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My thanks to our librarian Mr.DHANDAPANI M.Com, M.Lis

Finally I render this work to my parents.
INTRODUCTION

The WHO [world health organization] document that the vast majority of people (75 – 80%) living in the developing world and industrialized nation prefer to traditional remedies for common ailments and chronic disease. Due to the light cost of modern Hospitalization and expensive drugs and toxic with iatrogenic factors.

Siddha system of medicine is a holistic medicine to treated the individual as a whole and not the isolated case of the disease as found in modern medical science

Siddha medical science give importance to individual body constitution and customize the treatment based on humoural [MUKKUTRAM] pancha pootha concepts.

The Vaidhyam (Treatment ) is also based upon five Properties of the drugs as suvai (Taste), Gunam (Character) Veeriyam (potency) Private class Mahimai (Action)

The plant kingdom has several thousands of species. Siddhar’s have Identified certain plants to posses medicinal properties and named as Mooligaikal.

Nilavembu is one among them to cure more diseases especially - NEER PENISAM(Allergic Rhinitis)
Neer Peenisam strongly correlated with allergic rhinitis for its resemble of signs and symptoms approximately 2-6% of Indian population are prevalent for this disease in which Bronchial asthma seen in 50% cases. Pharyngitis, otitis media and deafness are as a result of sino nasal pathology. There is a need for holistic medicine of Indigenes origin. Which has to be effective non-toxic affordable. Especially for those who suffering from allergic Rhinitis.

This dissertation along with siddha perspective. Modern medical science have also been included to evaluate the efficacy of Nilavembu Chooranam to alleviate the disease Neer peenisam.
AIM AND OBJECTIVES

AIM
To evaluate the efficacy of Nilavembu Chooranam (Powder of Andrographis- paniculata) in the management of Neer peenisam.

OBJECTIVES:
A Systematic study to assess the efficacy of Nilavembu Chooranam was aimed and the main objectives of the study are:

- To study the pharmacognostic features of the Nilavembu (Andrographis- paniculata) which include correct taxonomic identification of the plant macro and microscopical details of the part used as medicine.

- To subject the Drug to physio–chemical Standardization.
- To Identify the phyto chemicals present in NVC
- To Subject the total drug to thin layer chromatography to determined. The RF Values.
- To study the NVC to bio chemical analysis
- To study the acute toxicity of NVS for fixation of Therapeutic dosage.
- To Study the Pharmacological activity of NVC.
- To ascertain the clinical efficacy of the drug
- MAPA - 2000 – 06  3342 V 22 Page 694.
REVIEW OF LETERATURE

I. GUNAPADAM ASPECT

epyNtk;G

Botanical Name : Andrographis Paniculata (Burm. F) wall.ex.nees

NtWngah;fs : rpul;Fr;rp> fhz;lfk;> fpuhjfk;> fphpahj;J> fpuhfp ehLepyNtk;G> mdhjphpajpj;jk; fLepk;gk; fhz;lk;> Nfhfzk; nfhw;wpiy Nfhfejk; jpk;jk; Gepk;gk;. G+kpehafd;.

,J xU rpW nrB> epyNtk;ghdJ 1½ mb ePskhfTk; ehd;F %iyfs; cs;sjhfTk; nfhQ;rk; fWg;ghfTk; ,Uf;Fk;.
gad;gLk; cWg;G : ,iy> jz;L.

Fzk;

Rit : ifg;G
jd;ik : ntg;gk;
gphpT : fhh;g;G
tPhpak; : ntg;gk;.

nra;iffs; :-
grpj;Jp;J}z;b : Stomachic
cukhf;fp : Tonic
clw;Nwe;jp  :  Alternative
ntg;gKz;lhf;fp  :  Stimulant

nghJ Fzk;  :-
thj Ruk; ePNuw;wk; khw;Wr; RuNhjNl
fhjnkd Xlf; fbAq;fhz; - khjuNr!
gpj;j kaf;fDf;Fk; gpd;G njsp itf;nfhLf;Fk;
Rj;j epy Ntk;gpd; njhopy;.

(mfj;jpah; FzthRlk;)
,jdhy; tspRuk; ePh;f;Nfhit, Ruq;fs;, kaf;fk; ,itfs; ePq;Fk; Gj;jpf;Fj;
njspTz;lhFk;.

tof;F Kiwfs;  :-
  ➢  epyNtk;G 15 fpuhk; nte;ePhpy; Nrh;j;J %b xU kzp Neuk;
nrd;w gp;d; tbfl;b jpdk; 15 -30 k; yp msT 2-3 Kiw nfhLf;f
ePhNfhit tsp Ruk; Ruq;fs; Nghd;w Neha;fSf;F
nfhLf;fhyk;

  ➢  ,jd; ,iyr;rhw;iwf; Foe;ijfl;Fz;lhFk; tapw;Wg; nghUKYf;Fk; ,
  fopr;rYf;Fk; toq;fhyk;.

eyNtk;G FbePh;
  1.  epyNtk;Gr;r%k;   FbePh;
  2.  ntl;b Nth;  30-60kpyp fpahok;
  3.  tpyhkpr;rNth;  fhiy khyi
4. re;jdj; Jqs; ,UNtis
5. Nga:g;Gly; r%yk;
6. Nfhjuf; fpoq;F
7. Rf;F
8. kpsF
9. gw;glhfk;.

epyNtk;G NrUk; gpwkUe;Jfs; jPUk; Neha;fs;

1. FLr; ahjp f\hak; - Fsp; Ruk;
2. epyw;Fkpo; vz;nza; - cs khe;ij
3. th]hjp f\hak; - Fsp; Ruk;
4. Fl[hjp f\hak; - Ruk;
5. rpW gQ;r %yf; f\hak; - rpj;j gpuk;k rd;jp
6. Nfh\;lhjp f\hak; - fhrk;
7. g+epk;; ghjp #uzk; - tprf;fha;r;ry;
8. gpUfj; fpuhj ijyk; - tprf;fha;r;ry;
9. rpw;w Kl;b FbePh; - tspKg;gpzp Ruk;
10. fPh;guhj;JNt FbePh; - Fsp; Ruk;
BOTANICAL ASPECTS
ANDROGRAPHIS PANICULATA (BURM –F) WALL EX NEES.
SYN: JUSTICIA PANICULATA- BURM.F

TAXONAMY

KINGDOM - PLANT KINGDOM.
DIVISION - ANGLOSPERM
CLASS - DICOTYLEDONE.
SUBCLASS - GAMOPETALAE.
SERIES - BICARPELLATAE.
ORDER - PERSONALES.
TRIBE - JUSTCIEAE.
FAMILY - ACANTHACEAE.
GENUS - ANDROGRAPHIS.
SPECIES - PANICULATA.

VERNACULAR NAMES
HINDI - KIRYAT, CHARAYETAH, MAHATITA
BENG - KALMEGH, MAHATITA
GUJ - KIRYATA, OLIKIRYATO, KARIYATU
ANDROGRAPHIS PANICULATA

PHARMACOGNOSY

Macroscopic
An erect glabrous, Annual, much branched herb up to 90 cm high, branched sharply quadrangular. Often narrowly winged in the upper part. Leaves simple opposite, short – petiole, 2-7 cm long and 1-3 cm wide, lance late, glabrous, slightly undulate, pale beneath base tapering, main nerves 4-6 pairs, slender; petioles 0-6 mm long. Flowers pink on solitary, auxiliary and terminal panicles. Capsules erect, linear – oblong, compressed, longitudinally furrowed on the broad faces, thinly glandular hairy; seeds numerous, sub-quadrate.

Leaf
Both the upper and lower epidermii show the presence of glandular trichomes. Lithocysts fairly large on upper epidermis as compared to the lower. Lower epidermis has a layer of wavy walled cells and diacytic type of stomata, which is absent on the upper surface.
STEM
Epidermis has glandular and non-glandular trichomes. Collenchyma densely found at the corners of the stem. Secondary phloem consists of acicular fibre mainly. Xylem fibre are elongated and thickened. Vessels with scalariform and spiral thickenings. Parenchyma cells of the pith contain small acicular crystals of calcium oxalate.

CHEMICAL CONSTITUENTS
Andrographolide, a furanoid diterpene (leaves, root, whole plant); 2’5-dihydroxy 7,8- dimethoxy flavone 2’-0 beta (D)- glucoside,3 B-hydroxy -5 stigmasta 9 ( 11), 22(23)-diene, andrographin, glycoside–neoandrographolide, flavone -5 hydroxy – 7,8,2’,3’-tetramethoxyc flavone,5-hydroxy- 7,8 flavanone,
A-sitosterol, apigenin, Mono-oxygenethyl- wigthin, 5 hydroxy 7,8 dimethoxy dimethoxy flavone, 5-hydroxy 3,7,8,2 tetramethoxy flavone 7-0 methrlwoconin, apigenin – 7-4’ – di-o-methy, ethe,r flavone glucosides, Andro graphidines, A,B,C,D,E & F (root); -B-sitosterol glucoside, bitter substances, deoxyandrographolide – 19-B glucoside, neoandrographolide, caffeic chlorogenic , dicafeoylquinic acids, panicolide, myristic acid, carvacrol, eugenol, hentriacontane, tritricontane, andrographone, horroandrographolide, a-b unsaturated lacton (leaves), andrograpanin.

ADULTERANTS / SUBSTITUTES
The drug s often substituted for or mixed with the genuine ‘Chirata’ [swertia chirayita] ( Roxb. Ex. Fleming) Karst.] but can be distinguished from the latter easily by the green colour of its stem , numerous erect, slender, opposite branched and its lanceolate green leaves . kalmegh is also adulterated with andrographis echioides Nees. Found in tropical India and in dry districts of maharashtra, rajasthan, and tamil nadu. However, both swertia chirayita and Andrographis echioides are devoid andrographolide, the major bioactive constituent of kalmegh

SAFETY ASPECTS
Gastric discomfort, vomiting and loss of appetite may be caused by the large oral doses of the drug. Injection of the crude drug extract may lead to anaphylactic shock.

PHARMACOLOGY:
Andrographolide and related diterpenes are hepatoprotective agents. These compounds also possess choleretic,antidiarrhoeal, immunostimulant,bitter tonic, febrifuge and anti-inflammatory activities

10
TLC IDENTITY TEST

Test solution: Extract 5g of powdered drug with methanol (50ml) in a soxhlet apparatus (6hr). Evaporate the methanol extract under reduced pressure. Dissolve 10mg of residue in 1 ml methanol.

Reference solution: Prepare a solution containing 1mg each of andrographolide, neoandrographolide and andrographiside in 1.5 ml methanol.

Solvent System: Chloroform : Methanol (7:1)

Procedure: Apply 5 μl each of test solution and reference solution on two different tracks on a precoated silica gel 60 plate (5x20 cms) of uniform thickness (0.2 mm). Develop the plate in the solvent system to a distance of 15 cm.
**Scanning:** scan densitometrically at 223 nm both reference and test solution tracks and record the fingerprint profiles. Quantitation of andrographolide, neoandrographolid and andrographiside in the test solution can be done by comparing their peak areas with those present in the reference solution track.

Visualization of spots (post scanning): spray the plate with 20% sulfuric acid in methanol and heat at 120°C for 10 min.

Evaluation: in day light: Three different spots visible in reference solution: andrographolide (Rf 0.70, brown), neoandrographolide (Rf 0.39, pink) and andrographiside (rf 0.12, Violet) and their corresponding spots in test solution. Other visible spots in the test solution include a light violet spot (Rf. 0.23), a light brown spot just below the spot corresponding to andrographiside, and an unmoved dark green spot at the base.
ASSAY / ANALYTICAL METHOD

HPLC Analysis of andrographolide – the major bio-active constituent

Mobile phase : Chloroform : Methanol (9:1)

Flow rate : 0.7 ml / min

Column : 5 μm spherical silica (3.0 mm x 15 cm)

Detector : UV at 254 nm

**Standard Preparation** : Prepare a solution of known concentration (conc. Rang: 05-10 mg/ml) of andrographolide in mobile phase.

Sample Preparation : Extract exhaustively – (5hr) known quantity of powdered drug (10g) in a soxhlet apparatus with methanol. Evaporate the Extract to dryness, dissolve and make-up the volume to a known strength (50μg/ml). Prepare further dilutions in mobile phase, if necessary.

Procedure: subject know volumes (10μl) of standard and sample preparations to HPCL and record the respective peak area for andrographolide in triplicate and accordingly calculate its percentage in the sample.

Chromatograms of (a) reference andrographolide peak 1) and (b) a methanol extract of A. paniculata
# QUANTITATIVE STANDARDATION

Foreign organic matter : Not more then 2.0%

Ash : Not more than 15.0%

Acid insoluble ash : Not more than 3.0%

Alcohol soluble extractive : Not more than 8.0%

Alcohol (60%) soluble extractive : Not more than 24.0%

Water soluble Extractive : Not more than 20.0%
THERAPEUTIC EVALUATION

1. A double blind study with a new mono drug. KAN JAN (Andrographis Paniculata) in a dose of 1200 mg/day has been reported to significantly shorter the course and duration of the disease and is indicated for an enhanced residence to common- cold.


2. Oral administration of Andrographolide isolated from. A.Paniculata Leaves. Andrographolide. Showed significant (P value Less than 0.05) analgesic activity in acitic acid induced writing in mice.

Andrographolide (100 and 300mg 1 kg oral) produced significant (P less than 0.05) Anti pyretic effect. After 3 hrs of administration in. Brewers – yeast induced pyrexia in rats.

Andrographolide also exhibited significant (P Less than 0.05) anti ulcerogenic- activity at 100 and 300 mg/kg doses aspirin induced ulceration in rats. Pharmaceuticals science v-57(3) Pare 121-125-1995

3. Andrographolide a diterpene Lactone isolated from the A.Paniculata after oral administration at doses of 30, 100 and 300 mg 1 kg. significantly inhibited carrageenin induced paw edema the anti-inflammatory activity of andrographolide decreaeased edema in adjuvant induced arthritis.

Fitoterapia v. 6705) Page 452 – 458 1996 (Eng 14 Ref)

4. The A.Paniculata drug might have the cell membrane. Stability property which may lead to prevention of the toxic effect of bile salts in various hepatic disorders.

MAPA- 2062 03 – 1662 v. 24 page 392.
5. Antimicrobial activity in vitro ant filarial effect of A.Paniculata Species against adult worm of sub Bragia Malayi.
MAPA -2002 03-17-07 v.24 page 400.

6. The History of using plant based herbal drugs in India is about 7000 years old using herbal. drugs (A.Paniculata) as effective as synthetic drugs for quick relief and permanent cure of in curable disease.
MAPA- 2002 – 04 2118 volume-24 page 506

7. A.Paniculata commonly known as king of bitter – which has large importance to the mankind for its therapeutic and much other potential.

8. Aqueous extract showed significant anti microbial activity which may be due the combined effect of the isolated Arabinogalactin proteins and Andrographolide.
MAPA- 2004. 20839 V.26 – Page 187

9. The data found in the Spontaneous reporting scheme of WHO and Natural drug safety bodies, the data suggested that A.Paniculata is superior to placebo in alleviating the subjective symptoms of uncomplicated URI. There is also preliminary evidence of a preventative effect.

10. A Phase of one trial of Andrographolide in HIV-1 Patients and Normal Volunteers leading to rise in CD4 Lymphocyte Level in HIV infected individuals.
Review and literature

ePh;g;gPdprk;
NtW ngah;fs;

\[ gPdprk; \geq ePh;f;Nfhit ,\%f;FePh;gha;jy; \]

,ay; : -

%f;fpd; Jisfs; rpte;J> Jk;ky; fz; rpte;J ePh;tbjy; ,\%f;fpy; ePhgha;jy; , jiy Nehhy; mbfb %f;if rpe;jp ePh; tUjy; vd ,ay;GilaJ.

%f;fp; cz;lhFk; Neha;fs; 86 ,tw;wpy; gPdpj;jpj; fPo; 9 tifahf tifgLj;jp ePh; gPd;rk; xd;whf tifg;gLj;jgLs;sJ

Neha; tuf;fhuzq;fs;: -

1. kpfTk; Fsph;e;j ePiu gUFjy;
2. gdp my;yJ Fsph;e;j fhw;wpy; <Lgly;
3. G*jp $ba fhw;W Jk;kiy cz;lhf;f $ba nghUs;fis Kfh;tjhYk;
4. Iaj;ij ngUf;f $ba Fsph;e;j ePhpy; jiy %o;Fjy;
5. Fsph;r;rp jUk; nghU;fs;fis cl;nfhs;Sjy;
6. gjpdhW Ntfq;fis rhh;e;j fz;zPh; the;jp ,tw;iw mlf;FtjhYk;
7. msTf;F kpUe;jhtJ Fiwe;jhtJ J}f;fk; nfhs;tjhYk; gPdpr Neha; Vw;gLk;.
8. xt;th kz%l;L nghUi;fs; Efh;jy;.
“jiykpf typf;Fk; ehrp rsptpo nkhlTz;lhFk;
eypWT Jk;kYz;lhFk; ehl;nrypy; twS ehrp
kiyTwj; jpuL tpOk; thANk ehw;wKz;lhk;
gny Kw %f;filFk; gPspr nkd;Nw NjNu”

ePh; gPdprj;jpd; Fzk;;-

“fz;INkd; Kfq;fz; fhJ fufuj; J}h; t NjNghy;
Jz;l Nkd; wpdT gw;wpr; nrhhpe;Jj;ryKk; tPo;e;J
kz;ilAq; fdj;J nehe;J typkpf TsNj ahfpy;
gz;LNrh; %f;fpdphpg; gha;r;rhyd; Wiuf;f yhNk”

%f;fpd; ntspGwj;jpy; ePh; Xbf;nfhz;bUg;gpd; mj;jd
Kz;zPh;g;gha;r;rnydTk; (Rhinorrhoea) njhz;ilapDk; Gwj;Nj ePh;
ngFjp thapd; top th;d gpd; ePh; gha;r;rnydTk; $Wth; (Post Nasal Drip)
FwpFzq;fs; :-

1. %f;filg;G Nasal blook
2. %f;fpv; ePh; gha;jy; (Rhinorrhoea)
3. %f;FePh; njsptf fhzg;gly; (Watery discharge)
4. jiy Neha;; (Headache)
5. Ruk; (Feverish)
6. cly; Nrhk;gy; (Malise)
7. if fhy; Nehjy; (Body Pain)

Kf;Fw;wk; :-

czT Kjypa nray;fshy; cly; ntg;gkile;J moy; Fw;wk; kpFe;J NghJ [ae;ijg; ngUff;$ba nray;fshy; gpwe;j [ak; moNyhL $bg;gpwe;j NehahUk;

ehb;:-

gz;ghz gpj;jj;jpy; Nrj;Jkk; $b
MATERIALS AND METHODS

PREPARATION OF THE NILAVEMBU CHOORANAM

The Drug “Nilavembu” was taken from the ‘Agastiyar Gunavagadam’ found in Siddha text book Gunapadam mooligai (siddha Mederia Medica Medicinal plants division) written by Dr. Murugesu mudaliyar.

COLLECTION OF THE TEST DRUG

Nilavembu- [Andrographis Paniculata ] Plants were collected from agricultural land at Vandavasi Tiruvannamalai District. The identity was conformed by Dr. Sasikala Ethisrajalu Botanist CRI for siddha Chennai 600 106. with the help of pharmacognostic study.

PROCEDURE :-

The Fresh plants were washed well in the running water to remove the impurities then the plants were cut into pieces and dried in shade. After drying they were finely powdered to obtain the medicine in its finest physical form the powder is sieved through a white cloth. [VASTHARAKAYAM]
PURIFICATION OF THE CHOORANAM

The powder was moistened with cow’s milk. The pot was half filled with milk and water the mouth of the pot was covered and tied with white cotton cloth the chooranam (moistened by milk) was placed above. The tied cloth the mouth of the pot closed with another mud pot. The gap between the two mud pots was tied with a wet cloth to avoid evaporation, then this arrangement was put on fire and boiled until water level gets reduced in the lower pot, then the powder was taken dried powdered finally and preserved for usage.

STORAGE OF THE CHOORANAM

The chooranam was stored in a clean air tight glass container. The life period of the chooranam is three month the prepared chooranam was used within the period.

ADMINISTRATION OF THE DRUG

<table>
<thead>
<tr>
<th>FORM OF THE MEDICINE</th>
<th>ROUTE</th>
<th>DOSE</th>
<th>TIME OF ADMINISTRATIVE</th>
<th>VEHICLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chooranam</td>
<td>External</td>
<td>1 g two times/day</td>
<td>After food</td>
<td>Hot water {about 30 ml}</td>
</tr>
</tbody>
</table>
The prepared **Nilavembu chooranam** was done subjected to various analyses and the methodology followed is given.

**TOXICITY STUDY**

1.1 Test Drugs

The following medicinal plants were used in the study were collected and processed by the methods prescribed in standard text books of siddha medicines.

1.1 **Nilavembu Chooranam [NVC]**

NVC was prepared by the method described in Gunapadam Mooligai-Vaguppu. page no: 579-80)

1.2 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.

1.3 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.
1.4 Experimental animals

Colony inbred animals strains of Wister rats of either sex weighing 200 - 250 g were used for the pharmacological and toxicological studies. The animals were kept under standard conditions 12:12 (day/night cycles) at 22°C room temperature, in polypropylene cages. The animals were fed on standard palliated 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).

1.5. 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.

Wistar albino rats of either sex weighing 200-250 g were fasted overnight, but allowed water *ad libitum*. Since the formulation 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 behavioral toxicity, if any by using FOB (Functional observation battery).

**1.6 Repeated oral toxicity study**

Repeated oral toxicity studies can be used to get additional information regarding the toxicity profile of a chemical. Repeated oral toxicity studies are defined as those studies where the chemical is administered to the animal for a period covering approximately 10% of the expected life of the animal.

Usually, the dose levels are lower than for acute studies and allow chemicals to accumulate in the body before lethality occurs, if the chemical possess this ability.

**1.8 Experimental procedure**

The following experimental procedure was followed to evaluate the repeated oral toxicity study of:

*Nila Vembu Extract (NVE)*
**Group I**: Control animals received 1% Sodium carboxy methyl cellulose (CMC), 2 ml/kg/p.o. for 21 days

**Group II**: Drugs suspended in CMC was given at the dose Level of 500 mg/kg/p.o. for 21 days

Body weight, food intake and water intake was recorded at two intervals with simultaneous observation for toxic manifestation and mortality, if any. At the end of 21 days treatment all the animals were sacrificed by over dosage of ether anesthesia. Blood was collected and used for hematological studies. Section of liver, kidney, and heart were dissected out and kept in 10% formalin for histopathological studies.

**RESULT**

**Acute oral toxicity study**

NVE 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.

**Repeated oral toxicity for 21 days**

Test drug NVE at the dose of 500 mg/kg/po when administered orally for 21 days in rats did not show toxicity in renal functions. There was an significant increase in % of Hb and RBC (Table 2). However the drug did not show any significant elevation of marker enzyme levels of liver (Table 3).
Table 1
Effect of Siddha Formulations (NVE) on Hematological parameters after 15 days repeated oral dosing (500 mg/kg)

<table>
<thead>
<tr>
<th>Group</th>
<th>Hb (gm/100ml)</th>
<th>RBC (millions/cu.mm)</th>
<th>WBC (cells/cu.mm)</th>
<th>Differential leucocyte count (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lymphocytes</td>
</tr>
<tr>
<td>Normal</td>
<td>13.08 ± 0.34</td>
<td>4.31 ± 0.35</td>
<td>54850 ± 9.44</td>
<td>76.06 ± 3.89</td>
</tr>
<tr>
<td>NVE (500mg/kg/p.o)</td>
<td>13.68 ± 0.70 ns</td>
<td>4.68 ± 0.72 ns</td>
<td>5786.66 ± 3.323</td>
<td>77.67 ± 3.32 ns</td>
</tr>
</tbody>
</table>

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

Table 2
Effect of Siddha formulation (NVE) on Biochemical markers of liver and kidney after 15 days repeated oral dosing (500 mg/kg/po) in rats

<table>
<thead>
<tr>
<th>Groups</th>
<th>ALP (K.A.Units)</th>
<th>AST (IU/L)</th>
<th>ALT (IU/L)</th>
<th>Urea (mg/100ml)</th>
<th>BUN (mg/100ml)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>3.78±0.38</td>
<td>78.48±0.23</td>
<td>28.70 ± 0.81</td>
<td>±</td>
<td>13.56 ± 0.37</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6.48 ± 0.50</td>
</tr>
<tr>
<td>NVE (500mg/kg/p.o)</td>
<td>4.32±0.75 ns</td>
<td>79.55±5.92</td>
<td>30.13 ± 0.69</td>
<td>±</td>
<td>14.60 ± 0.69</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7.51 ± 0.35 ns</td>
</tr>
</tbody>
</table>
N=6; Values are expressed as mean ± S.D followed by Students Paired ‘T’ Test
Ns – non significant when compared to control groups

ANALGESIC ACTIVITY

TAIL FLICK METHOD

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

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 3

Analgesic activity of NVE using Tail flick Method

<table>
<thead>
<tr>
<th>Groups</th>
<th>Paw licking response (Sec)</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0 min (Sec)</td>
<td>30 min (Sec)</td>
<td>60 min (Sec)</td>
<td>120 min (Sec)</td>
</tr>
<tr>
<td>Control</td>
<td>1.56 ± 0.96</td>
<td>1.86 ± 0.96</td>
<td>1.76 ± 0.67</td>
<td>1.86 ± 0.53</td>
</tr>
<tr>
<td>Test (500mg/kg. p.o.,)</td>
<td>1.86 ± 0.206 ns</td>
<td>3.133 ± 0.258 ***</td>
<td>4.966 ± 0.516 ***</td>
<td>5.15 ± 1.394 ***</td>
</tr>
</tbody>
</table>

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

***P<0.001 as compared with control.
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). 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.

Table 4

<table>
<thead>
<tr>
<th>Groups</th>
<th>Paw volume ( ml) by mercury Displacement at regular interval of time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0min</td>
</tr>
<tr>
<td>Control</td>
<td>1.233 ±</td>
</tr>
<tr>
<td></td>
<td>0.338</td>
</tr>
<tr>
<td>NVE</td>
<td>1.233±</td>
</tr>
<tr>
<td>(500mg/kg. p.o.,)</td>
<td>0.338 ns</td>
</tr>
<tr>
<td>Standard</td>
<td>0.835 ±</td>
</tr>
<tr>
<td>(Dic.Sodium 5 mg/kg/po)</td>
<td>0.065 ns</td>
</tr>
</tbody>
</table>

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

ns - Non significant as compared with control;
P< 0.001 (*** ) as compared with control.
HISTAMAINE STUDY

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 H₁ receptor of smooth muscle causes contraction which can be recorded by a kymograph. Drugs acting as H₁ 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 – 34⁰C and bubbled with a mixture of CO₂ + 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.
Histamines activity - showed in chymograph
Table 5

Effect of the NVE on histamine induced contractions of guinea pig ileum

<table>
<thead>
<tr>
<th>S.No</th>
<th>Histamine μg/ml</th>
<th>Mean contraction (M meter)</th>
<th>NVE μg/ml</th>
<th>Mean contraction M meter</th>
<th>% inhibition of Histamine</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>10.0</td>
<td>25.62 ± 0.322</td>
<td>10.0</td>
<td>10.08 ± 0147 ***</td>
<td>40.0</td>
</tr>
<tr>
<td>2.</td>
<td>20.0</td>
<td>54.0 ± 0.672</td>
<td>20.0</td>
<td>37.33 ± 0.216 ***</td>
<td>68.5</td>
</tr>
<tr>
<td>3.</td>
<td>40.0</td>
<td>66.130 ± 0.271</td>
<td>40.0</td>
<td>47.5 ± 3.216 ***</td>
<td>71.5</td>
</tr>
<tr>
<td>4.</td>
<td>80.0</td>
<td>75.0 ± 0.546</td>
<td>80.0</td>
<td>54.60 ± 0.967 ***</td>
<td>72.0</td>
</tr>
</tbody>
</table>

n=6; Values are expressed as mean ± S.D followed by Students Paired ‘T’ Test
P<0.001 as compared with that of control.

RESULTS

Analgesic, Anti inflammatory and Anti histaminic studies

Nila Vembu Extract (NVE) is used in the Siddha system of medicine for its anti allergic activity. In the present study NVE showed antagonistic action against Histamine induced contractions in guinea pig ileum. Histamine assay in g.pig ileum is used to evaluate the antihistaminic activity of drugs acting on H₁ receptors. NVE showed a dose dependent reduction in the height of contraction for histamine in g.pig ileum. NVE also exhibited antiperoxide and antioxidant activity against oxygen free radicals.
ANTI MICROBIAL STUDY

Paper disc diffusion method

The sterilized (autoclaved at 120 °C for 30 min) medium (40-50 °C) was inoculated (1 ml / 100 ml of medium) with the suspension (10^5 cfu mL^-1) of the microorganism (matched to Mc Farland barium sulphate standard) and poured into a petridish to give depth of 3-4 mm. The paper impregnated with the test compounds (25, 50, and 100 µg mL^-1 in dimethyl formamide) was placed on the solidified medium. The plates were pre-incubated for 1 h at RT and incubated at 37o C for 24 and 48 h for antibacterial and anti fungal activities, respectively. Ciprofloxin (100 µg /10 disc) and ketoconazole (100 µg / disc) were used as standard for anti bacterial and anti fungal activities, respectively. The observed zone of inhibition is presented in Table In-vitro antimicrobial activity of NVE as screened against bacteria and yeast strains. The results are depicted in Table 6. In 10 µl/disc concentration of NVE were exhibited low antibacterial activity in streptococcus mutans and aereus. others were exhibited moderate to high antibacterial activity when compared to standard drugs ciprofloxacin and ketoconazole respectively.

Table 6

<table>
<thead>
<tr>
<th>Zone of inhibition in mm</th>
<th>Standard drug</th>
<th>Test drug (NVEµl/disc)</th>
<th>Zone of inhibition in mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organism</td>
<td>Ciprofloxacin 50 mcg/disc</td>
<td></td>
<td>10µl</td>
</tr>
<tr>
<td></td>
<td>Ciprofloxacin 50 mcg/disc</td>
<td>Test drug (NVEµl/disc)</td>
<td>10µl</td>
</tr>
<tr>
<td>Strep. Mutans</td>
<td>30</td>
<td>15</td>
<td>19</td>
</tr>
<tr>
<td>Staph. Aureus</td>
<td>31</td>
<td>13</td>
<td>16</td>
</tr>
<tr>
<td>E.coli</td>
<td>31</td>
<td>12</td>
<td>18</td>
</tr>
<tr>
<td>K.pneumoniae</td>
<td>30</td>
<td>11</td>
<td>14</td>
</tr>
<tr>
<td>Ps.areginosa</td>
<td>31</td>
<td>13</td>
<td>16</td>
</tr>
</tbody>
</table>

In vitro anti microbe activity of Nilavembu Chooranam extract showed that the drug was sensitive to Streptococcus Mutans staphylococcus Aureus and resistant to K. pneumoniae
ANTIOXIDANT STUDY

In Vivo Antioxidant study

Samples of serum collected from rats treated with test drugs were assayed for GSH (Moron et al., 1979) and LPO (Yagi, 1976) and the results were compared with control group.

Table 7
Antioxidant activity of Siddha Formulation (NVE)
after 15 days repeated oral dosing (500 mg/kg)

<table>
<thead>
<tr>
<th>Groups</th>
<th>LPO</th>
<th>GSH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>0.63 ± 1.37</td>
<td>46.28 ± 2.31</td>
</tr>
<tr>
<td>NVE (500mg/kg/p.o)</td>
<td>0.42 ± 3.90***</td>
<td>83.31 ± 0.35***</td>
</tr>
</tbody>
</table>

N=6; Values are expressed as mean ± S.D followed by Student T-Test.

***P<0.001 as compared with control.

Antioxidant activity

At the end of 21 days repeated oral toxicity study when the plasma of drug treated animals was examined for GSH activity, the level of GSH activity was increased significantly (p>0.001) in test groups. On the other hand the LPO activity was considerably reduced in drug treated group when compared to control.
**QUALITATIVE ANALYSIS OF ACIDIC/BASIC RADICALS AND BIO-CHEMICAL CONSTITUENTS IN TEST DRUGS**

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Observation</th>
<th>Inference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Test for Calcium</strong> : 2 ml of extract is taken in a clean test tube. To this add 2 ml of 4% ammonium oxide solution.</td>
<td>white precipitate is formed</td>
<td>Presents of calcium</td>
</tr>
<tr>
<td><strong>Test for Sulphate</strong> : 2 ml of the extract is added to 5 % barium chloride solution.</td>
<td>white precipitate is formed</td>
<td>Presents of Sulphate</td>
</tr>
<tr>
<td><strong>Test for Chloride</strong> : The extract is treated with Silver nitrate solution</td>
<td>white precipitate is formed</td>
<td>Presents of Chloride</td>
</tr>
<tr>
<td><strong>Test for carbonate</strong> : The substance is treated with Conc. HCl.</td>
<td>effervescence is formed</td>
<td>Presents of carbonate</td>
</tr>
<tr>
<td><strong>Test for Starch</strong> : The extract is added with weak iodine solution</td>
<td>Blue colour is formed</td>
<td>Presence of starch</td>
</tr>
<tr>
<td><strong>Test for Iron (Ferric)</strong> : The extract is treated with glacial acetic acid and potassium ferrocyanide</td>
<td>blue colour is formed</td>
<td>Presents of Ferric iron</td>
</tr>
<tr>
<td><strong>Test for Iron (Ferrous)</strong> : The extract is treated with Conc. HNO₃ and ammonium thiocyanate</td>
<td>No Blood red colour is formed</td>
<td>Absence of Ferrous iron</td>
</tr>
<tr>
<td><strong>Test for phosphate</strong> : The extract is treated with ammonium molybdate and conc. HNO₃</td>
<td>Yellow precipitate is formed</td>
<td>Presence of phosphate</td>
</tr>
<tr>
<td><strong>Test for Tannic acid</strong> : The extract is treated with Ferric chloride</td>
<td>Blue black precipitate is formed</td>
<td>Presence of Tannic acid</td>
</tr>
<tr>
<td><strong>Test for Unsaturation</strong> : 1 ml of Potassium permanganate solution is added to the extract.</td>
<td>get decolourised</td>
<td>Presents of unsaturated compound</td>
</tr>
<tr>
<td><strong>Test for saponins</strong> : Dilute extract+ 1ml of distilled water shake well.</td>
<td>No Froth formation</td>
<td>presence of saponins</td>
</tr>
<tr>
<td><strong>Test for sugars</strong> : Benedict method ; 5ml of Benedict solution heated gently then add 8 drops of diluted extract then heated in a boiling water bath.</td>
<td>No colour change</td>
<td>Indicates the Presents of sugar</td>
</tr>
<tr>
<td><strong>Test for carbohydate</strong></td>
<td>Dilute extract+2 drops of Molisch+3ml conc.H₂SO₄</td>
<td>No Reddish violet zones appeared</td>
</tr>
<tr>
<td><strong>Test for steroids</strong></td>
<td>Liberman Burchard test ; Dilute extract +2 ml acetic anhydride+conc.H₂SO₄</td>
<td>Formation of red colour</td>
</tr>
<tr>
<td><strong>Test for amino acids</strong></td>
<td>Dilute extract +2ml of Ninhydrin’s soln</td>
<td>Formation of violet colour</td>
</tr>
<tr>
<td><strong>Test for proteins</strong></td>
<td>Biuret method ; 1ml of dilute extract+1ml of 5%CuSO₄+1%NaOH</td>
<td>Formation of Violet colour</td>
</tr>
<tr>
<td><strong>Test for Flavanoids</strong></td>
<td>Dilute extract+ mg bits+2drops of conc.HCl and gently heated</td>
<td>No formation of pink colour</td>
</tr>
<tr>
<td><strong>Test for phenol</strong></td>
<td>Dilute extract+2drops of FeCl₃ soln.</td>
<td>Deep green colour is formed</td>
</tr>
<tr>
<td><strong>Test for Tannins</strong></td>
<td>dilute extract +2ml of 10%lead acetate add.</td>
<td>White precipitate formed</td>
</tr>
<tr>
<td><strong>Test for alkaloids</strong></td>
<td>Mayer’s method;1ml of dilute extract + 1ml reagent.</td>
<td>Appearance of cream colour precipitate</td>
</tr>
<tr>
<td>Dragendroff’s method; 1ml of dilute extract+ 1ml of reagent.</td>
<td>Appearance of orange colour precipitate</td>
<td>Presence of alkaloids</td>
</tr>
</tbody>
</table>

**Result:**

From the biochemical analysis the following chemical were. Found to be present in the test drug (NVE)

- **Acid Radicals**
  - Sulphate
  - Phosphate
  - Chloride

- **Basic Radicals**
  - Calcium
  - Iron
  - Potassium
  - Magnesium
CLINICAL ASSESSMENT

STUDY DESIGN
1. Open clinical trial
2. Parameters for Evaluation.

SYMPTOMS
1. Thummal [Sneezing]
2. Mookil Neer Paithal [Rhinorrhoea]
3. Namaichal [Itching Nose, Exes Throat]
4. Mokadaippu [Nasal Block]
5. Thalai vali [Headache]

LINE OF TREATMENT
a. Does 500 mg bid = Hot water
b. Root of administration. Enternal
c. Duration: 45 days

SELECTION OF PATIENTS
Sample size – 30 patients
30 patients are selected on the basis of the inclusion and exclusion criteria

<table>
<thead>
<tr>
<th>Inclusion</th>
<th>Exclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Signs and symptoms of Neerpenisam</td>
<td>1. Acute Phase of BA</td>
</tr>
<tr>
<td>2. Age Between 15 – 60 yrs from age sex</td>
<td>2. Patient Who have RVF / CCF</td>
</tr>
<tr>
<td></td>
<td>3. Patient Who have any other</td>
</tr>
<tr>
<td></td>
<td>uncommitant illness</td>
</tr>
<tr>
<td></td>
<td>4. Patient With known liver or</td>
</tr>
<tr>
<td></td>
<td>kidney disorders</td>
</tr>
<tr>
<td></td>
<td>5. Patient having hyperpyrexia.</td>
</tr>
</tbody>
</table>
WITHDRAWAL CRITERIA

1. Irregular treatment
   To prevent withdrawal of study medicine. Was given to each patient for a period of 15 days.

INVESTIGATION

   Blood investigation including HB% and TLC (Total Leucocytes Count) Raised Eosinophil count on differential court suggested allergic with the body. 65% had raised Eosinophil count.

X RAY:

   Hypertrophied mucous of nose and Para nasal sinuses (PNS) Indicate allergic causes with the nose and PNS.

DIAGNOSIS was based mainly on history of neer peenism symptoms and also by considering the demonstration of allergy on blood investigation and nasal smear or by x-ray investigation statistical analysis of treatment is recorded and tabulated as follows.
### Table 8

**AGE WISE DISTRIBUTION**

<table>
<thead>
<tr>
<th>S/no</th>
<th>Age in years</th>
<th>No of Patient</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>16-25</td>
<td>16</td>
<td>53.4</td>
</tr>
<tr>
<td>2</td>
<td>26-35</td>
<td>6</td>
<td>20</td>
</tr>
<tr>
<td>3</td>
<td>36-55</td>
<td>8</td>
<td>26.6</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>30</td>
<td>100</td>
</tr>
</tbody>
</table>

![Pie chart showing age-wise distribution of patients]
Table 9

SOCIO-ECONOMIC STATUS

<table>
<thead>
<tr>
<th>S/no</th>
<th>Eco Status</th>
<th>No of Patient</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Poor</td>
<td>8</td>
<td>26.7</td>
</tr>
<tr>
<td>2</td>
<td>Middle</td>
<td>21</td>
<td>70</td>
</tr>
<tr>
<td>3</td>
<td>Rich</td>
<td>1</td>
<td>3.3</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>30</td>
<td>100</td>
</tr>
</tbody>
</table>
### Table 10

**DIET**

<table>
<thead>
<tr>
<th>S/no</th>
<th>Diet</th>
<th>No of Patient</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Vegetarian</td>
<td>4</td>
<td>13.4</td>
</tr>
<tr>
<td>2</td>
<td>Mixed – diet</td>
<td>26</td>
<td>86.6</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>30</td>
<td>100</td>
</tr>
</tbody>
</table>

![DIET Diagram](image_url)
### Table 11

**OCCUPATION STATUS**

<table>
<thead>
<tr>
<th>S.no</th>
<th>Occupation</th>
<th>No of Patient</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Daily Labour</td>
<td>10</td>
<td>33.4</td>
</tr>
<tr>
<td>2.</td>
<td>House Wife</td>
<td>7</td>
<td>23.4</td>
</tr>
<tr>
<td>3.</td>
<td>Office Worker</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>4.</td>
<td>Auto Mobile</td>
<td>5</td>
<td>16.6</td>
</tr>
<tr>
<td>5.</td>
<td>Sales Rep.</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>6.</td>
<td>Students</td>
<td>2</td>
<td>6.6</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>30</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

![Occupation Status Chart]

**Legend:**
- Blue: No of Patient
- Red: Percentage (%)
Table 12

IMPROVEMENT OF SIGNS AND SYMPTOMS OBSERVED BEFORE AND AFTER TREATMENT OF 30 (N) PATIENTS OF NEER PEENISAM GSMC, CHENNAI – 106.

<table>
<thead>
<tr>
<th>S.No</th>
<th>Signs And Symptoms</th>
<th>Number Of Patient Before Treatment</th>
<th>Number Of Patient After Treatment</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Itching [Nose, eyes, throat]</td>
<td>30</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>2</td>
<td>Sneezing</td>
<td>24</td>
<td>1</td>
<td>95.83</td>
</tr>
<tr>
<td>3</td>
<td>Rhimorrhoea</td>
<td>30</td>
<td>3</td>
<td>90</td>
</tr>
<tr>
<td>4</td>
<td>Nasal block</td>
<td>24</td>
<td>4</td>
<td>83.33</td>
</tr>
</tbody>
</table>

Table 13

RESULTS OF STATISTICAL ANALYSIS OF SUBJECTIVE PARAMETERS OBSERVED BEFORE AND AFTER TREATMENT OF 30(N) PATIENTS OF NEERPEENISAM GSMC, CHENNAI

<table>
<thead>
<tr>
<th>S.no</th>
<th>Parameters</th>
<th>Mean value Before Treatment</th>
<th>Mean value After Treatment</th>
<th>Difference Present</th>
<th>Statistical Test criteria</th>
<th>Probability (P) Value</th>
<th>Statistical significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Itching [Nose, eyes, throat]</td>
<td>30.0±4.472</td>
<td>0.01±0.01</td>
<td>NIL</td>
<td>16.432</td>
<td>0.001</td>
<td>Significant</td>
</tr>
<tr>
<td>2</td>
<td>Sneezing</td>
<td>24.0±5.777</td>
<td>1.0±0.242</td>
<td>23.0±0.437</td>
<td>16.432</td>
<td>0.001</td>
<td>Significant</td>
</tr>
<tr>
<td>3</td>
<td>Rhimorrhoea</td>
<td>30.0±4.472</td>
<td>3.0±0.342</td>
<td>27.0±0.572</td>
<td>16.432</td>
<td>0.001</td>
<td>Significant</td>
</tr>
<tr>
<td>4</td>
<td>Nasal block</td>
<td>24.0±4.472</td>
<td>4.0±0.342</td>
<td>20.0±0.572</td>
<td>16.672</td>
<td>0.001</td>
<td>Significant</td>
</tr>
</tbody>
</table>

Values are compared with test one sample student T.test
SUMMARY

In this dissertation Nilavembu chooranam (NVC) was taken to evaluate its efficiency on neerpeenisam.

Botanical aspect of the drug Nilavembu (A.paniculata) was studied regarding its identification description by pharmacojnostic study.

In Gunapadam aspect Nilavembu chooranam indicated for treating peenisam which is comes under kapha disease so the idea to evaluate the therapeutic efficacy of this drug in Neer penisam patients carried out at Aringnaranna Hospital P.G. Gunapadam Dept. Chennai – 106

Biochemical analysis revealed that the NVC Contains Phosphate, Calcium, Sulphate, Chloride,Iron. The pharmacological analysis showed that the drug has got anti- inflammatory action in albino rats, anti histaminic action in guie pig.

Micro biological studies revealed that the drug posses anti microbial activity against Straps-mutans.In clinical study 30 patients were selected and treated the drug was administered in the form of chooranam at the dose 1 gm twice a day with hot water after relevant diet restriction and medical advice were given to all the patients.

The clinical study showed that the drug NVC is statistically significant in Neer peenisam [allergic rhinitis] and also the symptoms of Sneezing ,Nasal discharge, Itching and Nasal obstruction.
DISCUSSION AND CONCLUSION

In siddha system of medicine Neer peenisam is caused by increased thosha like kapham and vatham.

In normal body these doshas are statically distributed in normal. But in neerpeenism Kapha dosha is increased in the body where the neck to head, is ruled by kapha humer. Allergy is the main aggravating factor for this disease. In siddha peosepective pancha boothic and arusavai are vital role while treating the patients with medicine. According to these theories suvai and veeriyam of the drugs acts against the kapha disease.

The bitter taste drugs we given to patients controls kapham and neutralize vatham. The above tast substance have vemai veeriam and first against the increased kabam and normalize the kabam dhosham and neutralize the vatham.

Histamine plays very important role in the early signs and symptoms of allergy like vasodilatation, smooth muscle contractions and edema formation. The antagonistic action exhibition by NVC for histamine in g.pig ileum shows the H1 - receptor antagonistic activity of NVC also exhibition anti peroxides and anti oxidant activities in the appropriate experimental models.

Nilavambu is widely used in kabha dosha like kabha suram which is mainly caused by kabha humer so the activity of NVC is the drug of choice for neer peenisam.
Pharmacological study revealed that NVC have Anti Inflammatory, Anti histaminic analgesic activity.

Biochemical analysis the following chemical were found to be present in the NVC. Calcium, iron, magnesium, and phosphate.

Iron transport of oxygen to the use of tissue participation in cellular oxidation-mechanism. Magnesium which help to keep the mind calm keeps nerves relaxed.

Chloride help in the preservation of the permeability of the cells and normal neuromuscular irritability in the ECF and ICF.

On clinical study age distribution between 15 to 60 years patients from either sex various economical status and habitats were taken for this study.

In this study it is noted that, out of 30 patients sharing this signs and symptoms 22 patients have good improvement, 5 patients have moderate improvement and 3 patients shared poor prognosis.

From this study it is revealed that NVC has beneficial effects in Neer Peenisam.

In this preliminary study it was found that Nilavembu Chooranam is an effective remedy in the management of Neer Peenisam.

This drug is easily available and economical. It was well tolerated safe and free from any adverse effect.
INTRODUCTION

The disease NINA KURARKAMAL (Enlarged Tonsils) is a world wide health problem is a common problem among children and youth due to neglecting oral hygiene may allows invasion of micro organisms and cause secondary damage to heart values (Rheumatic Fever) and kindly (glomerulonepheritis) it can also leads to skin- rashes, sinusitis, pneumonia and ear infection.

The modern surgical management has more complication and also more harmful to pharynx so safe remedy is need of the day.

The siddha medical science offer time tested experimental knowledge that can provide clues to explore and discover the medicine value of animal origin.

Present study was planned to evaluate the efficacy of SANGU PARPAM on Nina kurarkamal [Enlarged tonsils].
AIM AND OBJECTIVES

The aim of the dissertation work is to assess the efficacy of SANGU PARPARAM IN the management of Nina kurarkhmmal. [Enlarged Tonsils] ‘Strrep throat’(TONSILLITIS) is a specific type of infection caused by streptococcus bacteria can cause Secondary damage to the heart value. (Rheumatic – Fever) and kidney (glomerulonephritis) so. It is need to treat with herbo-minaral combination of non toxic drug. Sangu Parparam to Prevent cardiovascular Events.

Tonsillitis is one of the commonest and major problem among pediatric population and young adults. Hence SANGU PARPAM was studied in the following aspects.

- ACUTE CHRONIC TOXICITY STUDIES
- BIO CHEMICAL ANALYSIS
- ANTI MICROBIAL STUDIES
- PHARMACOLOGICAL STUDY
- CLINICAL STUDY.
REVIEW AND LITERATURE

rq;F

1) Gunapadam Aspect:

NetWngah;fs;: ee;J Rj;jp ehF tis fk;G NhL thuzk; nts;is tz;L
,lk;Ghp rq;fk; Njtjj;jk;.

kUj;Jtj;jpw;F gad;gLk; rq;F: CJ rq;F

nglj Fzk; : rq;fpdhy; ,uj;j gpj;jk; fz;Nzha;fs; thj kpFjp frpT
%isfl;b Kjypa Neha; ePq;Fk; grpia cz;lhFk;.

“frpth kpu;j gpj;jq; fz;Nzq; NsUk;
grpahYk; thjk; gwf;Fk; - kprpTLNd
jq;F Kisttpuze; jhsfY} Nknts;isr;
rq;fkJ Tz;lhapw;wd;”

Njiuah;

nra;iiffs;

cly; cukhf;fp Jaulf;fp
mfl;Lthafw;wp grpj;jPj;J}z;b
Jth;g;gp ntg;gfw;wp
Nfhio mfw;wp.
kfpikah ke;jhur; rpiyKI; rq;F
khq;fpr;rpiy kufjkhq; FUtt; Ig;gh
Nghfh; fhurhuj;Jiw
cgurq;fs; 120 fPo; rq;F tigf;gLj;Jgl;Ls;sJ.
gQ;rg+j cgurk; : rq;F : mg;G

mg;Gtpd; Fzk; :

fhrkWk; je;jq; foyhJ NkfKjy;
tPR kzy; jzpAk; tPhpak; - thrnd
ce;jptsh; Fz;K KepuQ; nrhwpaOpt Nghk;
,e;ehWe; jz;zPUf;Nf.
jz;zPhpdhy; fz; fhrk; , gpj;j gpunKfKk; gpjj Fd;kk; ntl;Lhaf;fspyUe;J
ngUFk; FUjp nrhw Mfpait NghFk;. gw;fs; cWjpngUk;
“frpthk; ,uj;jgpj;jk; fz;Nzha;fz; MFk;.
Grpahwk; thjk; gwf;Fk; - ,rpTlNd
jq;F ehNdh tpuze;jd; mfYNk nts;s
rq;fkJ cz; Nlah; ehd;”

mf;jpah; ml;ltidthflk;.
[e;J Rz;zk; - cNyhfd; cUf;fTk; Ntijapy;
ruf;Ffis vhpf;fTk; gad;gLk;

rq;F NrFk; gpwkUe;;Jfs;

jPUk; Neha;fs;

fhU kUe;J - %yk;
Rq;F ePh; - Fd;kk; gf;f R+iy
Jj;jik - fz;Nzha;;fs;

jhk;gpuhjp khj;jiu - rfytpj fz;Nzha;fs;
,uj;jpdjp khj;jiu - Jh; khkprk; fhr Nuhfk; mkuk;
gQ;r ghzurk; - [yNjhrk;
jpiuNyhf;fpa rpe;jhkzp urk; - mf;fpdpgyk;
,yFuh[ kpUfhq;fk; - fhrk; uh]\ak;

thj ur $y khj;jiu - fopr;ry;

%fis ,uzj;jp;w;U
Ky;iyapd; eifaha; rq;fj;jpd; gw;gk;

%fisapd; ,uz Neha; Nghf;Fk;
TAXONAMY

KING DOM : ANIMALIA
BRANCH : PROSTOSMIA
PHXLLUM : MOLLUSCA
CLASS : GACTROPODA
ORDER : NEO GASTROPODA
FAMILY : TURBINELLIDAE
GENUS : XANCUS
SPECIES : PYRAM

XANCUS PYRUM

OTHER NAMES

SANSKRIT : SHANKHA
ENGLISH : CONCH SHELL
DUK : SUKK
GUJ, MAH, KON, GUN : SHANKHA
TEL : SEHKHAM
DISTRIBUTION
Abundantly found in South east coast of India, Areas of gulf of mannar, Palk-bay (T.N. Coast) and Gulf of Kutch.
CHARACTERS :-
A Porcelaneoas shell of an oblong or conical form the oblong form is bulged in the middle and tapering at each and the conical variety and tapering at each and the conical verity is peculiar the upper portion is like cork screw, twisted and tapering at the end. The base is broad, the interior is hollow the surface is hard of a dull while color the Upper surface is highly tuborculated.

MEDICINAL USES
Shankha parpam. C. Silicate of Magnesia) does is 2-6 grains used for ear ache ulcers, eye troubles and internally for dysentery. gonorrhea, colic dyspepsia and jaundice, tympani ties.

A compound powder made up of shanka parpar with 5 bodice seed, 4asofodida 3 trikaduku and rock salt 4. Each part make it as powder used in colic pain in abdomen.

Shank parpam .Ficus religiosa, Borax and aconite is used in catarrh, sore threat, cough asthma etc. Does is 2 grams.
Kaphakettu rasa containing conch shell lime is also useful in discharge from ears nose etc. It is used as an expectorant a relives the phlegm. and fever.

cj;jhkp
PERGULARIA EXTENSA (JACG)

NtWngah;fs; : NtypgUj;jp cj;jkkhfhzp cj;jk fd;dpif fPhplk;

gad;gLk; cWg;G : ,iy nfhb
   Rit : ifg;G
   jd;ik : ntg;gk;
   gphpT : fhh;g;G

nra;iifs;:
1. Nfhioafw;wp - Expectorant
2. Gof;nfhy;yp - Germicide
3. the;jpAz;lhf;fp - Emetic

Fzk;
  Mypj;njoe;j Neha; mj;jidAe;jPUk;
  Ntypg; gUj;jpajpd; nky; ,iyahy; - Ntnyj;Jf;
  fz;bf;Fk; thjq; fLQ;rd;dp NjhlKk; NghFk;
  cz;bf;Fk; thridahk; XJ.
BOTANICAL ASPECTS

TAXONAMY

KINGDOM : PLANT KINGDOM
DIVISION : ANGIOSPERMS
CLASS : DICOTY LEDONAE
SUBCLASS : GAMOPETALEA
SERIES : BICRAPELLATEA
ORDER : GENTIANALES
FAMILY : ASCLEPIADACEAE
GENUS : PERGULARIA
SPECIES : DAEMIA
(SYN : PERGULARIA EXTANSA)
VERNACULAR NAMES
SAN : PHALA KANTAK
HINDI : UTRANAJUTUKA
PUNJ : TROTTOO
AUJ : NAGALADUDHELI
BEN : CHHAGAL BATI
SIND : KHARYAL DNDHAVELA
KAN : ATTARANI : UTARNI
TEL : JITTUPAKU GURTICHETTU
MAL : VELIPERITEE
CAN : TALAVARANABALL

HABIT : This common tawnier is found throughout India,
PART USED : whole plant- leaves roots and root bark.

CONSTITUENTS : Leaves contain Daemiae Alkaloid Soluble in ether alcohol and not Criztalisable The ash from the dried leaves powder has found amount 15.33% Pc and bitter glycoside also present.

MEDICINAL USES
Decoction of the Leaves is given to children as an anti helmintic. In does it is a good expectorant. Juice of leaves is useful also in asthma and snakebite.

Powdered leaves in does of 5- 10 grain are also good expectorant.
Externally the juice combined with lime is applied to Rheumatic swelling. Honey is also added to the decoction of the leaves to help the expectorant effects (chopra) combined with ginger the juice of the leaves is given to the rheumatism.

Fresh Lanes made into a pulp are used as a stridulating poultice in carbuncle with benefit.

**epzw;Fuw; fk;ky;**

ejhz;ilf; fl;L Rugq;fk; vd NtW ngah;fshy; Fwpg;gplg;gLk; Fuw; fk;ky; Nehapd; xU gphpthFk;.
cz;zhf;F mow;rp njhz;ilf;fpue;jp tPf;fk;> yrd jhgpjk; (.mz;zhf;F J}W vd;W) miof;fg;gLk; Nehapd; Fzq;fs; lhf;lh; R.jpahfu[d; Fzghlk; jhJ rPt tFg;gpy; gf;fk; 487y; Fwpg;gpl;Ls;s Enlarged Tonsils mz;zhf;F J}W Nehapd; FwpFzq;fSk; mbg;gilapy; xd;Nw vd;Wk; mz;zhf;F cz;zhf;F xNu Nehia Fwpg;gpLtjhf fjpuNth; gps;is jkpo; nkhop mfuhjpapy; njhFjp – 1 y; Fwpg;gpl;Ls;shh;. NkYk; cz;zhf;F mow;rpAk; epzFuw;fk;ky; Nehapd; FwpFzq;fSk; xNu Nehapid Fwpg;gpLtjhf cs;sJ.

**Neha; tUk; top**

1. Fsph; fhw;wpyPLgly; Fsph;e;j nghUs;fis cl;nfhs;sy;
2. njhz;ilapy; Gz;gljf;f R++l;by; nte;ePh; gUFjy;

,r;nrayhy; njhz;ilapy; ,Ugf;fq;fSk; jhgpjj;ij cz;lhf;fp, Fuy; tisapd; tPf;fk; , njhz;ilapy; , rij tsh;jy; njhz;il Gz; , ,Uky; Nghd;w FwpFzq;fs; Vw;gLk;

FwpFzk;

Fuy;tis epzf;Nfhi o nfhz;L el td; Nghy;

tpuT t*g; igf;Uz;ePh; Ntl;if jUNky;
tzg;Ngh; rwptpz;ik thw; nghWj;J Ngry;
epze;Fuw; fk; k ndwp

1. njhz;il rpte;J Iak; $ba njhz;ilapy; rij tsUk;
2. ,r;rij tsh;r;rp fl;bfs; Nghy; gFj;J Fuw;fk;ky; Nehia cz;lhf;Fk;.
3. Ruk;> njhz;il typ tha; ehw;wk; %f;fpy; ePh; tbjy; fhjpy; rPo; tUjy;>
   ,Uky; %r;Rj; jilg;gly; Kjypa Fw;Fzq;fis Vw;gLj;Jk;.
4. ePh; czT tpOq;f Kbahik

Kf;Fw;wk;.

Ia kpFe;J cjhd thAtpd; jd; td;ikia ,of;fr;nra;Ak;

ehb
“jhNdKs;s Nrj;Jke; jhdpsfpy;
………………………… neQ;rilg;G
.jNkhL ,Wjpehb ,yfplh epWjp epd;why;
gjnkhl njhz;il fl;Lk; gOj;Jnej;dpw;fl;Lk;”

Fz thfl ehb
MATERIALS AND METHODS

DRUG PREPARATION

SOURCE OF COLLECTION :- Sangu (Conch shell) Raw drug was purchased from the raw drug shop at Chennai.

PURIFICATION OF SANGU : (CONCH SHELL)

Conch shells were broken into smaller pieces and purified by saturated clear solution of karchunnam [calcium carbonate] immersed for 24hrs and boiled, then washed with water and dried.

PREPARATION OF PARPAM AND STORAGE

The purified dried conch shell placed in the uthamani karkam. in a earthen disc then it was boiled well kept for 3 days in the sun light and covered with same. It was sealed with seven layers of clay cloth and dried, then it was subjected to pudam final calicination the parpam . further granined well into fine particles and sieved in white cloth (vastharakeyam) and kept in dry clean air light container [Ref. Dr. Thiagarajan. Thathya seeva gunapadam Part II ]

TEST DRUGS

The following medicinal plants were used in the study were collected and processed by the methods prescribed in standard text books of siddha medicines.
Sangu Parpam [ SGP ]
was prepared by the method described in [Gunapadam Thadhoo Seeva Vaguppu Page no : 487]
TOXICITY STUDY

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

1.2 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.

1.3 Experimental animals
Colony inbred animals strains of wistar rats of either sex weighing 200 - 250 g were used for the pharmacological and toxicological studies. The animals were kept under standard conditions 12:12 (day/night cycles) at 22°C room temperature, in polypropylene cages. The animals were fed on standard palliated diet (Hindustan Lever Pvt Ltd., Bangalore) and tap water ad labium. 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).

1.4 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.

Wistar albino rats of either sex weighing 200-250 g were fasted overnight, but allowed water *ad libitum*. Since the formulation 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 behavioral toxicity, if any by using FOB (Functional observation battery).

1.5 REPEATED ORAL TOXICITY STUDY
Repeated oral toxicity studies can be used to get additional information regarding the toxicity profile of a chemical. Repeated oral toxicity studies are defined as those studies where the chemical is administered to the animal for a period covering approximately 10% of the expected life of the animal. Usually, the dose levels are lower than for acute studies and allow chemicals to accumulate in the body before lethality occurs, if the chemical possess this ability.
1.6 Experimental procedure

The following experimental procedure was followed to evaluate the repeated oral toxicity study of -

**SANGU PARPAM (SGP)**

Group I : Control animals received 1% Sodium carboxyl methyl cellulose (CMC), ml/kg/p.o. for 21 days

Group II : Drugs suspended in CMC was given at the dose Level of 500 mg/kg/p.o. for 21 days

Body weight, food intake and water intake was recorded at two intervals with simultaneous observation for toxic manifestation and mortality, if any. At the end of 21 days treatment all the animals were sacrificed by over dosage of ether anesthesia. Blood was collected and used for hematological studies. Section of liver, kidney, and heart were dissected out and kept in 10% formalin for histopathological studies.

1.7 Acute oral toxicity study

SGP 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.

1.8 Repeated oral toxicity for 21 days

Test drug SGP at the dose of 500 mg/kg/po when administered orally for 21 days in rats did not show toxicity in renal functions. There was an significant increase in % of Hb and RBC (Table 2 ). However the drug did not show any significant elevation of marker enzyme levels of liver (Table 3).
TABLE 1
EFFECT OF SIDDHA FORMULATIONS (NVE) ON HAEMATOLOGICAL PARAMETERS AFTER 15 DAYS REPEATED ORAL DOSING (500 MG/KG)

<table>
<thead>
<tr>
<th>Groups</th>
<th>Hb (gm/100ml)</th>
<th>RBC (millions/cu.mm)</th>
<th>WBC (cells/cu.mm)</th>
<th>Differential leucocyte count (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lymphocytes</td>
</tr>
<tr>
<td>Normal</td>
<td>13.08 ± 0.34</td>
<td>4.31 ± 0.35</td>
<td>54850 ± 9.44</td>
<td>76.06 ± 3.89</td>
</tr>
<tr>
<td>NVE (500mg/kg/p.o)</td>
<td>13.68 ± 0.70&lt;sup&gt;ns&lt;/sup&gt;</td>
<td>4.68 ± 0.72&lt;sup&gt;ns&lt;/sup&gt;</td>
<td>5786.66 ± 3.323</td>
<td>77.67 ± 3.32&lt;sup&gt;ns&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

n=6; Values are expressed as mean ± S.D followed by Students Paired ‘T’ Test

ns – non significant when compared to control groups

TABLE 2
EFFECT OF SIDDHA FORMULATION (NVE) ON BIOCHEMICAL MARKERS OF LIVER AND KIDNEY AFTER 15 DAYS REPEATED ORAL DOSING (500 MG/KG/PO) IN RATS

<table>
<thead>
<tr>
<th>Groups</th>
<th>ALP (K.A.Units)</th>
<th>AST (IU/L)</th>
<th>ALT (IU/L)</th>
<th>Urea (mg/100ml)</th>
<th>BUN (mg/100ml)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>3.78±0.38</td>
<td>78.48±0.23</td>
<td>28.70 ± 0.81</td>
<td>± 13.56 ± 0.37</td>
<td>6.48 ± 0.50</td>
</tr>
<tr>
<td>NVE (500mg/kg/p.o)</td>
<td>4.32±0.75&lt;sup&gt;ns&lt;/sup&gt;</td>
<td>79.55±5.92&lt;sup&gt;ns&lt;/sup&gt;</td>
<td>30.13 ± 2.67&lt;sup&gt;ns&lt;/sup&gt;</td>
<td>± 14.60 ± 0.69</td>
<td>7.51 ± 0.35&lt;sup&gt;ns&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

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

Ns – non significant when compared to control groups
BIOCHEMICAL STUDIES

ASPARTATE AMINOTRANSFERASE (AST)
Aspirate aminotransferase was estimated using commercial AST kit (Span Diagnostics) by the method of Reitman and Frankel (1957).

Alanine aminotransferase (ALT)
Alanine aminotransferase was estimated using commercial AST kit (Span Diagnostics) by the method of Reitman and Frankel (1957).

Alkaline phosphatase (ALP)
Alkaline phosphatase was assayed using commercial ALP kit (Span Diagnostics) by the method of King (1934).

Urea
Urea was assayed using the commercial kit (Span Diagnostics) by the method of Coulambe et al., (1965).

1.8 Haematological studies
Erythrocyte count
Erythrocyte count was estimated by Hemocytometer method of Ghai (1995).

Total Leukocyte Count (WBC)
Total Leukocyte Count was estimated by Hemocytometer method of John (1972).
Haemoglobin
Haemoglobin was estimated by method of Ghai (1995).
### TABLE 3
EFFECT OF SIDDHA FORMULATIONS (SGP) ON HAEMATOLOGICAL PARAMETERS AFTER 15 DAYS REPEATED ORAL DOSING (500 MG/KG)

<table>
<thead>
<tr>
<th>Groups</th>
<th>Hb (gm/100ml)</th>
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<tr>
<td></td>
<td>(Normal)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>13.08 ± 0.34</td>
<td>4.31 ± 0.35</td>
<td>54850 ± 9.44</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(SGP 500mg/kg/p.o)</td>
<td>13.98 ± 0.70</td>
<td>4.58 ± 0.72 ns</td>
<td></td>
</tr>
<tr>
<td></td>
<td>13.98 ± 0.70</td>
<td>4.58 ± 0.72 ns</td>
<td>5686.66 ± 3.323</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ns</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

n=6; Values are expressed as mean ± S.D followed by Students Paired ‘T’ Test

ns – non significant when compared to control groups

### TABLE 4
EFFECT OF SIDDHA FORMULATION (SGP) ON BIOCHEMICAL MARKERS OF LIVER AND KIDNEY AFTER 15 DAYS REPEATED ORAL DOSING (500 MG/KG/PO) IN RATS

<table>
<thead>
<tr>
<th>Groups</th>
<th>ALP (K.A.Units)</th>
<th>AST (IU/L)</th>
<th>ALT (IU/L)</th>
<th>Urea (mg/100ml)</th>
<th>BUN (mg/100ml)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Normal)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.78±0.38</td>
<td>76.48±0.23</td>
<td>28.70</td>
<td>13.56 ± 0.37</td>
<td>6.48 ± 0.50</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.81</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(SGP 500mg/kg/p.o)</td>
<td>4.32±0.75</td>
<td>89.55±5.92</td>
<td>32.13 ± 2.67 ns</td>
<td>15.60 ± 0.69 ns</td>
</tr>
<tr>
<td></td>
<td>4.32±0.75</td>
<td>89.55±5.92</td>
<td>32.13</td>
<td>15.60 ± 0.69</td>
<td>7.61 ± 0.35 ns</td>
</tr>
<tr>
<td></td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
</tbody>
</table>

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

Ns – non significant when compared to control groups
PHARMACOLOGY STUDIES

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.

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 5

**ANALGESIC ACTIVITY OF SGP USING TAIL FLICK METHOD**

<table>
<thead>
<tr>
<th>Groups</th>
<th>Paw licking response (Sec)</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0 min (Sec)</td>
<td>30 min (Sec)</td>
<td>60 min (Sec)</td>
<td>120 min (Sec)</td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>1.56 ± 0.96</td>
<td>1.86 ± 0.96</td>
<td>1.76 ± 0.67</td>
<td>1.86 ± 0.53</td>
<td></td>
</tr>
<tr>
<td>Test (500mg/kg. p.o.,)</td>
<td>1.86 ± 0.206 ns</td>
<td>2.367 ± 0.265 ***</td>
<td>4.866 ± 1.267 ***</td>
<td>5.8 ± 0.4336 ***</td>
<td></td>
</tr>
</tbody>
</table>

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

***P<0.001 as compared with control.
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). 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.
TABLE 6
ANTI INFLAMMATORY ACTIVITY OF SGP
INDUCED END PAW EDEMA IN RATS

<table>
<thead>
<tr>
<th>Groups</th>
<th>Paw volume (ml) by mercury Displacement at regular interval of time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0min</td>
</tr>
<tr>
<td>Control</td>
<td>1.323±0.1549</td>
</tr>
<tr>
<td>SGP (500mg/kg. p.o.)</td>
<td>1.323±0.338 ±ns</td>
</tr>
<tr>
<td>Standard (Dic.Sodium 5 mg/kg/po)</td>
<td>0.835±0.065 ±ns</td>
</tr>
</tbody>
</table>

n=6; Values are expressed as mean ± S.D followed by student paired T- test. ns - Non significant as compared with control; P< 0.001 (***) as compared with control.

Results

SGP showed anti-inflammatory activity in carrageen induced hind paw edema in rats. The anti-inflammatory activity was observed at the end of 2 hrs after the pre treatment drug whereas the standard drug diclofenac sodium exhibited reduction in edema volume at the end of 1 hr after administration.
ANTI MICROBIAL STUDY

**Paper disc diffusion method**

The sterilized (autoclaved at 120 °C for 30 min) medium (40-50 °C) was inoculated (1 ml / 100 ml of medium) with the suspension (10⁵ cfu mL⁻¹) of the microorganism (matched to Mc Farland barium sulphate standard) and poured into a Petri-dish to give depth of 3-4 mm. The paper impregnated with the test compounds (25, 50, and 100 µg mL⁻¹ in dimethyl formamide) was placed on the solidified medium. The plates were pre-incubated for 1 h at RT and incubated at 37 o C for 24 and 48 h for antibacterial and anti-fungal activities, respectively. Ciprofloxin (100 µg /10 disc) and ketoconazole (100 µg / disc) were used as standard for anti-bacterial and anti-fungal activities, respectively. The observed zone of inhibition is presented in table.

In-vitro antimicrobial activity of SGP was screened against bacteria and yeast strains. The results are depicted in Table 14. SGP were exhibited low antimicrobial activity in streptococcus mutans in 10 µl / disc. Others were exhibited moderate to high antibacterial activity when compared to standard drugs ciprofloxacin and ketoconazole respectively.
TABLE 7

Zone of inhibition in mm

<table>
<thead>
<tr>
<th>Organism</th>
<th>Standard drug Ciprofloxacin 50 mcg/disc</th>
<th>Test drug (SGP µl/disc)</th>
<th>Zone of inhibition in mm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>10µl</td>
</tr>
<tr>
<td>Strep. mutans</td>
<td>31</td>
<td></td>
<td>14</td>
</tr>
<tr>
<td>Staph. aurens</td>
<td>31</td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>E.coli</td>
<td>30</td>
<td></td>
<td>16</td>
</tr>
<tr>
<td>K.pneumoniae</td>
<td>31</td>
<td></td>
<td>16</td>
</tr>
<tr>
<td>Ps. areginosa</td>
<td>30</td>
<td></td>
<td>16</td>
</tr>
<tr>
<td>Group A Streptococcus.</td>
<td>31</td>
<td></td>
<td>15</td>
</tr>
</tbody>
</table>

14 mm – Low sensitive, 15 mm – Moderate, above 16 mm – Highly sensitive

Note Sample concentration :-
4 gm – 400 ml of solvent in 25 µl, 50 µl, and 100 µl / disc standard for Bacteria ;- Ciprofloxacin HCl, 50 mcg / disc.

In-vitro antimicrobial activity of SGP as screened against bacteria and yeast strains. The results are depicted in Table 13. In 10 µl/disc concentration of SGP were exhibited low antibacterial activity in Group A streptococcus and Staph. aereus. others were exhibited moderate to high antibacterial activity when compared to standard drugs ciprofloxacin and ketoconozole respectively.
ANTIOXIDANT STUDY

1.10 In Vivo Antioxidant study

Samples of serum collected from rats treated with test drugs were assayed for GSH (Moron et al, 1979) and LPO (Yagi, 1976) and the results were compared with control group.

Table 8

Antioxidant activity of Siddha Formulation (NVE) after 15 days repeated oral dosing (500 mg/kg)

<table>
<thead>
<tr>
<th>Groups</th>
<th>LPO</th>
<th>GSH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>0.63 ± 1.37</td>
<td>46.28 ± 2.31</td>
</tr>
<tr>
<td>NVE (500mg/kg/p.o)</td>
<td>0.42 ± 3.90***</td>
<td>83.31 ± 0.35***</td>
</tr>
</tbody>
</table>

N=6; Values are expressed as mean ± S.D followed by Student T-Test.

***P<0.001 as compared with control.
2.6 ANTIOXIDANT ACTIVITY

At the end of 21 days repeated oral toxicity study when the plasma of drug treated animals was examined for GSH activity, the level of GSH activity was increased significantly (p>0.001) in test groups. On the other hand the LPO activity was considerably reduced in drug treated group when compared to control.
CLINICAL ASSESSMENT

1. STUDY DESIGN

1. Open clinical trial

2. Parameters for evaluation

2. SYMPTOMS AND SIGN
   Thondai vali [pain]
   Vizingupothu vali [pain on swallowing]
   Thondai sathai veekam [Enlarged tonsils]
   Kurarkammal [Change of voice]
   Thondai Sivathal [Redness of Pharynges]

3. LINE OF TREATMENT

   Dose: 260 mg bid twice daily Anupanam: honey
   Route of administration: enternal
   Duration: 45 days

4. SELECTION PATIENTS:

   Sample size 24 patients total number of number of 24 patients total number of 24 patients are selected on the basis of inclusion and exclusion criteria.
<table>
<thead>
<tr>
<th>INCLUSION CRITERIA</th>
<th>EXCLUSION CRITERIA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. History sign and symptoms of Ninakurarkammal</td>
<td>1. Quinsy</td>
</tr>
<tr>
<td>2. Age between 10-50 years from either sex</td>
<td>2. Parapharyngeal abscess</td>
</tr>
<tr>
<td></td>
<td>3. Rheumatic fever endocardities</td>
</tr>
<tr>
<td></td>
<td>4. Acute glomerulo nephritis</td>
</tr>
<tr>
<td></td>
<td>5. Septicemia</td>
</tr>
<tr>
<td></td>
<td>6. 10 t who have any offer concomitant illness</td>
</tr>
<tr>
<td></td>
<td>7. 10t with known liver or kidney disorders</td>
</tr>
</tbody>
</table>

**DIAGNOSIS**

Diagnosis is made by physical examination signs and symptoms of the Disease.
**LABORATORY DIAGNOSIS**

Blood 1) Leukocytosis [12,000 cells/cumm – 20000 cells/cumm]  
With predominant polymorphonuclear cells  
2) ESR is Raised

Repaid detection method for streptococcal antigen or by culturing after pharyngeal swabbing, may be positive for streptococci in streptococcal tonsillitis.

<table>
<thead>
<tr>
<th>BLOOD TEST FOR</th>
<th>URINE</th>
</tr>
</thead>
<tbody>
<tr>
<td>➢ TCL</td>
<td>ALB</td>
</tr>
<tr>
<td>➢ DC</td>
<td>SUG</td>
</tr>
<tr>
<td>➢ ESR</td>
<td>DEP</td>
</tr>
<tr>
<td>➢ HB</td>
<td></td>
</tr>
</tbody>
</table>
MEDICAL ADVICE
Advice regarding personal hygiene
Improving general health

All the 24 patients were subjected for the clinical study age socio economic status personals habits and diets occupational status signs and symptoms during admission where recorded improvement showing signs and symptoms and statistical analysis after treatment is recorded and tabulated as follows.
### Table 9
SEX DISTRIBUTION

<table>
<thead>
<tr>
<th>S.N</th>
<th>SEX</th>
<th>No of Patients</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Male</td>
<td>11</td>
<td>45.8</td>
</tr>
<tr>
<td>2</td>
<td>Female</td>
<td>12</td>
<td>50</td>
</tr>
<tr>
<td>3</td>
<td>Children’s</td>
<td>1</td>
<td>4.2</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>24</td>
<td>100</td>
</tr>
</tbody>
</table>

![Sex Distribution Graph](image-url)
Table 10

AGE WISE DISTRIBUTION

<table>
<thead>
<tr>
<th>S.N</th>
<th>Age in years</th>
<th>No of Patients</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10 – 20</td>
<td>16</td>
<td>66.6</td>
</tr>
<tr>
<td>2</td>
<td>21 – 30</td>
<td>6</td>
<td>25</td>
</tr>
<tr>
<td>3</td>
<td>31 – 40</td>
<td>1</td>
<td>4.2</td>
</tr>
<tr>
<td>4</td>
<td>41 – 50</td>
<td>1</td>
<td>4.2</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>24</td>
<td>100</td>
</tr>
</tbody>
</table>

![AGE WISE DISTRIBUTION](chart.png)
## Table 11
### SOCIO-ECONOMIC STATUS

<table>
<thead>
<tr>
<th>S.N</th>
<th>Eco. Status</th>
<th>No of Patients</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Poor</td>
<td>3</td>
<td>12.5</td>
</tr>
<tr>
<td>2</td>
<td>Middle</td>
<td>20</td>
<td>83.3</td>
</tr>
<tr>
<td>3</td>
<td>Rich</td>
<td>1</td>
<td>4.2</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>24</td>
<td>100</td>
</tr>
</tbody>
</table>

![SOCIO-ECONOMIC STATUS](image)
### Table 12

**DIET**

<table>
<thead>
<tr>
<th>S.N</th>
<th>Diet</th>
<th>No of Patients</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Vegetarian</td>
<td>1</td>
<td>4.2</td>
</tr>
<tr>
<td>2</td>
<td>Mixed Diet</td>
<td>23</td>
<td>95.8</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>24</td>
<td>100</td>
</tr>
</tbody>
</table>

![DIET Graph]

- **No. of Patients**
- **Percentage**

![Vegetarian and Mixed Diet Graph]
Table 13

OCCUPATIONAL STATUS

<table>
<thead>
<tr>
<th>S.N</th>
<th>Occupation</th>
<th>No of Patients</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Daily Labor’s</td>
<td>5</td>
<td>20.8</td>
</tr>
<tr>
<td>2</td>
<td>Students</td>
<td>6</td>
<td>25</td>
</tr>
<tr>
<td>3</td>
<td>House wife</td>
<td>5</td>
<td>20.8</td>
</tr>
<tr>
<td>4</td>
<td>Office worker</td>
<td>5</td>
<td>20.8</td>
</tr>
<tr>
<td>5</td>
<td>Business</td>
<td>3</td>
<td>12.6</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>24</td>
<td>100</td>
</tr>
</tbody>
</table>

OCCUPATIONAL STATUS

No. of Patients

<table>
<thead>
<tr>
<th>S.N</th>
<th>Occupation</th>
<th>No of Patients</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Daily Labor’s</td>
<td>5</td>
<td>20.8</td>
</tr>
<tr>
<td>2</td>
<td>Students</td>
<td>6</td>
<td>25</td>
</tr>
<tr>
<td>3</td>
<td>House wife</td>
<td>5</td>
<td>20.8</td>
</tr>
<tr>
<td>4</td>
<td>Office worker</td>
<td>5</td>
<td>20.8</td>
</tr>
<tr>
<td>5</td>
<td>Business</td>
<td>3</td>
<td>12.6</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>24</td>
<td>100</td>
</tr>
</tbody>
</table>

No of Patients

Percentage
## Table 14

IMPROVEMENT OF SIGNS AND SYMPTOMS
OBSERVED BEFORE AND AFTER
TREATMENT OF 24 (N)
PATIENTS OF NINAKURAR KAMAL GSMC, CHENNAI – 106.

<table>
<thead>
<tr>
<th>S.NO</th>
<th>SIGNS AND SYMPTOMS</th>
<th>NUMBER OF PATIENT</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Before Treatment</td>
<td>After Treatment</td>
</tr>
<tr>
<td>1</td>
<td>Throat pain</td>
<td>24</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>Cough</td>
<td>20</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>Change of voice</td>
<td>15</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>Enlarged tonsils</td>
<td>12</td>
<td>3</td>
</tr>
</tbody>
</table>
Table 15

RESULTS OF STATISTICAL ANALYSIS OF
SUBJECTIVE PARAMETERS OBSERVED
BEFORE AND AFTER TREATMENT
OF 24(N) PATIENTS OF NINAKURARKAMAL GSMC, CHENNAI

<table>
<thead>
<tr>
<th>S/n</th>
<th>Parameters</th>
<th>Mean value Before Treatment</th>
<th>Mean value After Treatment</th>
<th>Difference Present</th>
<th>Statistical Test criteria</th>
<th>Probability (P) Value</th>
<th>Statistical significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Throat pain</td>
<td>34.0± 3.577</td>
<td>3.0± 0.894</td>
<td>21.0± 3.128</td>
<td>16.432</td>
<td>0.001</td>
<td>Significant</td>
</tr>
<tr>
<td>2.</td>
<td>Cough</td>
<td>20.0± 4.472</td>
<td>4.0± 1.7889</td>
<td>16.0± 3.621</td>
<td>10.954</td>
<td>0.001</td>
<td>Significant</td>
</tr>
<tr>
<td>3.</td>
<td>Change of voice</td>
<td>15.0± 4.472</td>
<td>3.0± 0.894</td>
<td>12.0± 2.752</td>
<td>8.2161</td>
<td>0.001</td>
<td>Significant</td>
</tr>
<tr>
<td>4.</td>
<td>Enlarged tonsils</td>
<td>18.0± 1.788</td>
<td>3.0± 0.894</td>
<td>150± 2.872</td>
<td>24.648</td>
<td>0.001</td>
<td>Significant</td>
</tr>
</tbody>
</table>

Values are compared with test one sample student T.test
SUMMARY

The Sangu Parpam [SGP] was taken to evaluate its efficacy on Ninakurarkammal.

Zoological and Botanical of the raw drugs were studied regarding its identification and description.

The Sangu Parpam prepared indicated for treating Ninakurarkamal enlarged tonsils which comes under kabha disease. So the plen to evaluate the therapeutic efficacy of this drug in Ninakurarkamal patients, carried out at Aringnar Anna Hospital post graduate Gunapadam out patient department Chennai – 106.

Bio Chemical analysis the SGP Contains Calcium, Carbonate, Chloride.

The pharmacology analysis showed that the drug has got mild anti inflammatory analgesic, antihistaminic, pyuretic animal study the clinical study was done in 24 patients after 45 days course of treatment good response was observed in 18 cases 3 cases showed fair response 3 cases showed poor response.

The drug Sanguparpam is statistically significant in improving Ninakurarkammal digest signs and symptoms
DISCUSSION AND CONCLUSION

The incinerated Sangu parpam SGP Considered to be KARPPU [ Acrid ] Taste. Which is Normalizing the Kaba thodam in Ninakurarkammal.

Even honey the adjuvant for the drug has expectorant and antiseptic action SGP Exhibition anti– inflammatory and analgesic activities in appropriate experimental models. The delayed anti– inflammatory activity of SGP in carrageenan induced edema may be due to the delayed absorption of activity constituent of the drug from GI tract or a mechanism by which SGP inhibits the synthesis or release of inflammatory prostaglandins from the site of chemical injury (carrageenan) SGP exhibited analgesic activity in the radiant heat method in rats. There is a good correlation of results obtained from the experimental study vi-a-vis the clinical study reported in the thesis.

The total leukocyte count and ESR are indicates level of infection associated with infection dropped to normal. Proving that Sangu parpam had influenced the disease state So it is concluded that for the disease Ninnakurakamal the treatment with Sangu Parpam is good in the view of efficacy and safe.

It was found that Snagu Parpam is an effective remedy in the management of Ninakurarkamal discus is easily available and economical. It was well tolerated, safe and free from any adverse effect.
<table>
<thead>
<tr>
<th>S/N</th>
<th>OP.N O</th>
<th>NAMES AGE/SEX</th>
<th>COMPLAINTS</th>
<th>B/T A/T</th>
<th>TLC</th>
<th>DC (%)</th>
<th>ESR (MM)</th>
<th>HB %</th>
<th>HB SUG</th>
<th>DEP</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1414</td>
<td>Jothika 30/F</td>
<td>Throat Pain Fullness in the Throat . Malise</td>
<td>BT</td>
<td>10100</td>
<td>53</td>
<td>39</td>
<td>22</td>
<td>45</td>
<td>10.2</td>
<td>N</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>AT</td>
<td>11600</td>
<td>51</td>
<td>35</td>
<td>10</td>
<td>30</td>
<td>12.5</td>
<td>N</td>
</tr>
<tr>
<td>2</td>
<td>1493</td>
<td>Mani 20/M</td>
<td>sore Throat difficulty in swallowing</td>
<td>BT</td>
<td>8900</td>
<td>54</td>
<td>40</td>
<td>6</td>
<td>7</td>
<td>10</td>
<td>5.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>AT</td>
<td>8800</td>
<td>58</td>
<td>38</td>
<td>6</td>
<td>3</td>
<td>11</td>
<td>N</td>
</tr>
<tr>
<td>3</td>
<td>1500</td>
<td>Balu 21/m</td>
<td>Cough. Change of voice sore throat</td>
<td>BT</td>
<td>11200</td>
<td>56</td>
<td>32</td>
<td>12</td>
<td>38</td>
<td>65</td>
<td>12.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>AT</td>
<td>10600</td>
<td>56</td>
<td>38</td>
<td>6</td>
<td>22</td>
<td>40</td>
<td>13</td>
</tr>
<tr>
<td>4</td>
<td>1502</td>
<td>Srinivasan 19/F</td>
<td>Throat Pain Cough Feverish</td>
<td>BT</td>
<td>10300</td>
<td>58</td>
<td>30</td>
<td>12</td>
<td>12</td>
<td>25</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>AT</td>
<td>10000</td>
<td>51</td>
<td>47</td>
<td>2</td>
<td>7</td>
<td>15</td>
<td>14</td>
</tr>
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**Abbreviation:**
- BT - Before Treatment
- AT - After Treatment
- TC - Total WBC Count
- DC - Differential Count
- Hb - Haemoglobin
- Alb - Albumin
- Dep - Deposit
- OPC - Occasional Pus Cells
- FPC - Few Cells
- N - Nil
- P - Neutrophils
- L - Lymphocyte
- E - Eosinophils
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