuvane shwari 45/F	Rhinitis sneezing PNS pain present	24.12.07 14.2.07	BT	8,800	60	33	7	10	15	9	95	18	135	Nil	Nil	Occ pus cells	Normal study	Symptoms moderately reduced
					AT	9,000	57	35	5	15	30	8.5	82	17	138	Nil	Nil	Few epi cells		
18.	1047	Lavanya 26/F	Pain PNS sneezing and congestion present	25.12.07 21.2.08	BT	8,800	60	33	7	15	32	9	73	19	150	Nil	Nil	Occ pus cells	Haziness noted in bilateral maxillary sinuses – Bilateral maxillary sinusitis	PNS pain present sneezing and congestion reduced
					AT	9,500	59	30	4	10	15	9	85	17	135	Nil	Nil	Occ pus cells		

Sl. No.	OP No.	Name Age /Sex	Complaint	Duration	BT AT	Investigation														Result
						Blood									Se	Urine			Xray PNS	
						TC cell/cu.mm	DC %			ESR		Hb	Sug	Urea	CL	Sug	Alb	Dep		
							P	L	E	½	1									
19.	2097	Sudha 51/F	Sneezing and congestion present	27.12.07 14.2.08	BT	9,800	57	38	5	5	11	12	73	17	149	Nil	Nil	Occ pus cells	Bilateral maxillary haziness and turbinate thickening, maxillary sinusitis	Sneezing and congestion reduced
					AT	9,500	54	30	4	2	4	11	82	18	135	Nil	Nil	Occ pus cells		
20.	4232	Silambarasan 20/M	Sneezing rhinitis congestion present	3.1.08 27.3.08	BT	9,000	58	36	6	10	42	11	135	28	115	Nil	Nil	Occ pus cells	Right frontal haziness – Frontal sinusitis	Rhinitis and congestion absent sneezing present
					AT	8,900	52	30	4	10	15	10	112	20	135	Nil	Nil	Occ pus cells		
21.	5457	Jayaraman 27/M	Congestion Rhinitis pain PNS present	7.1.08 4.3.08	BT	9,900	39	28	7	2	13	12	116	25	145	Nil	Nil	Occ pus cells	Left maxillary haziness – Left maxillary sinusitis	Rhinitis present congestion relieved
					AT	9,800	42	30	4	10	15	8	125	20	150	Nil	Nil	Occ pus cells		
22.	5621	Subesh 31/M	Sneezing pain PNS present	7.1.08 26.2.08	BT	9,300	55	34	4	11	20	9	135	16	157	Nil	Nil	Occ pus cells	Bilateral maxillary haziness – Bilateral maxillary sinusitis	Pain and sneezing reduced
					AT	9,400	57	38	5	10	15	10.5	116	19	160	Nil	Nil	Occ pus cells		
23.	6144	Premnath 27/M	PNS pain sneezing rhinitis	9.1.08 20.3.08	BT	9,800	57	38	5	5	11	12	73	17	149	Nil	Nil	Occ pus cells	Left maxillary haziness – Left maxillary sinusitis	Pain rhinitis reduced
					AT	9,500	54	30	4	2	3	11	110	18	152	Nil	Nil	Few epi cells		
24.	7776	Arunkumar 21/M	Pain PNS congestion sneezing present	14.1.08 15.3.08	BT	9,400	58	35	7	2	3	12	105	28	159	Nil	Nil	Occ pus cells	Bilateral maxillary haziness – maxillary sinusitis	Pain sneezing reduced congestion present
					AT	9,200	60	30	4	11	30	11.5	92	25	147	Nil	Nil	Occ pus cells		

Sl. No.	OP No.	Name Age /Sex	Complaint	Duration	BT AT	Investigation														Result
						Blood									Se	Urine			Xray PNS	
						TC cell/cu.mm	DC %			ESR		Hb	Sug	Urea	CL	Sug	Alb	Dep		
							P	L	E	½	1									
25.	9584	Perumal 47/M	Rhinitis sneezing congestion pain PNS present	21.1.08 25.3.08	BT	9,500	58	36	6	12	25	11	108	23	172	Nil	Nil	Occ pus cells	Frontal and maxillary haziness, frontal and maxillary sinusitis	Nasal congestion reduced
					AT	9,300	50	29	4	10	15	9	95	20	172	Nil	Nil	Occ pus cells		
26.	459	Thulasi 45/F	Pain PNS sneezing congestion present	23.1.08 21.2.08	BT	10,600	62	32	6	20	44	9.5	87	25	179	Nil	Nil	Occ pus cells	Normal study	Pain and congestion reduced
					AT	9,900	60	24	4	10	20	10	95	20	150	Nil	Nil	Occ pus cells		
27.	655	Devi 43/F	Rhinitis sneezing PNS pain and congestion present	24.1.08 13.3.08	BT	9,700	55	41	4	42	80	10.5	91	27	181	Nil	Nil	Few epi cells	Bilateral maxillary sinusitis	Pain reduce rhinitis present
					AT	9,800	51	42	5	15	25	10	98	22	153	Nil	Nil	Occ pus cells		
28.	1211	Thenmozhi 30/F	Rhinitis sneezing nasal congestion PNS pain present	25.1.08 31.3.08	BT	9,700	59	34	7	15	34	10	88	18	157	Nil	Nil	Few pus cells	Bilateral maxillary haziness – bilateral maxillary sinusitis	Nasal congestion sneezing reduced
					AT	9,400	52	44	4	25	54	10	89	18	155	Nil	Nil	Few pus cells		
29.	2700	Selvam 33/M	Nasal congestion sneezing present	24.3.08 28.1.08	BT	9,200	58	36	6	2	3	11.5	83	21	169	Nil	Nil	Few pus cells	Frontal maxillary haziness – Frontal and maxillary sinusitis	Congestion and sneezing reduced
					AT	9,700	59	36	5	2	5	11	91	21	166	Nil	Nil	Occ pus cells		
30.	2608	Nasiburahman 66/M	Rhinitis sneezing PNS pain congestion present	29.1.08 25.3.08	BT	9,400	59	35	6	2	3	11	266	28	193	++	Nil	Few epi cells	Right maxillary haziness – Maxillary sinusitis	All symptoms relieved
					AT	9,500	36	32	4	10	15	10	200	26	190	++	Nil	Occ pus cells		

Sl. No.	OP No.	Name Age /Sex	Complaint	Duration	BT AT	Investigation														Result
						Blood									Se	Urine			Xray PNS	
						TC cell/cu.mm	DC %			ESR		Hb	Sug	Urea	CL	Sug	Alb	Dep		
							P	L	E	½	1									
31.	2997	Karpagam 59/M	Rhinitis congestion sneezing PNS pain present	30.1.08 21.2.08	BT	9,400	57	38	5	11	20	10.5	200	24	193	Nil	Nil	Occ. pus cells	Normal study	Rhinitis Nasal congestion reduced sneezing present
					AT	9,600	51	36	4	10	20	9	145	19	185	Nil	Nil	Occ pus cells		
32.	3770	Karuna Moorthi 52/M	Rhinitis sneezing nasal congestion present	31.1.08 26.3.08	BT	9,800	60	34	6	4	9	12	132	27	196	Nil	Nil	2-4 pus cell	Left frontal haziness – Left frontal sinusitis	All symptoms relieved
					AT	9,700	56	32	4	5	15	12.5	110	23	154	Nil	Nil	Few pus cells		
33.	3842	Sudha 40/F	Pain PNS sneezing nasal congestion present	1.2.08 21.3.08	BT	9,900	52	33	6	10	15	10	95	18	140	Nil	Nil	Occ pus cells	Bilateral maxillary haziness – Bilateral maxillary sinusitis	Symptoms relieved
					AT	9,400	49	29	5	5	10	9	90	16	137	Nil	Nil	Few pus cells		
34.	4680	Yasodha F/45	Pain congestion sneezing aggravates in the morning	4.2.08 21.3.08	BT	9,800	60	32	8	10	18	10.5	10.9	19	177	Nil	Nil	Few pus cells	Left maxillary haziness – Left maxillary sinusitis	Pain reduced sneezing present
					AT	9,500	59	30	6	10	15	9	95	15	153	Nil	Nil	Few pus cells		
35.	3987	Ravikumar M/43	Congestion pain sneezing present	2.2.08 21.3.08	BT	9,800	59	35	6	4	9	11	98	21	170	Nil	Nil	Occ. pus cells	Bilateral maxillary sinusitis	Pain and congestion reduced sneezing present
					AT	9,600	54	30	4	5	10	10.5	112	18	169	Nil	Nil	Occ. pus cells		
36.	8253	Malar F/31	Congestion rhinitis and sneezing pain PNS present	13.2.08 26.3.08	BT	9,000	60	33	7	15	40	9.5	81	18	160	Nil	Nil	Occ pus cells	Normal study	Congestion and sneezing present
					AT	9,200	62	35	4	10	20	10	110	17	153	Nil	Nil	Occ. pus cells		

Sl. No.	OP No.	Name Age /Sex	Complaint	Duration	BT AT	Investigation														Result
						Blood									Se	Urine			Xray PNS	
						TC cell/cu.mm	DC %			ESR		Hb	Sug	Urea	CL	Sug	Alb	Dep		
							P	L	E	½	1									
37.	9303	Balaji 22/M	Rhinitis and sneezing nasal congestion present	16.2.08 29.3.08	BT	10,000	62	32	6	2	5	11	98	21	143	Nil	Nil	Occ pus cells	Bilateral maxillary haziness - Maxillary sinusitis	Rhinitis sneezing congestion present
					AT	9,900	53	30	4	15	20	10.5	102	18	132	Nil	Nil	Occ Pus Cells		
38.	4386	Selvi 30/F	Pain – PNS, Rhinitis and sneezing nasal congestion present	29.2.08 30.3.08	BT	9,500	59	36	5	12	20	10.5	152	18	154	Nil	Nil	Few pus cells	Normal study	Congestion Pain, rhinitis and reduced sneezing present
					AT	9,700	54	32	4	10	20	11	110	20	142	Nil	Nil	Occ Pus cell		
39.	5977	Raguraj 36/M	Pain in the PNS sneezing and rhinitis congestion present	11.4.08 23.5.08	BT	9,500	59	35	6	7	1	12	91	21	153	Nil	Nil	Occ pus cells	Right maxillary haziness – Right maxillary sinusitis	Pain sneezing and rhinitis reduced sneezing present
					AT	9,300	45	36	4	10	20	14	120	18	148	Nil	Nil	Occ pus cells		
40.	6368	Jayashankar 23/M	Nasal congestion and sneezing pain PNS present	5.3.08 18.4.08	BT	9,600	58	36	6	2	5	11	110	18	137	Nil	Nil	1 – 2 epi cells	Bilateral maxillary sinusitis	Pain congestion reduced sneezing present
					AT	9,400	43	35	4	11	20	10	98	17	154	Nil	Nil	Occ. Pus cells		

BT - Before treatment
AT - After treatment
TC - Total count cells / cu.mm
DC - Differential count
ESR - Erythrocyte sedimentation rate

P - Polymorphs
L - Lymphocytes
E - Eosinophils
Sug - Blood sugar in mg/dl
Se CL - serum cholesterol in mg/dl

OBSERVATION AND RESULTS
CLINICAL STUDY ON THAETRAN KARPAM IN THE MANAGEMENT OF PAANDU NOI

Sl. No	OP No.	Name Age /Sex	Complaints	Duration	BT AT	Blood						Investigation								Result
														Se	Urine			Motion		
						TC cell/cu.mm	DC %			ESR		Sug	Urea	CL	Sug	Alb	Dep	Ova /cyst	Occ. Blood	
							P	L	E	½	1									
1.	9876	Sargunam 39/F	Pallor tiredness, loss of appetite present	19.1.0.07 1.12.07	BT	10,400	66	30	4	10	24	120	25	168	Nil	Nil	Occ. pus cells	Nil	Nil	All 3 symptoms relieved
					AT	10,600	69	29	5	15	30	114	18	145	Nil	Nil	Occ. pus cells	Nil	Nil	
2.	2439	Yasodha 59/F	Fatigue and loss of appetite present	29.10.07 13.12.07	BT	9,100	48	46	6	10	18	120	19	143	Nil	Nil	Occ. pus cells	Nil	Nil	Appetite developed tiredness absent
					AT	9,000	52	49	6	10	20	110	18	153	Nil	Nil	Occ. pus cells	Nil	Nil	
3.	2989	Kamini 18/F	Loss of appetite, pallor present	31.10.07 18.12.07	BT	9,100	58	36	6	10	22	98	16	170	Nil	Nil	Occ. pus cells	Nil	Nil	Loss of appetite and pallor present
					AT	9,000	62	32	6	5	15	92	21	152	Nil	Nil	Occ. pus cells	Nil	Nil	
4.	3597	Naveena 19/F	Fatigue and loss of appetite present	2.11.07 13.12.07	BT	9,500	58	36	4	12	25	111	18	132	Nil	Nil	Occ pus cells	Nil	Nil	Appetite developed tiredness reduced
					AT	9,800	69	42	4	10	20	115	26	143	Nil	Nil	1-2 epi cells	Nil	Nil	
5.	6133	Anuradha 19/F	Pallor, Tiredness present	12.11.07 4.12.07	BT	9,700	59	34	4	15	34	88	18	157	Nil	Nil	Occ. Pus Cells	Nil	Nil	Fatigue and pallor reduced
					AT	9,600	49	42	5	20	35	95	16	145	Nil	Nil	Few Pus cells	Nil	Nil	

Sl. No	OP No.	Name Age /Sex	Complaints	Duration	BT AT	Investigation														Result
						Blood								Se	Urine			Motion		
						TC cell/cu.mm	DC %			ESR		Sug	Urea	CL	Sug	Alb	Dep	Ova /cyst	Occ. Blood	
							P	L	E	½	1									
6.	4423	Sekar 60/M	Fatigue loss of appetite present	5.11.07 25.12.07	BT	9,800	54	41	5	10	20	88	23	155	Nil	Nil	Occ. Pus Cells	Nil	Nil	Appetite developed fatigue absent
					AT	9,900	59	48	6	10	15	90	18	147	Nil	Nil	Few Pus Cells	Nil	Nil	
7.	7665	Thangam 22/F	Fatigue loss of appetite present	16.11.07 26.12.07	BT	9,900	60	33	4	15	32	112	23	146	Nil	Nil	1-2 epi Cell	Nil	Nil	Appetite developed fatigue present
					AT	9,800	49	32	5	10	15	107	25	132	Nil	Nil	3-4 pus cells	Nil	Nil	
8.	7663	Subbulakshmi 55/F	Fatigue pallor present	16.11.07 27.12.07	BT	9,000	60	33	4	15	30	81	18	160	Nil	Nil	Few epi cells	Nil	Nil	Tiredness reduced appetite developed
					AT	8,990	62	35	5	20	30	123	16	155	Nil	Nil	Occ. pus cells	Nil	Nil	
9.	8147	Leela 23/F	Loss of appetite, fatigue pallor present	17.11.07 27.12.07	BT	9,500	58	36	5	12	25	110	18	147	Nil	Nil	Occ. pus cells	Nil	Nil	All symptoms reduced
					AT	9,200	46	32	4	10	25	98	23	135	Nil	Nil	Occ. pus cells	Nil	Nil	
10.	8267	Ramesh 50/M	Loss of appetite pallor tiredness present	17.11.07 10.1.08	BT	10,000	62	32	6	2	5	90	21	157	Nil	Nil	Occ. pus cells	Nil	Nil	All 3 symptoms reduced
					AT	9,500	59	35	6	4	9	112	19	142	Nil	Nil	Occ. pus cells	Nil	Nil	
11.	8269	Kamakshi 25/F	Loss of appetite pallor tiredness present	7.11.07 3.1.08	BT	9,000	54	41	5	5	11	88	23	155	Nil	Nil	Occ. pus cells	Nil	Nil	Pallor present fatigue appetite improved
					AT	9,800	57	38	5	10	16	91	18	145	Nil	Nil	1-2 epi cells	Nil	Nil	

Sl. No	OP No.	Name Age /Sex	Complaints	Duration	BT AT	Investigation														Result
						Blood								Se	Urine			Motion		
						TC cell/cu.mm	DC %			ESR		Sug	Urea	CL	Sug	Alb	Dep	Ova /cyst	Occ. Blood	
							P	L	E	½	1									
12.	9104	Jaya 23/F	Pallor fatigue loss of appetite present	20.11.07	BT	9,200	58	36	6	2	10	83	21	169	Nil	Nil	Occ. pus cells	Nil	Nil	Fatigue and loss of appetite reduced pallor present
					AT	9,700	59	36	5	2	5	101	16	145	Nil	Nil	Occ. pus cells	Nil	Nil	
13.	956	Agalya 15/F	Loss of appetite pallor tiredness present	26.11.07 15.1.08	BT	9,700	59	34	6	15	34	88	18	157	Nil	Nil	Occ pus cells	Nil	Nil	All 3 symptoms improved
					AT	9,600	50	33	5	10	20	105	23	163	Nil	Nil	Occ pus cells	Nil	Nil	
14.	3190	Sivamani 30/M	Loss of appetite pallor tiredness present	1.12.07 17.1.08	BT	9,300	57	39	5	12	20	125	17	147	Nil	Nil	Occ pus cells	Nil	Nil	Pallor present fatigue and loss appetite reduced
					AT	9,200	59	40	4	10	20	113	19	132	Nil	Nil	Occ pus cells	Nil	Nil	
15.	1973	Uma 17/F	Loss of appetite tiredness present	28.11.07 18.1.08	BT	8,900	49	32	6	10	35	130	22	159	Nil	Nil	Occ pus cells	Nil	Nil	Appetite improved fatigue present
					AT	9,000	52	45	5	10	20	117	25	135	Nil	Nil	1-2 epi cells	Nil	Nil	
16.	3730	Kasthuri 45/F	Pallor tiredness present	3.12.07 24.1.08	BT	10,200	64	29	5	2	5	83	28	169	Nil	Nil	Occ pus cells	Nil	Nil	Symptoms reduced
					AT	10,300	60	32	5	10	20	90	19	157	Nil	Nil	Occ pus cells	Nil	Nil	
17.	3964	Manju 12/F	Loss of appetite tiredness present	4.12.07 24.10.08	BT	9,400	47	48	5	5	9	85	17	132	Nil	Nil	Occ. pus cells	Nil	Nil	Good appetite present tiredness reduced
					AT	9,300	45	40	4	10	15	89	19	139	Nil	Nil	Occ pus cells	Nil	Nil	

Sl. No	OP No.	Name Age /Sex	Complaints	Duration	BT AT	Investigation														Result
						Blood								Se	Urine			Motion		
						TC cell/cu.mm	DC %			ESR		Sug	Urea	CL	Sug	Alb	Dep	Ova /cyst	Occ. Blood	
							P	L	E	½	1									
18.	9126	Raguraj 64/M	Loss of appetite pallor tiredness present	18.12.07 27.03.08	BT	9,800	58	36	6	12	25	109	23	172	Nil	Nil	Occ pus cells	Nil	Nil	All 3 symptoms reduced
					AT	9,900	59	39	5	10	15	120	17	157	Nil	Nil	Occ pus cells	Nil	Nil	
19.	9515	Loganathan 85/M	Loss of appetite pallor tiredness present	20.12.07 7.2.08	BT	10,000	62	32	6	20	44	87	25	179	Nil	Nil	Occ pus cells	Nil	Nil	All 3 symptoms reduced
					AT	9,900	60	30	5	10	20	108	20	150	Nil	Nil	Occ pus cells	Nil	Nil	
20.	166	Pushpa 38/F	Loss of appetite tiredness present	22.12.07 4.3.08	BT	9,200	58	36	6	10	22	120	18	162	Nil	Nil	Occ pus cells	Nil	Nil	Loss of appetite and tiredness present
					AT	9,100	57	30	5	10	15	114	23	147	Nil	Nil	Occ pus cells	Nil	Nil	
21.	1917	Janani 15/F	Loss of appetite pallor tiredness present	27.12.07 14.2.08	BT	9,000	48	46	6	10	18	119	16	136	Nil	Nil	Occ. pus cells	Nil	Nil	Pallor reduced appetite fatigue present
					AT	9,200	52	49	5	5	15	97	23	149	Nil	Nil	Occ. pus cells	Nil	Nil	
22.	7098	Jothi 36/F	Loss of appetite pallor tiredness present	11.10.08 1.3.08	BT	8,700	55	41	4	34	60	106	19	165	Nil	Nil	Few epi cells	Nil	Nil	All 3 symptoms reduced
					AT	9,000	56	45	5	20	36	112	17	153	Nil	Nil	1-2 epi cells	Nil	Nil	
23.	872	Dhanam 43/F	Loss of appetite pallor tiredness present	18.1.08 31.3.08	BT	10,600	66	30	4	10	24	120	25	120	Nil	Nil	Occ pus cells	Nil	Nil	All 3 symptoms reduced
					AT	10,300	60	39	4	5	15	119	20	107	Nil	Nil	Occ. pus cells	Nil	Nil	

Sl. No	OP No.	Name Age /Sex	Complaints	Duration	BT AT	Investigation														Result
						Blood								Se	Urine			Motion		
						TC cell/cu.mm	DC %			ESR		Sug	Urea	CL	Sug	Alb	Dep	Ova /cyst	Occ. Blood	
							P	L	E	½	1									
24.	9889	Shanmugam 70/M	Loss of appetite pallor tiredness present	22.1.108 10.3.08	BT	8,700	51	44	5	4	9	93	25	180	Nil	Nil	Occ. pus cells	Nil	Nil	All 3 symptoms reduced
					AT	9,000	49	32	5	10	15	87	19	173	Nil	Nil	Occ. pus cells	Nil	Nil	
25.	9965	Bakianathan 65/M	Loss of appetite pallor tiredness present	22.1.08 11.3.08	BT	9,200	58	36	6	10	22	103	20	158	Nil	Nil	Occ. pus cells	Nil	Nil	Pallor and fatigue present appetite improved
					AT	9,000	55	32	4	10	15	115	22	145	Nil	Nil	Occ. pus cells	Nil	Nil	
26.	353	Dhesamma 35/F	Loss of appetite tiredness present	23.1.08 13.3.08	BT	9,000	57	38	5	12	20	78	23	170	Nil	Nil	Occ. pus cells	Nil	Nil	Appetite improved tiredness present
					AT	9,100	59	39	6	12	24	95	17	165	Nil	Nil	Occ. pus cells	Nil	Nil	
27.	771	Gayathri 19/F	Pallor tiredness present	24.1.08 6.3.08	BT	9,200	54	40	6	25	54	70	17	149	Nil	Nil	Occ. pus cells	Nil	Nil	Both symptoms reduced
					AT	9,000	54	32	6	20	30	90	20	153	Nil	Nil	Occ. pus cells	Nil	Nil	
28.	796	Banurega 36/F	Loss of appetite pallor present	24.1.08 27.3.08	BT	9,900	52	41	6	11	20	91	18	177	Nil	Nil	Occ. pus cells	Nil	Nil	Pallor present appetite improved
					AT	9,700	56	42	5	10	25	83	20	163	Nil	Nil	Occ. pus cells	Nil	Nil	
29.	773	Sellammal 55/F	Loss of appetite pallor tiredness present	24.1.08 13.3.08	BT	10,000	63	31	6	25	54	99	27	183	Nil	Nil	Occ. pus cells	Nil	Nil	Appetite improved fatigue and pallor present
					AT	9,900	60	32	5	20	35	103	19	174	Nil	Nil	Occ. pus cells	Nil	Nil	

Sl. No	OP No.	Name Age /Sex	Complaints	Duration	BT AT	Blood						Investigation								Result
														Se	Urine			Motion		
						TC cell/cu.mm	DC %			ESR		Sug	Urea	CL	Sug	Alb	Dep	Ova /cyst	Occ. Blood	
							P	L	E	½	1									
30.	1646	Kamalammal 60/F	Loss of appetite pallor present	27.1.08 6.3.08	BT	10,000	57	29	34	20	46	112	20	163	Nil	Nil	Occ. pus cells	Nil	Nil	Pallor present appetite improved
					AT	10,100	49	32	6	20	35	115	17	157	Nil	Nil	Occ. pus cells	Nil	Nil	
31.	2668	Meenakshi 65/F	Loss of appetite pallor tiredness present	29.1.08 31.3.08	BT	9,800	57	39	5	5	11	74	17	150	Nil	Nil	Occ. pus cells	Nil	Nil	Fatigue persists appetite improved pallor reduced
					AT	9,700	59	38	3	10	20	112	20	135	Nil	Nil	Occ. pus cells	Nil	Nil	
32.	45	Suharbanu 28/F	Loss of appetite pallor tiredness present	22.1.08 13.3.08	BT	9,300	57	38	5	12	20	99	19	158	Nil	Nil	Occ. pus cells	Nil	Nil	All 3 symptoms reduced
					AT	9,100	59	32	4	12	24	102	21	154	Nil	Nil	Occ. pus cells	Nil	Nil	
33.	3432	Dhayalan 35/M	Loss of appetite pallor tiredness present	31.1.08 31.3.08	BT	8,700	55	41	4	2	5	100	21	167	Nil	Nil	Occ. pus cells	Nil	Nil	Appetite improved pallor and fatigue reduced
					AT	9,000	56	42	5	5	10	97	17	152	Nil	Nil	Occ. pus cells	Nil	Nil	
34.	545	Sasikala 65/F	Loss of appetite pallor tiredness present	31.1.08 20.3.08	BT	9,200	58	34	6	12	25	92	22	143	Nil	Nil	Occ. pus cells	Nil	Nil	All 3 symptoms reduced
					AT	9,100	60	35	5	10	20	88	19	135	Nil	Nil	Occ. pus cells	Nil	Nil	
35.	3758	Kasiamma 65/F	Pallor tiredness present	1.2.08 27.3.08	BT	9,500	59	35	4	20	30	85	17	140	Nil	Nil	Occ. pus cells	Nil	Nil	Pallor present tiredness reduced
					AT	9,400	47	32	4	10	15	99	21	152	Nil	Nil	Occ. pus cells	Nil	Nil	

Sl. No	OP No.	Name Age /Sex	Complaints	Duration	BT AT	Investigation														Result
						Blood								Se	Urine			Motion		
						TC cell/cu.mm	DC %			ESR		Sug	Urea	CL	Sug	Alb	Dep	Ova /cyst	Occ. Blood	
							P	L	E	½	1									
36.	8975	Bhavani 35/M	Loss of appetite pallor tiredness present	18.2.08 1.4.08	BT	8,700	53	43	4 2	15	34	87	18	168	Nil	Nil	Occ. pus cells	Nil	Nil	Fatigue and Pallor reduced tiredness present
					AT	9,100	52	49	5	10	15	94	23	172	Nil	Nil	Occ. pus cells	Nil	Nil	
37.	6728	Saraswathi 40/F	Loss of appetite tiredness present	6.3.08 9.4.08	BT	10,200	64	29	6	30	54	83	28	179	Nil	Nil	Occ. pus cells	Nil	Nil	Loss of appetite present fatigue reduced
					AT	9,600	53	35	4	10	15	105	25	145	Nil	Nil	Occ. pus cells	Nil	Nil	
38.	6003	Latha 42/F	Loss of appetite tiredness present	4.3.08 10.4.08	BT	9,700	55	41	4	15	20	135	19	147	Nil	Nil	Occ. pus cells	Nil	Nil	Fatigue present appetite improved
					AT	8,900	49	39	5	20	40	142	22	165	Nil	Nil	Occ. pus cells	Nil	Nil	
39.	6776	Srinidhi 28/F	Loss of appetite pallor tiredness present	6.3.08 12.4.08	BT	9,700	59	33	7	15	30	87	19	153	Nil	Nil	Occ. pus cells	Nil	Nil	Loss of appetite present tiredness reduced
					AT	8,900	49	39	5	20	40	142	22	165	Nil	Nil	Occ. pus cells	Nil	Nil	
40.	3603	Priya 18/F	Loss of appetite pallor tiredness present	27.2.08 12.4.08	BT	9,000	57	36	7	20	38	152	19	153	Nil	Nil	Occ. pus cells	Nil	Nil	All 3 symptoms reduced
					AT	9,200	49	32	5	15	25	147	22	147	Nil	Nil	Occ. pus cells	Nil	Nil	

BT - Before treatment
AT - After treatment
TC - Total count cells / cu.mm
DC - Differential count
ESR - Erythrocyte sedimentation rate

P - Polymorphs
L - Lymphocytes
E - Eosinophils
Sug - Blood sugar in mg/dl
Se CL - serum cholesterol in mg/dl