A Study on

MALAIVEMBU ILAI CHOORANAM

&

PAAVANA OMUM

(DISSERTATION SUBJECT)

For the partial fulfillment of requirements to the Degree of

DOCTOR OF MEDICINE (SIDDHA)

(GUNAPADAM BRANCH)

GOVERNMENT SIDDHA MEDICAL COLLEGE

Chennai – 600106

(Affiliated to the Tamilnadu Dr.M.G.R. Medical University, Chennai)

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BONAFIDE CERTIFICATE

Certified that this thesis titled a study on ***MALAIVEMBU ILAI CHOORANAM*** **and** ***PAAVANA OMUM*** is the bonafide work of **DR. KALAIVANI .R** , **Reg. No. : 32051603** who certified 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.

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INTRODUCTION

Siddha system of medicine is the ancient unique and potent system among all the system of medicine existing at present. It was invented by Siddhars who were the spiritual scientists of the ancient Tamilland. Siddha system of medicine is dating up to 5000 years. This system maintains the physical, mental and moral health.

Siddhars had extra sensory perception, were highly spiritual and had complete control over all the elements. They had full awareness of the nature and activities of all objects on this planet and of all times past, present and future.

The word **"Siddha"** means ever sure and true, ready and ever lasting derivatively.

It is a medical science through which the body as well as the soul are treated. It comprises of four main branches called **Vatham, Maruthuvam, Yogam and Gnanam**. The Siddha system has not only the curative and preventive effects on different diseases but also paves the way for longevity and immortality.

This system considers body as a whole of five elements viz, **"Mann", "Neer", "Thee", "Vali", "Aakayam".** These are the fundamental principles of creation, protection and destruction of the world. The forces behind these are respectively referred to as **Vatham, Pitham and Kapham** in the case of human body. In a healthy person the respective ratio is **1:1/2:1/4** any imbalance in this ratio can cause disease.

Siddhars need many diagnostic tools in diagnosis of a disease. They are the philosophy of **"Nadi" (pulse), "Envagai thervugal** (**Naa, Niram, Mozhi, Vizhi, Malam, Moothiram, Nadi and Sparisam) Neerkuri and Neikuri.**

Nowaday's people are getting too very stressed in order to keep in pace with modern life style. Adding fuel to the fire, the advent of fast foods, tinned foods and the other junk ones are giving more trouble to the gastro intestinal tract. Hence over straining of the gastro intestinal tract may lead to a lot of "Acid Peptic Disorders" which is becoming a common disease of the world. Peptic ulcer disease can be prevented by following the simple basic disciplines of habits and food.

There are many drugs in Siddha, which prove good against peptic ulcer disease. One of the Siddha medicine is "**Paavana omum"** which is good medicine for the **"Gunmam" (peptic ulcer).**

Madhumegam (Diabetes Mellitus) is one of the most common endocrinological disease. Above 40 years of age are most commonly affected by it and it is significantly contributing for the loss of manpower from the society from work.

In day today life for **Madhumegam** a lot of drugs are used in the Siddha system of medicine. Among them "**Malaivembu Ilai Chooranam"** has its beneficial results in the treatment of **Madhumegam**. The author believes that the drug has good effect on treating **Madhumegam**.

AIM AND OBJECTIVES

AIM:

To evaluate the efficacy of **Malaivembu Ilai Chooranam (Melia azedarach)** in the management of **Madhumegam.**

OBJECTIVES:

Leaves of **Malaivembu (Melia azedarach)** are mentioned for **Madhumegam** in **"Kaikanda anuboga vaithiya perunkural[42]".** The disease Madhumegam found in Siddha texts is correlated with Diabetes Mellitus (Type II). A systemic study to access the efficacy of **"Malaivembu Ilai Chooranam"** was aimed and the main objectives of the study are,

- To study the pharmacognostic features of the leaves of **Malaivembu** which includes taxonomic identification of the plant, macro and microscopical details of the part used as medicine.

- To subject the **Malaivembu Ilai Chooranam** to thin layer chromatography to determine the reference values.

- To study the anti-microbial activity of **Malaivembu Ilai Chooranam.**

- To subject the **Malaivembu Ilai Chooranam** to biochemical analysis.

- To study the acute toxicity of **Malaivembu Ilai Chooranam** for fixation of therapeutic dosage.

- To study the pharmacological activity (antidiabetic) of the **Malaivembu Ilai Chooranam**.

- To ascertain the clinical efficacy of the drug for the management of **Madhumegam.**

- To analyse all the above study results to evaluate the efficacy of the **Malaivembu Ilai Chooranam.**

REVIEW OF LITERATURE

மலைவேம்பு (MELIA AZEDARACH.LINN)

BOTANICAL ASPECT

CLASSIFICATION:[1]

Class	:	Dicotyledons
Subclass	:	Polypetalae
Series	:	Disciflorae
Order	:	Geraniales
Family	:	Meliaceae
Species	:	Melia azedarach

VERNACULAR NAMES: [2, 3]

English	:	Persian lilac, pride of china, pride of India, Common Bead tree.
Hindi	:	Bakain, drek.
Bengali	:	Mahanim, Ghoranim
Marati	:	Pejri , Padrai
Gujarati	:	Bakam limbodo
Telungu	:	Turaka vepa, Kondu- vepa
Tamil	:	Malaivembu
Malayalam	:	Karin vembu, Sima veppu
Kannadam	:	Arebevu, Hutchubevu, Chikha – bovu, Bettada – bevu
Punjabi	:	Drek
Nepal	:	Bakaina
Assam	:	Thamaga
Trade	:	Persian Lilac
Duk	:	Gouri- nim
Sanskrit	:	Maha – Nim, Parvata – Nimba

DISTRIBUTION:[2]

Distributed throughout India.

DESCRIPTION:

A moderate sized deciduous tree, 9-12m in height with a cylindrical lobe with dark grey bark having shallow longitudinal furrows.

PARTS USED:

Roots, leaves, seeds, flowers.

LEAVES:

Bipinnate.

LEAFLETS:

Ovate or lancelet, serrate, acuminate, glabrous on both surfaces, slightly oblique at the base, flowers lilac.

PEDUNCLE:

Axillary panicles, staminal tube very conspicuous, purple, slightly ribbed out side.

FRUITS:

Ellipsoid,
4 seeded drupes,
Yellow when ripe.
It flowers during a hot season and fruits ripen during the cold weather.

CULTIVATION:

Under natural conditions, the plant regenerates freely from seeds during the rains. Artificial propagation is possible by direct sowing, transplanting seedlings from the nursery or by cuttings and root suckers.

PROPERTIES AND USES:

LEAVES:

The leaves are

Bitter
Astringent
Expectorant
Vermicidal
Diuretic
Emmenagogue
Stomachic.

They are useful in inflammation, hysteria, leprosy, scrofula, spleenomegaly, liver disorders, cardiac diseases, urolithiasis, strangury, amenorrhea, verminosis, cough and bronchitis.

ROOTS:

The roots are

Acrid
Bitter
Astringent
Anodyne
Antiseptic

Anthelmintic

Expectorant

Febrifuge

Antiperiodic

Emmenagogue

Tonic.

They are useful in sciatica, lumbago, cephalalgia, leprosy, leucoderma, skin diseases, wounds, ulcers, haemorrhoids, helminthiasis, especially tapeworm, cough, asthma, amenorrhoea, dysmenorrhoea, diabetes and vomiting. In excessive dose, it is a emetic and purgative.

SEEDS:

The seeds are

Bitter

Expectorant

Anthelmintic

Aphrodisiac.

They are useful in helminthiasis, typhoid fever, pain in the pelvic region and leprosy.

FLOWERS:

The flowers are

Astringent

Refrigerant

Anodyne

Vermifuge

Diuretic

Emmenagogue.

They are useful in cephalalgia, gastropathy, dysmenorrhoea and fever.

OIL:

Properties considered similar to that of neem oil.

Flowers and leaves are applied as poultice to relieve nervous headaches.

USES:

The leaves, barks and fruits are accredited with insect repellent properties. Leaves are placed inside books and between folds of woollen garments to protect them against insect attack.

Extracts of leaves, used in sprays, protect plants against grasshoppers and locusts. A decoction of dry leaves is effective against locusts; the active principle is reported to be an alkaloid soluble in hot water.

CHEMICAL CONSTITUENTS:

Kaempferol-3- L- shimano- D- glycoside m.p 181^{o} and rustic isolated from leaves [4].

Salannin and melanin also isolated [5]. Determination of kaempferol – 3 – 0 – B- D-rutinoside(0.14) and Quercetin -3-0- B.D- rutinoside(0.08%) in leaves. (J.Nat. Prod.

1986, page 49,176). Leaf extract inhibited growth of 4th instar larvae of Epilachna varivestis, an active principle isolated which caused 100% larval mortality at 2ppm[6]. Leaf extract from Melia azedarach inhibited phagocytes of opsonized sheep erythrocytes and the respiratory burst triggered by the post-receptor stimuli, phorbol 12- myristate B- acetate in human monocytes[7].

Bioassay of melia azedarach and Ricinus communis to assess their insecticidal properties against the insect. Naphthalene 2, 3, 4, 49, 5, 6- hexahydro 7-methy -1- (methylethyl) -6 – 01, 4 methoxd – 2 oxo-1- from methoxy -1, 2- dihydroxicotinitrite have been isolated from E. adenophorum[8].

Water extracts of Melia azedarach at the contraction of isolated guinea pig ileum was tested. Water extract of Melia azedarach leaves showed a significant effect on enhancing the stimulatory activity of acetylcholine at doses of 16 to 128 microgram dried leaves/ml of bathing medium while no significant effect was observed for azadirachta indica[9].

GUNAPADAM ASPECT

கிடைக்கும் இடங்கள் : [3]

இந்தியாவின் பல பாகங்களிலும், பாரசீகம், அமெரிக்கா முதலிய இடங்களிலும் பயிராகும் மரம் ஆகும். வேப்பிலையின் ஓரங்களில் காணும் அறுவாய் இம்மரத்து இலையில் இராது. இதன் இலை கரும்பச்சை நிறம். காய் சிறிது கனத்தும்,

உருண்டையாயும் இருக்கும்.

பயன்படும் உறுப்பு:

இலை, வேர்ப்பட்டை, பிசின்.

சுவை

கைப்பு

தன்மை

வெப்பம்

பிரிவு

கார்ப்பு

செய்கை :

இலை :

புழுக்கொல்லி - Anthelmintic

கற்றுகளாக்கி - Antilithic

சிறுநீர்ப்பெருக்கி - Diuretic

ருதுவுண்டாக்கி - Emmenagogue

பெருமலம் போக்கி - Cathartic

பூ:

வீக்கங்கரைச்சி - Resolvent

ருதுவுண்டாக்கி - Emmenagogue

பட்டை:

வாந்தியுண்டாக்கி - Emetic

குணம் : [12]

" மலட்டு புழுவும் வயிற்றின் வலியும்
அலட்டுவாய்வும் போம் அடக்கி – கொலட்டும்
உலவேஞ் சினைதேவற்கண் ஓதிமமே கேளாய்
மலைவேம்பின் பேரை வழுத்து".

பொழிப்புரை :

வயிற்றுப் புழு, சூதக வலி, வெறிநோய், உடலை வரட்டும் வளிநோய்கள் நீங்கும்.

வழக்கு :

1. சூதகவலி, மலட்டுப்புழு ஆகியவைகளை நீக்கும் மருந்தாகிய கலிங்காதித் தைலத்தில் சேருகிறது.
2. இலைச்சாற்றில் தக்க அளவு கொடுத்து வர, புழுக்களைக் கொன்று வெளிப்படுத்தும்.
3. பிசினை தக்க அளவில் கொள்ளக் கருங்கரப்பான், மேகக்கட்டி, செரியாக்கழிச்சல், மண்ணீரல் வீக்கம் குணமாகும்.
4. பச்சை வேர்ப்பட்டை 3 பங்கும், நீர் 24 பங்கும் சேர்த்து நீர் 1/2 பாகம் சுண்டும் வரைச் சுருக்கி பாகம் 15 -30 மிலி வீதம் கொடுத்து வந்தால் வயிற்றுப் புழுக்களைப் போக்கும்.

சேரும் மருந்துகள்:

1. நிம்ப பஞ்சகச் சூரணம்[13]

மலைவேம்பு
வேம்பு
சிவனார் வேம்பு
கறிவேம்பு

நிலவேம்பு

வகைக்கு 6 பலம் எடுத்து காயவைத்து இடித்து வஸ்திரகாயம் செய்யவும். மூவிரல்கொள் ளுமளவு எடுத்து உட்கொண்டு வெந்நீர் பருகவும். 20 நாட்கள். புளி, புகையிலை தவிர்க்கவும். முடக்கு சூலைகள் தீரும்.

2. கலிங்காதித் தைலம் [14]

வரிக்குமட்டிச் சாறு
வெங்காயச் சாறு
எலுமிச்சம்பழச்சாறு
மலைவேப்பிலைச்சாறு
சிற்றாமணக்கு நெய்

இவை வகைக்கு கச்சா 1 படி. இவைகளை சேர்த்துக் காய்ச்சி பதத்தில் வடித்து பருவப் பெண்களுக்கு மாதவிடாய் காலத்து 3 நாட்களிலும் காலையில் மட்டும் 1/4 சேர் நீராகாரம் சேர் த்துக் குடிக்க வைத்து, உப்பில்லாப் பத்தியம் வைக்க, மலட்டு நோய்கள் தீரும். இரத்த குன்மம், மலட்டுப் புழு ஆகிய இவைகளும் தீரும்.

MATERIALS AND METHODS

SOURCE:

Material for the present study was collected from Papanaasam, Tirunelveli District.

PREPARATION OF THE MALAIVEMBU ILAI CHOORANAM:

Purified dried leaves were finely powdered in a stone motor. Then it was filtered by a fine white cotton cloth.

PURIFICATION OF THE MALAIVEMBU ILAI CHOORANAM:

Milk and water were mixed in equal quantity and taken in a mud pot. The mouth of the mud pot was covered with a cloth. The pot was put on fire and burnt until milk mixed with water was fully evaporated. Then the prepared chooranam was allowed to dried by spreading.

STORAGE:

The chooranam was stored in a tightly stoppered glass container and was inspected again to guard against the moisture and insects. As the life period of the chooranam is for 3months only, it was used in that period.

ROUTE:

Enteral

DOSE:

1 gram, 2 times a day with water.

PHARMACOGNOSTICAL STUDY

METHODS FOR ANATOMICAL STUDIES:

Free hand as well as microtome sections were taken and double stained.

DOUBLE STAINING:

Microtome sections were stained in the following manner. Alcoholic saffranin (0.5%) counter stained with 0.25% fast green. This schedule gave good result for studying the histology of different tissues of plant organs. All sides after staining in saffranin were dehydrated by employing graded series of ethyl alcohol (30%, 50%,70%, 90% and absolute alcohol) and stained with fast green in clove oil and xylol alcohol (50-50) and passed through xylol and mounted in DPX.

(Johansen, 1940)

MACERATION:

Clearing of leaves for studying vein-islet number, palisade ratio, stomatal number and stomatal index was done by using 5% NaOH along with chlorinated soda solution supplemented with gentle heat.

PHOTOMICROGRAPHS:

Photomicrographs were made at different magnifications, depending upon the anatomical details to be broughtout photomicrographs were done on the Meopta research microscope using Asahi pentax, 35mm SLR spotmatic 11-camera and conica colour film(SR 100 ASA).

QUANTITATIVE MICROSCOPY:

The determination of leaf constants like stomatal number and stomatal index, palisade ratio, veinislet number, were carried out according to the procedures given in the literature and recorded in Table No 1 to 4.

STOMATAL NUMBER AND STOMATAL INDEX:

STOMATAL NUMBER:

Stomatal number is the average number of stomata per sq. mm of the epidermis of the leaf.

TABLE NO.1

STOMATAL NUMBER:

LOWER EPIDERMIS:

Field no.	No. of stomata /sq.mm
01	70
02	68
03	66
04	68
05	70
06	66

Average stomatal number = $68/mm^2$

STOMATAL INDEX:

Stomatal index is the percentage, which the number of stomata forms to the total number of epidermal cells, each stomata being counted as one cell. It is calculated by using the following equation.

S.I = S x 100/E+S

S.I. = Stomatal index

S. = Number of stomata per unit area

E = Number of epidermal cells in the same area.

TABLE NO. 2

STOMATAL INDEX:

LOWER EPIDERMIS:

Field No	No.of stomata per sq.mm(s)	No.of Epidermal cell per sq.mm(E)	Stomatal index I = S/E+S x 100
01	70	36	68
02	68	36	63
03	68	36	63
04	68	38	64
05	70	36	68
06	68	38	64

Average stomatal index = 65/mm^2

PROCEDURE:

Cleared the fragments of leaf from the portion between margin and midrib by boiling with chloral hydrate solution and prepared the mounts of lower epidermis in glycerin. Drawn a square of 1mm by means of stage micrometer and camera lucida. Replaced the stage micrometer by the cleared leaf preparation focused under the same magnification and traced the epidermal cells and stomata within the square. Examined successive adjacent fields of about 400 cells were counted and calculated, the stomatal number and the stomatal index.

DETERMINATION OF PALISADE RATIO:

Palisade ratio is the average number of palisade cells beneath one epidermal cell using four contiguous epidermal cells. (fig 2D)

The leaf pieces were cleared by boiling with chloral hydrate solution and mounted in glycerin. The cleared preparation was focused under high magnification with the help of camera lucida, four contiguous epidermal cells were traced and outlined. By lowering the draw tube the palisade cells were focused and traced which are lying immediately beneath the same four- epidermal cells.

TABLE NO. 3

PALISADE RATIO:

Field No	No.of Epidermal cells per sq.mm(E)	No.of palisade cells(p)	Palisade ratio P/E
01	4	28	7
02	4	32	8
03	4	28	7
04	4	30	7
05	4	26	6
06	4	28	7

Average palisade ratio = 7

VEIN ISLET NUMBER AND VEIN ISLET TERMINATION NUMBER:

Vein islet number is defined as the number of vein islet per sq. mm of the leaf surface midway between the midrib and margin. This number is independent of the side of the leaf and does not alter with the age of the plant.

TABLE NO. 4

VEIN ISLET NUMBER:

Field No.	Vein islet number per sq.mm
01	52
02	56
03	58
04	52
05	56
06	56

Average vein islet number = 55/mm^2

T.S. OF LEAFLET STALK:

Transverse section of leafstalk shows a small projection on the dorsal side with two wings on either side (fig 2A, C). The ventral side shows a huge convexity.

The epidermis is made up of single layer of cells and covered by a thick cuticle. Some of the epidermal cells elongate to form unicellular trichomes. In the centre, vasculature is represented by two superimposed bundles (fig.2C).

On the dorsal side, the subepidermal region of the projection and wings contain collenchyma cells and the other region is madeup of 2-3 rows of chlorenchyma cells. On the lower side, the subepidermal region contain 3-4 rows of collenchyma cells (Fig.2C).

The ground tissue is made up of thin walled parenchyma cells. Most of the parenchyma cells that are closer to the vascular bundles contain druses of calcium oxalate crystals (Fig.2C). Secretory cells present in the ground tissue.

T.S. OF LEAF LET:

T.S. OF LAMINA:

Transverse section of leaflet is dorsiventral in nature (Fig.2B). Epidermis is made up of single layer of cells and some of them elongate to form unicellular and rarely stellate trichomes. Mesophyll is differentiated into upper palisade tissue and lower spongy tissue (fig 2F).

Palisade tissue is single layered and made up of columnar. Closely arranged cell. It is followed by3-5 rows of circular to oval spongy tissue. (Fig. 2F)

Stomata are confined only to lower epidermis. Secretory cells are usually situated at the boundary between the palisade and spongy mesophyll.(Fig. 2F)

T.S OF MIDRIB:

Transverse section of midrib shows a large projection on the adaxial side and convexity on the abaxial side. Epidermis is single layered and made up of small rectangular cells. The subepidermal region of the dorsal projection and abaxial side contain 4-5 rows of collenchyma cells.

Vasculature is represented by two superimposed bundles in the centre of the midrib, (fig.2F). Ground tissue is made up of closely arranged round parenchyma cells. Secretory cells are present in the ground tissue. Most of the ground parenchyma cells contain druses of calcium oxalate crystals (Fig2E,I).

EPIDERMIS IN SURFACE VIEW:

Adaxial foliar epidermis is made up of penta-hexagonal cells with slightly wavy margin stomata are absent (Fig.2G).

Abaxial foliar epidermal cell walls are wavy in nature. It is perforated by ranunculaceous type of stoma (Fig.2H).

TRICHOMES

Clothing unicellular trichomes occur. Rarely stellate trichomes are present (Fig. 2C).

METHODOLOGY FOR THIN LAYER CHROMATOGRAPHY

2g of the sample was soaked in 20ml of rectified spirit(90%) for 18hrs, and boiled for 10 minutes and filtered. The filtrate was concentrated and made up to 10ml. 20µl of alcoholic extract was applied on Merck aluminium plate pre-coated with silica gel $60F_{254}$ of 0.2mm thickness along with the ingredients using linomat in applicator. The plate was developed in Toluene: ethyl acetate; formic acid 5:2:0.5v/v. The plate was visualized in UV 254 and 366nm. The plate was then dipped in Vanillin-sulphuric acid and heated in air oven at 105^{o} C till the spots appeared.

S.No	UV 254nm		UV 366nm		With spray reagent	
	Colour	Rf	Colour	Rf	Colour	Rf
1.	-	-	-	-	Grey	0.31
2.	-	-	Pink	0.36	Pale grey	0.36
3.	-	-	Pink	0.47	-	-
4.	-	-	Brown	0.53	-	-
5.	Pale green	0.56	Pink	0.58	Pale grey	0.58
6.	Green	0.67	Pink	0.67	Grey	0.67
7.	-	-	Dark pink	0.69	-	-
8.	Green	0.75	Pink	0.75	Dark grey	0.78
9.	Green	0.83	Dark pink	0.81	Grey	0.83
10.	-	-	Dark pink	0.89	-	-
11.	-	-	-	-	Pale grey	0.94

METHODOLOGY FOR ANTI-MICROBIAL STUDY

METHOD:

The anti-bacterial activities of different extracts of **Malaivembu Ilai Chooranam** 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 **Malaivembu Ilai Chooranam** were used in the concentration of 10, 50 and 25 µl using their respective solvents. Ciprofloxacin (50 mcg / disc) was 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^{o}C, the mixture was transferred to sterile petridishes and were allowed to solidity. Sterile discs, 5 mm 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 preincubation diffusion to minimize the effects of variation in time between the application of the different solutions. Then the plates were incubated at 37^{o} 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.

RESULT FOR ANTI MICROBIAL STUDY OF MALAIVEMBU ILAI CHOORANAM

Organism	**Standard drug Ciprofloxacin 50 mcg/disc**	**Test drug (Malaivembu Ilai Chooranam µl/disc)**		
		Zone of Inhibition in mm		
		10µl	**25µl**	**50µl**
Streptococcus mutans	31	15	17	21
Staphylococcus aureus	30	12	16	19

Escherichia coli	32	18	22	25
Klebsiella pneumoniae	29	14	21	24
Pseudomonas aeruginosa	30	16	19	22

14 mm – Low sensitive, 15mm – Moderate, above 16mm – highly sensitive.

Note :

Sample Concentration : -

4gm – 400 ml of solvent in 25µl, 50µl, and 10µl/disc.

Standard for Bacteria :

Ciprofloxacin HCL, 50 mcg/ disc.

BIO CHEMICAL ANALYSIS

5gm of **Malaivembu Ilai Chooranam** is weighed accurately and placed in a 250ml clean beaker and with 50ml of distilled water. Then it is boiled well for about 10 minutes, then it is cooled and filtered in a 100ml volumetric flastic and made upto 100ml with distilled water.

Then it is undergone the following tests for the presence of Acid radicals, Basic radicals and Phytochemical constituents in **Malaivembu Ilai Chooranam.**

QUALITATIVE ANALYSIS OF ACIDIC/BASIC RADICALS AND PHYTOCHEMICAL CONSTITUENTS IN MALAIVEMBU ILAI CHOORANAM

Procedure	Observation	Inference
Test for Calcium : 2 ml of extract is taken in a clean test tube. To this add 2 ml of 4% ammonium oxide solution.	White precipitate is formed	Presence of calcium
Test for Chloride : The extract is treated with Silver nitrate solution	White precipitate is formed	Presence of Chloride
Test for carbonate : The substance is treated with Conc. HCl.	Effervescence is formed	Presence of carbonate
Test for Iron (Ferrous) : The extract is treated with Conc. HNO_3 and ammonium thiocynate	Blood red colour is formed	Presence of Ferrous iron

Test for phosphate : The extract is treated with ammonium molybdate and conc. HNO_3	Yellow precipitate is formed	Presence of phosphate
Test for Tannic acid : The extract is treated with Ferric chloride	Blue black precipitate is formed	Presence of Tannic acid
Test for amino acids: Dilute extract +2ml of Ninhydrin's soln .	Formation of violet colour	Presence of amino acids
Test for proteins: Biuret method ; 1ml of dilute extract+1mlof5%$CuSO_4$+ 1%NaOH.	Formation of Violet colour	Presence of proteins
Test for Flavanoids : Dilute extract+ mg bits+2drops of conc.HCl and gently heated.	Formation of pink colour	Presence of Flavanoids
Test for phenol; Dilute extract+2drops of $FeCl_3$ soln.	Deep green colour is formed	Presence of phenols
Test for Tannins ; dilute extract +2ml of 10%lead acetate add.	White precipitate formed	Presence of tannins
Test for alkaloids; Mayer's method;1ml of dilute extract + 1ml reagent. Dragendroff's method; 1ml of dilute extract+ 1ml of reagent.	Appearance of cream colour precipitate Appearance of orange colour precipitate	Presence of alkaloids Presence of alkaloids

INFERENCE:

The **Malaivembu Ilai Chooranam** contains,

Acid radicals

Chloride

Carbonate

Phosphate

Basic radicals

Calcium

Iron(Ferrous)

Phytochemicals

Tannic acid

Amino acid

Protein

Tannins

Phenols

Flavanoids

QUANTITATIVE ANALYSIS:

Sl.No	Test parameter	Results
1.	Zinc	83.7mg/kg

INFERENCE: The **Malaivembu Ilai Chooranam** sample was found to have 83.7mg/kg of zinc.

ACUTE ORAL TOXICITY STUDY

Acute oral toxicity[43] 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 mice of either sex weighing 20-25 g were fasted overnight, but allowed water *ad libitum*. Malaivembu Ilai Chooranam 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:

Malaivembu Ilai Chooranam at the doses of 2000mg/kg/po did not exhibit any mortality in mice.

PHARMACOLOGICAL STUDY

ANTI – DIABETIC STUDY

DIABETES INDUCTION PROTOCOL

Male wistar albino rats weighing between 200-250g were assigned into 3 groups of 6 animals each.

Group I - Received warm water served as solvent control

Group II - Received the Standard Drug (glibenclamide 2mg/kg/po)

Group III - Received the test drug. (Malaivembu Ilai Chooranam)

Alloxan monohydrate (150mg/kg) was injected to all animals and observed for 48hours. To avoid hypoglycemic convulsions and death rats were injected with 5% glucose I.P and maintained on drinking water contains 5% glucose for 48 hours.

After 48 hours the blood glucose level was determined using glucometer. Animals showing blood glucose level ≤ 300mg/dl were taken for the study. Animals showing hyperglycemic ≤300mg/dl were distributed to various groups.

Test drug and standard drug were given for 6days.

RESULT:

At the end of 6 days animals were fasted 10hours and the fasting blood sugar was estimated by glucometer and reported as mg/dl.

In alloxan diabetic rats **Malaivembu Ilai Chooranam** at the dose of 500mg exhibited significant reduction is blood glucose of diabetic rats (P<0.001). The result is comparable to that of glibenclamide (2mg/kg/po) the standard oral hypoglycemic agent.

Effect of Malaivembu Ilai Chooranam on Blood Glucose level in rats

Groups	**Blood Glucose concentration (mg/dl)**
Control	168.56 ± 19.37
Standard (glibenclamide (2mg/kg/po)	74.16 ± 3.43***
Malaivembu Ilai Chooranam	101.6 ± 18.98***

N=6; Values are expressed as mean ±S.D followed by Students Paired 't' Test
***P<0.001 as compared with that of control is considered as significant.

METHODOLOGY FOR STATISTICAL ANALYSIS

PHARMACOLOGICAL STUDY:

The statistical analysis was carried out by using one-way ANOVA (Analysis of variance) followed by Dunnett's 't' test. P values <0.05 were considered as significant.

STATISTICAL ANALYSIS FOR CLINICAL STUDY:

To find the statistical significance paired t-test was used to assess the effect of treatment based on symptoms. Two tailed P value was considered for statistical significant. Analysis was performed by using SPSS 10 (Statistical Package for social science) Version package. For comparison of proportion among male and female less than 45 years and greater than or equal to 45 years. Chi square test was applied to find the statistical significance. P values less than 0.05 were considered significant.

$$t = \frac{\bar{d}}{\frac{d\sqrt{n}}{S}}$$

$\bar{d}$ – Mean
n – No.of Samples

To study variation in one or more attributes the data are expressed mostly as proportions. If a sample is divided into only two classes such as successes and failures it is said to have a binomial.

$$P = \frac{\text{Number of individuals having a Specific Character}}{\text{Total Number}}$$

$$P = \frac{\text{Character in a binomial distribution is expressed}}{\text{Total Number}}$$

q = probability of non – occurrence of the same .

STANDARD ERROR OF PROPORTION (S.E.P)

The probability or Proportional changes of positive or negative occurrence of an attribute or a character in a population or universe follows.

Binomial Frequency Distribution

$$S.E.P = \sqrt{\frac{Pq}{N}}$$

Probability of difference occurring by chance can be found by applying Z test as done in the case of means,

$$Z = \frac{p - P}{S.E.P}$$

STATISTICAL ANALYSIS

DESCRIPTIVE STATISTICS :

	N	Minimum	Maximum	Mean

Age	40	70	60	50.0

The mean value of affected group was observed to be 50.

PAIRED SAMPLES STATISTICS:

Pair I Fasting Blood Sugar	N	Minimum	Maximum	Mean
B.T	40	120	218	147
A.T	40	94	110	102

The mean Fasting blood sugar (147) before treatment was reduced to mean value 102 after treatment.

PAIRED SAMPLES STATISTICS:

Pair I Post prandial blood sugar	N	Minimum	Maximum	Mean
B.T	40	150	280	195.00
A.T	40	110	140	145.00

The mean Postprandial blood sugar (195.00) before treatment was reduced to mean 145.00 after treatment.

Pair	B.T vs A.T	Paired Mean	t	df	Significance (2 tailed)
1.	Fasting blood sugar	18.9	6.250	39	0.000
2.	Postprandial blood Sugar	40.125	10.582	39	0.000

Paired t-test showed significant ($P<0.001$) in both fasting and postprandial blood sugar levels after treatment at 39 degrees of freedom. The **Malaivembu Ilai Chooranam** has produced significant reduction in both fasting and postprandial blood sugar level.

STATISTICAL ANALYSIS OF SUBJECTIVE PARAMETERS OBSERVED BEFORE AND AFTER TREATMENT OF PATIENTS:

S.No	Parameters	Percentage improved			Statistical Criteria	Probability	Significance
		Study	Effect	Difference			
1.	Poly uria	100	90	10	Z=0.66	P<0.001	Significant
2.	Polydipsia	100	85	15	Z=2.00	P<0.001	Significant
3.	Polyphagia	90	75	15	Z=1.80	P<0.001	Significant
4.	Giddiness	87.5	57.5	30	Z=1.07	P<0.001	Significant
5.	Fatigue	87	75	10	Z=1.30	P<0.001	Significant

P <0.001 hence the improvement in the subjective parameters produced by **Malaivembu Ilai Chooranam** is statistically significant.

CLINICAL ASSESSMENT

மது மேகம் [39]

வேறு பெயர்கள் :

மிகுநீர்

வெகு மூத்திரம்

இனிப்பு நீர்

மேகநீர்

இயல்பு :

மிகுந்த அளவில் அடிக்கடி சிறுநீரிழிதல், ஏழு உடற்கட்டுகளும் வன்மையிழத்தல், உடல் இளைத்தல் என்னும் இயல்புடையதாம்.

நோய் வரும் வழி:

- அளவு கடந்து நெய்ப்பு, இனிப்புச் சுவையுள்ள பொருள்களை உண்ணல்
- மிகுதியும் கலவி செய்தல்

- எப்பொழுதுமே மனம் நைதல்
- உட்கார்ந்திருத்தல்
- சோம்பி திரிதல் ஆகிய இவற்றால் கீழ்நோக்குக்கால், மேல் நோக்குக்கால், பரவுகால் ஆகிய இம்மூன்றும் மிகுந்து முதல் நிலையைத் (மூலாதாரம்) தூண்டி அங்குள்ள கனலை எழுப்பி இந்நோயைப் பிறப்பிக்கும்.

" கோதையர் கலவி போதைகொழுத்தமீ னிறைச்சி போதைப்
பாதுவாய் நெய்யும் பாலும் பரிவுட னுண்பீ ராகில்
சோதைபாண் டுருவ மிக்க சுக்கில பிரமே கந்தான்
ஓதுநீ ரிழிவு சேர வுண்டென வறிந்து கொள்ளே "

– அகஸ்தியர் 1200

" சரியாக மேகத்தா லபான வாயு
தான்புகைக்கு மேலேறிக் கபாலச் சூடாம்
பெரிதான மேகத்தா லத்தி வெந்து
போமப்பா தசைவெந்து ரத்தம் வற்றிப்
பரிவாகித் தசவாய்வால் மந்தங் கொண்டு
பெருந்தீனி மலபந்தம் உஷ்ணவாயு
வரிவாகித் தேகமெலாம் விடநீ ராலே
மெய்யழிந்த மேகமென்ற திருப தாச்சே"

முற்குறிகள் :

அளவு கடந்த பசி
நீர் வேட்கை
உடல் மெலிவடைதல்
அதிகமாக சிறுநீர் போதல்
தூக்கமின்மை
மனக்கலக்கம்
பிசுபிசுத்த வியர்வை

பெருமூச்சு

மயக்கம்

நோய் எண் 20 :

1. நெய்மணநீர்
2. பசு மண நீர்
3. சீழ் நீர்
4. சதை நீர்
5. யானைக்கொழுப்பு மணநீர்
6. கற்றாழை மணநீர்
7. சுண்ணமணநீர்
8. இனிப்பு நீர்
9. பளிங்கு நீர்
10. முயற்குருதி நீர்
11. ஐயநீர்
12. தூய்மை நீர்
13. மூளை நீர்
14. இளநீர்
15. கள்நீர்
16. வெண்ணீர்
17. கழுநீர்
18. தேன்நீர்
19. உப்பு நீர்
20. கவிச்சி நீர்

DIABETES MELLITUS

It is a clinical syndrome characterized by hyperglycaemia due to absolute or relative deficiency of insulin. Lack of insulin affects the metabolism of carbohydrate,

protein and fat, and causes a significant disturbance of water and electrolyte homeostasis.Diabetes is world wide is distribution.

AETIOLOGY:

Excessive intake of fat and high calorie food such as milk, ghee and meat, increased intake of alcoholic beverages, excessive carbohydrate intake, eating indigestible and semi cooled food, disturbance in sleeping, excessive involvement in sexual activities, obesity and stress.

CLASSIFICATION:

Two broad categories of diabetes mellitus are

I. **Type I (IDDM) –** β cell destruction, usually leading to absolute insulin deficiency.

II. **Type II diabetes (NIDDM)** – May range from predominantly insulin resistance with relative insulin deficiency to a predominantly insulin secretory defect with insulin resistance.

- Principle of Internal medicine vol-I, 15th edition pg. 1649 – 1660 Braun wald

III. Others

1. Genetic defects
2. Diseases of the exocrine pancreas
3. Endocrinopathies
4. Drug or chemical induced
5. Infections

IV. Gestational diabetes mellitus.

CLINICAL FEATURES :

- Polyuria
- Nocturia
- Polydipsia
- Polyphagia
- Dryness of mouth
- Rapid weight loss
- Chronic fatigue
- Giddiness
- Peripheral neuritis
- Intense itching in genitals.

COMPLICATIONS OF DIABETES:

1. Retinopathy
    - Impaired vision

2. Nephropathy
    - Renal failure

3. Peripheral neuropathy
    - Sensory loss
    - Motor weakness

4. Autonomic neuropathy

- ❖ Postural hypotension
- ❖ GI Problems

5. Foot disease
    - ❖ Ulceration
    - ❖ Arthopathy

6. Coronary circulation
    - ❖ Myocardial ischaemia / infarction

7. Cerebral circulation
    - ❖ Transient ischaemic attack.
    - ❖ Stroke

8. Peripheral circulation
    - ❖ Claudication
    - ❖ Ischaemia

DIAGNOSTIC CRITERIA

BLOOD GLUCOSE

Fasting

Normal <110mg/dl

Borderline >110 but less than 125mg%

Diabetes mellitus >126mg%

Postprandial

Normal <140mg/dl

Borderline >140but less than 200mg%

Diabetes mellitus> 200mg %

Medical advice:

1. The diet should include complex carbohydrates, protein decreased fat and low calories.

2. Advised to take small frequent meals.

3. Advised to avoid / sweety, excessive salty, sour tastes in food.

4. Advised to take food rich in fibre content (20-30gm per day).

5. Advised to monitor blood glucose levels regularly.

6. Advise to do aasanas and pranayamam.

7. Advised to do moderate exercise and brisk walk (2-3km /day).

A Clinical trial on **Madhumegam** was carried out in Govt.Siddha Medical College, Arignar Anna Indian Medicine Hospital, Arumbakkam, Chennai – 106. 40 Cases with clinical signs and symptoms of **Madhumegam** of both sexes of age group above 30yrs were selected and studied under the guidance of Professor, Reader and Lecturers, Assistant Lecturers of PG II Department. All the cases were carried out in the OP.

The Parameters for the case selection were

(i) Polyuria,

(ii) Polydipsia

(iii) Polyphagia

(iv) Giddiness

(v) Fatigue

(vi) Peripheral neuritis.

Age Group : 30 – 70 years of both sexes.

The following routine laboratory investigations were done :

Urine Analysis

(i) Albumin

(ii) Sugar

(iii) Deposits

Biochemical Analysis

Blood sugar (Fasting or Postprandial) were carried out before treatment and after treatment.

EXCLUSION CRITERIA

- Patients with type I diabetes mellitus
- Pregnancy induced diabetes mellitus
- Patient with renal impairment
- Patient with hypertension

- Patient with other cardiovascular problems, pancreatic pathology and liver afflictions.
- Patients with diabetic nephropathy and retinopathy.

WITHDRAWAL CRITERIA

- Irregular medication
- Patients who followed dual treatment.

INCLUSION CRITERIA

- Patients of age group above 30-70 years.
- Patients of either sex.
- Patients suffering from non-insulin dependent Diabetes mellitus (NIDDM) type II.
- Non – Obese
- Clinical Parameters- Polyuria, Polydipsia, Fatigue , Giddiness, Peripheral neuritis.
- **Investigative parameters**
    1. Fasting blood sugar of 110mg /dl and above
    2. Postprandial blood sugar of 140mg/dl and above.

LINE OF TREATMENT

1g of **Malaivembu Ilai Chooranam** was administered with water before food, twice daily for a period of 48 days.

The patients were advised to visit follow-up once in 7 days for a general observation related to dose adaptations and parallel clinical parameters were recorded. The efficacy follow-up was taken up at the end of 48 days of therapy.

DIET CHART :

Vegetarian	Non-vegetarian
Bed tea or Coffee without sugar 1 cup	Bed tea or Coffee without sugar 1 cup
Breakfast : Toast 2 Oz or Atta 60gm Channa – 50 gm Boiled vegetables - 100gm Tea without sugar 1 cup Milk (Skimmed) – 1 cup	**Breakfast :** Toast 2 Oz% or Atta – 60gm Egg – 1 Tea without sugar 1 cup
Mid–morning : Sugarless biscuits – 2 Milk (Skimmed) – 1 Cup	**Mid–morning :** Sugarless biscuits – 2 Milk (Skimmed) – 1 Cup
Lunch : Rice or Atta – 70gm Dal – 1 cup Channa Curry – 100gm Green Vegetables – 250gm	**Lunch :** Rice or Atta – 70gm Dal – 1 cup Fish/meat – 100gm Buttermilk 1 cup

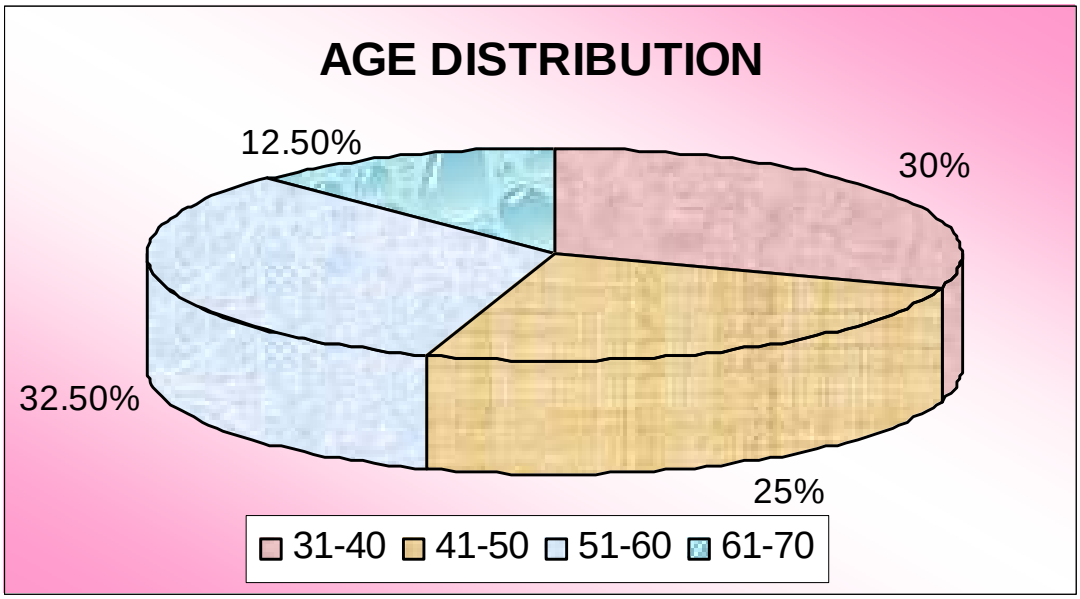
Buttermilk - 1 cup	
Evening: Sugarless biscuits -2 Tea without sugar – 1 cup	**Evening:** Sugarless biscuits -2 Tea without sugar – 1 cup
Dinner : Atta – 70gm Green Vegetables – 250gm Channa Curry 50gm	**Dinner:** Atta – 70 gm Green Vegetables – 250gm Fish / Meat 100gm

S.No	Op.No	Patient Name	Age	Duration of Treatment	Before Treatment			After Treatment		
					Blood Sugar (mg%)		Urine Sugar	Blood Sugar (mg%)		Urine Sugar
					F	PP		F	PP	
1.	5128	Jeganathan	60	11.09.07 – 20.10.07	136	170	+	95	115	Nil
2.	5317	Uma	50	12.09.07 – 20.10.07	181	200	++	109	120	Nil
3.	1171	Indhra	45	24.10.07 – 30.11.07	136	160	Nil	100	120	Nil
4.	1721	Sangeetha	53	26.10.07 – 06.12.07	148	170	+	106	125	Nil
5.	3795	Kamala	52	03.11.07 – 17.12.07	159	170	++	100	130	Nil
6.	4089	Malliga	50	04.11.07 – 17.12.07	161	180	+	105	135	Nil
7.	4660	Bharath	52	06.11.07 – 18.12.07	138	150	+	98	110	Nil
8.	4527	Anna Poorani	46	06.11.07 – 18.12.07	138	150	+	100	115	Nil
9.	4621	Leelavathi	49	06.11.07 – 18.12.07	146	160	+	105	110	Nil
10.	9726	Rajamani	48	22.11.07 – 31.12.07	130	192	Nil	105	140	Nil
11.	9734	Lalitha	50	22.11.07 – 31.12.07	141	170	+	96	110	Nil
12.	1620	Sujatha	34	27.11.07 – 31.12.07	159	280	++	102	130	Nil
13.	1572	Gandhimadhi	43	27.11.07 – 31.12.07	130	198	Nil	100	120	Nil
14.	16584	Akli	45	27.11.07 – 31.12.07	200	259	++	100	120	Nil
15.	5092	Syed Unksen	48	07.12.07 – 28.01.08	158	170	Nil	94	130	Nil
16.	5956	Thangappan	47	10.12.07 – 12.01.08	140	160	Nil	100	130	Nil
17.	169	Valliammai	67	22.12.07 – 08.02.08	142	200	Nil	100	120	Nil
18.	4893	Nataraj	65	09.01.08 – 17.03.08	218	250	++	108	130	Nil
19.	8506	Selvarangam	66	18.01.08 – 10.03.08	183	210	Nil	105	125	Nil
20.	9935	Sumathi	36	22.01.08 – 10.03.08	148	200	Nil	107	135	Nil
21.	436	Sasikala	42	23.01.08 – 10.03.08	185	200	Nil	102	125	Nil
22.	781	Lakshman	62	24.01.08 -10.03.08	198	210	+	100	135	Nil
23.	1954	Durai	70	28.01.08 – 17.03.08	151	202	+	105	120	Nil

24.	2568	Ravi	45	29.01.08 – 17.03.08	124	150	Nil	96	136	Nil
25.	2490	Karunanidhi	40	29.01.08 – 17.03.08	120	158	Nil	110	132	Nil
26.	2581	Govindaswamy	65	29.01.08 – 17.03.08	160	260	+++	108	130	Nil
27.	2541	Rajarathinam	70	29.01.08 – 17.03.08	141	191	Nil	109	120	Nil
28.	4079	Roobalingam	59	02.02.08 -17.03.08	198	220	+	110	126	Nil
29.	4594	Subbaiya	70	04.02.08 -17.03.08	150	200	Nil	98	130	Nil
30.	5279	Dhinakaran	47	05.02.08 -28.03.08	170	270	++	109	137	Nil
31.	5295	Eswari	38	05.02.08 – 28.03.08	130	180	Nil	110	133	Nil
32.	5315	Selvaraj Kumar	59	05.02.08 – 28.03.08	128	200	Nil	98	130	Nil
33.	6007	Hemachandran	55	07.02.08 -20.03.08	130	210	Nil	105	120	Nil
34.	7284	Thomas	70	08.03.08 – 21.04.08	160	240	+	100	140	Nil
35.	6729	Chandra	53	08.03.08 – 21.04.08	156	260	Nil	106	138	Nil
36	9986	Ezhumalai	55	10.03.08 - 21.04.08	139	170	Nil	100	136	Nil
37.	8488	Parimala	56	11.03.08 – 21.04.08	143	160	Nil	102	130	Nil
38.	8397	Ramaswamy	55	11.03.08 – 21.04.08	139	160	Nil	98	136	Nil
39.	8333	Lalitha	54	11.03.08 – 21.04.08	136	150	+	96	126	Nil
40.	8399	Ramaswamy	56	11.03.08 -21.04.08	163	200	Nil	98	130	Nil

AGE DISTRIBUTION:

S.No	Age in Years	No.of Patients	Percentage (%)
1.	31-40	12	30
2.	41-50	10	25
3.	51-60	13	32.5
4.	61-70	5	12.5

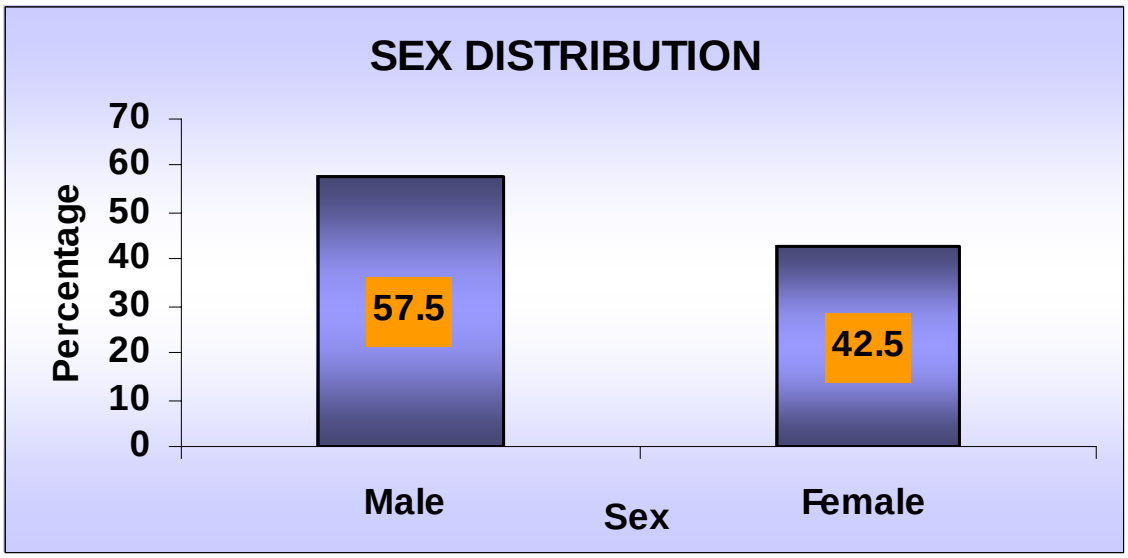


INFERENCE :

Among 40 Patients. 12 (30%) belong to age group 31-40, 10 (25%) patients belong to age group 41-50, 13 (32.5%) patients belong to age group 51-60 and 5 (12.5%) patients belong to age group 61-70. Maximum patients found to be between 51-60.

SEX DISTRIBUTION:

S.No	Sex	No.of.Cases	Percentage (%)
1.	Male	23	57.5
2.	Female	17	42.5

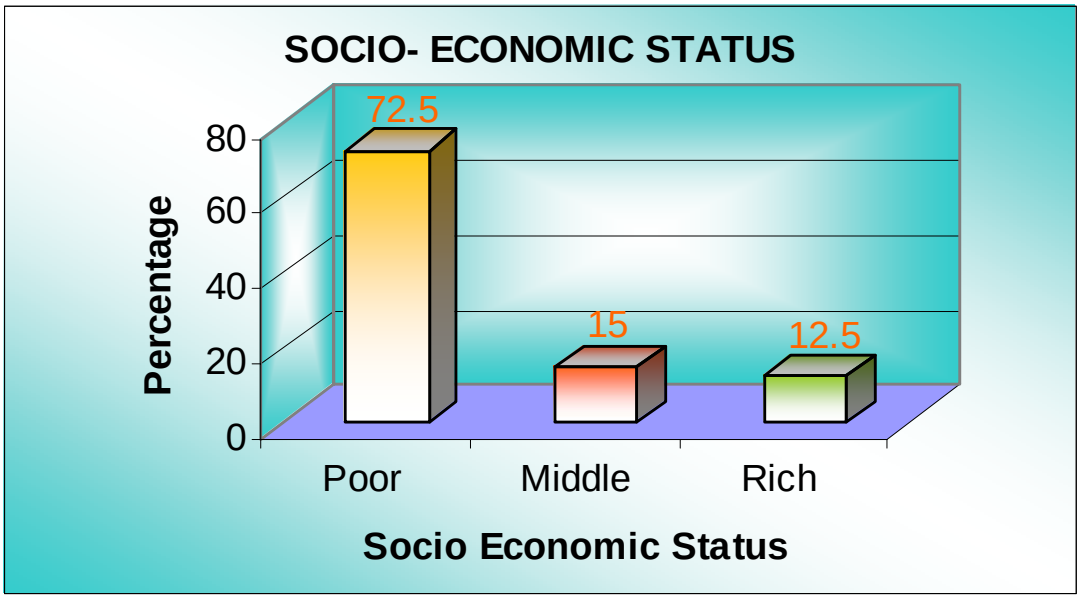


INFERENCE

Out of 40 Patients 23 cases(57.5%) were male and 17 cases (42.5%) were female.

SOCIO- ECONOMIC STATUS:

S.No	Socio – Economic Status	No.of.Cases	Percentage (%)
1.	Poor	29	72.5
2.	Middle	6	15.0
3.	Rich	5	12.5

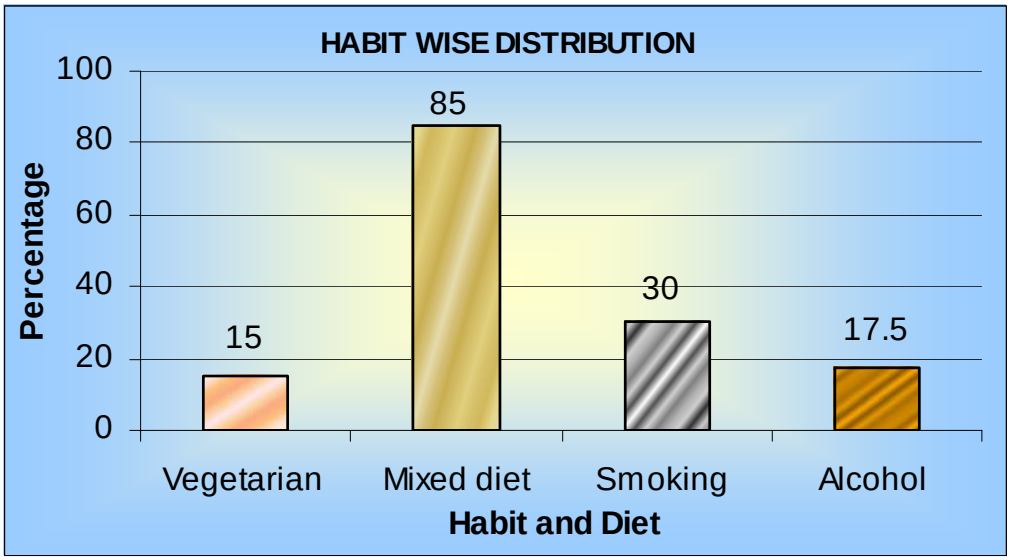


INFERENCE :

Among 40 patients 29(72.5%) were poor, 6(15%) were middle class and 5 (12.5%) were rich.

HABIT WISE DISTRIBUTION :

S.No	Habit and Diets	No.of.Cases	Percentage (%)
1.	Vegetarian	6	15
2.	Mixed diet	34	85
3.	Smoking	12	30
4.	Alcohol	7	17.5

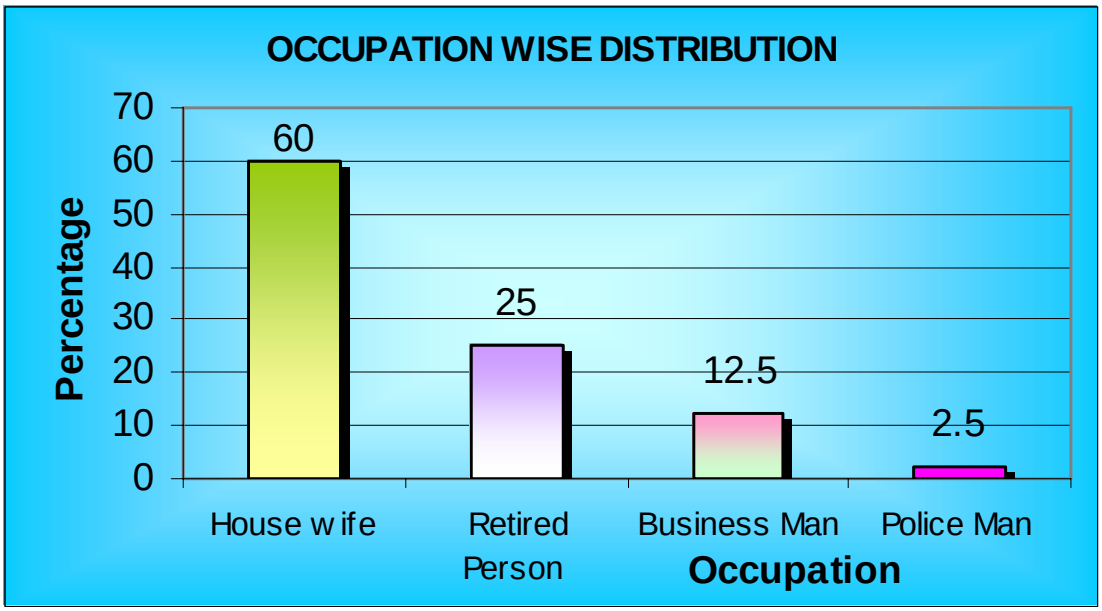


INFERENCE :

This table shows that food habit do not show any influence in case of Madhumegam. Among 40 patients. 6(15%) were vegetarian, 34(85%) were mixed diet, 12(30%) were smoker 7(12.5%) were alcoholic.

OCCUPATION WISE DISTRIBUTION:

S.No	Occupation	No.of.Cases	Percentage (%)
1.	House wife	24	60
2.	Retired person	10	25
3.	Business men	5	12.5
4.	Police man	1	2.5

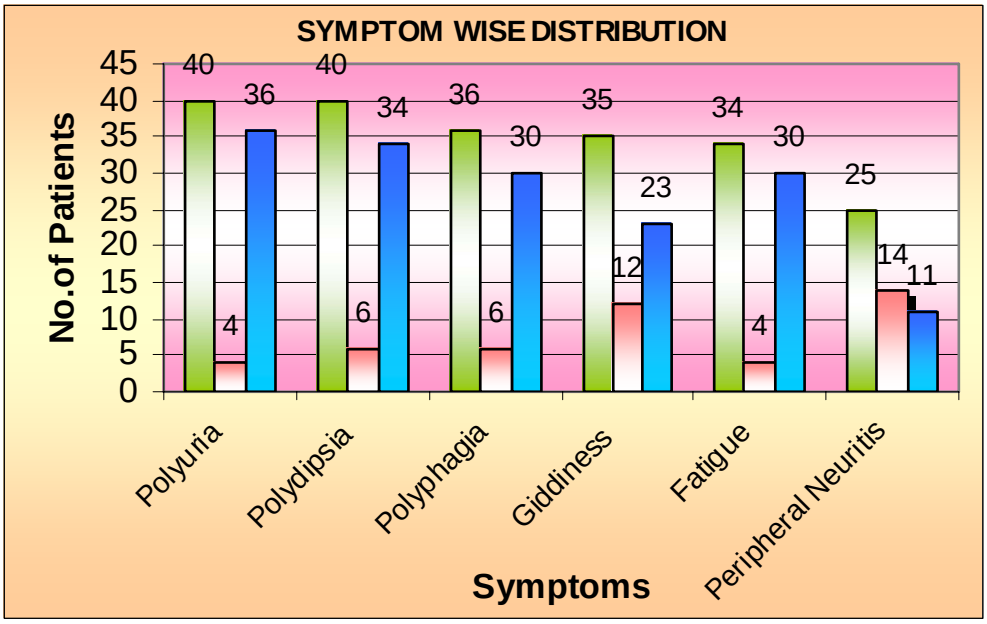


Inference:

Among 40 patients 24(60%) patients were housewives, 10 (25%) patients was retired person, 5(12.5%) patients were business men and 1 (2.5%) were police man.

SYMPTOM WISE DISTRIBUTION

Symptoms	Before Treatment	After Treatment	Improvement	Percentage (%)
Polyuria	40	4	36	90
Polydipsia	40	6	34	85
Polyphagia	36	6	30	75
Giddiness	35	12	23	57.5
Fatigue	34	4	30	75
Peripheral neuritis	25	14	11	27.5

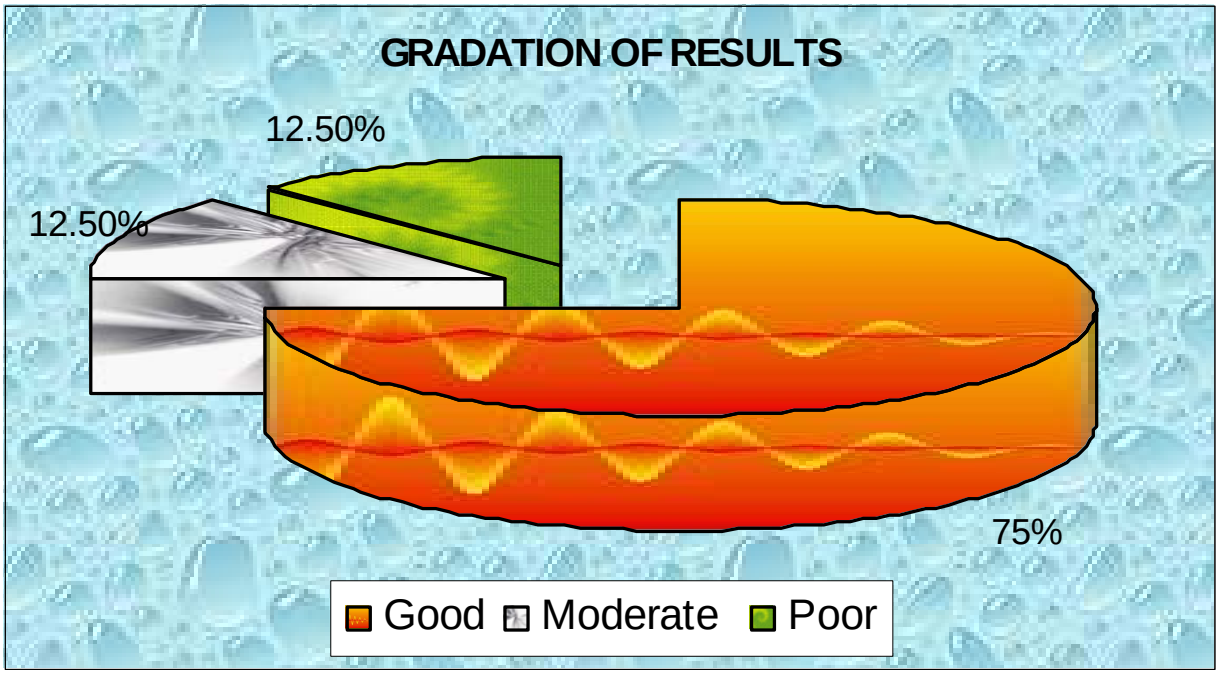


INFERENCE:

Patients with the symptoms that is Polyuria, Polydipsia, Polyphagia, Giddiness, Fatigue, Peripheral Neuritis were taken for the study. Among 40 patients with polyuria 36 patients improved from polyuria. Among 40 patients with polydipsia 34 improved. Among 36 patients with polyphagia 30 patients improved. Among 35 patients with giddiness 23 got relief. Among 34 patients with fatigue 30 got improvement. Among 25 patients with peripheral neuritis only 11 got improvement.

GRADATION OF RESULTS :

S.No	Grade	No.of.Cases	Percentage (%)
1.	Good	30	75
2.	Moderate	5	12.5
3.	Poor	5	12.5



INFERENCE :

Among the 40 cases, 75% of cases show good results, 12.5% of cases show moderate results and 12.5% of case show poor results.

DISCUSSION

To day's fast moving life style with its unhealthy food habits and increased stress are taking its role on human health and among the disease caused due to the occurrence of **Madhumegam** is increasing at an alarming rate.

As per Siddha system, **Madhumegam** is caused by derangement of **pittham.**

"பகர்பித்த விந்தையலாது மேகம் வராது"

– சித்த மருத்துவ நோய் நாடல் நோய் முதல் நாடல்

“ கன்னி மயக்கத்தால் கண்டிடும் மேகமே”

– நாடி நூல், திருமூலர்

தன்வினை, பிறவினைகளின் அளவாக பித்தம் தன்னிலையில் கேடடைந்து கீழ் நோக்குக்கால், மேல் நோக்குக்கால், பரவுகால் அத்துடன் கேடடைந்து உடற்கட்டுகள் ஏழினையும் ஒன்றன் பின் ஒன்றாக கேடடையச் செய்து நாளடைவில் பசித்தீயைக் கெடுக்கும். எனவே கேடடைந்த முக்குற்றங்களையும், கால்களின் கெடுதியையும் சரிசெய்ய வேண்டும்.

கைப்பு, துவர்ப்புச்சுவைகளானது பித்தமிகுதியை சமனப்படுத்தும். மலை வேம்பு கைப்புச்சுவையுடைய மூலிகை ஆகும்.

“ பித்தமதி கரிப்பின் பேசும் பரிகாரம்
சுத்தத் துவரொடு சொல்லினிப்புச் – சத்தாகும்
கைப்புச் சுவையே கருதவதன் வீறு
எய்ப்புடையு மென்றுரைத் தாரிங்கு”

– நோய் நாடல் நோய் முதல் நாடல்

மலைவேம்பு பித்தமிகுதியை சமனப்படுத்தி, மதுமேக நோயினை கட்டுப்பாட்டிற்குள் வைக்கும்.

கைப்பு சுவையானது வாயு மற்றும் ஆகாய பூதக் கூறுகள் சேர்ந்தது. மேகவிரணத்தை குணமாக்கும் தன்மை வாயு பூதத்திற்கு உள்ளது.

- The antimicrobial study of **Malaivembu Ilai Chooranam** shows that it is highly sensitive to all the following organisms such as,

Streptococcus mutans
Staphylococcus aureus
Escherichia coli
Klebsiella pneumoniae
Pseudomonas aeruginosa.

- Daily requirement of Zinc[26] is 0.3 mg/kg/per day.

- Zinc present in cereals, pulses, nuts and oil seeds are poorly absorbed dueto the presence of phytic acid which interferes in its absorption.

- Zinc[41] maintains normal concentration of Vitamin A in plasma. It is required for the mobilization of Vitamin A from the liver.

- Zinc is required for the preparation of insulin and increases and the duration of insulin action, when given by injection. Zinc is used in the β cells of the pancreas to store and release insulin in required.

- Helps in the formation of Zinc hexamers which helps in storage and subsequent release at insulin – Ref. Research abstract – Ayur Medline 2000 may.

- Zinc is concerned with the healing of wounds which is common problem in **Madhumegam.**

- Zinc is essential for the normal growth and reproduction of animals.

- **Malaivembu Ilai Chooranam** has Zinc 83.7mg/kg. So **Malaivembu Ilai Chooranam** controls the **Madhumegam** because of zinc which is in the β cells of the pancreas to store and release insulin as required.

- In **Madhumegam** reduction of body weight, suppression of immune system occurs and nervous tissue also gets affected.

- **“ மேகங் கிளர்பேதி வெட்டையழலைத் தணிக்கும்**
  வேகங் கிராணி விலக்குங்காண் – போகாப்

பரியமுளை புண்ணைப் பயித்தியத்தைப் போக்கும்
அரியதுத்த நாக மது ”

– குணபாடம் தாது வகுப்பு

பொழிப்புரை :

மேகம், பேதி, வெள்ளை, உட்சூடு, கிரகணி, முளைப்புண், பித்தம் முதலிய நோய் களை நீக்கும்.

“ சொல்லி முடியாது துத்தநா கம்பொடியாய்
மெல்லத் துரத்தும் வியாதிகளை – நல்ல
உரனுடைமை யுண்டாக்கும் உண்டவரை யென்று
கிருமி மனை மண்மகிமை கேள்”

– குணபாடம் தாது வகுப்பு

பொழிப்புரை :

நோயினால் மெலிந்து போன சரீரத்தை காப்பாற்றி நன்மையைத் தரும்.

மேற்கண்ட பாடல்களின் வாயிலாக துத்தநாகமானது மதுமேக நோயினையும், அதை தொடர்ந்து வரும் உடல் மெலிவடைதலையும் பரிகரிப்பதில் சிறந்து விளங்குகிறது என புலனாகிறது.

- Biochemical analysis of **Malaivembu Ilai Chooranam** shows the presence of calcium, zinc which is the constituents of insulin. மலைவேம்பில் துத்தநாக சத்து இருப்பதால், இதற்கு மதுமேகத்தினை நீக்கும் குணம் உள்ளது என அறியலாம்.

- Iron and calcium are essential for nerve cells, prevents complications of peripheral neuritis. **Malaivembu Ilai Chooranam** contains iron in the form of Ferrous and it contains Calcium

- Magnesium helps to keep mind calm and nerves relaxed. This help to relieve the symptom, peripheral neuritis.

- Flavanoids are present. Flavanoids are effective antioxidant. When body's cells burn oxygen they form free radicals. Increased formation of reactive oxygen species (ROS) related to increase of glucose concentration in plasma and tissues. The inhibitory effect may be due to flavanoids.

- Acute toxicity study shows **Malaivembu Ilai Chooranam** at the dose of 2000mg/kg/po did not exhibit any mortality in mice.

- The pharmacological study of **Malaivembu Ilai Chooranam** shows that it reduce the blood sugar levels. Hence it is proved to be good for **Madhumegam.**

- The clinical study has been conducted under the following criteria age, sex, socio–economic status, personal habits & diet and occupation.

  40 patients belonging to age group 30 to 70 were selected
  Polyuria decreased in 36 patients within 2 weeks.
  Polydipsia decreased in 34 patients within 2weeks
  Polyphagia decreased in 30 patients within 2 weeks
  Giddiness relieved in 23 patients within 2weeks
  Fatigue relieved in 30 patients within 3 weeks.
  Peripheral neuritis relieved in 11 patients within 6 weeks.

Male, Middle class & rich people, 40 to 60 years age group, housewives alcoholics, non – vegetarians and businessmen are mostly affected.

From the above studies **Malaivembu Ilai Chooranam** has been proved to be clinically effective against **Madhumegam.**

SUMMARY AND CONCLUSION

1. The trial drug **Malaivembu Ilai Chooranam** has been selected for anti diabetic activity based on strong literary evidence.

    i) After obtaining guidance for the Head of the department and permission from principal, Government siddha medical college. Pharmacological study was carried out in C.L. Baid Metha college of pharmacy, Thoraipakkam, Chennai.
    ii) The single drug was prepared as chooranam then purified and stored.

2. Phytochemical tests showed the presence of alkaloids, flavanoids, tannin and phytosteroids

3. Rf values were determined by Thin Layer Chromatography.

4. Antimicrobial study proved that **Malaivembu Ilai Chooranam** was an effective anti bacterial agents.

5. Bio-Chemical analysis shows the presence of elements like **zinc**, calcium and Iron (Ferrous).

6. **Malaivembu Ilai Chooranam** at the dose of 2000mg/kg/po did not exhibit any mortality in mice.

7. Animal experiments revealed that this drug is effective in controlling blood sugar levels significantly when given in a dose of 500mg bds with water before food.
8. Clinical trial showed that **Malaivembu Ilai Chooranam** is effective in reducing both the fasting and postprandial blood sugar levels. It was done in Arignar Anna Hospital of Indian medicine, Chennai – 106.

9. The statistical analysis also significantly shows the reduction of symptoms like polyuria, tiredness, polydipsia, polyphagia, giddiness and peripheral neuritis.

10. The administration of **Malaivembu Ilai Chooranam** for 48 days did not produce any side effects. Out of 40 patients 33 patients showed better response in reduction at symptoms like polyuria, polydipsia, polyphagia, fatigue and giddiness. Moderate response in peripheral neuritis.

11. The trial drug is available at everywhere in all seasons. The preparation and preservation of the trial drug is simple and economical. So it is concluded that **Malaivembu Ilai Chooranam** has antidiabetic activity and moderately effective for controlling blood sugar levels.

AIM AND OBJECTIVES

AIM :

To prove the efficacy of **Paavana Omum** in the treatment of **Gunmam.**

OBJECTIVES :

The effect of salts in Siddha system of Medicine is well known one.

Paavana Omum is good medicine for the gunmam. This medicine is in the Siddha text, **"Praana rakhsamirtha sindhu".** The ingredients of **Paavana Omum** are Omum, Induppu, Buttermilk and Lemon Juice.

The dissertation deals with the action of **Paavana omum** in the treatment of Gunmam for the case study of 48 days.

In this aspect **Paavana omum** was subjected to the following studies.

1. Antimicrobial Study
2. Biochemical Study
3. Pharmacological study
4. Clinical Study

REVIEW OF LITERATURE

இந்துப்பு (Rock Salt)

SIDDHA ASPECT

வேறுபெயர்கள் : [17]

சைந்தவம்	சந்திலகம்
சிந்தூரம்	நாக நெய்
சந்திரனுப்பு	வித்தகம்
மதியுப்பு	மதிலவணம்

மதிகூர்மை	கடிமாசம்
மிந்தாச் சொல்	காரக்கஞ்சாரம்
மான்கசம்	பனிக்கூர்மை [20]
நாகதெய்வம்[18]	மாக்கசம்
வாணி	

" படியான வாணி, மரக்கசமென்றும் பேரு
பரிவான சைந்தலவணமென்றும் பேரு
சடியான சந்திலகமென்றும் பேரு,
சார்வான நாகநெய்யென்றும் பேரு,
வெடியான வித்தக மென்றும் பேரு
விளங்கனோ மதிலவணமென்றும் பேரு
கடியான கடி மாசமென்றும் பேரு
காரக் கஞ்சாரக இந்துப்பினடப் பேரே"

– பதினெண் சித்தர்கள் மருத்துவ அகராதி

இந்துப்பின் தோற்றம்: [19]

இவ்வுப்பை சிந்து தேசத்திலும், பஞ்சாப் வடமேற்குப் பாகங்ளிலும் பூமியிலிருந்து வெட்டி எடுக்கின்றார்கள். இது 2 முதல் 10 பவுண்டு நிறையுள்ள கட்டிகளாயும், மேற்பக்கம் அழுக்குப் படிந்த கபில நிறமாயும், உட்பக்கம் வெண்மையாயும், வாயிலிடில் உப்பாயுமிருக்கும். நல்ல வெண்மை நிறம் கொண்டது சிறந்ததாகும்.[21]

வைப்பு முறை : [19]

சமுத்திர நீர், 100 படியைப் (200 லிட்டர்) புதுச்சட்டியிலிட்டுக் காய்ச்சி உப்பெடுத்து, இவ்வுப்பில் நூறு பலம் (3,500 கி.கிராம்) அடிகனத்திருக்கும் சட்டியிலிட்டு, கரும்பாலை அடுப்பின் மீது வைத்துக் காடாக்கினியாய் எரிக்க, உப்பு உருகும். அச்சமயத்தில்
வெடியுப்பு 5 பலம் (175 கிராம்), சீனாக்காரம் 5 பலம் (175 கிராம்), பூநீறு 3 பலம்
(105 கிராம்) இவைகளைப் பொடித்துத் தூவி ஒன்றுபட உருசிக் குளிர விட்டெடுக்க கட்டும், உடைத்துப் பார்க்கில் வைரம் போலிருக்கும், இதில் பச்சைக்கற்பூரம் மடியும், பூரம்
முப்பாகும்.

வேறு:

சீனம், கல்லுப்பு, வெடியுப்பு, வெங்காரம், சுத்த நீருப்பு முதலியவைகளைக் கழுதை மூத்திரத்திலும், பசுவின் கோமயத்திலும் அரைத்து எரித்து இறக்கும் பொழுது 1/2 பங்கு பூநீறு போட்டு மூட அனலில் வெம்பி இந்துப்பாகும்.

பொதுக்குணம் : [19]

" **அட்டகுன்ம** மந்தம் அசிர்க்கரஞ்சூர் சீதபித்தந்
துட்டவையம் நாடிப்புண் டோடங்கள் – கெட்டமலக்
கட்டுவிட விந்தையக் காமியநோய் வன்கரப்பான்
விட்டுவிட விந்துப்பை விள்."

இந்துப்பினால் எண்வித குன்மம், அலசம், அசிர்க்கரம், கபபித்தம், கபாதிக்கம், நரம்புக்கிரந்தி, திரிதோஷம், மலபந்தம், விஷமசுக்கிலம், கரப்பான் நீங்கும்.

" சென்னிக்கண்ணா பற்றூர் செவிகவுள்கண் டம்பகநோய்
சந்நியா சங்காசந் தாகமிரைப் – புன்னிரத்த
மூலஞ் சிலந்திநளி மூடிகநஞ் சூதை வல்லி
சூலஞ் சிதையுமிந்தாற் சொல்"

இந்துப்பு தலை, விழி, நாவு, தந்தமூலம், காது, கண்டம், யோனி முதலிய

இடங்களில் காணுகின்ற நோய்களையும், சந்நியாசம், நேத்திரகாசம், தாகசுரம், சுவாசம், இரத்த மூலம்,சிலந்தி, தேள், எலி இவற்றின் விஷங்களையும், வாதக்கடுப்பு,குத்தல் முதலிய ரோகங்களையும் நீக்கும்.

செய்கை [19]

பசித்தீத்தூண்டி

அகட்டுவாயுவகற்றி

சிறுநீர்ப்பெருக்கி

மலகாரி

நாசிநீர்விர்த்தினி

பஞ்சபூதக் கூறு :

இது மண்பூதச் சரக்கு

பெண் சரக்கு : இந்துப்பு

இதற்கு ஆண் சரக்கு : பச்சைக் கற்பூரம்

மித்துரு : பூரத்தின் மித்துரு

சுத்தி முறைகள் : [19]

1. இதனைக் காடியில் மூன்று நாள் ஊறப்போட்டு சூரியன் ஒளியில் உலர்த்தி எடுக்க சுத்தியாகும்.
2. வெள்ளாட்டு நீரில் மூன்று நாழிகை மத்தித்து வெய்யிலில் உலர்த்திக் கொள்ள இது சுத்தியாகும்.
3. காடியில் கரைத்து வடிகட்டி சூரிய ஒளியில் காயவைத்து எடுக்க உறைந்து சுத்தியாகும்.

நஞ்சு முறிவு :

இந்துப்பை மிகுதியாக பயன்படுத்தினால் பித்தத்தை வளர்க்கும். அதிசாரத்தை தோற்றுவிக்கும்.

இதனால் தோன்றிய துன்பங்களுக்கு தாழம் பூவில் உள்ள பகுதியின் சாறு முறிப்பா கும்.

CHEMICAL ASPECT OF ROCK SALT

Chemical Name : Sodium Chloridum Impura (NaCl) [23]

Vernacular Names : [23]

English - Rock Salt, Sea salt, Bay Salt, Sodium Chlorate.
Hindi - Sendhalon, Sedhalon
Malayalam - Intu-uppu
Sanskrit - Saindhava
Telugu - Saindhalavanam
Tamil - Indu-uppu

Characters: [23]

It is found in 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. It is colourless when pure but after tinged grey, blue,. brown or pink, because of associated impurities.

Specific gravity: [24]

2.1-2.6, H-2.5, nD 20°, 1.5444

Composition of Rock Salt:

NaCl
$Ca\ (So_4)_2$
$CaCl_2$
MgCl
$NaHCO_3$

Insoluble Matter

Moisture

Solubility : [23]

35.7g/100g of water at 0°C

39.8g/100g of water at 100°C

Actions: [23]

In Small doses

Highly Carminative

Stomachic

Digestive

It promotes the appetite and assists digestion and assimilation.

In large doses

1-2 dranchms – It is cathartic

4-8 dranchms – It is emetic

Rock Salt possess stronger purgative properties than cream of tartor.

Properties and uses: [23]

It is given in dyspepsia and other abdominal disorders. A medicinal salt called Nariekelashora is highly recommended in Chakaradatta as valuable in the form of dyspepsia which is attended with pain two or three hours after meals.

இந்துப்பு சேரும் மருந்துகளுள் குன்மநோய் தீர்க்கும் மருந்துகள்

1. அக்னி மந்தாதிச் சூரணம் : [27]

இந்துப்பு 1 பலம்

முன்னை வேர் 2 பலம்

சீரகம் 3 பலம்

ஓமம் 4 பலம்

சுக்கு 5 பலம்

திப்பிலி 6 பலம்

இவைகளுக்கு சம எடை கடுக்காய் சேர்த்து சூரணம் செய்யவும்.

அளவு : இருகடி

அனுபானம் : வெந்நீர்

தீரும் நோய் : குன்மம் தீரும்

2. குன்ம குடோரி லேகியம் : [22]

இந்துப்பு
வளையலுப்பு
நவாச்சாரம்
வெடியுப்பு
சோற்றுப்பு
சுத்தித்த பூநீறு
கற்பூரம்

} வகைக்கு 1 பலம்

இவைகளை சூரணம் செய்து, பின் 10 பலம் பனைவெல்லத்தில் 1/2 படி வெள்ளாட்டு நீர்விட்டு அரைத்து வடிகட்டி, அடுப்பேற்றி சிறுதீயாக எரித்து பாகுபதம் வரும் போது சூரணத்தை கொஞ்சம் கொஞ்சமாக போட்டு கிளறி ஆறவிட்டு சுரண்டி எடுத்து போதிய அளவு தேன்,நெய் கூட்டிப் பிசைந்து வைத்துக் கொள்ள வேண்டும்.

அளவு : சுண்டை, இருவேளை,

தீரும் பிணிகள் :

குன்மம்

அஜீரணம்

வயிற்றுப்பொருமல்.

3. வஜ்ஜிரவல்லி வடகம் [27]

4. சரபேந்திர குளிகை [27]

5. இரசயோக மாத்திரை [27]

6. கூஷ்பாண்ட லேகியம் [27]

7. வாயுவிளங்காதிச் சூரணம் [27]

8. கருங்கோழிச்சூரணம் [27]

9. பஞ்சலவணக்கட்டு [28]

10. பாஸ்கர லவணம்[29]

11. நவசிஞ்சரக்ஷார வடகம் [30]

12. குக்கிலாதி மாத்திரை[30]

13. ஏரண்டத்தைலம் [30]

14. கோடாசூழி மாத்திரை [30]

15. பஞ்சகவ்விய கிருதம் [30]

16. தீவாக்கினிச் சூரணம் [30]

17. குமரி பற்பம் [30]

18. பஞ்சலவணச் சூரணம் [30]

19. சங்ககுடாரி குளிகை [30]

20. பெருங்காயச் சூரணம்[30]

21. மகாசுந்தரி இரசம் [31(i)]

22. காமகளா ரசம் [31(i)]

23. இரசப்பதங்கம் [31(i)]

24. விடாமிர்த மை [31(ii)]

25. கௌரிசிந்தாமணி ரச செந்தூரம் [31(ii)]

26. கனக இலிங்க மெழுகு [31(iii)]

27. போசன சஞ்சீவி [31(iii)]

28. பஞ்ச இலவண பற்பம் [31(iv)]

29. மகா திராவகம் [31(iv)]

30. இலவணாதிக் குழம்பு [31(iv)]

31. வெடியுப்புக்கட்டு [31(iv)]

32. வெடியுப்புத்திராவகம் [31 (iv)]

33. தாம்பூரப் பற்பம் [32]

34. சதுர் முகச் சூரணம் [32]

35. அஜமோதாஷ்டக மாத்திரை [28]

36. நிலவாகைச் சூரணம் [30]

திரிகடுகு

கருஞ்சீரகம்

சீரகம்

இந்துப்பு

பெருங்காயம்

வகைக்கு 1 பலம், நிலவாகை 4 பலம் ஒவ்வொன்றையும் தனித்தனியாக சூரணம் செய்து கலந்து ஒரு வெருகடிப்பிரமாணம் வெந்நீரில் உண்ண குன்மம் தீரும்.

ஓமம்

Botanical Name : Carum copticum (Trachyspermum ammi)

Family **:** Umbelliferae

Vernacular Names : [25]

Hindi	- Ajowan, ajwain
Bengali	- Jowan, Juvani,
Marathi	- Owa, Vova
Gujarati	- Ajamo, Yavan
Telugu	- Vaamu
Tamil	- Omum, Asampadam.
Kannadam	- Oma, Omakki, Omu.
Malayalam	- Omum, Ayamodakam
Trade	- Ajowan, Omum
English	- The Bishops Weed

Properties and Uses: [25]

1. It is a household remedy for indigestion.

2. Actions:

Antispasmodic
Stimulant
Tonic
Carminative

3. It is administered in flatulence, atonic dyspepsia and diarrhoea, and often recommended for cholera.

4. Ajowan is also effective in relaxed sore throat and in bronchitis and often constitutes an ingredient of cough mixture.

5. Taken with buttermilk, it is a common remedy for relieving difficult expectoration due to driedup phlegm.

6. It has been shown to possess antibiotic activity against

Salmonella typhosa
Micrococcus pyogens var. aureus
Escherichia Coli.

7. The roots of ajowan plant are reported to possess diuretic and carminative properties and are used in febrile conditions and in stomach disorders.

8. Ajowan oil is an expectorant in emphysema, pneumonia and some other respiratory ailments. It has a anti-diuretic action.

9. It is an hypotensive agent. It is a powerful antiseptic.

10.The aqueous portion, left after the separation of essential oil from the steam distillate of ajowan, is used under the name of omum–water. It is prescribed as a carminative and is believed to be useful in flatulence and gripe, especially in children.

கிடைக்கும் இடம் : [26]

இந்தியாவில் பயிரிடப்படுகின்ற ஒரு செடி வகை ஆகும்.

பயன்படும் உறுப்பு : [26]

விதை

சுவை :

கார்ப்பு

தன்மை :

வெப்பம்

பிரிவு :

கார்ப்பு

செய்கை : [26]

பசித்தீத்தூண்டி

இசிவகற்றி

அகட்டுவாய்வகற்றி

அழுகலகற்றி

வெப்பமுண்டாக்கி

உரமாக்கி

உமிழ்நீர்பெருக்கி

ஓம சுத்தி : [27]

சுண்ணாம்பை நீரில் கரைத்து நீரை மட்டிலும் இருத்தி அதில் ஓமத்தை 1 சாமம் முழுவதும் ஊறவைத்து உலர்த்தி எடுக்க சுத்தியாகும்.

குணம் : [26]

" சீதசுரங் காசஞ் செரியாமந் தம்பொருமல்
பேதியிரைச் சல்கடுப்பு பேராமம் – ஓதிருமல்
பல்லொடுபல் மூலம் பகமிவைநோ யென்செயுமோ
சொல்லொடுபோம் ஓம மெனச் சொல்."

பொழிப்புரை: [26]

ஐயசுரம், இருமல், செரியாமந்தம், பொருமல், கழிச்சல், ஊழி, குடலிரைச்சல், இரைப்பு, பல் நோய், பகம் (குய்ய ரோகம்) இவைகள் போகும்.

வழக்கு :

1. ஓமம், சுக்கு, சித்திரமூல வேர்ப்பட்டை இம்மூன்றும் ஓரெடை எடுத்து பொடித்து ஒன்றுக லந்து, கலந்த எடைக்கு, நேர், கடுக்காய் பொடி கூட்டி வேளைக்கு மூவிரல் அளவு மோரில் கொடு க்க, மந்தம் நீங்கும்.

2. ஓமம், கடுக்காய்த் தோல், முக்கடுகு, சிற்றரத்தை, அக்கிரகாரம், திப்பிலி வேர் இவைக ளின் பொடி ஓரிடை கூட்டிய எடைக்கு நேர் பாதி, சர்க்கரை சேர்த்து காலை,மாலை மூவிரல் அள வு கொள்ள புகையிருமல் தீரும்.

3. ஓமம், மிளகு வகைக்கு 34 கிராம் இவற்றை வெதுப்பி, வெல்லம் 34 கிராம் சேர்த்த ரைத்து, காலை, மாலை, 10 நாள் கொட்டைப் பாக்களவு சாப்பிட, வயிற்றுக்கடுப்பு,பொருமல், க ழிச்சல் தீரும்.

4. ஓமம் 252 கிராம், ஆடாதோடைச் சாறு, இஞ்சிரசம், பழரசம், புதினாச்சாறு வகைக் கு 136கி, இந்துப்பு 34 கிராம் சேர்த்து ஊறவைத்து உலர்த்தி இருமல், சுவாசகாசம், அசீரணம் முதலியன நீங்கக்கொடுக்கலாம்.

5. ஓமத்தீரினால் ஊழி, வயிற்றுப்பொருமல், வயிற்றுவலி, செரியாக்கழிச்சல், மந்தம் இவைகளைப் போக்கும்.

- ❖ The glycosidal fraction, essential oil and total oil produce contraction of isolated ileum, tracheal chain and bronchial musculature. Essential oil and total oil caused marked fall in blood pressure in cat.

  - (Indian journal med. Res. 1962 P. 55, 1003)

- ❖ Thymol (61.0), P-cymene (15.6), S-terpinene (11.9 %) determined in fruit essential oil from Turkish plant. (J. Essent Oil Res 1993, 5,105; Chem, Abstr. 1993, P118)

  - Compendium of Indian Medicinal Plants
    Rastogi, B.N. Mehrotra Volume I

எலுமிச்சை [3]

Botanical Name : Citrus limon. Linn

இது 8-10 அடி உயரம் வளரும். இலை, மேற்புறம் பசுமையுடனும், சிறு புள்ளிகளை உடையதாகவும் இருக்கும். இப்புள்ளிகளில் எண்ணெய் நிறைந்திருக்கிறது.

பழத்தின் சுவை	:	புளிப்பு
தன்மை	:	வெப்பம்

பிரிவு : கார்ப்பு

செய்கை : குளிர்ச்சியுண்டாக்கி

குணம் :

முக்குற்றம், சூலை, வாந்தி, குன்மம், இடுமருந்து, அழல் இவைகளைப் போக்கும்.

Limes [24] are rich in vitamins, minerals and alkaline salts but not in fruit sugars.

It is a good source of Vitamin C. It is considered aperient, astringent, antipyretic and sedative. The fruits are regarded as antiseptic, styptic and sudorific.

மோர் [13]

உணவு முடிவில் மோர் சேர்ந்த உணவு உண்பது தமிழ்நாட்டில் வழக்கத்தில் இருக்கி
ன்றது. இது மலசலக் கட்டு உண்டாகாமல் உடல் வெப்பத்தை தணிக்கும்.

பசிமந்தத்திற்கு பத்தியப்பொருளாக வழங்கப்படுகிறது.

ஓமம் சேரும் மருந்துகளுள் குன்மநோய் தீரும் மருந்துகள் :

1. இலந்தை நெய் [33]
2. சாரணை நெய் [34]
3. கருஞ்சாதி இலவணம் [34]
4. கொன்றை நெய் [34]
5. அகத்தியர் கோடாசூழி மாத்திரை [35]
6. குன்மச் சூரணம் [34]
7. கடுக்காய் இளகம் [34]

8. வளராகி வளையம் [36]
9. ராஜசங்குவடி மாத்திரை [28]
10. ஹரிதகி லேகியம் [27]
11. கரிப்பனாகு லேகியம் [27]
12. வஜ்ஜிரவல்லி பாகு [27]
13. ஆயில்பட்டைச் சூரணம் [37]
14. மகாவில்வாதி லேகியம் [28]
15. வச்சிரவல்லரிதகி லேகியம் [27]
16. சங்க க்ஷாரம் [30]
17. வச்சிர வல்லிக் கடுகு [30]
18. பஞ்சலவணச் சூரணம் [30]

குன்மநோய் தீர்க்கும் பிற மருந்துகள்

1. அமிலபற்ப மாத்திரை [31]
2. அஷ்டகற்பூரம் [31]
3. நவ உப்பு மெழுகு [19]
4. குன்மத்திற்குச் சூரணம் [27]
5. ஏலாதி சூரணம் [14]
6. உப்புச் செந்தூரம் [14]
7. குன்மகுடோரி மெழுகு [14]

8. காவிக்கல் சூரணம் [19]

9. சப்தலவண பற்பம் [38]

10. கழற்சி கஷாயம் [21]

11. நால்பாமராதி நெய்[21]

12. சிவதை வேர் சூரணம் [21]

13. திரிபலா கஷாயம் [21]

14. குமரிவேர்க் கஷாயம்[21]

15. பிரண்டை என்ணெய்[21]

16. செவ்வியாதி நெய் [21]

17. சங்கட சார மாத்திரை [21]

18. குன்மவலிச் செந்தூரம் [21]

19. வசாதி கிருதம் [21]

MATERIALS AND METHODS

PREPARATION OF CHOORANAM:

The trial drug **Paavana omum** was taken from a siddha literature**, "Praana rakhsamirtha sindhu" [28]**

COLLECTION OF THE DRUG:

The raw drugs, which are the ingredients of **Paavana omum**, were collected from the raw drug shop.

They were identified and confirmed by the guide.

STORAGE OF CHOORANAM:

Medicine was stored in the airtight glass container.

PURIFICATION OF ALL INGREDIENTS:

1. இந்துப்பு : [19]

இதனை காடியில் மூன்று நாட்கள் ஊறப்போட்டு, சூரியனொளியில் உலர்த்தி எடுக்க சுத்தியாகும்.

2. ஓமம்: [3]

ஓமத்தை கற்சுண்ணாம்பு நீரில் 1 சாமம் ஊறவைத்து, பிறகு எடுத்து கழுவி உலர்த்திக் கொள்ள வேண்டும்.

மருந்து செய்யும் முறை :

அரை பங்கு ஓமத்தின் அரிசியை ஒரு நாள் புளித்த மோரில் ஊறவைத்து உலர்த்தி, பிறகு 1 பங்கு எலுமிச்சம் பழச்சாறும், 1/4 பங்கு இந்துப்பும் சேர்த்து அதில் 2 நாள் ஊறவைத்து உலர்த்தி எடுத்துக்கொள்ள வேண்டும்.

அளவு : 1 கிராம் , 2 வேளை

அனுபானம் : தண்ணீர்

தீரும் நோய்கள்:

குன்மம், அஜீர்ணம், வயிற்றுவலி, அக்கினிமந்தம், வயிறுப்பல் முதலிய நோய்கள் குணமாகும்.

METHODOLOGY FOR ANTI-MICROBIAL STUDY

METHOD:

The anti-bacterial activities of different extracts of **Paavana Omum** 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 **Paavana Omum** were used in the concentration of 10, 50 and 25 µl using their respective solvents. Ciprofloxacin (50 mcg / disc) was used as standard. The disc diffusion method was employed for the screening of antibacterial activity.

DISC DIFFUSION METHOD:

A suspension of organism was added to sterile soya bean casein digest agar media at 45^{o}C, the mixture was transferred to sterile petridishes and were allowed to solidity. Sterile discs, 5 mm 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 preincubation diffusion to minimize the effects of variation in time between the application of the different solutions. Then the plates were incubated at 37^{o} 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.

RESULT FOR ANTI MICROBIAL STUDY OF PAAVANA OMUM

Organism	**Standard drug Ciprofloxacin 50 mcg/disc**	**Test drug (Paavana Omum µl/disc)**		
		Zone of Inhibition in mm		
		10µl	**25µl**	**50µl**
Streptococcus mutans	31	15	17	21
Staphylococcus aureus	30	12	16	19

Escherichia coli	32	18	22	25
Klebsiella pneumoniae	29	14	21	24
Pseudomonas aeruginosa	30	16	19	22

14 mm – Low sensitive, 15mm – Moderate, above 16mm – highly sensitive.

NOTE :

SAMPLE CONCENTRATION : -

4gm – 400 ml of solvent in 25µl, 50µl, and 10µl/disc.

Standard for Bacteria :

Ciprofloxacin HCL, 50 mcg/ disc

Paavana Omum has highly sensitive to following organisms;

Streptococcus mutans

Staphylococcus aureus

Escherichia coli

Klebsiella pneumoniae

Pseudomonas aeruginosa.

BIO CHEMICAL ANALYSIS

5gm of **Paavana Omum** was weighed accurately and placed in a 250ml clean beaker and with 50ml of distilled water. Then it was boiled well for about 10 minutes, then it was cooled and filtered in a 100ml volumetric flastic and made upto 100ml with distilled water.

Then it was undergone the following tests for the presence of Acid Radicals Basic radicals, and phytochemical constituents in **Paavana Omum.**

Procedure	Observation	Inference

Test for Calcium : 2 ml of extract is taken in a clean test tube. To this add 2 ml of 4% ammonium oxide solution.	White precipitate is formed	Presence of calcium
Test for Sulphate : 2 ml of the extract is added to 5 % barium chloride solution.	White precipitate is formed	Presence of Sulphate
Test for Chloride : The extract is treated with Silver nitrate solution	White precipitate is formed	Presence of Chloride
Test for carbonate : The substance is treated with Conc. HCl.	Effervescence is formed	Presence of carbonate
Test for Iron (Ferric) : The extract is treated with glacial acetic acid and potassium ferrocyanide	Blue colour is formed	Presence of Ferric iron
Test for phosphate : The extract is treated with ammonium molybdate and conc. HNO_3	Yellow precipitate is formed	Presence of phosphate
Test for Tannic acid : The extract is treated with Ferric chloride	Blue black precipitate is formed	Presence of Tannic acid
Test for Unsaturation : 1 ml of Potassium permanganate solution is added to the extract.	Decolourised	Presence of unsaturated compound
Test for amino acids: Dilute extract +2ml of Ninhydrin's soln .	Formation of violet colour	Presence of amino acids
Test for proteins: Biuret method ; 1ml of dilute extract+1mlof5%$CuSO_4$+ 1%NaOH.	Formation of Violet colour	Presence of proteins
Test for Flavanoids : Dilute extract+ mg bits+2drops of conc.HCl and gently heated.	Formation of pink colour	Presence of Flavanoids
Test for phenol; Dilute	Deep green colour is formed	Presence of phenols

extract+2drops of $FeCl_3$ soln.		
Test for Tannins ; dilute extract +2ml of 10%lead acetate add.	White precipitate formed	Presence of tannins
Test for alkaloids; Mayer's method;1ml of dilute extract + 1ml reagent. Dragendroff's method; 1ml of dilute extract+ 1ml of reagent.	Appearance of cream colour precipitate Appearance of orange colour precipitate	Presence of alkaloids Presence of alkaloids

RESULT :

Paavana Omum Contains,

Acid Radicals

Sulphate

Chloride

Carbonate

Phosphate

Basic Radicals

Calcium

Iron (Ferric)

Phytochemicals:

Tannic acid

Unsaturated

Alkalodis

Steroids

Protein

Tannins

Phenols

Flavanoids

Aminoacid

Glycosides

QUANTITATIVE ANALYSIS :

S.NO	TEST PARAMETER	RESULTS
01	Copper	28.6 mg/kg
02	Magnesium	2215mg/kg
03	Calcium	1.24 %

INFERENCE:

The **Paavana Omum** sample was found to have 28.6mg/kg of copper, 2215mg/kg of magnesium and 1.24% of calcium.

ACUTE ORAL TOXICITY STUDY

Acute oral toxicity[43] 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 mice of either sex weighing 20-25 g were fasted overnight, but allowed water *ad libitum*. **Paavana Omum** 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:

Paavana Omum at the doses of 2000mg/kg/po did not exhibit any mortality is mice.

ANTI ULCER STUDY

Wister albino rats of either sex weighing between 200 – 250 g were assigned into 3 groups of 6 animals each.

Group I - Received warm water served as solvent control
Group II - Received the Standard Drug (Ranitidine 20mg/kg/po)
Group III - Received the test drug. (Paavana Omum)

Gastric ulcers in rats were produced by 4 hrs pylorous ligation (Goel R.K, 1985). Briefly ulcer was induced in 18 hrs fasted rats by 4 hrs Pylorous Ligation (PL). Gastric

ulcer was induced by ligating the pyloric end of the stomach without causing any damage to the blood supply under diethyl ether anaesthesia. The animals in pyloric ligation induced GU were sacrificed after 4 hrs. The ulcer index in the above groups were calculated by adding the total number of ulcer per stomach and total severity of ulcers as +1 per stomach. Ulcer index was scored based upon the product of length and width of the ulcer present in the glandular portion of the stomach (mm^2/rat).

RESULT :

Effect of Paavana Omum on gastric ulceration induced by 4 hrs pyloric ligation in rats

Oral treatment	**Pyloric ligation (4 hrs)**		**pH of samples**	**Morphological observation of ulcer index**
	Ulcer index (Unit/100ml)	**% protection**		
Control	1.52 ± 0.956	-	1.68 ± 0.241	++++
Standard Ranitidine 20mg/kg/po	4.43 ± 0.127	66.5	5.24 ± 0.261	Nil
Paavana	3.31 ±	55.1	3.97 ±	+

Omum 500mg/kg/po	0.754***		0.136**	

n=6; Values are expressed as mean ± S.D followed by Students Paired 'T' Test
***P<0.001 as compared with control.
**P<0.003 as compared with control.

Paavana Omum exhibited antiulcer activity in pyloric ligated rats. The ulcer index showed a percentage protection of 55.1% for **Paavana Omum** against 66.5% for standard anti ulcer drug Ranitidine. The gastric juice of the **Paavana Omum** treated rats showed a pH of 3.97 against the pH of control rats (1.68). There is a good correlation of pH and % protection of ulcer index of rats treated with both **Paavana Omum** and ranitidine. There was a complete remission of ulcer sore with respect to ranitidine where as **Paavana Omum** exhibited a morphological ulcer sore of 1+ when compared to control (4+). This again shows a significant antiulcer activity for **Paavana Omum.**

METHODOLOGY FOR STATISTICAL ANALYSIS

To study variation in one or more attributes the data are expressed mostly as proportions. If a sample is divided into only two classes such as successes and failures it is said to have a binomial.

$$P = \frac{\text{Number of individuals having a Specific Character}}{\text{Total Number}}$$

$$P = \frac{\text{Character in a binomial distribution is expressed}}{\text{Total Number}}$$

q = probability of non – occurrence of the same .

STANDARD ERROR OF PROPORTION (S.E.P)

The probability or Proportional changes of positive or negative occurrence of an attribute or a character in a population or universe follows.

Binomial Frequency Distribution

$$S.E.P = \sqrt{\frac{Pq}{N}}$$

Probability of difference occurring by chance can be found by applying Z test as done in the case of means,

$$Z = \frac{p - P}{S.E.P}$$

STATISTICAL ANALYSIS OF SUBJECTIVE PARAMETERS OBSERVED BEFORE AND AFTER TREATMENT OF PATIENTS.

S.No	Parameters	Percentage improved			Statistical Criteria	Probability	Significance
		Study	Effect	Difference			
1.	Epi gastric Pain	100	95	5	Z=1.00	P<0.001	Significant
2.	Vomiting	87.5	80	7.5	Z=0.7	P<0.001	Significant
3.	Abdomial distension	75	75	0	Z=1.2	P<0.001	Significant

P <0.001 hence the improvement in the subjective parameters produced by **Paavana Omum** is statistically significant.

CLINICAL ASSESSMENT

குன்மம் [39]

வேறுபெயர்கள் :

குன்மம்

வயிற்றுள் புரளல்

வயிற்றுள் புரளலுடன் நோதல்

இயல்:

செரியாமை, வயிற்றில் எரிச்சல், வாந்தி, உடல்வன்மை குறைதல், தேகம் மெலிதல், மனம் குன்றல் ஆகிய குறிகுணங்களுடையது. மேலும் வயிற்றுள் உணவு செரிக்காமல் காற்றுக்கூடி வலியுடன் பந்துபோல் புரளச் செய்யும் நோய் எனவும், இந்நோயால் வருந்தும்போது மனம் குன்றும் காரணத்தாலும், வலி வரும்போது

நோயினனை முன்பக்கம் குன்ற வைக்கும் காரணத்தாலும் இதனை குன்மநோய் என்பர்.

நோய் வரும் வழி:

" செய்யான குன்மத்தின் தோற்றந் தன்னைச்
செப்பிடவே துவர்ப்பான பொசிப் பினாலும்
மெய்யான மங்கையுடன் மருவ லாலும்
வகையாகுங் கிழங்குவகை யருந்த லாலும்
உய்யான மிளகு வகை யுரைப்பினாலும்
உறுபசியை யடக்கிடு மந்தத் தாலும்
தய்யான சண்டாள கோபத் தாலும்
சலிப்பாலும் குன்மம்வந் தடையும் பாரே"

– யூகி வைத்திய சிந்தாமணி பெருநூல் 800

1. மிகுதியும் கூடுள்ள பொருள்களையும், காற்றை வயிற்றுள் நிரப்பக்கூடிய பொருள்களையும், மண், உமி, கல், தூசு இவை கலந்த பொருள்களையும் உண்பதாலும்.

2. சுனைநீர், ஓட்டமற்ற நீர், சுண்ணாம்பு கலந்த நீர் இவைகளை அருந்தலாலும்.

3. தேங்காய்ப்பால் போன்ற செரிக்கக்கூடாப் பொருள்களை மிகுதியும் கொள்வதாலும்.

4. அடிக்கடி சினங்கொள்ளல், பட்டினி இருத்தல், மனச்சலிப்பு அடைதல் ஆகியவற்றாலும் இந்நோய் உண்டாகும்.

" தொடர்வாத பந்தமலாது குன்மம் வராது"

– தேரையர்

உணவின் வேறுபாட்டாலும், தகாத நடத்தையாலும் வளிக்குற்றம் கேடடைந்து, அதற்கு துணையாக மற்ற இரு குற்றங்களும் கூடி இயற்கைத் தொழில் புரியாது, கேடடைந்த குற்றங்களின் அளவாக கால்களுள் கீழ்நோக்குக்கால் (அபான வாயு) மேல்நோக்குக்கால் (உதான வாயு), நடுக்கால் (சமானன்) மூன்றும் கேடடைந்து இந்நோயை உருவாக்குகிறது.

குறிகுணங்கள்: [40]

- வயிறு புரட்டி நோதல்
- உணவில் வெறுப்பு
- பசியின்மை
- குமட்டல், வாய்நீர் ஊறல்
- எதிரெடுத்தல்
- புளியேப்பம்

SELECTION OF THE PATIENTS:

In our siddha system of medicine, so many single and compound medicine are available for Gunmam. 40 cases were selected in the OP of Arignar Anna Govt hospital, Chennai – 106.

INCLUDING CRITERIA

- Age 31-70years, sex, occupation, diets, and personal habits, socio–economic status.
- Epigastric pain
- Heart burn
- Regurgitation
- Nausea

- Vomiting
- Abdominal distension

EXCLUDING CRITERIA

- Radiating abdominal pain as in pancreatitis, appendicitis.
- Acute abdominal colics.
- Cancer of stomach
- Complication of peptic ulcer in haemorrhage, perforation, malignancy at the site of the ulcer.

INVESTIGATIONS:

The blood investigation such as HB, ESR was done in biochemical laboratory of Arignar Anna Hospital. Endoscopy was done in private laboratory and peripheral hospital.

Diagnosis was made on the basis of signs, symptoms and investigations.

LINE OF TREATMENT

The patients were orally administered with **Paavana omum** of dose 1gm twice a day with water before food for a period of 48 days.

OBSERVATION AND RESULTS OF CLINICAL STUDY

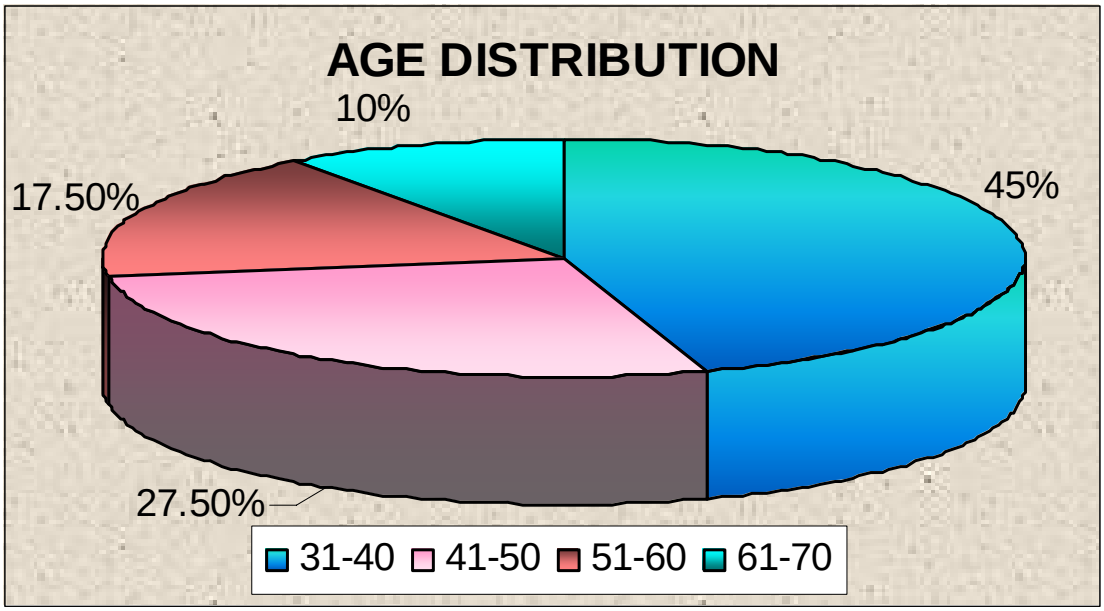
The Clinical study was subjected to 40 selected cases.

The following parameters were observed during courses of treatment.

- Age
- Sex
- Socio-economic status
- Personal habits
- Occupational status

AGE DISTRIBUTION:

S.No	Age in Years	No.of Patients	Percentage (%)
1.	31-40	18	45
2.	41-50	11	27.5
3.	51-60	7	17.5
4.	61-70	4	10

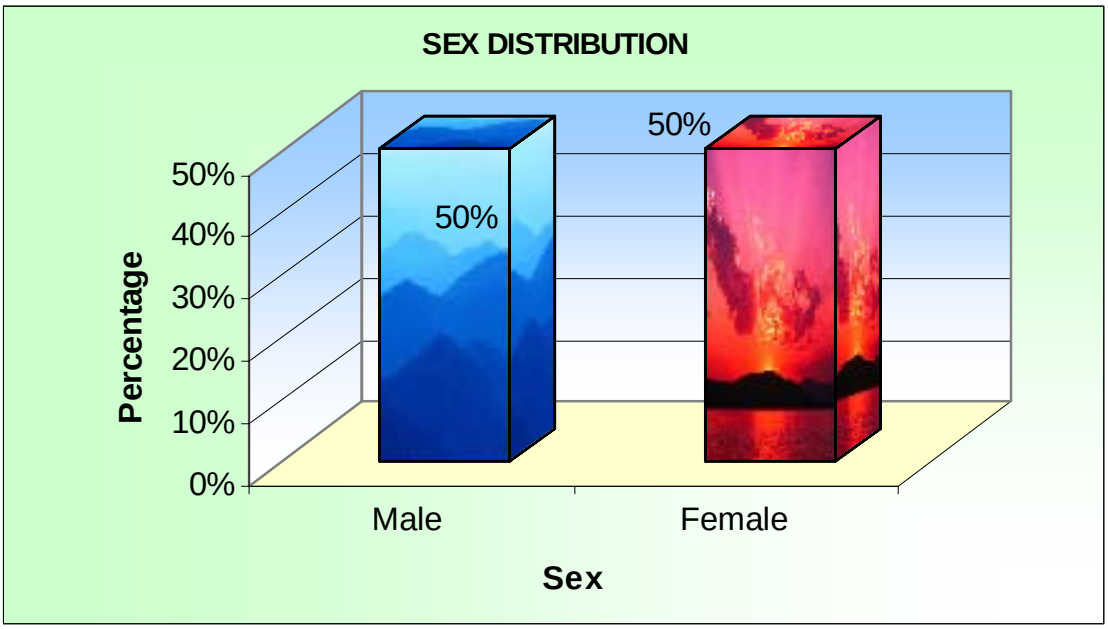


INFERENCE :

Among 40 Patients. 18(45%) belong to age group 31-40, 11(27.5%) patients belong to age group 41-50, 7(17.5%) patients belong to age group 51-60 and 4(10%) patients belong to 61-70. Maximum patients found to be between 31-40.

SEX DISTRIBUTION:

S.No	Sex	No.of.Cases	Percentage (%)
1.	Male	20	50
2.	Female	20	50

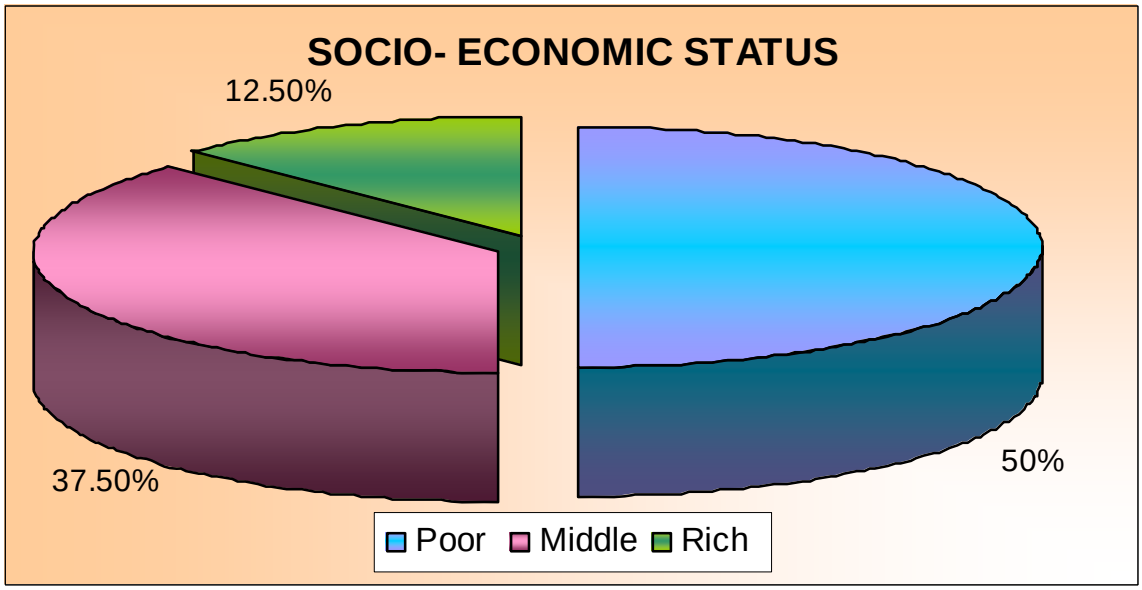


INFERENCE

Out of 40 Patients 20 cases(50%) were male and 20 cases (50%) were female.

SOCIO- ECONOMIC STATUS:

S.No	Socio – Economic Status	No.of.Cases	Percentage (%)
1.	Poor	20	50
2.	Middle	15	37.5
3.	Rich	5	12.5

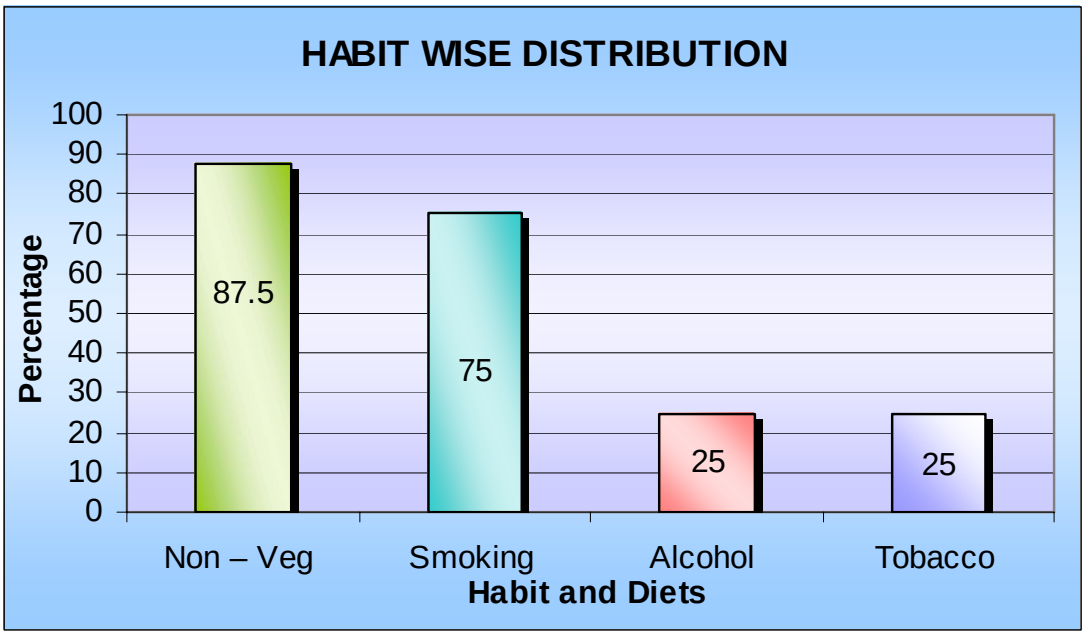


INFERENCE :

Among 40 patients 20(50%) were poor, 15(37.5%) were middle class and 5 (12.5%) were rich.

HABIT WISE DISTRIBUTION

S.No	Habit and Diets	No.of.Cases	Percentage (%)
1.	Non – Veg	35	87.5
2.	Smoking	30	75
3.	Alcohol	10	25
4.	Tobacco	10	25

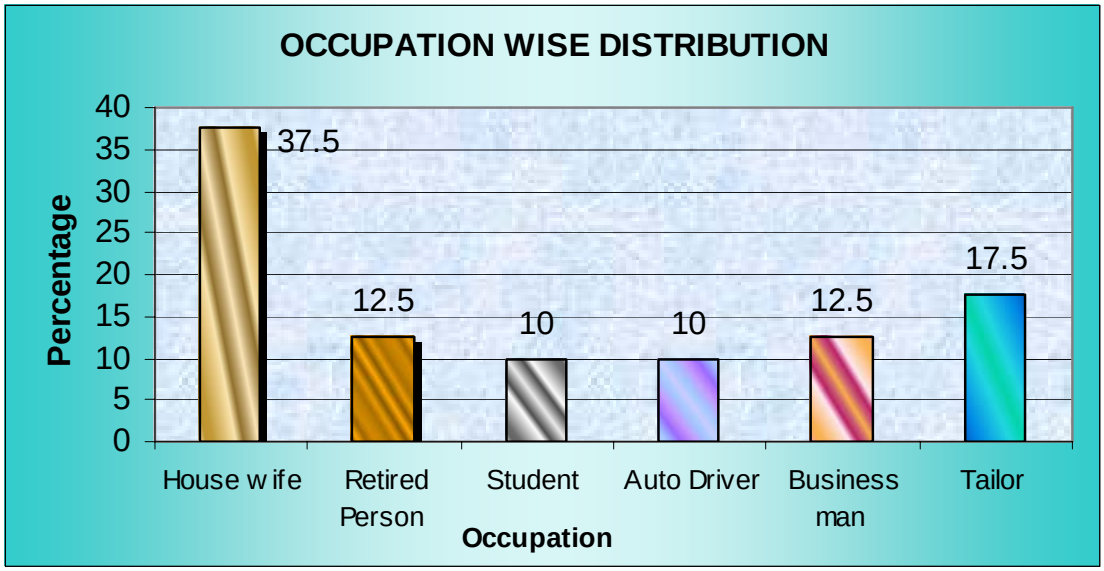


INFERENCE :

This table shows that food habit may be cause of Gunmam. Among 40 patients. 35(87.5%) were Non - Vegetarian, 30(75%) were Smoker, 10(25%) were alcoholic, 10(25%) were tobacco users.

OCCUPATION WISE DISTRIBUTION

S.No	Occupation	No.of.Cases	Percentage (%)
1.	House wife	15	37.5
2.	Retired person	5	12.5
3.	Student	4	10
4.	Autodriver	4	10
5.	Business men	5	12.5
6.	Tailor	7	17.5

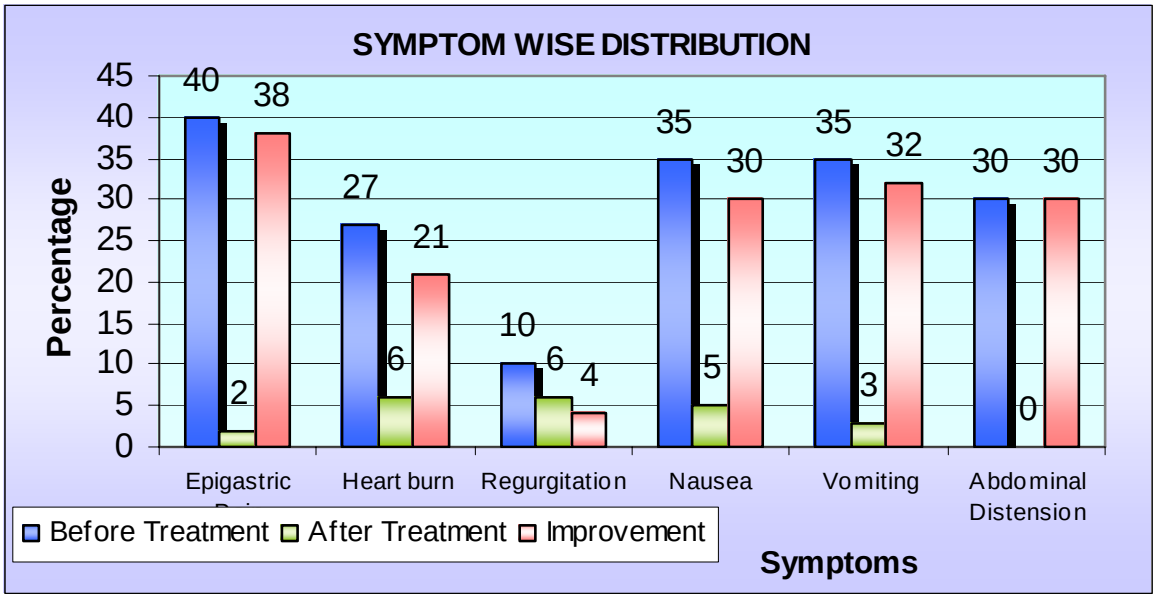


Inference:

Among 40 patients 15(37.5%) patients were housewives, 5 (12.5%) patients were Retired person, 4(10%) patients were Student, 4(10%) patients were Autodriver, 5(12.5%) patients were Business men and 7 (17.5%) were Tailor.

SYMPTOM WISE DISTRIBUTION

Symptoms	Before Treatment	After Treatment	Improvement	Percentage (%)
Epigastric Pain	40	2	38	95
Heart burn	27	6	21	52.5
Regurgitation	10	6	4	10
Nausea	35	5	30	75
Vomiting	35	3	32	80
Abdominal Distension	30	0	30	75



INFERENCE:

Patients with symptoms that is Epigastric pain, Heartburn, Regurgitation, Nausea, Vomiting, Abdominal distension were taken for the study.

Among 40 patients 38 patients improved from Epigastric pain. Among 27 patients with Heartburn 21 improved. Among 10 patients with Regurgitation 4 got relief, Among 35 patients with Nausea 30 got improvement, Among 35 patients with Vomiting 32 got improvement, Among 30 patients with Abdominal distension 30 patients got improvement

DISCUSSION

Today's fast moving life style with its unhealthy food habits and increased stress are taking its roll on human health and among the diseases caused due to the occurrence of Gunmam is increasing at an alarming rate.

" தொடர்வாத பந்தமலாது குன்மம் வராது"

– தேரர்

As per siddha system, gunmam is caused by derangement of vatham.

உணவின் வேறுபாட்டாலும், தகாத நடத்தையாலும் வளிக்குற்றம் கேடடைந்து, அதற்குத் துணையாக மற்ற குற்றங்களும் கேடடைந்து கீழ் நோக்குக்கால், மேல் நோக்குக்கால், நடுக்கால் என்னும் இம்மூன்றின் தொழிலையும் கெடுத்து இந்நோயைப்பிறப்பி க்கும்.

வாதத்தை சமப்படுத்தக்கூடிய சுவைகள் இனிப்பு, புளிப்பு, உப்புச் சுவைகளாகும்.

பாவன ஓமத்தின் சுவை, அதிகம் புளிப்பு, சிறுஉப்பு. எனவே இந்த மருந்தானது வாதக்குற்றத்தினை சமப்படுத்தி குன்ம நோயினை நீக்கும்.

புளிப்புச்சுவையானது மண் மற்றும் தீ பூதக் கூறுகள் சேர்ந்தது. உப்புச் சுவையானது நீர் மற்றும் தீ பூதக்கூறுகள் சேர்ந்தது. நீர் பூதத்திற்கு குன்மத்தினை நீக்கும் குணம் உண்டு.

- The antimicrobial study of **Paavana Omum** shows that it is highly sensitive to all the following organisms such as,

  Streptococcus mutans

  Staphylococcus aureus

  Escherichia coli

  Klebisiella pneumoniae

  Pseudomonas aeruginosa.

- Bio Chemical analysis of **Paavana Omum** shows the presence of Copper, Magnesium and Calcium which has anti ulcer property.

  தாமிரத்திற்கு குன்மத்தை விரைவில் போக்கக்கூடிய தன்மை இருப்பதால் இதற்குகுன்ம காலன் என்ற பெயரும் உண்டு.

  The Average Concentration of copper present in normal plasma is about 100 µg/100 ml in adults.

  Paavana Omum contains 28.6 mg/kg copper. Copper has healing property.

- The body contains about 21g of magnesium. Daily requirement of magnesium is 300 – 350 mg. Paavana Omum contains 2215 mg/kg of magnesium. Magnesium neutralizes the HCL in the Stomach.
- Calcium is a antacid. Paavana Omum contains 1.24% of Calcium.
- Acute toxicity study shows Paavana Omum at the dose of 2000 mg/kg/po did hot exhibit any mortality in mice.
- The Pharmacological study of Paavana Omum shows that it pacifies the acidity levels of the gastric juice and protects the gastric mucosa from injury. Hence it is proved to be good for Gunmam. At the study pH of gastric juice was 3.97±0.136.
- The clinical study has been conducted under the following criteria age, sex, socio – economic status, personal habits & Diet and Occupation.
- 40 Patients belonging to the age group of 30 to 70 are selected.
- Epigastric pain decreased within 12 hours.
- The heartburn relieved in 22 patients within a week.

- Regurgitation relieved in patients within a week.
- Nausea & Vomiting relieved in patients within 10 days.
- Abdominal discomfort relieved in patients within a week.

The clinical finding showed that the people belonging to the age group 31 to 40 years are mostly affected and the people of poor socio economic group, mostly of males, and the housewives and labours are mostly prone to gunmam. The people who have taken much of non-vegetarian food items and alcohol are commonly affected.

Students, housewives, alcoholics, non–vegetarians, tobacco and smokers showed late recovery.

From the above studies **Paavana Omum** has been proved to be clinically effective against Gunmam.

SUMMARY AND CONCLUSION

- The trial drug Paavana Omum has been selected for its antiulcer activity bases on literature evidence.
- Bio- Chemical analysis shows the presence of elements Copper, Magnesium, calcium and Iron (ferric) [26].
    - (i) Copper has ulcer healing property.
    - (ii) Mg – Magnesium Hydroxide that neutralize the HCL.
    - (iii) Ca is in the form of CaCl2 in the stomach. It is a antacid.
- Animal experiments revealed that drug has a ulcer healing property when given in a dose of 500mg bds with water before food.
- Clinical trial showed that **Paavana omum** is effective.
- The Statistical analysis also significantly shows the reduction of symptoms like epigastric pain, heartburn, regurgitation, nausea, vomiting and abdominal distension.
- The administration of **Paavana Omum** for 48 days did not produce any side effects.
- Out of 40 patients, 30 patients showed better response in reduction at symptoms like epigastric pain, heartburn, regurgitation, nausea, vomiting, and abdominal distension.
- So it is concluded Paavana Omum has antiulcer activity.

S. No	Op No	Name/ Age/ Sex	Complaints	Days	BT AT	Investigation														Endoscopy	Results
						Blood									Serum cho.	Urine					
						TC	DC			ESR		Hb	Sug	Urea		Alb	Sug	Dep			
							P	L	E	½ hr	1 hr										
1.	5100	Chellammal 40/ F	Epigastric pain, heart burn, regurgitation, nausea, vomiting.	48	BT	10400	63	35	2	4	8	11.5	110	18	165	Nil	Nil	Few Epi.cells	Gastritis	Symptoms Relieved
					AT	10300	55	35	3	3	6	11	115	19	160	Nil	Nil	Few Epi.cells	Normal	
2.	5112	Gopinath 45/ M	Epigastric pain, heart burn, nausea, vomiting, abdominal distension.	48	BT	10500	57	35	2	4	8	12	115	20	170	Nil	Nil	Few Epi.cells	-	Moderate response
					AT	10900	55	33	7	3	5	12.5	100	15	165	Nil	Nil	Few Epi.cells	-	
3.	5148	Nambirajan 64/ M	Epigastric pain, regurgitation, nausea, vomiting, abdominal distension.	48	BT	10600	55	35	3	5	10	12	100	25	150	Nil	Nil	Few Epi.cells	Gastritis	Symptoms Relieved
					AT	10600	55	39	5	4	6	12.5	100	20	150	Nil	Nil	Few Epi.cells	Normal	
4.	5806	Kumar 25/ M	Epigastric pain, heart burn, abdominal distension.	48	BT	9800	65	33	5	7	9	12	98	16	175	Nil	Nil	Few Epi.cells	-	Moderate response
					AT	10400	50	35	4	3	6	13	96	20	165	Nil	Nil	Few Epi.cells	-	
5.	5930	Naveena 28/ F	Epigastric pain, heart burn, nausea, vomiting, abdominal distension.	48	BT	10600	57	35	4	5	9	13	120	18	180	Nil	Nil	Few Epi.cells	-	Symptoms Relieved
					AT	10700	55	35	4	4	6	13	126	20	150	Nil	Nil	Few Epi.cells	-	

6.	8722	Rajathi 45/ F	Epigastric pain, regurgitation, nausea, vomiting, abdominal distension.	48	BT AT	10800 10900	55 55	35 33	4 3	2 2	4 4	13 14	100 100	20 25	150 160	Nil Nil	Nil Nil	Few Epi.cells Few Epi.cells	- -	Symptoms Relieved
7.	4856	Ramasamy 28/ M	Epigastric pain, regurgitation, heart burn, nausea, vomiting.	48	BT AT	10700 10800	51 50	34 34	4 2	7 4	9 4	14 14	110 110	26 30	170 170	Nil Nil	Nil Nil	Few Epi.cells Few Epi.cells	- -l	Symptoms Relieved
8.	8620	Selvam 35/ M	Epigastric pain, nausea, vomiting, abdominal distension.	48	BT AT	10900 10900	55 55	35 33	2 2	3 3	6 6	13 14	98 100	15 16	165 170	Nil Nil	Nil Nil	Few Epi.cells Few Epi.cells	Gastritis Normal	Symptoms Relieved
9.	3594	Leela 29/ F	Epigastric pain, heart burn, nausea, vomiting, abdominal distension.	48	BT AT	10400 10800	55 53	35 35	4 3	7 5	9 8	13 14	110 126	20 18	156 160	Nil Nil	Nil Nil	Few Epi.cells Few Epi.cells	- -	Moderate response
10.	4534	Ramadoss 36/ M	Epigastric pain, heart burn, regurgitation, nausea, vomiting.	48	BT AT	9100 9800	61 65	35 33	4 2	11 11	13 12	14 15	100 98	15 15	160 160	Nil Nil	Nil Nil	Few Epi.cells Few Epi.cells	- -	Symptoms Relieved
11.	6130	Leela 48/ F	Epigastric pain, heart burn, nausea, vomiting, abdominal distension.	48	BT AT	10400 9800	55 53	33 35	2 3	5 4	9 8	14 15	120 130	25 26	150 160	Nil Nil	Nil Nil	Few Epi.cells Few Epi.cells	- -	Moderate Response

12.	8743	Chitra 30/ F	Epigastric pain, heart burn regurgitation, nausea, vomiting.	48	BT AT	8800 9800	54 60	34 30	8 5	3 3	6 6	9.5 11	105 100	18 20	177 160	Nil Nil	Nil Nil	Few Epi.cells Few Epi.cells	Gastritis Normal	Symptoms Relieved
13.	1644	Nandha Gopal 25/ M	Epigastric pain, nausea, vomiting, abdominal distension.	48	BT AT	9800 10400	60 55	34 33	6 3	5 4	10 8	11 12	82 100	18 20	145 155	Nil Nil	Nil Nil	Few Epi.cells Few Epi.cells	Gastritis Normal	Symptoms Relieved
14.	1612	Pranol kumar 46/ M	Epigastric pain, heart burn, nausea, vomiting, abdominal distension.	48	BT AT	10700 10800	51 53	35 33	2 3	2 2	5 5	12 13	120 130	30 25	150 155	Nil Nil	Nil Nil	Few Epi.cells Few Epi.cells	Gastritis Normal	Symptoms Relieved
15.	2260	Elavarasan 46/ M	Epigastric pain, heart pain, regurgitation, nausea, vomiting.	48	BT AT	9500 10800	50 53	33 33	8 2	5 4	9 8	11 13	84 110	19 21	173 150	Nil Nil	Nil Nil	Few Epi.cells Few Epi.cells	Gastritis Normal	Symptoms Relieved
16.	4110	Franklin 47/ M	Epigastric pain, heart burn, nausea, vomiting, abdominal distension.	48	BT AT	10500 10800	64 55	31 35	5 5	8 5	10 8	10.5 13	109 110	26 25	200 150	Nil Nil	Nil Nil	Few Epi.cells Few Epi.cells	Gastritis Normal	Symptoms Relieved
17.	4446	Meenachi Sundaram 75/M	Epigastric pain, nausea, vomiting.	48	BT AT	10700 10800	64 53	31 32	5 3	9 5	11 9	11 13	156 110	28 24	172 155	Nil Nil	Nil Nil	Few Epi.cells Few Epi.cells	Gastritis Normal	Symptoms Relieved

18.	4422	Surendren 40/ M	Epigastric pain, Heart burn, nausea, vomiting, abdominal distension.	48	BT AT	9800 10400	60 55	35 30	3 2	5 4	9 8	12 13	110 1250	30 25	150 155	Nil Nil	Nil Nil	Few Epi.cells Few Epi.cells	- -	Moderate response
19.	5211	Sumathi 40/ F	Epigastric pain, Heart burn, nausea, vomiting, abdominal distension.	48	BT AT	10400 10800	62 60	33 33	3 4	10 8	12 10	10 12	118 116	24 24	170 160	Nil Nil	Nil Nil	Few Epi.cells Few Epi.cells	- -	Symptoms Relieved
20.	7112	Tamilarasi 33/ F	Epigastric pain, Heart burn, regurgitation, nausea, vomiting, abdominal distension.	48	BT AT	10400 10800	66 55	28 35	6 3	5 4	10 8	9.5 13	82 100	18 17	173 165	Nil Nil	Nil Nil	Few Epi.cells Few Epi.cells	Gastritis Normal	Symptoms Relieved
21.	9140	Poornum 58/ F	Epigastric pain, abdominal distension.	48	BT AT	10000 10400	67 60	25 35	5 4	3 4	6 8	9.5 12	120 115	15 25	170 160	Nil Nil	Nil Nil	Few Epi.cells Few Epi.cells	- -	Symptoms Relieved
22.	9508	Malliga 51/ F	Epigastric pain, regurgitation, nausea, vomiting, abdominal distension.	48	BT AT	9800 10400	60 55	34 33	6 4	9 10	11 12	9.5 12	126 115	29 25	168 158	Nil Nil	Nil Nil	Few Epi.cells Few Epi.cells	- -	Moderate response
23.	6736	Vijaya 38/ F	Epigastric pain, Heart burn, nausea, vomiting, abdominal distension.	48	BT AT	9400 10800	60 55	34 30	6 3	5 4	10 8	10.5 13	92 98	22 20	170 150	Nil Nil	Nil Nil	Few Epi.cells Few Epi.cells	- -	Symptoms Relieved

24.	47	Abitha 32/F	Epigastric pain, Heart burn, nausea, vomiting, abdominal distension.	48	BT AT	10400 10800	60 60	33 25	7 4	10 8	12 10	10 13	98 100	18 24	167 200	Nil Nil	Nil Nil	Few Epi.cells Few Epi.cells	- -	Symptoms Relieved
25.	403	Merry 33/ F	Epigastric pain, nausea, vomiting, abdominal distension.	48	BT AT	9700 10400	59 55	36 34	5 3	6 7	12 9	10 11	98 110	18 20	170 155	Nil Nil	Nil Nil	Few Epi.cells Few Epi.cells	- -	Symptoms Relieved
26.	625	Kathiresan 68/ M	Epigastric pain, Heart burn, abdominal distension.	48	BT AT	10200 10800	76 50	20 32	1 4	4 3	6 6	12 12	120 97	18 21	170 165	Nil Nil	Nil Nil	Few Epi.cells Few Epi.cells	- -l	Moderate response
27.	1112	Perumal 62/M	Epigastric pain, Heart burn, nausea, vomiting, abdominal distension.	48	BT AT	9400 10800	57 55	38 33	5 3	4 4	8 8	11 13	90 115	25 25	177 160	Nil Nil	Nil Nil	Few Epi.cells Few Epi.cells	- -	Moderate response
28	1151	Latha 34/F	Epigastric pain, Heart burn, nausea, vomiting, abdominal distension.	48	BT AT	10200 10800	60 55	32 31	3 4	9 6	12 9	10.5 13	135 112	22 24	156 165	Nil Nil	Nil Nil	Few Epi.cells Few Epi.cells	- -	Symptoms Relieved
29.	2255	Puruchotaman 41/M	Epigastric pain, nausea, vomiting, abdominal distension.	48	BT AT	9800 10400	40 54	32 33	1 2	4 3	8 6	12 13	96 98	25 22	167 150	Nil Nil	Nil Nil	Few Epi.cells Few Epi.cells	- -	Symptoms Relieved

30	2601	Hema chandran 55/M	Epigastric pain, Heart burn, nausea, vomiting, abdominal distension.	48	BT AT	10800 8400	64 57	31 34	5 4	5 4	10 8	12 11	120 115	29 26	214 159	Nil Nil	Nil Nil	Few pus.cells Few Epi.cells	- -	Symptoms Relieved
31.	5041	Krishna samy 58/M	Epigastric pain, Heart burn, nausea, vomiting, abdominal distension.	48	BT AT	10000 9800	63 57	31 38	6 5	9 11	11 13	12 11	100 112	14 27	175 200	Nil Nil	Nil Nil	Few Epi.cells Few Epi.cells	- -	Symptoms Relieved
32.	5971	Ponnammal 40/F	Epigastric pain, Heart burn.	48	BT AT	10400 10800	62 60	32 30	6 4	5 4	10 8	10 12	112 110	22 20	183 150	Nil Nil	Nil Nil	Few Epi.cells Few Epi.cells	- -	Symptoms Relieved
33.	5691	Balan 60/M	Epigastric pain, nausea, vomiting.	48	BT AT	8700 10400	55 54	35 33	7 4	10 10	12 12	9 10	133 120	24 25	209 180	Nil Nil	Nil Nil	Few Epi.cells Few Epi.cells	- -l	Moderate response
34.	6268	Sekar 53/M	Epigastric pain, Heart burn, nausea, vomiting, abdominal distension.	48	BT AT	10400 10600	66 62	30 33	4 3	12 10	14 12	11.5 13	113 115	31 25	205 200	Nil Nil	Nil Nil	Few Epi.cells Few Epi.cells	- -	Symptoms Relieved
35.	6321	Balaji 27/M	Epigastric pain, nausea, vomiting, abdominal distension.	48	BT AT	10000 10100	60 55	37 33	4 5	8 10	12 14	14 15	118 119	18 22	118 128	Nil Nil	Nil Nil	Few Epi.cells Few Epi.cells	- -	Symptoms Relieved

36.	7436	Kamala 33/F	Epigastric pain, Heart burn, abdominal distension.	48	BT AT	9700 9900	55 53	32 35	9 4	10 10	12 12	14 13	120 115	18 25	170 165	Nil Nil	Nil Nil	Few Epi.cells Few Epi.cells	- -	Symptoms Relieved
37.	7960	Dhana Lakshmi 24/F	Epigastric pain, Heart burn, nausea, vomiting, abdominal distension.	48	BT AT	10600 10800	55 52	34 32	6 3	4 3	8 6	14 15	75 85	21 19	155 170	Nil Nil	Nil Nil	Few Epi.cells Few Epi.cells	- -l	Moderate response
38.	8434	Selvi 51/F	Epigastric pain, Heart burn, nausea, vomiting, abdominal distension.	48	BT AT	9800 9600	57 57	34 32	4 4	9 8	10 10	10.5 12	84 85	18 18	161 172	Nil Nil	Nil Nil	Few Epi.cells Few Epi.cells	- -l	Symptoms Relieved
39.	9859	Tamilarasi 39/F	Epigastric pain, nausea, vomiting,	48	BT AT	10400 10600	51 52	30 35	2 3	4 4	8 9	12 12.5	90 94	22 25	175 180	Nil Nil	Nil Nil	Few Epi.cells Few Epi.cells	- -	Symptoms Relieved
40.	9857	Sujatha 35/F	Epigastric pain, nausea, vomiting.	48	BT AT	10900 10100	55 55	30 30	4 5	5 4	10 8	15 14	115 110	15 18	165 170	Nil Nil	Nil Nil	Few Epi.cells Few Epi.cells	- -	Symptoms Relieved

Hb – Haemoglobin, **Sug** - Sugar, **Serum Cho** – Serum Cholesterol, **Alb** – Albumin, **Dep** – Deposits,

Few Epi Cells – Few Epithelial Cells.

S.No	Op No	Name/ Age/ Sex	Complaints	Days	BT AT	Investigations												Results
						Blood								Serum	Urine			
						TC	DC			ESR		Hb	Urea	Serum cholesterol	Alb	Sug	Dep	
							P	L	E	½ hr	1 hr							
1.	5128	Jeganathan 60/M	Polyuria Polydipsia Polyphagia Giddiness Fatigue	48	BT	10500	55	35	2	4	6	12	26	168	Nil	+	Few Epi	Good
					AT	10800	53	34	3	4	8	12	25	158	Nil	Nil	Few Epi	
2.	5317	Uma 60/F	Polyuria Polydipsia Polyphagia Giddiness Fatigue	48	BT	10400	60	30	3	4	8	112	23	171	Nil	++	Few Epi	Good
					AT	10700	58	32	2	4	6	115	22	160	Nil	Nil	Few Epi	
3.	1171	Indhra 45/F	Polyuria Polydipsia Polyphagia Fatigue Peripheral Neuritis	48	BT	10300	54	32	2	6	10	12	24	173	Nil	Nil	Few Epi	Good
					AT	10350	53	33	4	4	8	13	22	155	Nil	Nil	Few Epi	
4.	1721	Sangeetha 53/F	Polyuria Polydipsia Polyphagia Giddiness Fatigue	50	BT	10300	56	30	2	4	8	12	22	196	Nil	+	Few Epi	Good
					AT	10400	50	29	4	3	6	13	19	170	Nil	Nil	Few Epi	

5.	3795	Kamala 52/F	Polyuria Polydipsia Polyphagia Giddiness	48	BT AT	10500 1700	52 53	30 31	2 3	4 5	7 8	12 12	23 22	181 170	Nil Nil	++ Nil	Few Epi Few Epi	Good
6.	4089	Malliga 50/F	Polyuria Polydipsia Polyphagia Peripheral Neuritis	48	BT AT	10300 10400	50 51	30 33	2 4	2 4	4 6	12 13	27 23	178 165	Nil Nil	+ Nil	Few Epi Few Epi	Moderate
7.	4660	Bharath 52/M	Polyuria Polydipsia Polyphagia Giddiness Peripheral Neuritis	48	BT AT	10200 1300	50 49	30 32	2 5	4 2	6 4	12 14	26 23	162 152	Nil Nil	+ Nil	Few Epi Few Epi	Good
8.	4527	Anna Poorani 46/F	Polyuria Polydipsia Giddiness Fatigue Peripheral Neuritis	48	BT AT	10100 10300	52 55	30 31	2 4	4 2	8 8	12 14	23 22	163 159	Nil Nil	+ Nil	Few Epi Few Epi	Moderate
9.	4621	Leelavathi 49/F	Polyuria Polydipsia Polyphagia Giddiness Fatigue	48	BT AT	10500 10600	60 59	33 32	2 3	4 2	6 4	13 14	27 23	169 158	Nil Nil	+ Nil	Few Epi Few Epi	Good

10.	9726	Rajamani 48/M	Polyuria Polydipsia Peripheral Neuritis Polyphagia	48	BT AT	10400 10500	60 50	33 34	2 4	4 2	8 4	12 12	26 25	160 157	Nil Nil	Nil Nil	Few Epi Few Epi	Moderate
11.	9734	Lalitha 50/F	Polyuria Polydipsia Fatique Giddiness Polyphagia	48	BT AT	9800 10300	60 59	33 34	2 4	4 2	8 4	12 12	23 22	176 160	Nil Nil	+ Nil	Few Epi Few Epi	Good
12.	1620	Sujatha 34/F	Polyuria Polydipsia Fatigue Peripheral Neuritis Giddiness Polyphagia	48	BT AT	10400 10500	60 59	34 33	6 5	12 6	20 10	10.5 12	18 17	156 150	Nil Nil	++ Nil	Few Epi Few Epi	Good
13.	1572	Gandhimadhi 43/F	Polyuria Polydipsia Fatigue Peripheral Neuritis Giddiness Polyphagia	48	Bt AT	9700 10200	59 55	36 35	3 3	5 5	9 10	10 12	18 17	170 160	Nil Nil	Nil Nil	Few Epi Few Epi	Good

14.	16584	Akli 45/F	Polyuria Polydipsia Fatigue Peripheral Neuritis Giddiness Polyphagia	48	BT AT	10300 10400	59 58	35 33	2 3	5 5	10 8	12 13	18 17	160 150	Nil Nil	++ Nil	Few Epi Few Epi	Poor
15.	5092	Syed Unksen 48/M	Polyuria Polydipsia Fatigue Peripheral Neuritis Giddiness Polyphagia	48	BT AT	10200 10300	60 58	33 34	2 3	5 4	10 8	12 13	27 25	200 180	Nil Nil	Nil Nil	Few Epi Few Epi	Good
16.	5956	Thangappan 47/M	Polyuria Polydipsia Fatigue Peripheral Neuritis Giddiness Polyphagia	48	BT AT	9700 10400	58 62	36 34	6 4	11 10	20 14	11 10	21 21	189 170	Nil Nil	Nil Nil	Few Epi Few Epi	Poor
17.	169	Valliammai 67/F	Polyuria Polydipsia Fatigue Peripheral Neuritis Giddiness Polyphagia	48	BT AT	8200 9800	60 59	33 30	2 2	2 2	4 4	9 11	27 25	179 172	Nil Nil	Nil Nil	Few Epi Few Epi	Good

18.	4893	Nataraj 65/M	Polyuria Polydipsia Fatigue Peripheral Neuritis Giddiness Polyphagia	48	BT AT	9200 10300	59 55	35 34	6 4	10 5	18 10	11 12	28 26	200 170	Nil Nil	++ Nil	Few Epi Few Epi	Moderate
19.	8506	Selvarangam 66/M	Polyuria Polydipsia Fatigue Peripheral Neuritis Giddiness Polyphagia	48	BT AT	9500 10300	58 55	36 34	6 4	4 4	8 6	11 12	33 30	220 190	Nil Nil	Nil Nil	Few Epi Few Epi	Good
20.	9935	Sumathi 36/F	Polyuria Polydipsia Fatigue Peripheral Neuritis Giddiness Polyphagia	48	BT AT	9400 10300	57 55	38 35	5 3	5 5	11 10	10 12	18 17	170 160	Nil Nil	Nil Nil	Few Epi Few Epi	Good
21.	436	Sasikala 42/F	Polyuria Polydipsia Fatigue Peripheral Neuritis Giddiness Polyphagia	48	BT AT	9500 10300	57 55	37 34	7 4	2 4	4 6	10 11	23 22	185 170	Nil Nil	Nil Nil	Few Epi Few Epi	Good

22.	781	Lakshman 62/M	Polyuria Polydipsia Fatigue Peripheral Neuritis Giddiness Polyphagia	48	BT AT	9200 9700	57 59	38 35	5 6	12 5	20 12	10.5 11	30 29	195 192	Nil Nil	+ Nil	Few Epi Few Epi	Good
23.	1954	Durai 70/M	Polyuria Polydipsia Fatigue Peripheral Neuritis Giddiness Polyphagia	48	BT AT	10400 10500	57 55	38 33	5 4	5 4	10 8	10.5 11	26 24	171 160	Nil Nil	+ Nil	Few Epi Few Epi	Poor
24.	2568	Ravi 45/M	Polyuria Polydipsia Fatigue Peripheral Neuritis Giddiness Polyphagia	48	BT AT	10400 10500	55 53	38 35	5 3	5 2	10 4	11 12	26 23	170 150	Nil Nil	Nil Nil	Few Epi Few Epi	Good
25.	2490	Karunanidhi 40/M	Polyuria Polydipsia Fatigue Peripheral Neuritis Giddiness Polyphagia	48	BT AT	9800 10400	57 53	38 33	2 2	12 5	14 10	11 12	25 23	170 160	Nil Nil	Nil Nil	Few Epi Few Epi	Good

26.	2581	Govindaswamy 65/M	Polyuria Polydipsia Fatigue Peripheral Neuritis Giddiness Polyphagia	48	BT AT	10900 10900	55 50	24 23	6 4	12 6	18 10	11 12	28 23	210 170	Nil Nil	+++ Nil	Few Epi Few Epi	Moderate
27.	2541	Rajarathinam 70/M	Polyuria Polydipsia Fatigue Peripheral Neuritis Giddiness Polyphagia	48	BT AT	10900 10900	70 55	24 30	6 3	12 4	20 8	11 12	28 25	210 190	Nil Nil	Nil Nil	Few Epi Few Epi	Good
28.	4079	Roobalingam 59/M	Polyuria Polydipsia Fatigue Peripheral Neuritis Polyphagia	48	BT AT	10800 10900	55 54	29 30	4 3	2 4	4 6	12 13	28 24	200 180	Nil Nil	+ Nil	Few Epi Few Epi	Good
29.	4594	Subbaiya 70/M	Polyuria Polydipsia Fatigue Giddiness Polyphagia	48	BT AT	10800 10900	51 53	33 30	2 3	4 4	8 6	12 13	21 20	155 149	Nil Nil	Nil Nil	Few Epi Few Epi	Good

30.	5279	Dhinakaran 47/M	Polyuria Polydipsia Fatigue Giddiness Polyphagia	48	BT AT	9500 10100	60 55	34 33	6 4	12 4	20 8	11 12	25 20	150 140	Nil Nil	Nil Nil	Few Epi Few Epi	Good
31.	5295	Eswari 38/F	Polyuria Polydipsia Fatigue Giddiness Polyphagia	48	BT AT	10300 10800	55 50	33 31	4 3	4 4	8 10	12 13	22 20	150 142	Nil Nil	Nil Nil	Few Epi Few Epi	Good
32.	5315	Selvaraj Kumar 59/M	Polyuria Polydipsia Fatigue Peripheral Neuritis Giddiness	48	BT AT	10200 10500	45 46	33 32	4 2	4 2	10 4	11 12	23 20	150 145	Nil Nil	Nil Nil	Few Epi Few Epi	Good
33.	6007	Hemachandran 55/M	Polyuria Polydipsia Fatigue Giddiness Polyphagia	48	BT AT	10800 10900	64 57	31 34	5 9	5 5	9 9	12 11	29 26	214 159	Nil Nil	Nil Nil	Few Epi Few Epi	Good

34.	7284	Thomas 70/M	Polyuria Polydipsia Fatigue Giddiness Polyphagia	48	BT AT	9500 10300	54 50	35 32	7 6	3 4	6 10	11 12	26 20	172 160	Nil Nil	+ Nil	Few Epi Few Epi	Good
35.	6729	Chandra 53/F	Polyuria Polydipsia Fatigue Giddiness Polyphagia	48	BT AT	9700 10200	65 55	34 30	4 3	5 4	10 10	12 13	20 20	170 160	Nil Nil	Nil Nil	Few Epi Few Epi	Good
36.	9986	Ezhumalai 55/M	Polyuria Polydipsia Fatigue Peripheral Neuritis Giddiness	48	BT AT	10100 10300	55 54	30 31	3 2	5 5	10 8	12 13	22 20	153 150	Nil Nil	Nil Nil	Few Epi Few Epi	Good
37.	8488	Parimala 56/F	Polyuria Polydipsia Fatigue Giddiness Polyphagia	48	BT AT	10800 10900	55 53	30 31	3 2	5 4	10 8	12 13	23 22	181 170	Nil Nil	Nil Nil	Few Epi Few Epi	Good

38.	8397	Ramaswamy 55/M	Polyuria Polydipsia Fatique Peripheral Neuritis Polyphagia	48	BT AT	10700 10800	54 55	33 30	2 3	5 4	10 6	12 12	24 23	181 170	Nil Nil	Nil Nil	Few Epi Few Epi	Good
39.	8333	Lalitha 54/F	Polyuria Polydipsia Giddiness Polyphagia	48	BT AT	10800 10900	55 52	30 32	4 3	4 4	8 10	11 13	23 20	165 155	Nil Nil	+ Nil	Few Epi Few Epi	Poor
40.	8399	Ramaswamy 56/M	Polyuria Polydipsia Giddiness Polyphagia	48	BT AT	9800 10300	50 55	32 33	3 2	4 4	10 6	12 12	22 20	173 160	Nil Nil	Nil Nil	Few Epi Few Epi	Poor

Hb – Haemoglobin, Sug – Sugar, Serum Cho – Serum Cholesterol, Alb-Albumin, Dep – Deposits, Few epi – Few epithelial cells.