1.INTRODUCTION

Siddha science considers nature and man as essentially one. Nature is man and man is nature. Man is considered as microcosm and Universe is macrocosm because what exists in the world exists in man. Man is nothing but a miniature of world containing the five elements of various principles which constitute the minerals, vegetables and the animal kingdom. According to Siddha medical science, the Universe originally consisted of atoms which contributed to the five basic elements, viz., earth, water, fire, air and sky which corresponds to the five senses of the human body and they are the fundamentals of all the things in the world.

Siddha system of medicine is linked to life style and culture of the people. Siddhars lay great emphasis on strict observance of discipline, (daily activities) *naal ozhukam*, seasonal discipline, and food regulations. According to siddhars diseases are not only due to improper and excessive food but also due to the derangement in basic character of human being.

Moreover apart from being called as one of the most ancient system of the world, it can also be described as one of most advanced system of all. Siddhars mentioned about AIDS thousands of years back. System treats chronic diseases like arthritis, skin problems, infertility, degenerative disorders, medicinally treatable spinal disorders, intractable allergic disorders etc.

Siddha pharmacopoeia though has a wide range of drugs including medicinal herbals, minerals, metals and animal products, plant origin drugs play a significant role in most of the siddha formulations. According to the Siddha medicine various physiological and psychological functions of the body are attributed to the combination of seven elements: first is *saram* (plasma) responsible for growth, development and nourishment; second is *senneer* (blood) responsible for nourishing muscles, imparting colour and improving intellect; the third is *ooun* (muscle) responsible for shape of the body; fourth is *kollzhuppu* (fatty tissue) responsible for oil balance and lubricating joints; fifth is *enbu*

(bone) responsible for body structure and posture and movement; sixth is *moolai* (nerve) responsible for strength; and the last is *sukilam* (semen) responsible for reproduction.

The treatment in Siddha medicine is aimed at keeping the three humors (*Vatham, pitham, kabam*) in equilibrium and maintenance of seven elements. So, proper diet, medicine and a disciplined regimen of life are advised for a healthy living and to restore equilibrium of humors in diseased condition. The treatment should be commenced as early as possible after assessing the course and cause of the disease. Treatment is classified into three categories: *devamaruthuvum* (Divine method); *manuda maruthuvum* (rational method); and *asura maruthuvum* (surgical method). The diagnostic methods are 8 methods (*en vahi thervu*) and also some more such as *manikadai nool, neerkuri, neikuri* etc are used. The reading pulse is a unique technique of siddha medicine.

Now herbal medicines are regarded as valuables because of its proximity to nature and trend to accept herbal medicines worldwide have been increased. A scientific investigation of medicinal plants not only demonstrates a particular type of activity which has been reported in ancient literature but also time emerges produces some unexpected activity. The super specialty and major advantage in use of siddha medicine are "No synthetic chemicals and no side effects". Medicinal plants are playing vital role in the drug preparation and disease curing activities in all Indian system of medicines. Medicinal plants are the most important source of life saving drug for majority of world's populations. Plants have been main source of medicines for thousands of years. The World Health Organization (WHO) estimates that 4 billion people, 80% of the world's population, presently use herbal medicine for some aspect of primary health care.

Women have specific health care needs during their life cycle. Understanding and education about women's health is an important topic that includes a number of subjects such as Female Anatomy, The Female Reproductive System, Hormones, and Diseases which are More Common in Women, Cancer, and Cosmetic Concerns. During a woman's life they may also have health care concerns related to Menstruation, Sexuality, Fertility, Birth Control and Infertility, pregnancy, Motherhood, Menopause, and Post Menopause

issues. Education in regards to these health care concerns is important and can help lead to a healthy and happy life.

Out of which Menorrhagia is one of the most common bleeding manifestation in women. Menorrhagia or bleeding which is excessive in amount and duration during menstruation is one of the gynecological complaints in which out of 20-25% of women report suffering from it. One in 20 women aged 30-49 consults doctor each year with menorrhagia. Causes of the condition include disorders of the blood that affects blood clotting, pelvic infections, fibroids, endometrial polyps, endometrial hyperplasia and even pelvic cancers. If there is no obvious cause mennorhagia falls into category of Dysfunctional Uterine Bleeding (DUB). Heavy menstrual episodes may negatively affect quality of life by limiting normal activities, social life and work of female population.

In siddha out of many siddhars who concerned about gynecological diseases *Yugimuni* explained brief about Menorrhagia as *Perumbabu* and classified into 4 groups as *vadha perumbadu, pitha perumbadu, sethuma perumbadu* and *thondha perumbadu* and described its management.

Treatment of menorrhagia an DUB as per modern side includes use of NSAIDS, contraceptive pills, hormonal therapies which has many adverse reactions such as stomach upsets, weight gain, headache, edema, depression, back pain etc. if these treatment does not have proper results they administrate surgical conditions such as D&C, abalation techniques, hysterectomy etc which has many risk factors and complications such as injury to adjacent organs hematoma etc and produces a lifetime inconvenience.

So it is better indicated to move on with herbal remedies as in siddha which has curative and preventive effect with no or minimal side effects and also gives hands with cost wise expenses and helps the people to have a better healthy life. But the use of herbal remedies too has some demerits. Even there is increasing tendency in population for taking herbal drug has increased on the other hand Herbal therapy has been criticized because

medicinal plants have not been tested for efficacy according to rigid pharmaceutical standards.

"Nature has been a source of medicinal agents for thousands of years, and an impressive number of modern drugs have been isolated from natural sources, many based on their use in traditional medicine."

Thus this dissertation gets its therapeutic value by integrating modern scientific research techniques on ancient siddha literature by using *Sirukanpeelai* (Aerva lanata). The herb is well known for treating urolitiasis, UTI etc but its action over female reproductive system is indicated but concealed. In this particular study the vitality of *Sirupeelai* (Aerva lanata) over the prime female complaints such as Menorrhagia and DUB will be evaluated which would be very beneficial for the female health and future herbal drug existence.

2. AIM AND OBJECTIVES

Menorrhagia is a condition characterized by an imbalance of hormones in women which leads to heavy menstrual flow during menstrual periods. It is one of the main cause by which most of the women suffer. Herbs' occurring naturally promotes in the conservation of female health and supports hormonal imbalance. Aerva lanata helps in the condition called Menorrhagia and DUB. The principle aim of this study is to evaluate the efficacy of the drug *Sirupeelai chooranam* in the management of ***MENORRHAGIA (Perumbadu***) in pre- clinical and clinical aspects.

Objectives:

The main objectives of the study are:

- To study the pharmacognostic features of the plant *Sirupeelai* (*Aerva lanata*) this includes correct taxonomic identification of the plant with macro and microscopically details.
- To have a collective review of the literature.
- To prepare the drug according to Siddha classical text.
- To subject the drug to physico-chemical standardization.
- To identify the phyto chemical constituents of the drug.
- To subject the trial drug to chemical analysis.
- To study the acute toxicity of *Sirupeelai Chooranam* according to OECD guidelines.
- To determine the pharmacological activity (Styptic activity) of *sirupeelai chooranam*.
- To assess the therapeutic potential of the drug through clinical trial for the management of *Perumbadu*.
- To analyse all the above study results to evaluate the efficiency of *Sirupeelai chooranam*.

3. REVIEW OF LITERATURE

3.1 Botanical aspect of plant:

Scientific classification: Aerva lanata *(Sirupeelai)*

Botanical name:

Aerva lanata

Classification:

- Kingdom : Plantae (Plants)
- Sub-kingdom : Tracheobionta (Vascular plants)
- Division : Magnoliophyta (Angiosperms, flowering plants)
- Class : Magnoliopsida (Dicotyledones)
- Subclass : Caryophyllidae
- Order : Caryophyllales
- Family : Amaranthaceae
- Genus : Aerva
- Species : *Aerva lanata*

Synonyms:

- Achyranthes lanata
- Aerva elegans Moq
- Illecebrum lanatum
- Achyranthes villosa
- Aerva arachnoidae
- Aerva incana
- Aerva mozambicensis.
- Aerva sansibarica
- Illecebrum lanatum

Vernacular names:

- English :*Common wayside weed*
- Tamil : *Sirupeelai*
- Sanskrit :*Astmabayda*
- Hindi : *Gorkhabundi, Kapurijadi*
- Spanish :*Sanguinara de Cuba*
- Trans-indus :*Azmei,Sassai,Spirke*
- Ashanti : *Bameha*
- Bengal :*Chaya*
- Deccan : *Khul,Kul*
- Gujarathi : *Bur,Kapurimadhuri*
- Kannnada :Bilesuli
- Malayalam :Cherula
- Marathi :*Kapurmadhura,Kapurimadhuri,Kapurphuti, Kumrapindi*
- Mundari :*Cauliara, Lupuara*
- Porebunder : *Bhonyajdi,Gorkhaganjo*
- Punjab :*Buikallan,Bui-Kaltan*
- Rajputana :*Bhui*
- Sadani :*Caursag*
- Sind :*Bui,jari*
- Sinhalese :*Polkudupala*
- Telugu :*Pindikumda*

Plant description:

Erect or prostrate with a long tap root, branched from near the base; branches many, terete, pubescent or woolly-tomentose, striate leaves alternate, 2-2.5 by 1-1.6 cm. On the main stem 6-10 by 5-6 mm. On the branches elliptic or obovate, or sub orbicular, obtuse or acute, entire, pubescent above more or less white with cottony hairs beneath; Petioles 3-6 mm. long, often obscure. Flower greenish white , very small ,sessile, often bisexual in small dense subsessile axillary heads or spikes 6-13 mm. long often closely crowded and forming globose clusters; bracteoles 1.25 mm. long, membranous, broadly

obate, concave ,apiculate, silky-hairy on the back. Utricle, broadly ovoid, acute; stigmas 2, Seed 0.85 mm. in dm, smooth and polished, black.

Distribution and habitat:

A. lanata prefers damp sites and found in forests and slopes of mountain, found on waste and disturbed ground, deserted cultivation and coastal scrub and at altitudes from sea level to 900 meters (3,000 ft).

It is found throughout India and also Srilanka,Malaysia,Indonesia, Phillippines,Saudi Arabia,Somalia,Kenya,Uganda,Liberia,Madagascar,South Africa, Australia etc,.

Figure No: 1 Aerva lanata (*Sirupeelai)*

3.2 Materia medica (Gunapadam aspect)

Other names:

- *Sirukanpeelai*
- *Karbedhi*
- *Pashanabedhi*
- *Kanpeelai*

Parts used:

Whole plant

- *Taste (Suvai)* -*Kaaipu* (bitter)
- *Charater (Thanmai)* -*Veppam*
- *Pirivu (classification)-Kaarpu*

Action:

- Diuretic
- Lithontriptic
- Emmenagogue
- Alexipharmic

General Properties:

This cures *pandu* (anemia), ***perumbadu*** (**Mennorhagia)**, *moothira kiricharam* (Burning micturation), Delirium, Uretral stricture, Urolitisis, *Kudarsoolai, kurudhi choodu*.

- "பாண்டுபெரும் பாடு பகர்மூத்தி ரக்கிரிச்சம்
  பூண்டதிரி தோடமிவை போகுங்காண்-தாண்டிப்
  பறியவே ளைத்துரத்தும் பார்வையின்கண்-தாண்டிப்
  பறியவே ளைத்துரத்தும் பார்வையின்கண் மாதே!
  சிறியபீ ளைக்ச் சிதைத்து.
  நீரடைப்பு கல்லடைப்பு நீங்காகக் குடற்சூலை
  போரடரி ரத்தகணம் போக்குங்காண்-வாரிறுக்கும்
  பூண்முலையே! கேளாய் பெருந்துஞ் சிறியபீளை
  யாமிதுகற் பேதி யறி".

-Gunapadam mooligai vagupu

Uses:

This cures dropsy, anuriasis and bladder stones.

Leaf juice if taken regularly it cures menorrhagia, calculus affections, anuriasis, burning sensation etc,.

If the root is incluced in the rice gruel it acts as tonic for pregnant ladies

Root bark of its root with palm sugar each 35 grams are finely grinded and mixed with cow's milk and consumed morning and evening regularly cures bladder stones, anureasis, menorrhagia etc.

The ash of the root mixed with indigofera enneaphylla, root of grateava religiosa and root of pavonia odorata are added with water and made into paste by boiling it. This is used in treating urinary stone problems.

This plant is said to possess diuretic and demulcent properties.

The root of this plant also acts as an antidote for snake poison

For urolitiasis, cystitis, urinary retension etc

i)Leaf juice is administered 1/8-1/4 azakku morning and evening or

ii)Root decoction is administered.

Aerva lanata used in other drug preparation

1.*Nandukkal parpam*:

Nandukkal is purified by being boiled in a solution of *puneer* water and *karchunnam neer* in equal parts and then washed well with water. After being dried in the sun this is powered and grinded in kalvam with

1) The juice of *Mullangi kizhangu*(Raphanus sativus)for 2 or 3 days and dried in the *kalvam* and then
2) With the juice of ***sirupeelai samoolam*** for another 2 or 3 days.it is then allowed to dry in the sun thoroughly well for 5 days with the *kalvam*, then finely powered and bottled up. It is need not to be subjected for *putham*.

Dose: 2-4 grains BD given with cow's milk or diuretic decoctions or juices

Uses: Retention of urine, urinary obstruction due to urinary lithiasis and cystitis are relived (*Neerkattu, Noeradaippu* and *Kalladaippu* are particularly cured).

2. *Kalludai kudori*

Mercury 1 part, sulphur 2 parts are grounded and powdered in kalvam as per procedure, and then grinded with *vellaisatranai chaaru* and then made into small tablets and dried in the shade. It is then kept in the *Gugai* and *seelai* is made and subjected to *manal maraivu pudam.* Then equal amount of ***Sirupeelai chooranam*** is added grinded with *sakthicharanai charru* and then made into *ulundalavu mathirai* and dried in shade.
Each *matirai* is given with *vellari kudineer* at morning and *nerunjil chaaru* during evening for kidney stones.

3. *Nayana vyadiku urundai*

Sirupeelai verin charru	*1 balam*
Sunambu kal	*1balam*
Vendha mandaiodu	*1balam*
Turusu (copper sulphate)	*5balam*
Thutham	*5balam*
Ponankanni ver	*1 ¼ varagan*

All these are grinded in *kalvam* with lemon juice, and made into tablets.
Used in eye diseases. If it is used with *nagapatai chaaru* and in mother's milk cures *paarvai mandham*. It is made into paste with *nagamarapatai* used in eye diseases.

4. *Nayana rogathirku marundu*

Yaanai pal, madal thutham, oodhu sangu, kudirai pal, ceenakaram, peedharogini each *1 ¼ varaganadai*
*Oridhazthamarai ver, vensaranai ver**, sirupeelai ver**, sen naurivi vidhai.*
Kaiyandagarai ver, ponangani ver, sirukeerai ver. Each 1 balam.

They are crused together and grounded well in the kalvam and the paste is made as 10-15 villai and dried in sun again is grounded with lemon juice and dried.

5. Maragadha neeru

Maragadham(emerald) is grounded with *kandankathri* extract for one day and ***sirukanpeelai*** extract for another one day and dried, then seelaiman is made and subjected to *pandri pudham* and the parpam is preserved.

Dose: *panavedai* (488 mg).

It is administered with suitable adjuvant and administered in *Moorchai* (fainting) caused due to snake poision, used as *kalikam* in eyes or used in ring acts as a preventive for grandmal epilepsy (*kaakai valipu*)

6. *Putparaga parpam*

Putparagam (Topaz) is ground with ***Sirupeelai*** extract for two *saamam* (6 hrs) and is kept in *moosai* and blowed to get parpam.

Dose : 1 arisi yedai (65 mg)

Administered in fever, cough, wound with suitable adjuvant. It acts as a cardiac tonic.

7. *Vaidooriya parpam*

Purified *vaidooriyam* is soaked in ***Sirupeelai root*** extract for 3 days and processed in *vajra gugai* and subjected to *geja pudam* to obtain parpam.

Dose : ½ to 1 *kadualavu.*

Administered with honey in the treatment of *pitham* disease. Bogar said that due to *vaaidooriya parpam* appetite, knowledge and health can be obtained.

Sirukanpeelai is also used in

- *Thambira suthi,*
- *mahavilvadhi legiyam,*
- *sukku chooranam* which is used in the treatment of *soothaga vaayu*

3.3 Modern aspect of the drug

Chemical constituents:

β –Sitosterol, α –amyrin, palmitic, stearic, linoleic, myristic, palmitolic, oleic aid and kaempferol glycosides isolated (J.pham. sci1977,18,337)

A new flavones glycoside isolated from roots and identified as chrysin-7-o-β galactoside (Indian J.chem.1979.17 B,416)

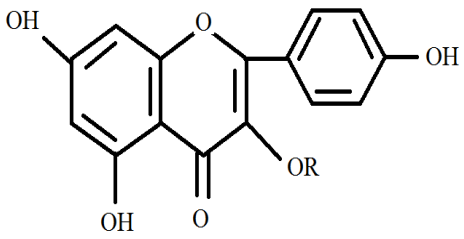
A new flavanone, aervanone was isolated and its structure elucidated as 8C-β-D-galactosyl-7,4'-dihydroxy- flavanone (phytochemistry 1980,19.1265)

Hentriacontane, tetratriacontane, sitosterol and oleanolic acid isolated from leaves (fitoterpia 1982,53,75)

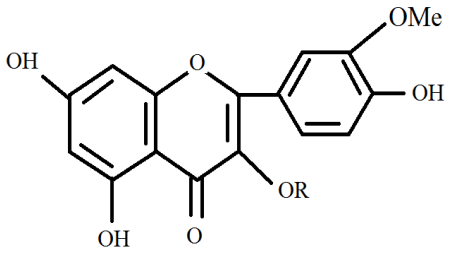
β –sitosterol glycoside fr4om leaves (J.Pharm(univ. Karachi) 1982)

Four flavinoid glycosides (I,II,III and IV) isolated and characterisied (Khim-Farm.Zh 1986)

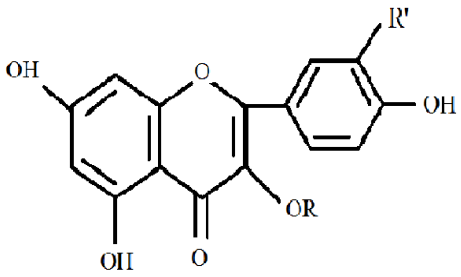
Flowering and fruiting parts contained hemicelluloses, starch, an acid soluble polysaccharides, monosaccharide contents of polysaccharides determined (Khim.prir.Soedin 1989,425, chem.. Abstr .1989, 111, 74847 P)



I. R= Glu (6''-P'-Coumaroyl)



II. R=Glu (6"-P-Coumaroyl)



III. R=Glu(4",6"-di-P-coumoryl),R'-H

IV. R=Glu (4",6"-di-p-coumaroly),R'=OMe

The plant contains kaempferol 3- galactiside, kaempferol-3-rhamnogalactoside, betalin, hentriactane, β- sitosterol and its D-glucoside (Afaq et al, Etnobotany,1991)

The aerial part contain six alkaloids canthin-6-one, 10- methoxycanthin-6-one (methyl aervin),10-hy-droxycanthin-6-one(aervin),10-β-D-glucopyranosyl-oxycanthin-6-one (aervoside), β- carboline-1-propionic acid and 6-methoxy-βcarboline-1-propionic acid (aervolanin) and four β-caumaroyl-glycosides.

The roots also contain methylaervin, aervin and aervoside. Two feruloylamide S,and other phenolic compounds have been reported from the herb. (ZXapesochnaya et al, planta Med,1991)

Medicinal uses:

The plant is anthelmentic and demulcent and is used in lithiasis. It is also regarded as a valuble medicine for cough, sore throat, indigestion and wounds, and as a specific for diabetis. A decoction of the plant is an efficacious diuretic and is useful in catarrh of bladder. In Bihar, the plant is used to cure diarrhea, cholera, and dysentery (Agharkar et al 1970)

The root are diuretic and demulcent. They are credited with tonic properties and given to pregnant women. The roots and flowers are used for the removal of kidney stones and in gonorrhea (Chopra *et al*,1956)

The herb is used in Malaria and skin diseases. In piles, it is given with black pepper and milk [Nayar et al 1991]

3.4 Siddha aspect of the diseases

Clinical features of mennorhagia:

- கையுடன் காலுங் காந்துங் காத்திர முலர்ந்து வற்று
  மையலாங் கலவிதன்னை மருந்திடுங் கர்ப்பங் கேடாஞ்
  செய்யநீர் போலுஞ்சற்றே சிவந்திடுங் குருதிபோலும்
  பெய்யுமே யாகில் மானே! பெரும்பாடென்றறிகுவீரே.

-Dhanvantri vaithiyam- Vol 2

Burning sensation in soles and palms, no desire for sexual intercourse leading to infertility, profused bleeding are the features of menorrhagia.

Etiology of mennorhagia:

- கண்டாயோ பெரும்பாடு கலந்த மார்க்கம்
  கருதிக் கேள் மின்னாளே நன்றாய் இன்னும்
  கொண்ட படிகாரமுள்ள வகைகள் தின்றால்
  கூறான மாதவிடை காலம் தன்னில்
  விண்டாலும் வாய்வு அது மிஞ்சினாலும்
  விளங்கும் மாம்சம் அதிகம் புசித்தாலும்
  உண்டாலும் மந்தமதில் புசித்தாலும்
  உறக்கமது ஒழிந்த விதத்தாலும்.

  ஆகுமே கடும் சுமடெடுப்பதாலும்
  கதிப்பாக பகலுறக்கம் பகல் சம்போகம்
  பாகு பெற குறுக்கதுதான் கூனிக் கொண்டு
  பண்பாகவே உறங்கும் தன்மையாலும்
  வாகு பெறவே அதிக புணர்ச்சியாலும்
  வலுவாக மேகமது உற்பவித்து
  தாகமுற சூடெழும்பி தளவாய் நீறி
  தனி வயறும் கருக்குழியும் புண்ணுண்டாமே.

  புண்ணாகி தேகமது மெலிவுமாகி
  பொருந்தழலு தேகமது தாகமதாய் சோம்பலாகி
  திண்ணமுற இளைப்பாகி அசனம் குன்றி
  தேகமது தான் வெளுத்து நடை தள்ளாடி

வண்ணமுற மேல் மூச்சாகி நோவுமாகி
வளமான தாது கெட்டு கருகி தேகம்
எண்ணமுற பெரும்பாடு நோயுண்டாகும்
இதின் பேரும் குணம் கூறும் சாற்றுவேனே.

-Mega nooi soothganool matrum arivaiyar sindhamani.

- Consumption of high foods with spices and condinents , ingestion without apetite, increased intake of non veg, daytime sleep, intercourse during day, and increased sexual desire (nymphomania) all the above mentioned factors leads to uterine ulcers, loss of weight, lethargy, suffocation which ultimately results in the diseased condition known as Menorrhagia.

Curable and Uncurable:

- சாற்றுவேன் வாதத்தின் பெரும்பாடொன்று
சலியாமல் பித்த பெரும்பாடு தானும்
போற்றியதோர் சேர்ப்ப பெரும்பாடொன்று
பெருந்து திறிதோஷ பெரும்பாடு நாலாம்
ஆற்றியதோர் வாத பெரும் பாடினோடு
அதிகமாய் பித்த பெரும்பாடு தீரும்
மாற்றியதோர் வாத பெரும் பாடினோடு
மருவு திறிதோஷ பெரும்பாடு அசாத்தியம்.

-Mega nooi soothganool matrum arivaiyar sindhamani.

- Menorrhagia has been classified as 4 major types. Out of which menorrhagia of Vadha and Pitha origin are curable and of Thiridosha origin is uncurable.

Vadha perumbadu:

- கூடுமே தலைவலியு மேற்க டுப்பும்
கூறான முதுகிடுப்புக் குடைச்ச லுண்டாம்
வாடுமே தேகமெல்லாங் கருக்க லாகும்
மாதவிடாய் கரித்துமே மைந்தன் போலாம்
ஊடுமே வயிறூதி உளைச்ச லாகி
ஊற்றுமே செந்நிறஞுங் கருக லாகி
தேடுமே துற்கந்தஞ் சேர வொட்டா
சேகமறிய வாதத்தின் சிராவ மாமே.

-magalir maruthuvam

- பாடாமல் வாதத்தின் பெரும்பாடுற்றால்
  பண்பாக தலைவலிக்கும் தேகம்
  நாடாமல் முதுகொடு இடுப்பு தானும்
  நொந்து மிக வருத்தமிகும் உளைவுண்டாகும்
  கூடாகவுடல் மெலியும் கருகும் தேகம்
  கோள்ளும் மாதவிடாய் காலம் வயறு நோகும்
  ஊடாகவே உருளும் குழந்தை போலே
  உறு பெருமல் செந்நிறமாய் இரத்தம் நாறும்.

-Mega nooi soothganool matrum arivaiyar sindhamani.

Symptoms of menorrhagia in Vadham origin

- head ache, low back pain, myalgia
- Distention of lower abdomen with pain
- Dark red and bright red coloured menstrual flow.

Pitha perumbadu

- ஆமென்ற வன்னத்தை இறங்கொட்டாது
  அழுகின்ற மஞ்சள்நிறம் போல ஊற்றும்
  வேமென்ற யோனியிலே வேக்கா டுண்டாம்
  மேனியுமோ வெளுத்துமே ரத்தம் போகும்
  காமென்ற கால்கையு மழற்ற லாகும்
  கருகலாய்க் கட்டிபோ லுதிரம் வீழும்
  தேமென்ற சீறுகடுப்பா மங்க மெல்லாம்
  சீரியதோர் பித்தத்தின் சிராவ மாமே.

magalir maruthuvam

- சோல்லுவேன் பித்தத்தின் பெரும்பாடென்றால்
  சுடும் மஞ்சள் நிறம் ரெத்தம் வெறுக்கும் அன்னம்
  சல்லியமாய் யோனியது வெந்து நீறும்
  சர்வாக உடல் வெளுக்கும் ரத்தம் வற்றும்
  மெல்லவே கால் கையும் காந்தலுண்டாம்
  மெய்யுருகி கட்டியதாய் இரத்தம் போகும்
  இல்லையினி தேகமது உளையும் சற்று
  இது பித்த பெரும்பாடென்று உரைக்கலாமே.

- Mega nooi soothganool matrum arivaiyar sindhamani.

Symptoms of menorrhagia in pitham origin

- Loss of apetite
- Vaginities , pallor
- Putrid yellowish vaginal discharge and sometimes associated with clots.

Sethuma perumbadu

- ஆகுமே வெள்ளை நிறமாக ஊற்றும்
  ஆலியான நாற்றந்தான் மிகவுண் டாகும்
  வேகுமே வுடம்பெங்கும் விபூதி பூக்கும்
  வெந்தழலா யுடம்பெங்கும் எரிச்ச லாகும்
  பாகுமே படபடப்பு மூச்சு முண்டாம்
  பாரமாங் கோழையொடு மயக்க மாகும்
  தேகுமே யடிக்கடிக்கு மயக் கமாகும்
  சேட்டுமத்தின் சிராவ மென்றே செப்பாமே.

  -magalir maruthuvam

- போமே சேர்ப்பனத்தின் பெரும்பாடென்றால்
  பொருந்து வெள்ளை நிறமாக ரத்தம் விழும்
  வாகுபெறவே நாறும் தேகம் தானும்
  வளர் நீறும் போலெரியும் அழலும் தேகம்
  தாகமுறும் படபடத்து மூச்சு வாங்கும்
  தனித்த கபமிருமலொடு வேவுண்டாகும்
  பாகுபெற அடிக்கடி மயக்கமுண்டாம்
  பகருவேன் சேர்ப்பனத்தின் பெரும் பாடென்றே.

  - Mega nooi soothganool matrum arivaiyar sindhamani.

Symptoms of mennorhagia in Kapham origin:

- Whitish menstrual discharge with offensivness
- Ash coloured discolouration of the skin
- Palpitation and suffocation.

Thondha perumbadu

- செப்பவே கருங்கல்லாய்ச் சிவப்பு மாகும்
  சேர்ந்ததிலே கட்டியாய்க் கருப்பாய் வீழும்
  உப்பவே வயிறது முளைச்ச லாகும்
  ஊசலா நாற்றமுட னொழுக்க மாகும்
  நம்பவே மஞ்சள்நிற நயப்பு மாகும்
  நாணியே தலைதானு நடுக்க லாகும்
  துப்பவே வாய்நீரு மிகவே வூற்றும்
  தொந்தமாம் பெரும்பாடு சூட்டி னோமே.

-magalir maruthuvam

- உண்டான திறிதோஷ பெரும்பாடென்றால்
  உள்ளபடி கல்லுப் போல் கட்டியாகும்
  விண்டு கறுப்பாய் சிகப்பாய் மஞ்சள் போலும்
  விதம் விதமாய் இரத்தமது நிறம் மாறிப் போம்
  கண்டாலும் வயறுளையும் நாற்றம் மீறும்
  கடிதான தலை நடுக்கம் வாய் நீருறும்
  மிண்டாத திறிதோஷ பெரும்பாடின்
  மிக பெருமையுள்ளபடி செப்பினேனே.

- Mega nooi soothganool matrum arivaiyar sindhamani.

- Discharge of menstrual flow which is dark red coloured and bright coloured nature along with clots.
- Distention of lower abdomen along with marked offensiveness
- Vertigo and profused salivation.

3.5 Mordern aspect of the disease

Menorrhagia is defined as cyclic bleeding at normal intervals; the bleeding at normal intervals; the bleeding is either excessive in amount (>80 ml) or duration or both. The term menotaxis is often used to delete prolonged bleeding.

Causes:

Menorrhagia is a symptom of some under-lying pathology organic or functional.

Organic:

- **Pelvic pathology**

  Due to congestion, increased surface area or hyperplasia of the endometrium.

  - Fibroid uterus
  - Adenomyosis
  - Chroni tubo-ovarian mass
  - Tubercular endometritis (early cases)
  - Retroverted uterus-due to congestion
  - IUCD in-utero
  - Polvic endometrosis
  - Granulosa cell tumour of the ovary

- **Systematic**
  - Liver dysfunction failure to conjugate and thereby inactivate the Oestrogens
  - Congestive cardiac failure
  - Severe hypertension
- **Endocrinal**
  - Hypothyroidism
  - Hyperthyroidis
- **Blood dyscrasias**
  - Idiopatic thrombocytopenic purpura
  - Leukaemia
- **Emotional upset**

- **Due to disturbed hypothalamo-pitutary-ovarian-endometrial axis.**

Common causes of menorrhagia includes:

- **Hormonal imbalance.**
- **Dysfunction of the ovaries.** If ovulation does not occur in a menstrual cycle (anovulation), progesterone is not produced. This causes hormonal imbalance and may result in menorrhagia.
- **Uterine fibroids.**
- **Polyps.**
- **Adenomyosis.**
- **Intrauterine device (IUD).**
- **Pregnancy complications.** A single, heavy, late period may be due to a miscarriage,ectopic pregnancy.
- **Cancer.** Rarely, uterine cancer, ovarian cancer and cervical cancer
- **Inherited bleeding disorders.** Some blood coagulation - von Willebrand's disease, a condition in which an important blood-clotting factor is deficient or impaired — can cause abnormal menstrual bleeding.
- **Medications.** Certain drugs, including anti-inflammatory medications and anticoagulants.
- **Other medical conditions.** A number of other medical conditions, including pelvic inflammatory disease (PID), thyroid problems, endometriosis, and liver or kidney disease, may be associated with menorrhagia.

Epimenorrhoea and Epimenorrhagia (syn: Polymenorrhoea):

Epimennorhoea is defined as cyclic bleeding where the cycle is redued to an arbitrary limit of 21 days or less and remains constant at that frequency.

Frequent cycle less than 21 days associated with excessive or prolonged bleeding. It is called epimenorrhagia.

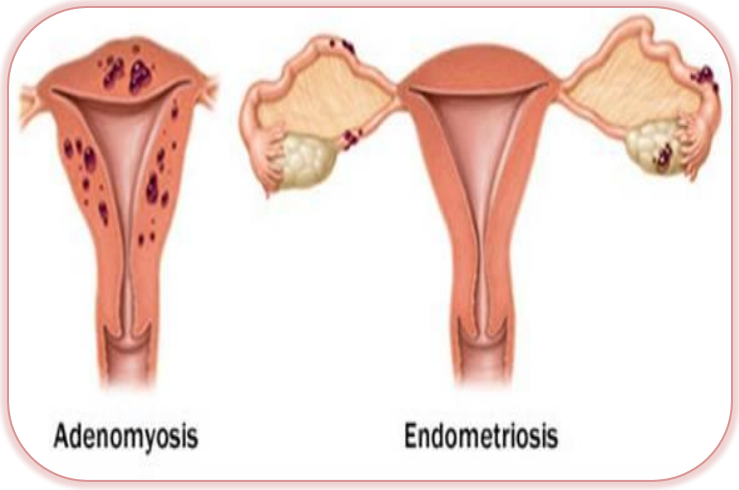


Figure No: 2 Adenomyosis and Endometriosis

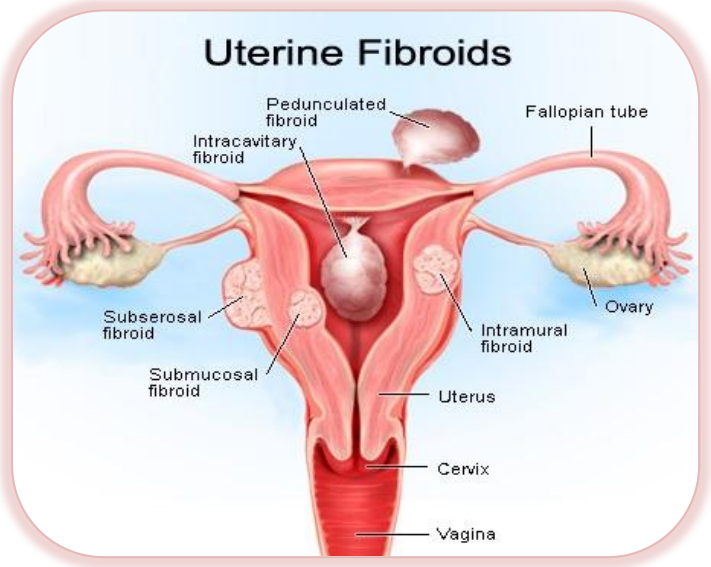


Figure No :3

Causes:

Dysfunctional

It is seen predominantly during adolescence, preceding menopause and following delivery and abortion. Hyper-stimulation of the ovary by the pituitary hormones may be responsible factor.

Ovarian hyperemia as in PID or ovarian endometriosis.

Metrorrhagia:

Metrorrhagia is defined as irregular, acyclic bleeding from the uterus. While metrorrhagia is strictly concerns with uterine bleeding. Then again, irregular bleeding in the form of contact bleeding or intermenstural bleeding in an otherwise normal cycle is also included in metrorrhagia. In fact it is mostly related surface lesion in the uterus.

Menometrorrhagia is the term applied when the bleeding is so irregular and excessive that the menses cannot be identified at all.

Causes of acyclic bleeding

- DUB – usually during adolescence, following child birth and abortion and preceding menopause
- Submucous fibroid
- Uterine polyp
- Carcinoma cervix and endometrial carcinoma

Causes of contact bleeding

- Carcinoma cervix
- Mucous polyp of cervix
- vascular erosion of the cervix specially during pregnancy, pill use or tubular cervix
- Cervical endometriosis

Causes of intermenstrual bleeding:

Apart from the causes of contact bleeding, other causes are:

- Urethral caruncle
- Ovular bleeding
- Breakthrough bleeding in pill use
- IUCD in- utero
- Decubitus ulcer

Dysfunctional Uterine bleeding:

DUB is defined as a state of abnormal uterine bleeding without any clinically detectable organic pelvic pathology- tumour, inflammation or pregnancy.

Incidence:

The prevalence varies widely but the incidence of 10% amongst new patients attending outpatient seems logical. The bleeding may be abnormal in frequency, amount and duration or combination of any three. As the diagnosis depends on the definition of 'organic lesion' and on the care and facilities to exclude such a lesion, the incidence varies accordingly.

Classification:

Based on the disturbed function of the cortico-hypothalamo-pitutary-ovarian axis or of the endometrium, the DUB is classified as

- Primary – DUB is due to dysfunction present in the endometrium or in hypothalamo-pitutary-ovarian axis.
- Secondary – DUB is secondary to organic pathology outside the endometrium or hypothalamo- pitutary-ovarian axis.
- Iatrogenic – DUB is secondary to IUCD or steroidal contraceptives.

Patho-physiology

Primary

The primary patho-physiology concludes that the abnormal bleeding is most likely due to local causes in the endometrium. There is some disturbance of the endometrial blood vessels and capillaries and coagulation of blood in and around these vessels. These are probably related to alteration in the ratio of endometrial prostaglandins which are delicately balanced in haemostasis of menstruation.

The endometrial abnormalities may be primary or secondary to inc-ordination in the hypothalamo-pitutary-ovarian axis. It is thus more prevalent in extremes of reproductive period – adolescence and premenopause or following childbirth and abortion.

- Emotional influences
- worries
- Anxieties or sexual problems sometimes are enough to disturb the normal hormonal balance.

The abnormal bleeding may be associated with or without ovulation and accordingly grouped into:

- Ovular bleeding
- Anovular bleeding

Ovular bleeding:

Epimennorhoes or epimenorrhagia

The condition usually occurs following childbirth and abortion, during adolescence and premenopausal period and in pelvic inflammatory disease.
The follicular development is speeded up with resulting shortening of the follicular phase. This is probably due to hyperstimulation of follicular growth of FSH. Rarely,the luteal phase may be shortened due to premature lysis of the corpus luteum. Sometimes, it related to stress induced stimulation.

Functional mennorhagia

Ovular menorrhagia is quite common. Two varities are found:

- Irregular shedding of the endometrium
- Irregular ripening of the endometrium

Irregular shedding of the endometrium

The abnormality is usually met in extremes of reproductive period. Normally, regeneration of the endometrium is completed by the end of mensuturstion. In irregular shedding, desquamation is continued for a variable period with simultaneous failure of regeneration of the endometrium.

The possible explanations are:

I. Incomplete withdrawal of LH even on 26^{th} day of cycle ⟶ incomplete atropy of the corpus luteum ⟶persistant secretion of progesterone.
II. Persistant LH ⟶ inhibition of FSH ⟶suppresses ripening of the follicle in the next cycle ⟶less oestrogen ⟶less regeneration.
III. Variation of the endometrial receptors which are sensitive to the influence of oestrogen and progesterone.

Endometrial sampling performed after 5^{th} or 6^{th} day of the onset of menstruation revels mixture of secretory and proliferative endometrium. There is total absene of any surface epithelium.

Pregnanediol is found in the urine during menstrual phase.

Irregular ripening of endometrium

There is poor formation and inadequate function of the corpus luteum. Secretion of both oestrogen and progesterone is inadequate to support endometrial growth. As such, slight bleeding occurs and continues prior to the start of proper flow.

The endocrine profile in the luteal phase shows persistant low level of urinary prenanediol level of less than 3mg or plasma progesterone level less than 5ng/ml.

Endometrial study prior to or soon after spotting revels patchy area of seretory changed amidst proliferative endometrium.

Anovular bleeding

Mennorhagia

Anovular bleeding is usually excessive. In the absence of growth limiting progesterone due to anovulation, the endometrial growth is under the influence of oestrogen throughout the cycle. There is inadequate structural stromal support and the endometrium remains fragile.

Thus, with the withdrawal of oestrogen due to negative feedback action of FSH, the endometrial shedding continues for a longer period in asynchronous sequences because of lack of compactness.

Cystic grandular hyperplasia (syn: Metropathia haemorrhagia, Schrieder's diseases):

This type of abnormal bleeding is usually met in menopausal women.

The basic fault may lie in the ovaries or may be due to disturbance of the rhythmic secretion of the gonadotropins. There is slow increase in secretion of oestrogen but no negative feedback inhibition of FSH. The net effect is gradual rise in the level of oestrogen with concomitant phase of amenorrhoea for about 6-8 weeks. As there is no ovulation, the endometrium is under the influence of oestrogen without being opposed by growth limiting progesterone for a prolonged period. After a variable period , howrver , the oestrogen level falls resulting in endometrial shedding with heavy bleeding.

Bleeding may also occur because the endometrial growth, have outgrowth their blood supply → necrosis → haemorrhage.

Changes in the uterus:

There is variable degree of myohyperplasia with symmetrical enlargement of the uterus to a size of about 8-10 weeks due to simultaneous hypertrophy of muscles. The

endometrial changes are classical. On naked eye examination the endometrium looks thick, congested and often polupoidal (multiple polyposis).

Microscopically:

a) There is marked hyperplasia of all the endometrial components. There is however, intense cystic grandular hypertrophy rather than hyperplasis with marked disparity in than hyperplasia with marked disparity in sizes. Some of the glands are small, others are large giving the appearance of "swiss cheese" pattern (small and large holes). The glands are empty and lined by columnar epithelium.
b) Absence of secretory changes
c) Areas of necrosis in the superficial layers with haemorrhages and leucocytic infiltration.

Changes in ovaries:

Cystic changes may be observed involving one or both the ovaries. The cyst may be single or multiple and the fluid contains oestrogen. The cyst is of follicular type. There is no evidence of corpus luteum.

Confusion in diagnosis:

Phase of amennorhoea followed by continued bleeding per vaginam with bulky uterus is too often confused with disturbed uterine pregnancy or ectopic gestation. DUB of this type is absolutely painless.

Atrophy of the endometrium

This type of abnormality is commonly met in postmenopausal women but may occur in reproductive period as final involuntary state of a previous metorpathia. The bleeding occurs from the rupture of the dialated capillaries beneth the atropic surface epithelium. The cause of endometrial atrophy may be due to total absence of oestrogen or failure of uterine receptors to become responsive to oestrogen.

Secondary:

Haemotological disorders:

Thrombocytopenia purpura may be associated with excessive blood loss during periods. This may be due to diminished platelet count and increased capillary fragility with inadequate haemostatic plug formation. (Normal platelet count is 2.5-4 lacs/cu mm and the critical level is 60,000/cu mm).

Thyroid dysfunction

It is often associated with menstrual abnormality, the nature of which is most often associated with menstrual abnormality, the nature of which is most often inconsistent. Hypothyroid state is too often associated with oligomenorrhagia whereas, thyrotoxicosis may lead to oligomenorrhoea ⟶ amenorrhoea depending upon the severity.

Iatrogenic:

IUCD or oral contraceptives induce structural changes in endometrial vessels which may lead to irregular bleeding.

Endometrial patern of DUB

- In majority (60 %), the endometrium is normal in every aspect.
- In about 30%, the endometrium is hyperplastic and in the remaining, there are evidence of irregular shedding, irregular ripening or atropic pattern

Complications:

- Iron deficiency anemia
- Dysmenorrhea

3.6 Lateral aspect of the drug

Immunomodulatory effect and antitumor:

Pharmacological and immunomodulary effects of Aerva lanata in Daltons lymphoma ascites- bearing mice. (Pharmaceutical Biology,V.43(7); P 640-649, 2006)

Petroleum ether (60-80^{o}c) extract of Aerva lanata (Amaranthaceae) was prepared and partially purified by preparative thin-layer chromatography. The partially purified fration (PPF) showed significant cytotoxicity against Daltons lymphoma ascites(DLA) tumour cell lines in vitro and stimulated lymphocytes proliferation in invitro and invivo conditions. DLA-bearing animals when treated with PPF showed increase in life span compared to control animals. PPF was also found to be hepatoprotective as evidenced from the normal levels of liver marker enzymes compared to the elevated levels of these enzymes in DLA alone inoculated animals. The lipid, haemoglobin and WBC level were normal in PPF-treated animals indicating a low proliferation of tumour cells in peritoneal cavity. Preliminary phytochemical analysis of PPF showed the presence of alkaloids. These results indicated that PPF contains non toxic immunomodulatory compounds. (Nevin,K.G; Vijayammal P.l.2006)

Cytotoxicity activity:

Aerva lanata ethyl acetate and methanol extracts of whole plant showed antimicrobial activities while petroleum ether, ethyl acetate and methanol extracts, showed significant cytotoxic activity. (Chowdhury et al 2002)

Cytotoxicity and antioxidant activity:

Cytotoxicity and antioxidant activity studies of green leafy vegetables consumed in srilanka. Journal of the National science foundation of the National science foundation of srilanka ,

The cytotoxicity of some green leafy vegetables was tested using brine shrimp lethality bioassay. Majority of tested bioassay, Majority of tested leafy vegetables were found to have insignificant cytotoxicity. However Aerva lanata and Bacopa monnieri,(Scopularaceae) showed significantly higher level of cytotoxicity when compared with the positive control, Alternanthere sessilis(Amaranthaceae), and passiflora

edulis;(passiflorae) showed similar toxicity levels as the positive control. Consumption of these 4 leafy vegetebles could pov a potential health risk. Antioxidant activity of above greens were tested using DPPH assay. All the leafy vegetables showed free radical scavenging properties indicating the presence of primary antioxidents in the plants. (Balasuriya et al 2008)

Antimicrobial:

The whole plant of Aerva lanata ethyl acetate and methanol extracta showed interesting antimicrobial against Bacillus subtilis, Bacillus cereus, Staphylococcus cereus, Escherichia coli,

Shigella dysenteriae, Shigella shiga, Shigella sonnei, Shigella flexneriae, Shigella botddii, Klebsilla, Aspergillus fumigates, Aspergillus niger, Candida albicans, Hensinela californica and Rhizopus oligosporum and petroleum ether, ethyl acetate and methanol extracts showed significant cytotoxic properties.

Antiparasitic :

The antiparasitic activity of the seed and leaf extracte of Aerva lanata were tested against a tapeworm and an earthworm, particularly the ethanolic extract proved to be better against tapeworm and earthworm than the Albendozole, which is used for treating parasite infection.

Diuretic and anti-urolitiasis:

The alcoholic extract of Aerva lanata was tested for diuretic activity. The study indicated that the alcoholic extract at a dose of 800 mg/kg acted as a diuretic, with respect to control. Aerva lanata aqueous suspention (2 g/kg body wt/dose/day for 28 days) to CaO_2 urolithic rats had reduced the oxalate-synthesizing enzymes, and diminished the markers of crystal deposition in the kidney. The results of the study confirmed that Aerva lanata can be used as curative agent for urolithiasis.

Acute renal failure:

The ehanolic extract of the entire plant of Aerva lanata was studied for its nephroprotective activity in cisplatin- and gentamicin-induced acute renal injury in albino rats of either sex. In the curative regimen, the extract at dose level of 75,150 and 300 mg/kg showed dose-dependent reduction in the elevated blood urea and serum creatinine and normalized the histopathological changes. In the gentamicin model the rats in the

preventive regimen also showed good response to the ethanol extract at 300 mg/kg. The findings suggest that ethanol extracts of Aerva lanata possesses marked nephroprotective activity with minimal toxicity caused by nephrotoxins like cisplatin and gentamicin.

Antiasthmatic:

The ethanolic extract of the aerial parts of Aerva lanata showed antiasthematic at 100 µg/ml in the isolated goal tracheal chain preparation. When administered orally 30 and 60 mg/kg of extract demonstrated antiasthmatic activity against clonidine-induced catalepsy and it also inhibits mast cell degranulation in mice.

Antifertility activity:

The ethanolic extract of the aerial parts of Aerva lanata were evaluated for antifertility activity using anti-implantation, abortifiient, and motility of rat spermatozoa (in vitro) models. The anti- implantation effect seems to be dependent on the dose as well as the initiation of treatment on specific days of pregnancy. Aerva lanata has shown pre-implantation loss of 20% and 30% against control at the dose of 200 and 400 mg/kg b/w, respectively. Aerva lanata at a concentration of 10% showed no motility of rat spermatozoa within 60 sec.

Anti-hyperglycemic and anti-diabetic:

In the oral glucose tolerance test, Aerva lanata (400 mg/kg) increased the glucose threshold at 60 min after the administration of glucose. The alcoholic extract of Aerva lanata was found to reduce the increased blood sugar level of alloxan-induced diabetic rats (42% at 375 mg/kg and 48% at 500 mg/kg body weight). Aerva lanata (400 mg/kg) treatment prevented diabetic mice weight loss in. in the subacute study, repeated administration (one a day for 28 days) of glyburide and Aerva lanata caused a significant reduction in the serum glucose level as compared to the vehical-treated group.

Hypolipidimic:

The hypolipidimic ativity of Aerva lanata was assessed on ethylene glycol-induced calcium oxalate urolithic rats. Total lipids, total cholesterol and triglyceride level were significantly increased in the serum, liver and kidney of calcium oxalate urolithic rats. Besides, phospholipids (PL), high-density lipoproteins (HDL), low-density lipoproteins (LDL) and very low-density lipoproteins (VLDL) levels were altered in calcium oxalate

urolithic rats. On supplementation of Aerva lanata aqueous suspension acts as a hypolipidemic agent in calcium oxalate urolithiasis.

Anti diarrheal:

Ethanolic and aqueous extracts of Aerva lanata and A.javanica was screened for nti-diarrheal activity. All the extracts showed significant anti-diarrheal activity in charcoal meal test. Reduction of the intestinal transit is suggested as mechanism of action.

Anti-hepatotoxicity and antioxidant effect:

Aerva lanata was found to be very much effective in the amelioration of the deleterious effects of various toxic chemicals. An experiment was conducted to evaluate the potentiality of the partially purified fraction (PF) from A.lanata in the protection of liver injury which was caused by the administration of carbon tetra chloride in Sprague dawley rats and identified that the PF administration has reversed the histopathological changes significantly and also restored the elevated activities of liver marker enzymes and also enhanced the antioxidant enzyme activities. The extract was also found to reduce the hepatic lipid peroxidation and increases the serum total protein and albumin/globulin (A/G) ratio. The preliminary phytochemical analysis of PF showed the presence of alkaloids which clearly indicates that the PF contains antioxidant alkaloids which clearly indicates that the PF contains antioxidant activity. The PF treatment was found to ameliorate the deleterious effects of CCl4 on the lipid peroxidation in whole liver and microsomal fraction by acting as an antioxidant.

4. MATERIALS AND METHODS

4.1. PREPARATION OF *CHOORANAM*

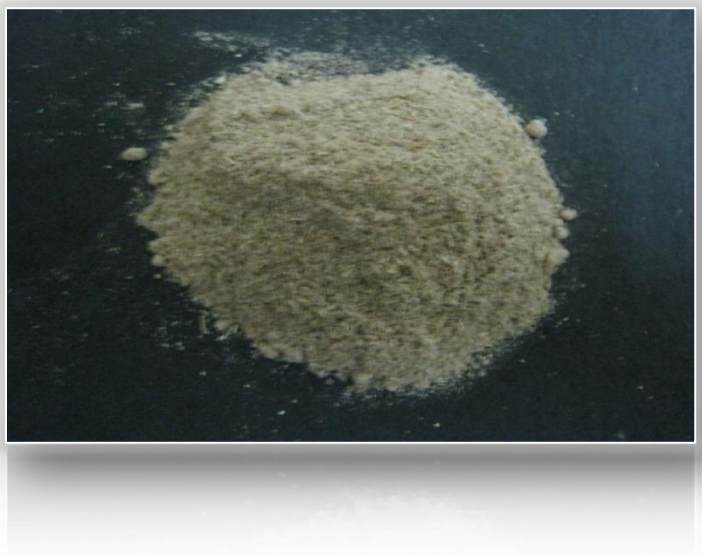
Collection and authentication of the materials:

The plant material used in this study was collected during the month of jan (2012) in and around Chennai and Salem district, Tami nadu, India and authenticated by Botanist, Central Research Institute for Siddha and Siddha experts of Gunapadam Dept. The drug "***Sirupeelai*"** was selected from the Siddha literature *Gunapadam mooligai vagupu* written by *Murugesa mudaliyar*.

Preparation of *Sirupeelai Chooranam*:

The whole plant of *Sirupeelai* which was freshly collected weighed about 10 Kg was cleaned thoroughly to discard soil particles and impurities. Then the plant was cut into small pieces and dried in the shade. After it got dried it was made into fine powder. The resultant powder of 2.5 kg was sieved with white cotton cloth to acquire finest physical powdered form. (Vasthirakayam)

Figure no:4 *Sirupeelai choornam*



4.1 Purification of chooranam:

The *Chooranam* was moistened with cow's milk. Water and milk of equal ratio were filled on pot about ¾ its volume. The opening of the pot was covered and tied with clean white cotton cloth. The *Chooranam* moistened and mixed with milk was placed on the cloth which was tied. The mouth of the pot was closed with another mud pot. The gap between the two mud pots was covered with a wet cloth to avoid evaporation. Then this pot was subjected to heat and boiled till the level of the milk in lower pot gets reduced to ¼ volumes. Then the resultant powder was taken, sun dried, finely powdered and preserved in an airtight container for further usage.

Preservation:

The purified *Chooranam* was stored in a clean, air tight glass container.

Life span : 3 Months.

Administration of the drug:

Form of the medicine	:	Chooranam
Route of Administration	:	Enteral
Dose	:	1 - 2 gms
Anubanam (Vehicle)	:	Hot water
Times of Administration	:	Two times a day; after food

4.2. Standardisation of *SIRUPEELAI CHOORANAM*:

Standardization of drugs means confirmation of its identity and determination of its quality, effectiveness and acceptability to be used as medicine. Standardization of plant drug is based on the concentration of their active principles, physical and chemical standards .Plant drug has been standardized on the basis of organoleptic properties, physical characteristics, and physico-chemical properties the process of standardization can be achieved by stepwise studies

Collection and identification of plant:

The plant materials *viz*., root, stem, leaf and flowers and whole plant of *Aerva lanata*. Belongs to the family Amaranthaceae were collected in and around Chennai, Tamil nadu. The plant was identified with the help of Botanist, Central Research Institute for Siddha, Chennai and by the Siddha experts of Gunapadam Dept. and a voucher specimen is deposited in the Herbarium, Department of Gunapadam, Govt. Siddha Medical College, and Chennai-106.

4.2.1 Pharmacognostic Study*:*

Aerva lanata:

Collection of specimens

The plant specimens for the proposed study were collected from Chennai. Care was taken to select healthy plants and normal organs. The required samples of different organs were cut and removed from the plant and fixed in FAA (Farmalin-5ml+ Acetic acid-5ml + 70% Ethyl alcohol-90ml).After 24 hrs of fixing, the specimens were dehydrated with graded series of tertiary –Butyl alcohol as per the schedule given by Sass, 1940. Infiltration of the specimens was carried by gradual addition of paraffin wax (melting point 58-60 C) until TBA solution attained super saturation. The specimens were cast into paraffin blocks.

Sectioning

The paraffin embedded specimens were sectioned with the help of Rotary **Microtome.** The thickness of the sections was 10-12 μm. Dewaxing of the sections was by customary procedure (Johansen, 1940). The sections were stained with **Toluidine blue** as

per the method published by O'Brien et al. (1964). Since **Toluidine blue** is a polychromatic stain. The staining results were remarkably good; and some **cytochemical** reactions were also obtained. The dye rendered pink colour to the **cellulose** walls, blue to the **lignified** cells, dark green to suberin, violet to the mucilage, blue to the **protein** bodies etc. wherever necessary sections were also stained with **safranin** and **Fast-green** and IKI(for Starch)

For studying the stomatal morphology, venation pattern and trichome distribution, **paradermal sections** (sections taken parallel to the surface of leaf) as well as **clearing** of leaf with 5% sodium hydroxide or epidermal peeling by partial maceration employing Jeffrey's maceration fluid (Sass, 1940) were prepared. Glycerine mounted temporary preparations were made for macerated/cleared materials. Powdered materials of different parts were cleared with Naoh and mounted in glycerine medium after staining. Different cell component were studied and measured.

Photomicrographs

Microscopic descriptions of tissues are supplemented with micrographs wherever necessary. Photographs of different magnifications were taken with **Nikon labphoto 2** microscopic Unit. For normal observations **bright field** was used. For the study of **crystals, starch grains** and **lignified** cells, **polarized** light was employed. Since these structures have **birefringent property**, under polarized light they appear bright against dark background. Magnifications of the figures are indicated by the scale-bars. Descriptive terms of the anatomical features are as given in the standard Anatomy books (Esau, 1964).

4.2.2 Organoleptic evaluation:

The organoleptic characters of the sample were evaluated (Siddiqui *et al).* Organoleptic evaluation refers to evaluation of the formulation by color, odor, taste and texture etc.

4.2.3 Physico-chemical Investagations:

Ash and acid insoluble ash:

To the ash add 1:5 Hcl: Distilled water 15 ml boil, cooled and then filtered using whatman filter paper (No.41) repeat 3 to 4 times till the yellow colour disappear or colourless, then remove the filter paper and add to the filter to the original dish and keep it in the muffle furnace at 600^{o} C and take constant weight and calculate the acid insoluble ash value.

$$\text{Acid insoluble ash (\%)} = \frac{\text{Weight of acid insoluble residue x 100}}{\text{Weight of the sample}}$$

Acid insoluble residue = Acid insoluble ash value – Empty weight of the dish

Loss on drying:

3gm of the drug is heated in a hot oven at 105^{0} c to constant weight. The % of weight was calculated.

Loss on drying value at 105^{0} c - 10.96 %w/w

Potential of hydrogen (pH):

The pH scale is logarithmic and runs from 0.0 to 14.0 with 7.0 being neutral. Readings less than 7.0 indicate acidic solutions, while higher readings indicate alkaline or base solutions.

Above mentioned Quantitative analysis results are showed in the Table : 7

4.2.4 Phyto-chemical evaluation of plant drug:

Test for Phenol

Substance in water is added with 5 % alcoholic ferric chloride. Dark blue or green colour shows presence of phenol.

Test for Flavonoids (Shinoda test)

Substance is dissolved in alcohol, added with magnesium bits and concentrated hydrochloric acid. On heating over a water bath, the appearance of majenta colour shows the presence of flavonoids.

Triterpenoids (Noller's Test)

To a few mg of extract, add tin and thionyl chloride and heat in water bath. Purple colour indicates the presence of tritepenoids.

Test for Anthraquinones

Few milligram of crude powder is shaken with 10 ml of benzene and filtered. To this filtrate, 0.5 ml of 10 % ammonia solution is added and the mixture is shaken well and the presence of the violet colour in the layer phase indicates the presence of the anthraquinone.

Test for Quinones

To a few mg of extract, add few drops of concentrated sulphuric acid. Appearance of red colour shows the presence of quinone.

Test for Saponins

To a few mg of extract distilled water is added and shaken well. The formation of foam indicates the presence of saponin.

4.2.5 Proximate Bio Chemical Analysis of a Drug:

Methodology For Chemcial Analysis

Preparation of Extract :

Add 5 gm of the sample to 50ml of distilled water. Boil the solution for 20 minutes, cool and then filter. Use the Extract for the following tests.

Table no : 1 Chemical analysis of the drug *Sirupeelai chooranam*

S.No	Experiment	Observation	Inference
1.	**Test for reducing Sugar :** To 5ml of Benedicts qualitative reagent, add 10 drops of extract, then boil for two minutes	Green / Yellow / Red PPT	Presence of Reducing Sugar
2.	**Test for Starch :** To 5 ml of extract add 2ml of acetic acid and then add few drops of N/50 Iodine Solution.	Blue Colour	Presence of Starch

3.	**Test for Proteins :** To 2 ml of extract, add 2ml of 5% Sodium Hydroxide mix and add 2 drops of Copper Sulphate Solution.	Violet or Purple Colour	Presence of Proteins
4.	**Test for amino Acid :** Place 2 drops of extract on a filter paper and allow to dry well. Then spray 1% ninhydrin over the same and allow to dry.	Violet Colour	Presence of Amino Acid
5.	**Test for Albumin :** To 2 ml of extract, add 2ml of Esboch's reagent.	Yellow PPT	Presence of Albumin
6.	**Test for Phosphate :** To 2ml of extract, add 2ml of ammonium Molybdate solution and 2ml of concentrated Nitric Acid.	Yellow PPT	Presence of Phosphate
7.	**Test for Sulphate :** To 2 ml of extract add 2ml of 4% ammonium oxalate solution.	White PPT	Presence of Sulphate
8.	**Test for Chloride :** Add 2ml of extract to dilute nitric acid till the effervescence ceases. Then add 2 ml of Silver Nitrate Solution.	Cloudy White PPT	Presence of Chloride
9.	**Test for Iron :** To 2ml of extract, add 2ml of ammonium thio cynate solution and add 2ml of concentrated Nitric Acid.	Red Colour	Presence of Iron
10.	**Test for Calcium :** To 2 ml of extract, add 2 ml of 4% ammonium Oxalate Solution.	White PPT	Presence of Calcium
11.	**Test for Sodium :** Make a paste with 2 pinches of the sample with Hcl and Introduce it into the blue flame.	Yellow Flame	Presence of Sodium

12.	**Test for Potassium :** Add a pinch of the sample to 2 ml of Sodium Nitrate Solution. Then add 2ml of Cobal Nitrate in 20% acetic acid.	Yellow PPT	Presence of Potassium
13.	**Test for Zinc :** To 2ml of extract, add few drops of Sodium Hydroxide.	White PPT	Presence of Zinc
14.	**Test for Magnesium :** To 2ml of extract, add few drops of Sodium Hydroxide Solution	White PPT	Presence of Magnesium
15.	**Test for Alkaloids :** a. To 2ml of extract, add 2ml of Potassium Iodide Solution b. To 2ml of extract add 2ml of Picric Acid. c. To 2 ml of extract add 2ml of Phosphotunqstic Acid.	Red Colour Yellow Colour White PPT	Presence of Alkaloids Presence of Alkaloids Presence of Alkaloids
16.	**Test for Tannic Acid :** To 2ml of extract add 2 ml of Ferric Chloride Solution	Black PPT	Presence of Tannic Acid

4.3 TOXICOLOGICAL STUDY OF THE DRUG:

Animals:

Albino mice of either sex weighing 25-30g (For acute toxicity study) were used for the study. The animals were used with the approval of the Institute animal ethics committee and obtained from Vels University, Chennai. They were fed with a balanced standard pellet diet and maintained under standard laboratory conditions, providing 24-28^{0}C temperature, standard light cycle (12 h light, 12 h dark) and water ad libitum. Animals were kept in cages with raised floors of wide mesh to prevent coprophagy. Animal welfare guidelines were observed during the maintenance period and experimentation. The rats were randomly assigned to control and different treatment groups, six animals per group. (XIII/VELS/PCOL/13/2000/CPCSEA/IAEC/08.08.2012). The animals were acclimatized for one week under laboratory conditions.

Acute toxicity study:

Acute oral toxicity test for the Sirupeelai Chooranam was carried out as per OECD Guidelines 425. As with other sequential test designs, care was taken to ensure that animals are available in the appropriate size and age range for the entire study. The test substance is administered in a single dose by gavage using a stomach tube or a suitable intubation cannula. The fasted body weight of each animal is determined and the dose is calculated according to the body weight. After the substance has been administered, food was withheld for a further 2 hours in mice. Single animals are dosed in sequence usually at 48 h intervals. However, the time interval between dosing is determined by the onset, duration, and severity of toxic signs. Treatment of an animal at the next dose was delayed until one is confident of survival of the previously dosed animal. The time interval was adjusted as appropriately in case of inconclusive response. The test is simpler to implement when a single time interval is used for making sequential dosing decisions. Special attention was given during the first 4 hours and daily thereafter, for a total of 14 days, except where they need to be removed from the study and humanely killed for animal welfare reasons or are found dead.

All observations are systematically recorded and Observations include changes in skin and fur, eyes and mucous membranes, and also respiratory, circulatory, autonomic and central nervous systems, and somatomotor activity and behaviour pattern. Attention was directed to observations of tremors, convulsions, salivation, diarrhea, lethargy, sleep and coma. The principles and criteria summarized in the Humane Endpoints Guidance Document taken into consideration. Animals found in a moribund condition and animals showing severe pain or enduring signs of severe distress was humanely killed. When animals are killed for humane reasons or found dead, the time of death was recorded.

Stock Solution Preparation:

The test drug 200mg of fine powder form of Sirupeelai Chooranam was accurately weighed using electronic balance and mixed thoroughly with 10ml of 2% Carboxy Methyl Cellulose (CMC) solution to achieve 20mg/ml stock solution and this was used for further study.

Drug Treatment:

Over night fasted rats were divided into 4 groups of six rats each.

Group l served as a control, received vehicle 2% CMC only orally for three days.

Group II & III received Sirupeelai Chooranam at a different dose levels (50 and 100mg/kg), orally for three days and also administered (25µl of 50mg/ml stock suspension) on open liver wound at the time of bleeding and Group IV was untreated normal animals.

4.4Pharmacological study

Induction of Experimental Bleeding:

After last dosing of *Sirupeelai Chooranam* suspension oral administration and 30 minutes of absorption period, the animals were placed on the dissection board and the animals were anesthetized using anesthetic ether. The abdomen of the animals was cut opened carefully without any damage to the major blood vessels under ether anesthesia, the left lobe of liver was located in the abdominal cavity and the tip is wounded carefully by making an incision to induce bleeding. Simultaneously the timer was switched on and the blood traces were fixed on the blotting paper at different time intervals in room temperature (27 ± 2^0C). The time at which the bleeding ceased from the liver lobe was noted.

Statistical analysis:

The statistical analysis was carried out using one-way ANOVA followed by Dunnett's multiple comparison test. All the results obtained in the study were compared with the vehicle control group. P values <0.05 were considered statistically significant.

4.5 Clinical Assessment

The administration of herbal medicine is a boon in siddha mode of treatment. In spite of the abundant source and lower side effects, the implementation of such herbal drugs are still lacking behind clinically. Thus this study intensively focuses over the clinical activity of *Sirupeelai choornam* as the remedy for Menorrhagia and DUB.

Objectives:

- To evaluate the styptic activity of *Sirupeelai chooranam*.
- To explore the efficacy of SPC in patients with Menorrhagia and DUB(Dysfunctional Uterine Bleeding) .

Design of the Study:

The Open clinical trial – Phase II B

Study Centre:

- Arignar Anna Government Hospital of Indian Medicine and Homeopathy,
- Arumbakkam, Chennai – 106.

Study Participants:

Women members of all races and ethnic groups are eligible for this trial. Treatment will be administered on an outpatient *basis*. The patients will be selected from Out-patient department and In-patient department of Arignar Anna Government Hospital of Indian Medicine and Homeopathy, Chennai – 106.

Number of Subjects:

Number of participants were 50

Registration Process:

To register a patient, the following documents should be completed by the investigator.

- Copy of required laboratory tests
- Signed patient consent form
- Other appropriate forms (e.g., Trial profoma).

The investigator verified eligibility and had assigned patient's study number, drug dose and registered the patient on the study.

Selection:

50 female patients of age groups 15 – 55 were selected for clinical trial. The selection was based on the inclusion and exclusion criteria. They were clinically diagnosed on the basis of Siddha principles with modern laboratory findings.

Sample Size:

50 patients in the age group 15 – 55.

Selection Criteria:

Inclusion criteria:

Patients with the following criteria are included in the study:

- Excessive bleeding per vagina
- Dysmenorrhoea
- Epimenorrhoea
- Epimenorrahagia
- Pallor
- Vaginal discharge
- Purpura

Exclusion criteria:

- Leukaemia
- Thrombocytopenic purpura
- Hypo thyroidism

- Hyperthyroidism in initial stages
- Genital TB
- Immediate puerperal and post abortal periods.

Withdrawal Criteria:

Patients will be removed from study when any of the criteria listed below applies. The reason for study removal and the date of removal of patient had been documented in the Case Report Form.

- Patients with Irregular medication.
- Patients who are not cooperating to take blood samples.
- If any adverse reactions produced during the study period.
- Patient who decides to withdraw from the study, or
- Unwanted prolonged illness during the study period.

Evaluation of Clinical Parameters:

Patients are clinically evaluated by the following parameters:

History Taking:

Age, occupation, socio economic status, complaints and duration, menstrual history, marital history. History of parity, family history, previous illness, and personal habits were recorded in the case sheet for every patient at the time of first visit to the OP.

Investigations:

All the patients were subjected to the laboratory investigations before and after the treatment.

Blood: Complete haemogram, Blood sugar fasting & post prandial,Blood urea, Serum creatinine, Serum cholesterol and hormonal assay.

Urine: Albumin, Sugar, Deposits,

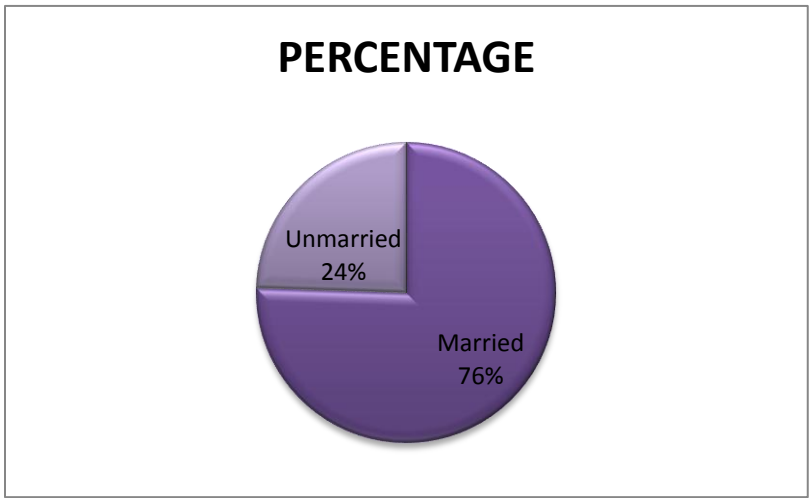
Ultra Sono Gram: Whole Abdomen and Pelvis.

Criteria for Assessment of Response To Therapy:

1) Marked response : 90% relief in signs and symptoms
2) Moderate response : 70 - 80 % relief in the presenting signs and symptoms
3) Mild response : 60-70% relief signs and symptoms.
4) Poor response : 50% relief of signs and symptoms no marked changes

Table No: 2 (Marital Status of the Patients)

SL. NO	Marital Status	NO. OF PATIENTS	PERCENTAGE (%)
1	Married	38	76%
2	Single	12	24%
TOTAL		50	100

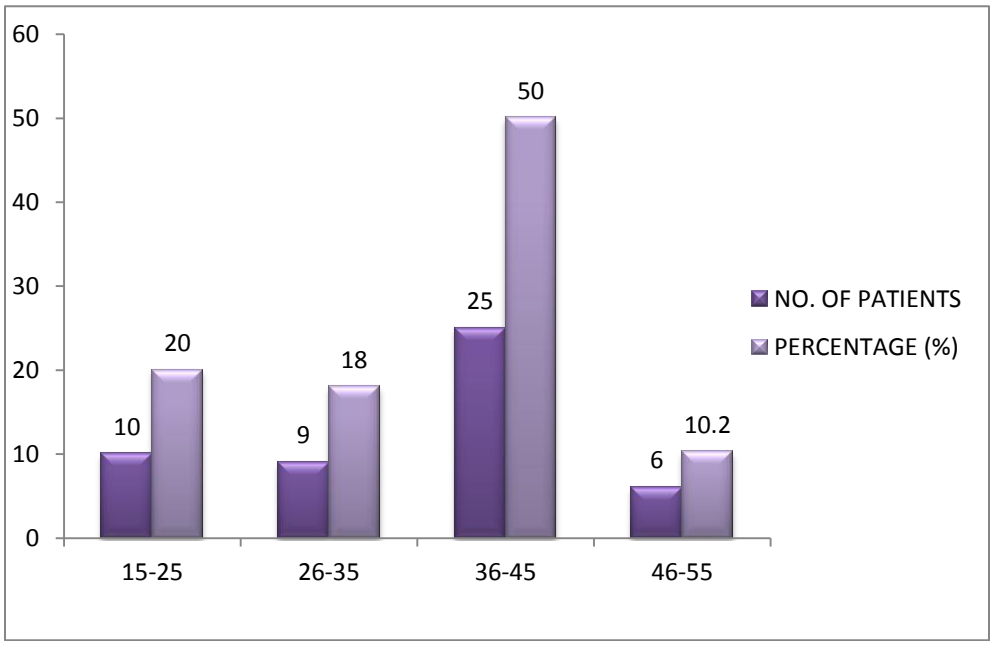


Inference:

Out of 50 out patients 38(76%) are married and 12(24%) are unmarried

Table No.3 (Age Distribution Of the Patients)

SL. NO	AGE IN YEARS	NO. OF PATIENTS	PERCENTAGE (%)
1	15-25	10	20%
2	26-35	9	18%
3	36-45	25	50%
4	46-55	6	12%
TOTAL		50	100%

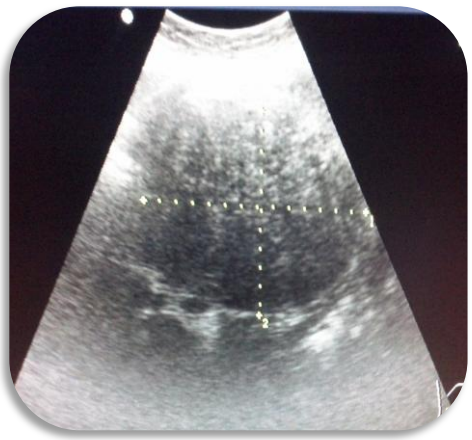


Inference:

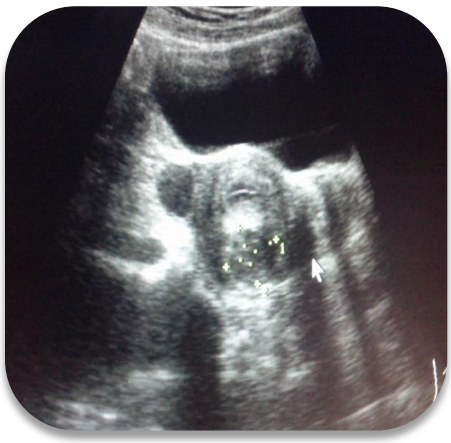
Among 50 patients,

- 10 patients belongs to the age group of 15-25 years
- 9 patients belongs to the age group of 26-35 years
- 25 patients belongs to the age group of 36-45 years
- 6 patients belongs to the age group of 46-55 years

Figure No:5 USG Pelvis



Large fibroid



Posterior fibroid

Small fibroid

Normal uterus

Table: 4 clinical study on *sirupeelai chooranam* for out-patients dept. in the management of *perumbadu*

SI NO	Op. No	Name/ Age/ Sex	Complaints	Duration of Days	BT & AT	INVESTIGATION														Results
						BLOOD										Urine			USG	
						TC cells/cumm	DC (%)			ESR(mm)		Hb gm	Sgr mg/dl	Ur mg/dl	Blood CL	Sgr	Alb	Dep	pelvis	
							P	L	E	½ hr	1 hr									
1.	2763	Malathi 51/Female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain.	26.5.12 to 20.6.12	BT	9200	57	38	5	25	50	9	99	25	160	NIL	NIL	FPC	-	marked
					AT	9300	57	38	5	10	15	9	99	23	158	NIL	NIL	FPC	-	
2.	6544	Anitha 50/Female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain.	14.6.12 to 2.9.12	BT	9100	56	39	5	4	8	12	110	25	170	NIL	NIL	FPC	-	mild
					AT	8700	57	39	7	4	8	12	119	24	168	NIL	NIL	NIL	-	
3.	6545	Amudha 25/Female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain.	14.6.12 to 5.8.12	BT	8100	60	36	4	10	20	10.5	115	20	150	NIL	NIL	FEC	-	marked
					AT	7900	58	38	4	5	10	10.5	120	20	150	NIL	NIL	NIL	-	
4.	004	Uma 47/Female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain.	25.6.12 to 19.10.12	BT	8100	52	44	4	27	45	8	92	21	150	NIL	NIL	FPC	-	marked
					AT	8300	56	40	4	12	20	9	105	20	150	NIL	NIL	NIL	-	
5.	3587	Suseela 47/Female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain.	9.7.11 to 16.9.12	BT	7600	57	38	5	38	60	9	85	30	193	NIL	NIL	FPC	-	marked
					AT	7800	57	39	4	20	48	9	80	29	180	NIL	NIL	FPC	-	

Clinical study on *sirupeelai chooranam* for out-patients dept. in the management of *perumbadu*

SI NO	Op. No	Name/ Age/ Sex	Complaints	Duration of Days	BT & AT	INVESTIGATION														Results
						BLOOD										Urine				
						TC cells/cumm	DC (%)			ESR(mm)		Hb gm	Sgr mg/dl	Ur mg/dl	Blood CL	Sgr	Alb	Dep	USG pelvis	
							P	L	E	½ hr	1 hr									
6.	5260	Lakshmi 44/female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain.	16.7.12 to 20.9.12	BT	8500	56	40	4	10	20	9	108	27	149	NIL	NIL	NIL	**normal**	moderate
					AT	8300	57	40	3	10	20	9.5	112	27	147	NIL	NIL	NIL		
7.	8497	Lakshmi 33/Female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain.	27.7.12 to 25.9.12	BT	9000	54	41	5	5	20	10.4	80	28	148	NIL	NIL	FEC	-	marked
					AT	9100	55	40	5	6	22	11	86	25	145	NIL	NIL	NIL	-	
8.	480	Nila 19/Female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain.	4.8.12 to 18.10.12	BT	9700	56	39	5	12	20	12.5	105	26	160	NIL	NIL	FPC	-	marked
					AT	9600	57	40	3	12	20	12	115	26	155	NIL	NL	NIL	-	
9.	8620	Padma 30/Female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain.	11.8.12 to 15.10 .12	BT	9500	55	40	5	12	24	11.5	120	24	180	NIL	NIL	FPC	-	marked
					AT	9000	59	38	3	10	12	11.5	125	22	178	NIL	NIL	Nil	-	
10.	8213	Sudha 27/Female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain.	22.8.12 to 27.10.12	BT	9700	60	32	8	25	52	12.6	118	22	170	NIL	NIL	FPC	-	mild
					AT	9600	60	35	5	15	28	12.6	120	20	165	NIL	NIL	NIL	-	

Clinical study on *sirupeelai chooranam* for out-patients dept. in the management of *perumbadu*

S. NO	Op. No	Name/ Age/ Sex	Complaints	Duration of Days	BT & AT	INVESTIGATION														Results
						BLOOD										Urine				
						TC cells/cumm	DC (%)			ESR(mm)		Hb gm	Sgr mg/dl	Ur mg/dl	Blood CL	Sgr	Alb	Dep	USG pelvis	
							P	L	E	½ hr	1 hr									
11.	9261	Shanthi 27/Female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain.	11.9.12 to 20.10.12	BT	9700	59	37	4	5	15	11.6	227	28	182	NIL	NIL	FPC	-	Marked
					AT	9000	59	37	4	5	15	11.6	200	25	180	NIL	NIL	FPC	-	
12.	6231	Sathiyavathi 28/Female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain.	15.9.12 to 29.10.12	BT	9000	56	39	5	12	24	13	135	25	175	NIL	NIL	FPC	-	moderate
					AT	8300	58	39	3	10	20	13	120	20	175	NIL	NIL	NIL	-	
13.	1563	Vijayalakshmi 36/Female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain.	22.9.12 to 20 .10 .11	BT	9000	58	36	6	20	40	8	93	26	178	NIL	NIL	FPC	-	marked
					AT	9200	59	37	4	15	28	8	98	24	170	NIL	NIL	FEC	-	
14.	2052	Mariammal 43/Female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain.	27.9.12 to 15.10.12	BT	10800	55	39	6	2	5	12	88	25.8	170	NIL	NIL	FEC	**DUB**	marked
					AT	9600	59	37	4	2	5	12.5	88	20	165	NIL	NIL	NIL	Normal	
15.	4845	Kanimozhi 20/Female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain.	5.10.12 to 15.11.122	BT	8000	55	41	4	10	25	8	90	28	182	NIL	NIL	FPC	-	marked
					AT	8200	54	41	5	10	20	8	90	26	180	NIL	NIL	NIL	-	

Clinical study on *sirupeelai chooranam* for out-patients dept. in the management *of perumbadu*

SI NO	Op. No	Name/ Age/ Sex	Complaints	Duration of Days	BT & AT	INVESTIGATION														Results
						BLOOD									Blood CL	Urine			USG pelvis	
						TC cells/cumm	DC (%)			ESR(mm)		Hb gm	Sgr mg/dl	Urm g/dl		Sgr	Alb	Dep		
							P	L	E	½ hr	1 hr									
16.	6179	Fathima 37/Female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain.	10.10.12 to 15.11.12	BT	9800	59	37	4	36	64	15	89	38	186	NIL	NIL	FPC	-	marked
					AT	9800	59	37	4	20	40	15	95	30	180	NIL	NIL	FPC	-	
17.	8001	Jayanthi 42/Female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain.	18.10.12 to 25.11.12	BT	9700	60	36	4	3	8	16	89	22	147	NIL	NIL	FPC	DUB	marked
					AT	9700	58	38	4	3	8	16	95	22	147	NIL	NIL	NIL	Normal	
18.	1652	Seetha 28/Female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain.	26.10.12 to 24.12.12	BT	8400	55	40	5	17	34	8.8	118	24	158	NIL	NIL	FPC	-	moderate
					AT	9700	56	40	4	13	18	9.5	85	24	150	NIL	NIL	NIL	-	
19.	3665	Vinothini 25/Female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain.	27.10.12 to 25.12.12	BT	9800	54	41	5	12	24	11.5	90	20	152	NIL	NIL	FPC	-	moderate
					AT	9900	55	41	4	14	28	11.5	92	20	150	NIL	NIL	NIL	-	
20.	940	Manusha 30/Female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain.	3.11.12 to 25.12.12	BT	9200	55	42	3	5	11	14.8	92	21	169	NIL	NIL	FPC		Poor
					AT	9300	52	42	6	5	11	14.8	92	20	165	NIL	NIL	FPC		

Clinical study on *sirupeelai chooranam* for out-patients dept. in the management of *perumbadu*

SI NO	Op. No	Name/ Age/ Sex	Complaints			BLOOD									Blood CL	Urine			USG pelvis	Results
						TC cells/cumm	DC (%)			ESR(mm)		Hb gm	Sgr mg/dl	Ur mg/dl		Sgr	Alb	Dep		
							P	L	E	½ hr	1 hr									
21.	941	Kumari 37/Female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain.	3.11.12 to 31.12.12	BT	8800	55	38	7	15	28	10	130	24	162	NIL	NIL	FEC	-	marked
					AT	9000	60	35	5	10	20	10	130	24	160	NIL	NIL	FEC	Bulky uterus	
22.	1197	Gyathiri 17/Female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain.	5.11.12 to 31.12.12	BT	9200	60	37	3	12	24	10.2	120	21	156	NIL	NIL	FPC	-	marked
					AT	8700	58	39	3	10	20	10.2	120	20	150	NIL	NIL	NIL	-	
23.	1199	Cathrin 18/Female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain.	5.11.12 to 6.12.13	BT	9200	52	43	5	6	13	12	77	25	156	NIL	NIL	FEC	-	marked
					AT	9300	55	39	6	8	22	12.2	80	23	150	NIL	NIL	FEC	-	
24.	1526	Pavithra 18/Female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain.	6.11.12 to 2.1.13	BT	8700	56	39	5	10	20	11	96	21	175	NIL	NIL	FEC	-	marked
					AT	8800	58	39	3	10	20	11	96	20	173	NIL	NIL	Nil	-	
25.	1666	Vanitha 35/Female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain.	6.11.12 to 15.12.12	BT	8700	58	40	2	9	20	16	83	27	169	NIL	NIL	FPC	-	marked
					AT	8600	60	36	4	9	15	16	80	25	160	NIL	NIL	FPC	-	

Clinical study on *sirupeelai chooranam* for out-patients dept. in the management of *perumbadu*

SI NO	Op. No	Name/ Age/ Sex	Complaints	Duration of Days	BT & AT	INVESTIGATION														Results
						BLOOD										Urine			USG pelvis	
						TC cells/cumm	DC (%)			ESR(mm)		Hb gm	Sgr mg/dl	Ur mg/dl	Blood CL	Sgr	Alb	Dep		
							P	L	E	½ hr	1 hr									
26.	1917	Krishnaveni 43/Female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain.	7.11.12 to 13.12.12	BT	9500	60	36	4	24	40	11.4	91	45	185	NIL	NIL	FPC	-	mild
					AT	9800	58	38	4	20	30	11.4	91	36	180	NIL	NIL	FPC	-	
27.	5022	Shamaladevi 38/Female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain.	8.11.12 to 22.12.12	BT	8800	55	39	6	23	62	9	95		177	NIL	NIL	FEC	**Normal**	marked
					AT	8000	58	39	3	20	40	9	95	22	170	NIL	NIL	NIL		
28.	2545	Maheshwari 42/Female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain.	10.11.12 to 15.12.12	BT	7800	54	41	5	12	33	8	84	30	172	NIL	NIL	FEC	-	marked
					AT	8300	56	39	5	12	30	8	84	26	170	Nil	NIL	Nil		
29.	3560	Deepa priya 40/Female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain.	6.11.12 to 15.1.13	BT	11100	64	31	5	62	10	10	89	28	182	NIL	NIL	FEC	-	moderate
					AT	10500	60	36	4	20	40	10	89	25	181	NIL	NIL	FEC	-	
30.	3652	Gomathi 35/Female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain.	10.11.12 to 9.12.12	BT	10400	59	36	5	8	15	12.8	86	25	181	NIL	NIL	FPC	-	marked
					AT	9500	58	39	3	8	15	12	92	22	176	NIL	NIL	NIL		

Clinical study on *sirupeelai chooranam* for out-patients dept. in the management of *perumbadu*

SI NO	Op. No	Name/ Age/ Sex	Complaints	Duration of Days	BT & AT	INVESTIGATION														Results
						BLOOD										Urine				
						TC cells/cumm	DC (%)			ESR(mm)		Hb gm	Sgr mg/dl	Ur mg/dl	Blood CL	Sgr	Alb	Dep	USG pelvis	
							P	L	E	½ hr	1 hr									
31.	1258	Rajeshwari 42/Female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain.	17.11.12 to 22.12.12	BT	9800	55	40	5	20	40	11.4	115	24	160	NIL	NIL	FPC	-	marked
					AT	9000	58	38	4	15	22	11.4	100	20	150	NIL	NIL	NIL		
32.	6215	Krishnaveni 43/Female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain.	7.11.12 to 25.12.12	BT	9000	58	39	3	15	30	13	82	24	175	NIL	NIL	FEC	-	moderate
					AT	9200	58	38	4	10	18	13	82	22	170	NIL	NIL	Nil		
33.	4230	Jasmine 18/Female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain.	7.11.12 to 29.11.12	BT	10400	62	35	5	3	9	13	85	25	157	NIL	NIL	FEC	-	marked
					AT	9700	62	36	2	4	11	13	85	24	152	NIL	NIL	NIL		
34.	3766	Mythili 36/Female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain.	17.11.12 to 25.12.12	BT	9500	59	36	5	6	12	11	97	23	152	NIL	NIL	NIL	-	marked
					AT	9600	59	37	4	6	12	11	100	23	150	NIL	NIL	NIL		
35.	3555	Girija 42/Female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain.	16.11.12 to 7.1.13	BT	10100	59	36	5	24	50	12	89	34	180	NIL	NIL	FPC	-	marked
					AT	9600	58	38	4	10	20	12.5	87	30	170	NIL	NIL	NIL		

SI NO	Op. No	Name/ Age/ Sex	Complaints	Duration of Days	BT & AT	INVESTIGATION														Results
						BLOOD									Blood CL	Urine			USG pelvis	
						TC cells/cumm	DC (%)			ESR(mm)		Hb gm	Sgr mg/dl	Ur mg/dl		Sgr	Alb	Dep		
							P	L	E	½ hr	1 hr									
36.	4136	Sridevi 342/Female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain.	19.11.12 to 28.12.12	BT	10200	62	32	6	11	24	11	64	33	202	NIL	NIL	FPC	-	marked
					AT	9900	57	38	5	8	20	11.5	70	30	199	NIL	NIL	NIL		
37.	4137	Vasanthi 40/Female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain.	19.11.12 to 21.12.12	BT	9500	56	39	5	9	20	11	90	30	155	NIL	NIL	FPC	-	marked
					AT	9200	57	39	4	9	20	11	90	28	148	NIL	NIL	NIL		
38.	3285	Kalpana 20/Female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain.	24.11.12 to 28.12.12	BT	9100	53	42	5	18	40	10	90	32	175	NIL	NIL	FPC	-	marked
					AT	8800	55	41	4	15	28	10	90	30	170	NIL	NIL	NIL		
39.	3652	Srinithi 22/Female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain.	1.12.12 to 5.1.12	BT	8200	54	48	3	40	80	8.2	97	27	199	NIL	NIL	FEC	-	marked
					AT	8000	56	40	4	20	40	8.2	97	24	180	NIL	NIL	FEC		
40.	4142	Banumathi 36/Female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain.	3.12.12 to 3.1.13	BT	8900	60	36	3	5	11	15	99	25	147	NIL	NIL	FEC	-	marked
					AT	8500	61	36	3	5	11	15	99	25	147	NIL	NIL	FEC		

ABBREVATION

BT - Before treatment
AT - After treatment
TC - Total count
DC - After count
L - Lymphocyte
E - Eosinophil
ESR - Erythrocyte sedimentation rate
CL - Cholesterol
Alb - Albumin
Dep - Deposits
FPC - Few Pus Cells
FEC - few epithelial cells
Hb - Haemoglobin
P - Polymorphs

Table no:5 Clinical study on *sirupeelai chooranam* for in patients dept. in the management of *perumbadu*

SI NO	Ip. No	Name/ Age/ Sex	Complaints	Duration of Days	BT & AT	INVESTIGATION														Results
						BLOOD										Urine			USG pelvis	
						TC cells/cumm	DC (%)			ESR(mm)		Hb gm	Sgr mg/dl	Ur mg/dl	Blood CL	Sgr	Alb	Dep		
							P	L	E	½ hr	1 hr									
1.	721/ 7341	Suseela 43/Female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain.	29.5.12 to 5.6.12	BT	7600	53	41	6	5	13	6	83	25	150	NIL	NIL	FPC	**Bulky U**	Marked
					AT	7800	54	40	6	8	15	6.4	90	23	154	NIL	NIL	FPC	-	
2.	627/ 3595	Krishnaveni 55/Female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain.	1.6.12 to 2.9.12	BT	9100	56	39	5	8	13	11	110	25	170	NIL	NIL	FPC	-	Mild
					AT	8700	57	39	7	8	15	11.3	119	24	168	NIL	NIL	NIL	-	
3.	694/ 6652	Alamelu 42/Female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain.	14.6.12 to 24.6.12	BT	9000	55	39	6	6	13	9	110	22	143	NIL	NIL	FPC	**Bluky U**	Marked
					AT	9100	54	38	8	6	15	9.2	108	24	142	NIL	NIL	NIL	-	
4.	958/ 3680	Saraswathi 45/ Female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain	9.7.12 to 18.7.12	BT	8400	55	38	7	10	22	8	110	25	152	NIL	NIL	FPC	-	Mild
					AT	8500	56	40	4	12	22	7.5	107	26	152	NIL	NIL	FPC	-	
5.	1422/ 8223	Rajakumari 45/Female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain.	3.9.12 to 17.9.12	BT	8800	55	34	6	4	8	12	110	25	170	NIL	NIL	FPC	-	Moderate
					AT	8700	57	39	7	4	8	12	119	24	168	NIL	NIL	NIL	-	

Clinical study on *sirupeelai chooranam* for in patients dept. in the management of *perumbadu*

SI NO	Ip. No	Name/ Age/ Sex	Complaints	Duration of Days	BT & AT	INVESTIGATION														Results
						BLOOD										Urine			USG pelvis	
						TC cells/cumm	DC (%)			ESR(mm)		Hb gm	Sgr mg/dl	Urmg/dl	Blood CL	Sgr	Alb	Dep		
							P	L	E	½ hr	1 hr									
6.	1426/ 7319	Lakshmi 45/ Female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain.	4.9.12 to 14.9.12	BT	8700	53	39	8	9	18	8.5	95	22	145	NIL	NIL	FEC	-	Marked
					AT	8800	55	41	4	10	20	9	100	23	144	NIL	NIL	NIL	-	
7.	2/ 9725	Pushpavalli 47/Female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain.	13.9.12 to 4.10.12	BT	9100	58	36	6	10	22	10.5	110	20	147	NIL	NIL	FEC	-	Moderate
					AT	9200	55	40	5	5	10	10.5	124	18	152	NIL	NIL	NIL	-	
8.	84/ 2085	Nagavalli 50/Female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain.	24.9.12 to 12.10. 12	BT	9000	53	43	4	28	35	7	112	20	150	NIL	NIL	NIL	-	Marked
					AT	9100	55	40	5	25	30	8.5	105	20	150	NIL	NIL	NIL	-	
9.	120/3 084	Chinnammal 40/Female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain.	25.9.12 to 16.10.1 2	BT	8600	52	40	8	9	20	8	83	27	183	NIL	NIL	FPC	-	Marked
					AT	8800	54	39	7	8	18	8.2	80	28	179	NIL	NIL	FEC	-	
10.	131/ 3595	Shanthi 40/Female	Excessive bleeding during mensurtion, pallor ,lower abdominal pain.	1.10.12 to 7.11.12	BT	9100	53	43	4	18	33	7	96	22	159	NIL	NIL	FPC	-	Marked
					AT	9200	56	38	6	16	32	7.8	98	23	159	NIL	NIL	FEC	-	

5. RESULTS AND DISCUSSION

Various kinds of studies had been focused on *Sirupeelai Chooranam* to prove its therapeutic efficacy both clinically and preclinically. Analysis like literary collections, Pharmacognostic study, physicochemical and Phyto-chemical analysis, toxicological study, pharmacological study and clinical study are carried to validate the aim and objective of the study.

Literary review of *Sirupeelai choornam* demonstrates that it has bitter taste and has bio- transformed (pirivu) as kaarpu. So it acts therapeutically on Menorrhagia and ameliorates the condition.

Botanical aspects of the plant signifies the presence of β –Sitosterol, α –amyrin, palmitic, stearic, linoleic, myristic, palmitolic, oleic acid and kaempferol glycosides.

Standardization of Plant Drug:

Pharmacognostic Study of *Sirupeelai Chooranam:*

Microscopy:

Anatomy of leaf

The leaf consists of fairly thick midrib and thick, bifacial lamina (fig 1.a). The midrib consists of short and wide adaxial lump and wide abaxial hemisphere part (fig 1.b). The midrib is 230 µm thick and 270 µm wide. The epidermis is of the midrib portion is narrow; the cells are small and thick walled. The adxial lump has one or two subepidermal layers of collenchymatous cells. The adaxial part of the midrib has horizontally transcurrent palisade cells above the vascular strand. The abaxial part includes compact angular trhin walled parenchyma cells. The vascular bundle is single, small, somewhat circular and collateral. It consists of a prominent and an arc of pholoem elements.

Lamina

The lamina is dorsiventral and 200 µm thick. The adaxial epidermis has thick spindle shaped thin walled cells. The abaxial epidermis is comparatively thin; the cells are narrowly rectangular and thin walled. The palisade tissue consists of one or two layers of

narrow cylindrical cells. The spongy mesophyll region is wider than the palisade cells. These are 7 or 8 layers of lobed or spherical cells. (fig 2.a)

Crystals

Calcium oxalate crystals of Druses are sparsely seen in the mesophyll tissue of the leaf. The druses are located in the slightly dialated mesophyll cells (fig 2.b), the druses are 40 µm in diameter.

Stem

The stem is roughly circular in outline measuring g 1.6 mm in diameter. It consists of a thin epidermal layer layer, narrow cortex and thin hollow cylinder of vascular tissues enclosing a wide piths (fig 3.a).

The epidermal cells are narrowly rectangular and thick walled. The cortex is narrow and includes four or five layers of angular compact parenchymous cells.

The vascular cylinder consists of thin discontinuous layer sclerenchyma cells **altering** large discrete masses of phloem (fig3.b). The xylem cylinder includes several radial segments of vessels with selerenchyma gaps in between. The vessels are circular, solitary and thick walled, they are 30 µm wide. The sclerenchyma elements are xylem fibers which are thick walled, liquefied and are in radial files. The pith includes large, angular, thick walled compact parenchyma cells.

Root (fig 4.a;4.b)

The root measuring 1.5 mm thick was studied. It consists of continous, uniformly thick periderm. The periderm includes four or five layers of tabular suberised cells. The entical zones is intact; it comprises four or five layers of angular, compact thin walled parenchyma cells.

The vascular system exhibits unusual or anomalous type of sdecondary growth. It consists of central cluster of vessels and fibers in a thin layer of phloem. These is a secondary of xylem and phloem. and again a third cylinder xylem and phloem. Thus, these are successive co axial cylinders xylem-phloem with parenchymatous gaps in between the cylinders.

Macroscopy:

Morphology

Herb, prostrate or erect with a long tap-root, branched near the base; branches are many, pubescent or wolly- tomentose, striate.

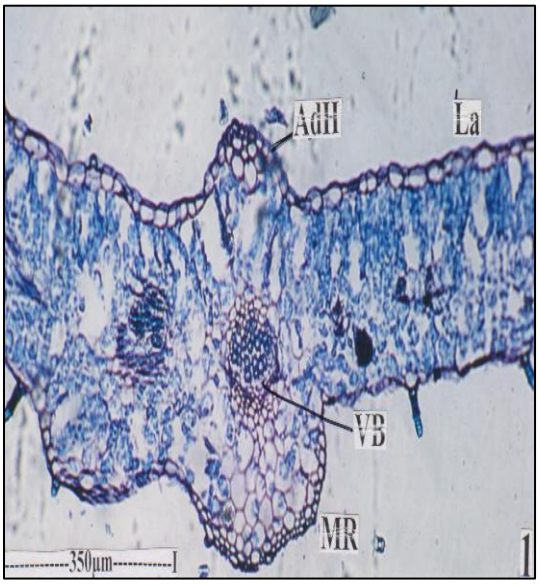
Leaves alternate, 2-2 × 1-1.6 cm on main stem, 6-10 x 5-6 mm on the branches, elliptic or obovate, obtuse or acute, entire, pubescent above, more or less white with cottony hairs beneath; petioles 3-6 mm long, often obscure.

Flowers are greenish white, very small, sessile, often bisexual, in small dense subsessile axillary heads or spikes 6-13 mm long, often closely crowded and forming globose clusters; bracteoles 1.25 mm, long, membranous, broadly ovate, concave, apiculate. Perianth 1.5-1.25 mm long; sepals oblong, obtuse, sometimes apiculate, on the bak silky-hairy structures are found. Utricle broadly ovoid, acute; stigmas two, seed 0.85 mm in diameter, smooth and polished, black.

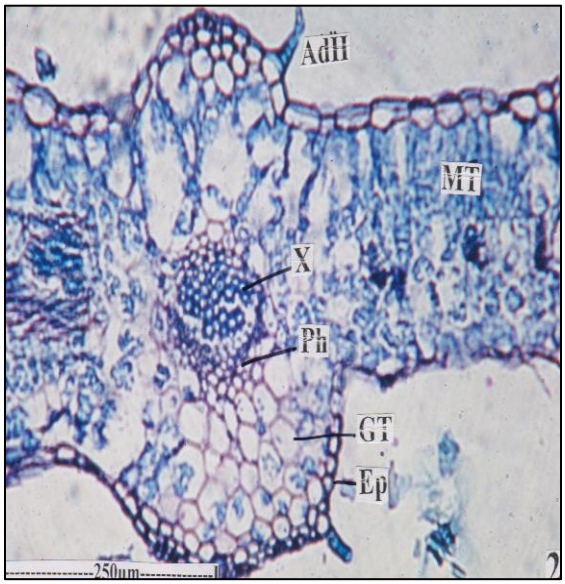
Pharmacognostic study reveals Macroscopical, Microscopical structures and powdered macroscopy of the herb Aerva lanta. It is used to identify and recognize the fresh and dried samples of the drug and also from its adulteration products.

Figure No:6 Pharmacognostic plates of Aerva lanata

1.a T.S of leaf through mid



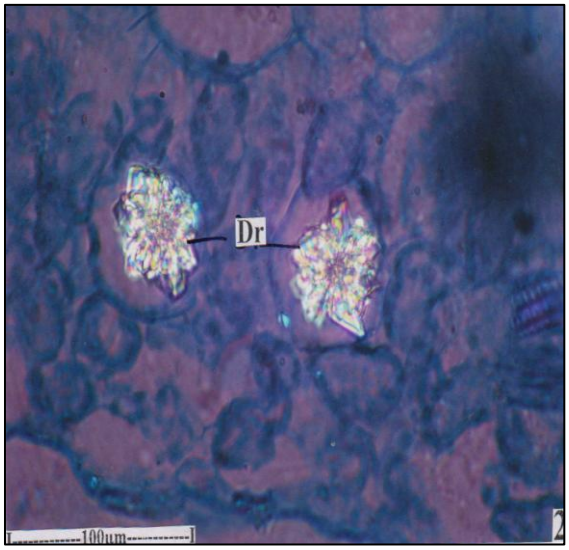
1.b T.S of midrib enlarged



(AdH- Adxial Hump, Ep - Epidermis, GT- Ground Tissue, La- Lamina, MT- Mesophyll Tissue, MR- Midrib, Ph- Phloem, VB-

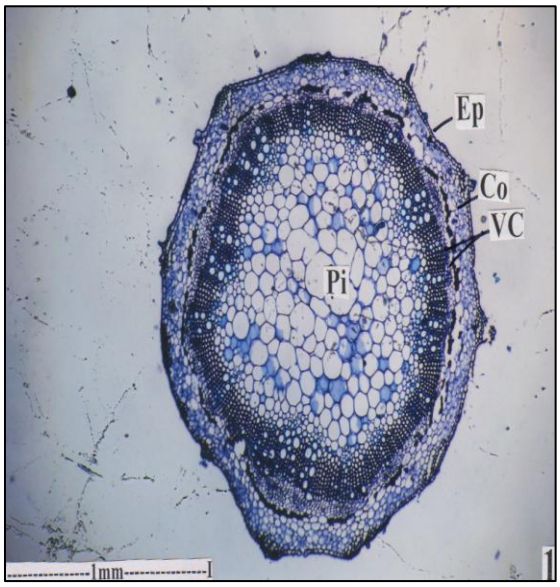
2.a T.S. of Lamina enlarged.

2.b Crystals in the Lamina (polarized light)

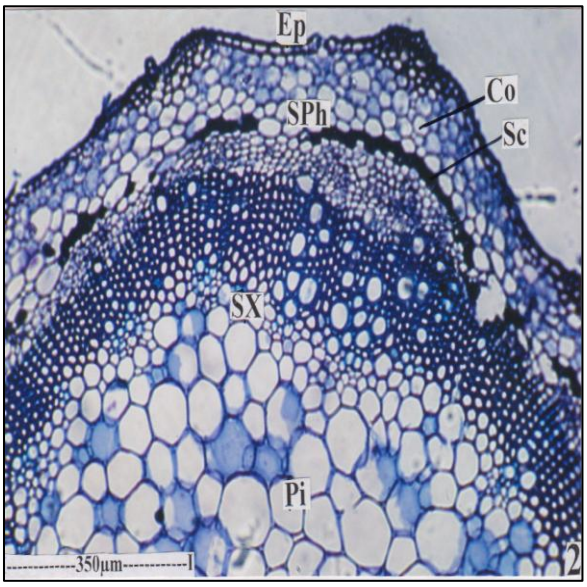


(AdE- Adaxial Epidermis, Dr – Druces, PM – Paliside Mesophyll,SM – Spongy Mesophyll)

3.a T.S. of Stem entire view

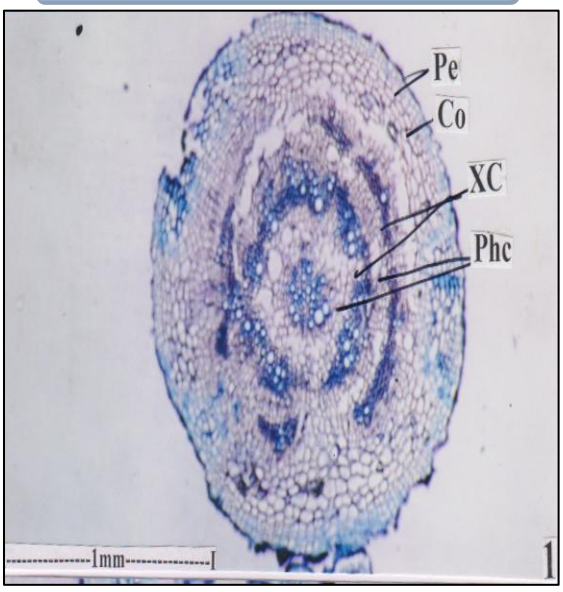


3.b T.S of Stem- A sector

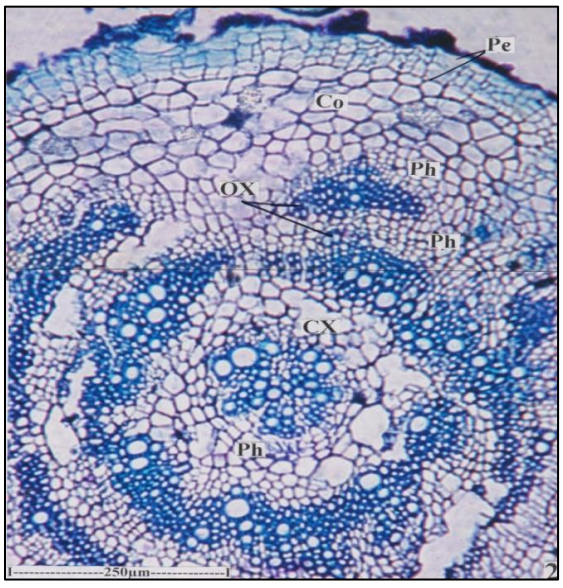


(Co- Cortex, Ep – Epidermis, Pi – Pith, Sc- Sclerenchma, Sph – Secondary Phloem, Sx – Secondary xylem, VC – Vascular cambium)

4.a T.S of Root entire view



4.b T.S of Root- A sector enlarged



(Co – Cortex, CX- Central Xylem, OX – Outer Xylem, Pe – Periderm, Ph- Phloem Cylinder , XC – Xylem cylinder).

Organoleptic Characters:

The following organoleptic characters are noted in SPC

Table No.6

Appearance	Powder
Color	light green
Odour	Odourless
Taste	Bitter
Texture	Fine(spongy)

Physio-Chemical Investigations of *Sirupeelai Chooranam*

Table No: 7 Physio-chemial analysis

S.No	Parameter	Mean Value
1.	Loss on Drying at 105°C	7.423 %
2.	Total Ash	7.998 %
3.	Acid insoluble Ash	0.875 %
4.	Water Soluble Extractive	13.5 %
5.	Alcohol Soluble Extractive	10.2 %
6.	pH	6.0

Inferance:

- Loss on drying (LOD) gives the total of moisture and volatile content present in the drug. If the LOD is low, the shelf life of the plant will be better..since LOD is only 7.423% the shelf life is more.
- Total ash value measures the total inorganic content (ammonium, potassium, chloride, iron calcium, etc.) present in the drug. In *Aerva lanata* it has about 7.998% reveals inorganic content in the drug.

- The amount of siliceous matter present in the plant is calculated by the amount of Acid insoluble ash value. Lower the acid insoluble value higher the quality of the drug. (0.875%)
- Water and ethanol extractive values gives the percentage of soluble matters present in the drug. Suitable solvent could be selected based on the extractive value. Also it gives the percentage of drug which will interact with the metabolism reactions.
- Alkalinity or acidity is determined by calculating pH. Value of pH zero to less than 7 shows the drug is acidic in nature.

TLC Estimation of *Sirupeelai choornam:*

Figure No: 7 TLC of *Sirupeelai chooranam*

After spray with visualizing agent

Table no:8 TLC of *Sirupeelai chooranam*

	After Dipping in Vanillin-Sulphuric acid	
	Rf value	**Colour of the spot**
1	0.10	Purple
2	0.15	Purple
3	0.20	Purple
4	0.25	Yellow
5	0.31	Purple
6	0.46	Greenish blue
7	0.51	Violet
8	0.61	Purple
11	0.66	Purple
12	0.70	Greenish blue
13	0.85	Greenish blue

Inference:

- Thin layer chromatography (TLC) is most popularized and simple chromatographic techniques.
- By performing TLC it enables the quantitative and qualitative informations of the resolved compounds in the drug.
- TLC provides the authoritative identification and adultration of the herbal drug.
- Identification by the observation of the Rf value and colour of the band can be effected.
- Standardization of drugs aids in the confirmation of identity ,effectiveness of *Sirukanpeelai.*

Phyto chemical evaluation of *Sirupeelai chooranam:*

The qualitative analysis on phyto chemical substance on Sirupeelai chooranam shows the presence of **Alkaloids, Flavinoids, Phenol, Coumarin, Triterpenes,** and **Saponins.**

Table no : 9 Qualitative Phytochemical Tests		
S.NO	Phytochemicals	Test Results
1.	Alkaloids	+ ve
2.	Flavonoids	+ ve
3.	Phenol	+ ve
4.	Coumarin	+ ve
5.	Triterpenes	+ ve
6.	Anthraquinones	- ve
7.	Saponin	+ ve

Inferance:

- *Aerva lanata* plant contains active biological alkaloids such as ervine, methylervine, ervoside, aervine, methylaervine, aervoside. Plant also contains alkaloids propionic acid, aervolanine, propionic acid.(Zapeschnaya G, Kurkin V, 1992;58:192-6, 1991; 27:725-8)
- Flavonoids are rich source of Aerva lanata such as kaempferol, quercetin, isorhamnetin etc,. Flavonoids have anti inflammatory, and antioxidant activity.
- The phytochemical found explains the activity of Sirupeelai choornam over the condition called as menorrhagia and DUB.

Preliminary Bio-Chemical analysis of *Sirupeelai chooranam:*

Table no:10 Bio chemical analysis

Test for chemicals	Observation	Inference
Reducing sugar	No appreance green, yellow or red PPT	-
Starch	No appearance of blue colour	-
Proteins	No appearance of any colour	-
Amino acids	Violet Colour is formed	+
Albumin	Yellow PPT was not found	-
Phosphate	Yellow PPT was not found	-
Sulphate	No appearance of white PPT	-
Chloride	Cloudy White PPT was formed	+
Iron	Appreance of red Colour	+
Calcium	White coloured PPT was formed	+
Sodium	No Yellow Flame is seen	-
Potassium	No Yellow PPT if found	-
Zinc	No appreance of White PPT	-
Magnesium	No appreance of White PPT	-
Alkaloids	No coloured ppt were formed	-
Tannic Acid	No appearance of Black PPT	-

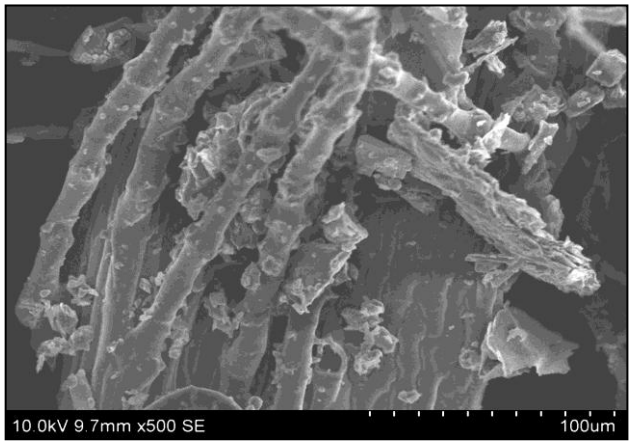
Inferance:

- Chemical analysis shows the presence of Aminoacids, chloride, iron, calcium
- Iron is required for many proteins and enzymes notably to hemoglobin to prevent Anaemia.
- Chloride is an electrolyte that maintains fluid volume of the body. It is found in fluids of human body and aids in the transportation and balance the pH level of the blood. It transports electrical impulses.
- Calcium is needed for muscles, heart and digestive system health, supports synthesis and functions of blood. It is an main coagulating factor.
- From the above results it can be stated that all the chemical found in the drug are related to the maintainance of body fluid and its pH. Calcium acts on uterine

muscle and acts as a styptic since it is one of the coagulating factor and used therapeutically in the condition called menorrhagia and DUB.

Scanning electron microscope (SEM)

Figure No:8 SEM study of Aerva lanata

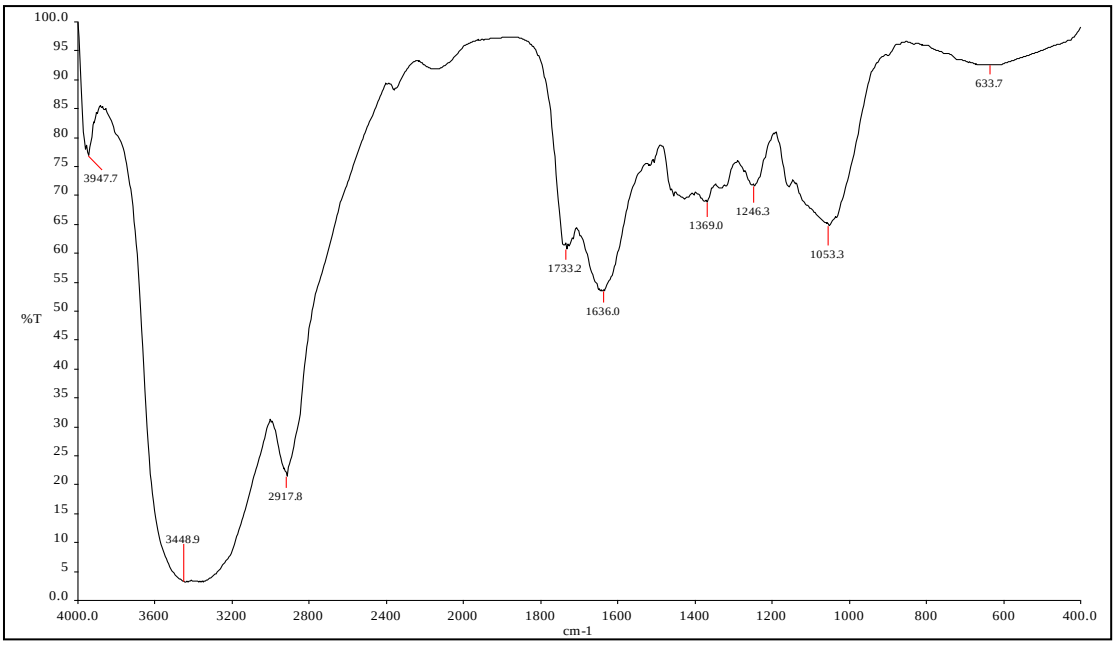


- It helps to determine the structure of the particles and its adultration can be distinguished**.**

Fourier Transforms Infrared Spectroscopy (FTIR):

Figure No: 9 FTIR

It is used in determining the elemental analysis of the drug.



Infarance:

KA9A44~1.SP 3601 4000.0 400.0 3.1 100.0 4.0 %T 4 2.0

PT

REF 4000 100.0 2000 95.8 600

3947.7 76.9 3448.9 3.1 2917.8 21.4 1733.2 60.7 1636.0 53.5

1369.0 68.8 1246.3 71.7 1053.3 64.7 633.7 92.5 END 9 PEAK(S) FOUND

This helps in knowing the chemical groups present in the drug.

Table no: 11 FTIR groups

3448.9	Amines N-H stretch
2917.8	Carboxylic acids O-H stretch
1733.2	Carboxylic C=O stretch
1636	Amides C=O stretch
1369	Alkenes C-H in plane bend
1246.3;1053.3	Alcohol C-O stretch
633.7	Alkynes acetylenic C-H bend

TOXICOLOGICAL EVALUATION OF *SIRUPEELAI CHOORANAM*:

Acute toxicity study:

Acute oral toxicity test for the *Sirupeelai Chooranam* was carried out as per OECD Guidelines 425. As with other sequential test designs, care was taken to ensure that animals are available in the appropriate size and age range for the entire study. The test substance is administered in a single dose by gavage using a stomach tube or a suitable intubation cannula. The fasted body weight of each animal is determined and the dose is calculated according to the body weight. After the substance has been administered, food was withheld for a further 2 hours in mice. Single animals are dosed in sequence usually at 48 h intervals. However, the time interval between dosing is determined by the onset, duration, and severity of toxic signs. Treatment of an animal at the next dose was delayed until one is confident of survival of the previously dosed animal. The time interval was adjusted as appropriately in case of inconclusive response. The test is simpler to implement when a single time interval is used for making sequential dosing decisions. Special attention was given during the first 4 hours and daily thereafter, for a total of 14 days, except where they need to be removed from the study and humanely killed for animal welfare reasons or are found dead.

All observations are systematically recorded and Observations include changes in skin and fur, eyes and mucous membranes, and also respiratory, circulatory, autonomic and central nervous systems, and somatomotor activity and behaviour pattern. Attention was directed to observations of tremors, convulsions, salivation, diarrhea, lethargy, sleep and coma. The principles and criteria summarized in the Humane Endpoints Guidance Document taken into consideration. Animals found in a moribund condition and animals showing severe pain or enduring signs of severe distress was humanely killed. When animals are killed for humane reasons or found dead, the time of death was recorded.

Stock Solution Preparation:

The test drug 200mg of fine powder form of *Sirupeelai Chooranam* was accurately weighed using electronic balance and mixed thoroughly with 10ml of 2% Carboxy Methyl Cellulose (CMC) solution to achieve 20mg/ml stock solution and this was used for further study.

Drug Treatment:

Over night fasted rats were divided into 4 groups of six rats each.

Group l served as a control, received vehicle 2% CMC only orally for three days.

Group II & III received *Sirupeelai Chooranam* at a different dose levels (50 and 100mg/kg), orally for three days and also administered (25µl of 50mg/ml stock suspension) on open liver wound at the time of bleeding and Group IV was untreated normal animals.

Induction of Experimental Bleeding

After last dosing of *Sirupeelai Chooranam* suspension oral administration and 30 minutes of absorption period, the animals were placed on the dissection board and the animals were anesthetized using anesthetic ether. The abdomen of the animals was cut opened carefully without any damage to the major blood vessels under ether anesthesia, the left lobe of liver was located in the abdominal cavity and the tip is wounded carefully by making an incision to induce bleeding. Simultaneously the timer was switched on and the blood traces were fixed on the blotting paper at different time intervals in room temperature (27 ± 2^0C). The time at which the bleeding ceased from the liver lobe was noted.

Statistical analysis:

The statistical analysis was carried out using one-way ANOVA followed by Dunnett's multiple comparison test. All the results obtained in the study were compared with the vehicle control group. P values <0.05 were considered statistically significant.

RESULTS AND DISCUSSION

In the present experiment, Group II & III received *Sirupeelai Chooranam* at the dose of 50 and 100mg/kg. p.o., for three days exhibited significant (P<0.01) reduction in the duration of bleeding from the incised liver mechanical wound when compared to untreated normal and control animals. In conclusion, the result in this study suggests that the *Sirupeelai Chooranam* is producing dose dependent moderate styptic action and it can be clinically used as an Anti hemorrhagic agent after studying the systematic toxicity profile.

Table no: 12 Dose finding experiment and its behavioral Signs of Toxicity

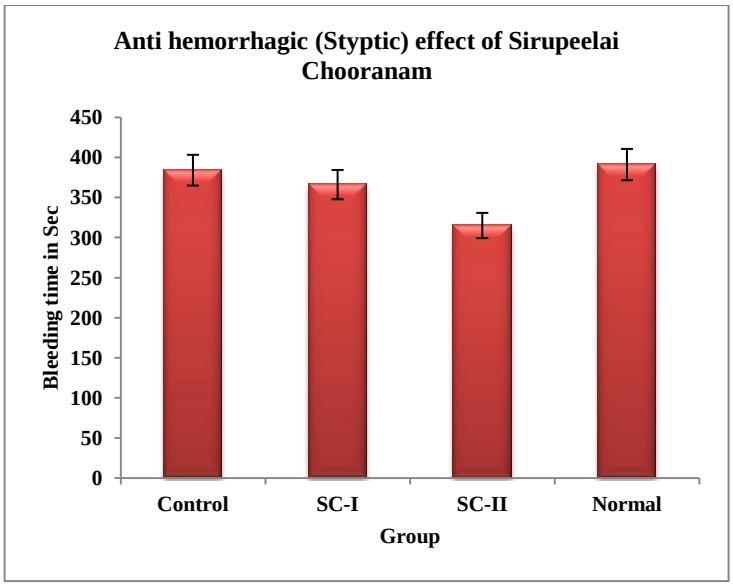
No	Dose mg/kg	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1.	500	+	+	-	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2.	1000	+	+	-	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	+
3.	2000	+	+	-	+	+	+	-	-	-	-	-	-	-	-	-	-	-	+	-	+
4.	5000	+	+	-	+	+	+	-	-	-	-	-	-	-	+	-	-	-	+	-	+

1. Alertness 2. Aggressiveness 3. Pile erection 4. Grooming 5. Gripping 6. Touch Response 7. Decreased Motor Activity 8. Tremors 9. Convulsions 10. Muscle Spasm 11. Catatonia 12. Muscle relaxant 13. Hypnosis 14. Analgesia 15.Lacrimation 16. Exophthalmos 17. Diarrhoea 18. Writhing 19. Respiration 20. Mortality

Table No:13 Anti hemorrhagic (Styptic) effect of Sirupeelai Chooranam in mice

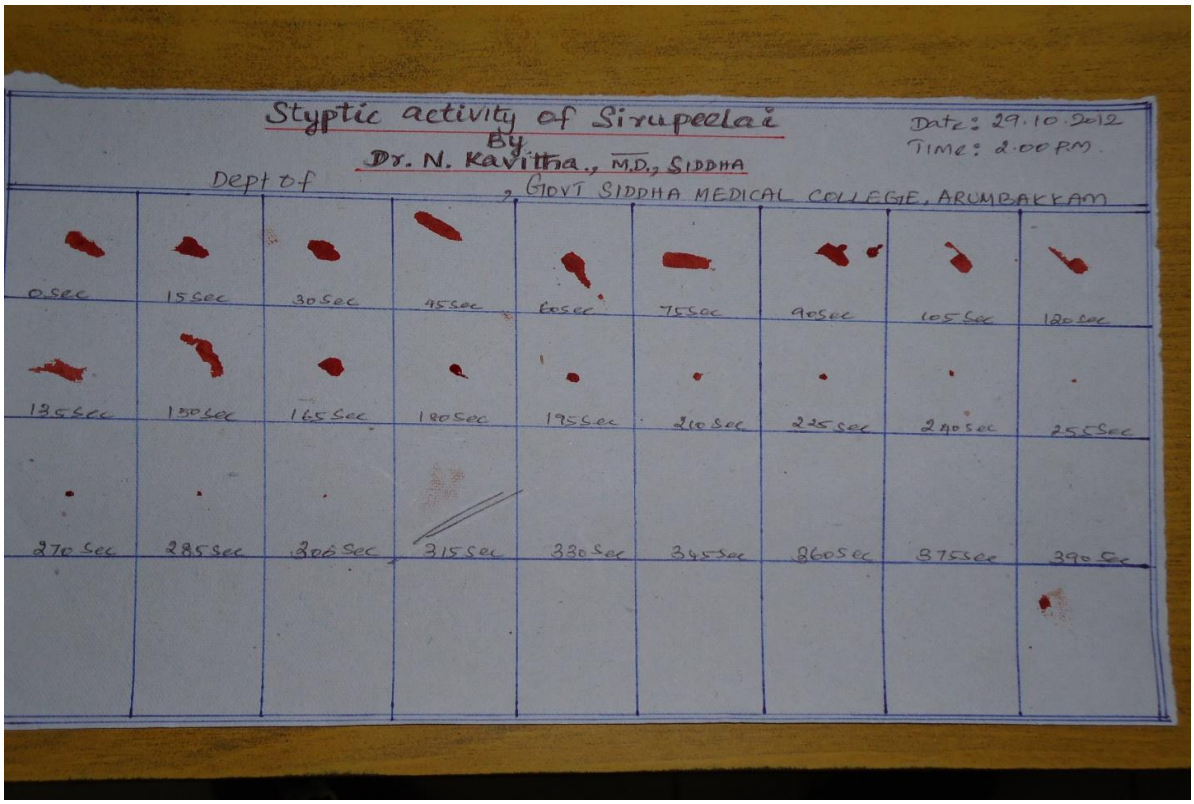
S. No.	Group and treatment	Bleeding time in seconds
1.	I- Control-(2ml/kg 2% CMC)	384±12.31
2.	II- Sirupeelai Chooranam	366±10.85
3.	III- Sirupeelai Chooranam	315±8.66**
4.	IV- Normal control	391±11.27

Values are expressed as mean ± S.E.M.; n = 6; **P<0.01 VS Control



Styptic activity of Sirupeelai Choornam:

Figure: 10 Styptic activity of *sirupeelai*

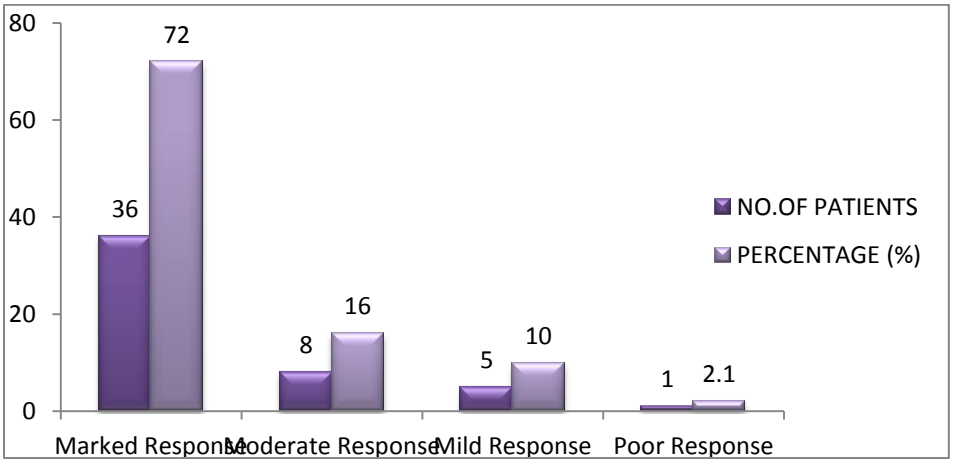


CLINICAL ASSESMENT:

50 patients of female sexe of various age groups were selected for clinical trial. Among 50 patients 40 patients were treated as out-patients, 10 patients were treated as in-patients. The selection was based on the inclusion and exclusion criteria. They were clinically diagnosed on the basis of siddha principles with modern laboratory findings.

Table No: 14 (Gradation result)

S. NO	LEVEL OF IMPROVEMENT	NO.OF PATIENTS	PERCENTAGE (%)
1	Marked Response	36	72
2	Moderate Response	8	16
3	Mild Response	5	10
4	Poor Response	1	2
TOTAL		50	100



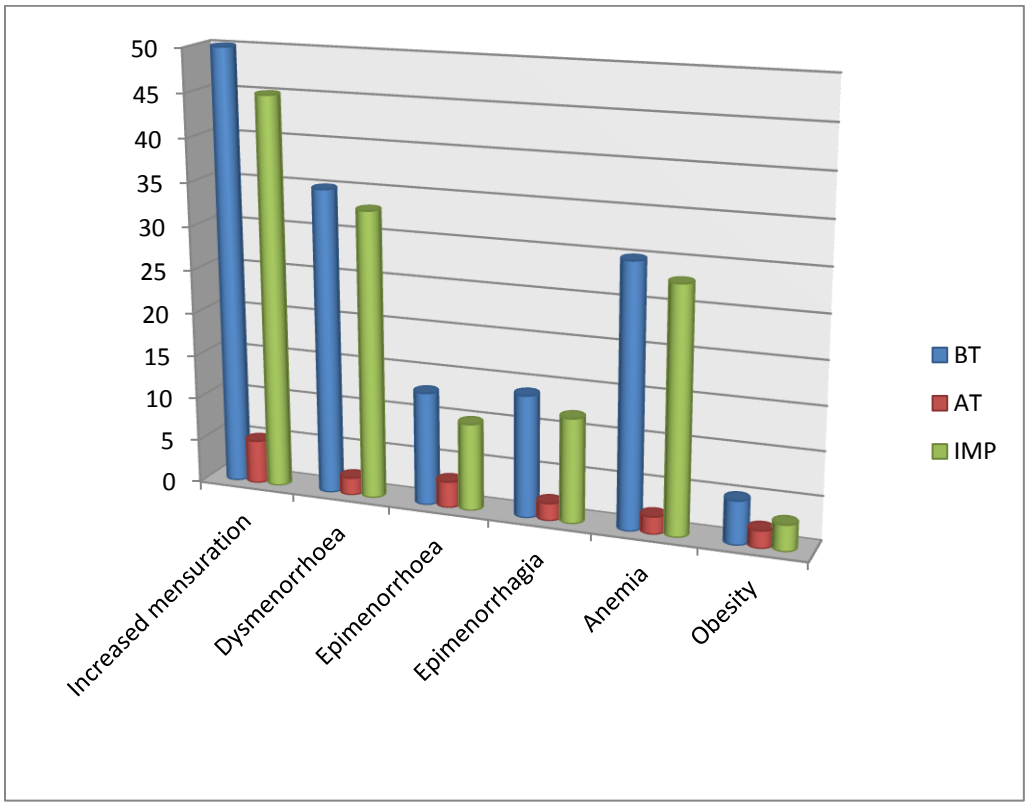
INFERENCE:

Among 50 patients,

- Marked response seen in 36 patients (72%)
- Moderate response seen in 8 patients (16%)
- Mild response seen in 5 patients (10%)
- Poor response seen in 1 patients (2%)

Table No. 15 (Improvement in signs and symptoms)

SL.NO	SIGNS AND SYMPTOMS	No of Patients			
		BT	AT	IMP	IMP %
1.	Increased blood flow during mensuration	50	5	45	90
2	Dysmenorrhoea	35	2	33	94.3
3	Epimenorrhoea	13	3	10	76.9
4	Epimenorrhagia	14	2	12	85.7
5	Anemia	30	2	28	90
6	Obesity	5	2	3	40



INFERANCE:

Among 50 patients,

- 41 out of 50 patients were relieved from Increased blood flow during mensuration.
- 30 out of 35 patients were relieved from Dysmenorrhoea.
- 10 out of 13 patients were relieved from Epimenorrhoea.
- 12 out of 14 patients were relieved from Epimenorrhagia.
- 27 out of 30 patients were relived from Anemia.
- 2 out of 5 patients reduced their weight.

Statistical Analysis

Paired t test results

P value and statistical significance:
The two-tailed P value equals 0.0086
By conventional criteria, this difference is considered to be very statistically significant.

Confidence interval:
The mean of Group One minus Group Two equals 2.80
95% confidence interval of this difference: From 1.18 to 4.42

Intermediate values used in calculations:
t = 4.8020
df = 4
standard error of difference = 0.583

Table no:16

Group	Group one	Group two
Mean	24.50	25.6
SD	14.71	14.71
SEM	6.58	6.58
N	6	5

Table showing Paired t test result

Table No: 16 Improvement Of The Patients

S.no	Name of the patient	Length of the cycle in days		Duration of the menstruation	
		BT	AT	BT	AT
1.	Suseela 43/F	18-22	27-28	15	7
2.	Krishnaveni 55/F	20-25	27-30	8	4
3.	Alamelu 42/F	23-27	23-27	10	5
4.	Saraswathi 45/F	25-27	25-27	12	10
5.	Rajkumari 45/F	27-28	27-28	15	6
6.	Lakshmi 45/F	25-28	25-28	8	5
7.	Pushpavalli 47/F	18-20	25-28	7	5
8.	Nagavalli 50/F	23-25	30-33	15	13
9.	Chinnammal 40/F	20-21	23-25	10	5
10.	Shanthi 40/F	33-35	30-35	13	7
11.	Malathi 51/F	30-32	30-32	10	6
12.	Anitha 50/F	18-20	25-27	8	7
13.	Amudha 25/F	33-35	33-35	7	4
14.	Uma 47/F	17-19	25-27	9	7
15.	Suseela 47/F	28-30	28-30	12	6
16.	Lakshmi 44/F	19-22	25-27	10	4
17.	Lakshmi 33/F	20-21	25-30	6	5
18.	Nila 19/F	25-28	25-28	15	6
19.	Padma 30/F	27-30	27-30	10	6
20.	Sudha 27/F	35-40	35-40	15	5-8
21.	Shanthi 27/F	27-30	27-30	10	3
22.	Sathiyavathi 28/F	30-32	30-32	12	5
23.	Vijayalakshmi 36/F	27-28	27-28	15	4
24.	Mariammal 43/F	29-30	29-30	11	5
25.	Kanimozhi 20/F	33-35	33-35	15	5
26.	Fathima 37/F	15-20	25-30	12	7
27.	Jayanthi 42/F	25-30	25-30	12	9
28.	Seetha 28/F	30-32	30-32	9	5
29.	Vinothini 25/F	20-21	25-28	10	6
30.	Manusha 30/F	23-25	27-30	9	4
31.	Kumari 37/F	20-21	25-26	10	7
32.	Gayathri 17/F	27-30	27-30	10	5
33.	Cathrin 18/F	25-30	25-30	11	6
34.	Pavithra 18/F	40-45	35-40	15	9
35.	Vanitha 35/F	20-23	25-27	9	5
36.	Krishnaveni 43/F	35-40	35-40	14	12
37.	Shamaladevi 38/F	13-15	23-27	11	7
38.	Maheshwari 42/F	26-30	26-30	15	4
39.	Deepa priya 40/F	30-32	30-32	9	4
40.	Gomathi 35/F	30-35	28-30	8	5

41.	Rajeshwari 42/F	28-30	28-30	15	6
42.	Krishnaveni 43/F	25-27	25-27	11	3
43.	Jasmine 18/F	27-30	27-30	12	6
44.	Mythili 36/F	30-35	30-35	13	12
45.	Girija 42/F	28-30	28-30	10	5
46.	Sridevi 32/F	25-27	25-27	11	6
47.	Vasanthi 40/F	20-22	27-28	10	7
48.	Kalpana 20/F	26-28	26-28	9	5
49.	Srinithi 22/F	28-30	28-30	15	6
50.	Banumathi 36/F	18-20	23-25	9	6

6. CONCLUSION

The Siddha drug *Sirupeelai chooranam* discloses the constructive styptic activity in excessive bleeding phase Menorrhagia and DUB *(Perumbadu*) condition in female.

The study design reveals the possibility of evaluating powdered form of *Aerva lanata* (*Sirukanpeelai chooranam*) in the management of Menorrhagia and DUB(*perumbadu)*

The literary evidence along with phytochemical, chemical constituents encourages the explanation of the drug. Standardisation of drug through various physio chemical analysis and pharmacognostic study had coincides as a part of study for quality and reliability of drug.

As Aerva lanata is a common herb its availability, collection and preparation is quite effortless. *Sirupeelai Chooranam* at the dose of 50 and 100mg/kg. p.o., for three days exhibited significant ($P<0.01$) reduction in the duration of bleeding. In conclusion, the result in this study suggests that the Sirupeelai Chooranam is producing dose dependent moderate styptic action and it can be clinically used as an Anti hemorrhagic agent.

The clinical trial shows the possible benefits of the drug in treating execessive bleeding in women with 72% marked response, 16% moderate response and with negligible poor response is documented.

The study emerged the efficiency of *Aerva lanata* (*Sirukanpeelai chooranam*) latent action over the profused menstrual bleeding commonly known as Menorrhagia and DUB.

7.Summary

The herb of *Aerva lanata (Sirupeelai)* had been collected from chennai, Tamilnadu and authenticated by experts.

The literary review in Siddha and botanical aspects had been discussed completely.

The drug underwent a series of investigations like pharmacognostic study, phyto-chemical, chemical and physio-chemical analysis to prove the reliability of drug.

Toxicity studies had its appropriate role in proving the safety of the drug for consumption.

Styptic activity had promising feature in the management of bleeding and proved that it can be used as an Anti hemorrhagic agent after studying the systematic toxicity profile and hence used in treating menorrhagia and DUB in women.

Sirupeelai Chooranam was preferred for this study to control the profuse bleeding during mensuration which is due to various causes and also due to unknown etiology in women such as DUB in women patients, with 72% marked improvement in excessive bleeding phase in female called as *Perumbadu.* The clinical study showed good improvement in patients.

As a result of this elobrate composite study all results proves that distinctive Siddha medicine, powdered form of *Aerva lanata* (*Sirupeelai choornam*) will be significantly safe, promising and effective.

It is well known that, treatment regimen with naural herbs can be selected that will produce safe and highly effective treatment without any adverse reaction and side effects. So I feel inclined to advance my forthcoming study on *sirupeelai chooranam* in controlling the profuse bleeding disorder during mensuration *(Perumbadu)* and in restoration of the female health.

1.INTRODUCTION

Siddha medicine is the system which is spiritually enriched with unique and peculiar aspects with treasure house of secret science, embodying the results by the ancient siddhars. Siddhars utilized their knowledge for the welfare of the people. They found and developed the system of medicine, which has high therapeutic nature. They classified 4,448 diseases and varied medicines with amazing solutions for its curative measures and also handled with its preventive aspects.

Siddha system of medicine revitalizes and rejuvenates the internal organs and provides guidelines for healthy lifestyle for healthy living. The principle of siddha is based on the physiological function in the human system which is mediated by 3 *doshams* namely

- *Vadham*
- *Pitham*
- *Kapham*

These are made up of five elements

- Earth (Shapes the body, it represents Bones, muscles and tissues)
- Water (It transmits the energy; it represents serum, lymph, saliva, blood etc.)
- Fire (It makes the body steady, gives vigor and stimulation, it represents Digestion and Circulation)
- Air (Ignites the fire, acts as a life carrier, it represents respiration and nervous system)
- Ether (creator of life)

A compatible combination and function of these five elements in the body produces active life.

In extensive terms in the human body motor functions and sensation are due to *vadham*, the metabolic activities are functions of *pitham* and stability is controlled by *kapham*. If these *doshams* function in equilibrium, health is maintained. Any alteration in this equilibrium will result in disease.

Siddhars said there is close and intimate connection between body and mind. The tridoshams has influence both on the body and mind. When the body is diseased mind also affected.

The drugs in siddha are classified into *Thavaram* (herbal origin), *Thadu* (metal and mineral origin), and *Jeevam* (animal origin) .thadu drugs are further classified as

Uppu,
Pasanam,
Uparasam,
Logam,
Gandhagam.

Many Siddhars like *Thirumoolar, Yugimuni* has given special importance to female health and their problems as they know females are the stepping stones for the healthy future generation.

But as on date in modern world the most valued female gender is subjected to many gynecological complaints and ill health, in accordance in the production of healthy future generations such as infertility, PCOS, and other menstrual complaints that interferes with reproduction. Although it was first discovered in 1935, PCOS was then considered an obscure reproductive disorder. However, today this is most common female endocrine disorder, often resulting in infertility.

Among the above said conditions, PCOS (Poly Cystic Ovarian Syndrome) is one of the most common endocrine disorders in teenage girl and young women, which are major causes of female sub fertility. PCOS produces symptoms in approximately 5-10% of female of reproductive age (15-45 yrs). In India prevalence rate is as high as 50% have also been detected.

It is seen that due to insulin resistance, female teenagers are subjected to overgrowth of facial hair, acne, irregular menses, weight gain or increase in body fat. Similarily Women during reproductive years may experience not only infertility, miscarriages, but also higher incidence of gestational diabetes during pregnancy.In addition to these later in life, women are at higher risk of developing type 2 diabetes, cardio vascular disease, sleep apnea and endometrial cancer is also noticed in some cases. Futher it is visualized that depression is uncommon in women with PCOS.

Its etiology is unknown but has been due to change in life style, food habits and usage of steroids as in allopathy. Severity of the symptoms affects women to a greater extend and make them inferior and insecured in the society.

So it is an very essential factor to have an eye towards this distressing syndrome and to save the valuable women's health both physically and psychologically by providing safe and proper treatment rather than administrating hormonal therapy, steroids, surgical conditions such as laproscopy etc as in modern side which is very expensive and also have increased recurrence rate which is not affordable by most of the population.

In siddha SOODHAGAVAAYU which has symptoms like flatulency in the womb arising from irregular menstruation, amenorrhea, enlargement of abdomen etc are compared to PCOS condition.

Parpam is one of the 32 internal medicine in siddha is done by calcination process has unique capacities like no taste, easy to consume, lower dose will have more effect, readily absorbed by blood, have very long lasting medicinal actions and also its efficiency increases as time advances.

Under the circumstance and in order to seek and render medical remedy in this connection, it has become necessary to bring out the clinical evaluvation and research on *UPPU PARPAM* thoroughly in PCOS that is *SOOTHAGA VAAYU* (which is caused by kapha dosha and it affects the 7^{th} element in the body).

It is pertinent to observe that though many medications have been indicated for Soothagavaayu in our Siddha literature and text, no significant researches have been undertaken on Uppu parpam so far. Hence with an intense hope that it will definitely helpful to a greater extent in curative aspects on PCOS and whih will have an efficient role in improving women's health, UPPU PARPAM in treating PCOS (Soothagavayu) has been selected here in this dissertation study.

2. AIM AND OBJECTIVES

Aim:

PCOS (Poly Cystic Ovarian Diseases) is a condition which collectively comprises of Signs and symptoms includes irregular mensuration, Oligomenorrhoea, etc and mainly causes female Sub-fertility. Natural herbs promote female reproductive health and support hormonal balance. The Siddha medication will be effective and safe for treating this condition and regulates Hormonal imbalance. The cheif aim of this study is to evaluate the efficacy of the drug *Uppu Parpam* in the management of *Soothagavaayu* (Polycystic Ovarian Syndrome) in pre- clinical and clinical aspects.

Objectives:

The main objectives of the study are:

- To have a collective review of the literature.
- To prepare the drug according to siddha classical text.
- To subject the drug to physio-chemical standardization
- To analyze the drug chemically for detection of acid and basic radicals.
- To focus the drug for analytical assessment.
- To study the toxicity profile of according to OECD guidelines.
- To determine Ovulation inducing activity of *Uppu Parpam*.
- To assess the therapeutic potential of the drug through clinical trial for the management of *Soothagavaayu*.
- To analyze all the above study results to evaluate the superiority of *Uppu parpam.*

3. Review of literature

3.1 Siddha aspects of the drug:

1.Vediuppu - Siddha Aspect

Vediuppu is a type of *kaarasaram*. It comes under artificial salt *(seiyarkai uppu)*

Vediuppu speciality:

- It is considered as root, fruit, laef and flower for *Vaadam*.
- It is one of the ingredients of *astaloga maranam* which is used widely in the preparation of chenduram.

Other names for Vediuppu:

- *Potilai, poonagam, padairasan, katilaikambi, karuvamanam, kanthaan, otilai, theechuda*
  - **"**பொட்டிலைப் பூநாகம் பொருந்தும் படைராசன்
    கட்டிலைக் கம்பி கருவா மணங்கந்தான்
    ஒட்டிலை த்தீசுடர் வுறுபூமிக் கூர்மைதான்
    மட்டிலா வேதை வளர்க்கும் வெடியுப்பே"

    - ***Sataimuni nigandu***
- *potiluppu, inangan, padairasan, boomikoormai, navachara mitru.*

  - "பொட்டளைமின் பேர்தனையே பொருந்தக்கேளு
    பேரான படையரசன் இணங்கனாகுங்
    கட்டளையின் பூனாதம் பூமிக் கூர்மை
    கருதியதோர் படலவணங் கருவாமுப்பு
    அட்டளை யினூஷாத்தி லவணமென்று
    அக்னிக்கு உயர்கிறோன் ஆண்மையுள்ளோன்
    அட்டளையின சங்கத்தின் சத்தருவாகு
    நவச்சார மித்துரு வென்றறிந்திடீரோ"

    - Bogamunivar nigandu 1200

General characters of *Vediuppu*

- **"**மல்லாரு மட்டகுன்ம **மாதருத ரக்கட்டி**
  கல்லா மதைப்புநீர் கட்டருக – லெல்லாமே
  கம்**பிகம்பி யென்றுங் கருவுண்டா மங்கிநின்ற**
  கம்பிகம்பி யென்றுரைக்குங் கால்."

- Gunapadam thadu vargam

Due to vediuppu 8 types of Gunmam(ulcer), ***Karupasaiya katti(*PCOS),** *soobai*(dropsy*), mootirakiricharam(UTI), neerchuruku* are treated. Because of this those women who attained their menopausal stage are also copable of getting conceived.

- **"சூதக வாயுவொடு சோணிதத்தின் வாதமும்போம்**
  வாதவலி குன்மமிவை மாறுங்கான் - மீதாங்
  கொடிய வயிறிழியுங் கோழைகப மேகும்
  வெடியுப்புத் தன்னை விளம்பு ."

- Gunapadam thadu vargam

Soothaga vaayu, vadhasonidham, kunmam, peruvayiru, kabha thodam, eellai, are cured by *vediuppu* and also it is used in the treatment of *keel vadham*(Arthrities), *rathapitham*, *pramegam*, *thondaiviranam*, *swasakasam*, *kan noi*(eye disease).

Actions:

- Refrigerant
- Diaphoretic
- Diuretic

Chatru mitru of vediuppu:

- "போடவே வெடியுப்பின் சத்துருவைக் கேளு
  பேரான காரீயஞ் சவுடு சூடன்
  வீடவே வெள்ளீயந் துருசு வெள்ளி
  விபரமா இரும்பு செம்பு காந்தம்
  சூடவே சிலை தொட்டிக் கெந்தி சிங்கித்

தீமுறுகல் அண்டடோடு சுரை கெந்தியுமாகும்
பூடவே பொட்டிலைக்கு சத்துரு வாகும்
புவனியுள்ளோன் பிறித்திதுக்குள் சுண்ணம் பாரே"

- Bogar nigandu 1200

Kaariyam,Pooneeru,Soodan,Velleeyam,Thurusu,Velli,Irumbu,Sembu,Kandham, Manosilai, Thoti Paasanam, Gendhi, Teemurugal, Padanam, Anda odu, Surai gendhi all these are *Chatru saraku* of *Vediuppu.*

- "பாரென்ற வெடியுப்பு மித்துருவைக் கேளு
படிகியுடன் இந்துப்பு கல்லுப்புக் காரம்
நேரென்ற லிங்கமொடு வீரந்துத்தம்
நிசமான தாளகமுங் கத்தும் நாகம்
காரென்ற கடலுநுரை நிமிளை வெள்ளை
கம்பளியும் பழம் பிளியும் ரோமமாகும்
வேரென்ற வெடியுப்பு மித்துருவாகும்
மீறாமற் சேத்தரைத்து விரவிடாயே"

- Bogar nigandu1200

Induppu*, Kalluppu,* ***Vengaram****, Lingam, Veeram, Thutham, Thalagam, Naagam, Kadal nurai, Nimilai, Vellai padanam, Pazham puli,* all these are *mitru saraku* of *Vediuppu.*

Purification of Vediuppu:

- *Vediuppu* and 4 parts of water is mixed and it is filtered and heated at low flame and when it starts boiling add a egg white to it .The dirt and impurities floats in the upper part are removed with wooden spoon and in its kulambu stage it is filtered into another vessel and dried in sunlight. This process is repeated again for 6 times and purified vediuppu is obtained.
- Instead of egg white Lemon juice or sour butter milk can be used.

2.Induppu

Other names:

Saindavam, sinduram, chandiranuppu, madhi koormai, madhi uppu, mindhasol.

It is one of the *vaippu uppu*. It is found as blocks which weighs about 2 -10 pounds.

Actions

It has laxative action. It is said that it is superior than cream of tartaric

- "அட்டகுன்ம மந்தம் அசிர்க்கஞ்சூர் சீதபித்தந்
  துட்டவையம் நாடிப்புண் டோடங்கள்-கெட்டமலக்
  கட்டுவிட விந்தையக் காமியநோய் வன்கரப்பான்
  விட்டுவிட விந்துபை விள்."

-Gunapadam thadu vargam

Uses:

It is used to relive sprains.

Used as laxative, when administered with hot water it acts as emetic.

***3. Gendhi uppu*:**

It is an artificial salt*(Vaippu uppu)*. It has carminative and stimulant action.

- "உடல்கரையச் செய்துவிடு முட்டிணமாம் பொல்லாக்
  குடல்வாதந் தன்னைவெட்டிக் கொல்லு-மடலாருந்
  தந்திமந்த கத்தையடத் தாவுகொங்கை மாதரசே
  கந்தியுப்பை நன்றாய்க் கழறு."

-Gunapadam thadu vargam

Ghendhi uppu is used in the treatment of *Adhitoola rogam* (Obesity), and in *kudalanda vaadham* (Hernia).

3. *Pooneeru*

Pooneeru is an important womb product of *Siddha Vingnanam*. It comes under *Kaarasarm*. This belongs to the group *Saaram (Shakti porul)* .It is an salt occurring naturally.

- **"பூநீறே சாரமிது போதுஞ் சரக்குவகை"**

- Therar venba(172)

Pooneeru speciality:

- It is an prime ingredient in the preparation of *Muppu.*
- For the completion of advanced medicines like Parpam, chenduram, guru, seyaneer, thiravagam, kattu, kalangu, padangam, it is used.
- The medicines in which Pooneeru is an ingredients it acts immedieatly and cures the disease earlier. It increases the life span of the medicine.
- It as an important Rejuvinator.
- It is an aadhi of Chunnam

- "வெளியாச் சொல்லுகிறேன் கருவையெல்லாம்

  விளங்கியதோர் **சுண்ணாம்புக் காதி கேளு**

  அளியாகப் புனுகோடு சீனம் வீர

  மப்பனே **சவுக்காரச்** சுண்ணந்தானே"

-Sataimuni vadha kaviyam

Other names of *pooneeru*:

- "முர்க்கனாந் தரணிக்கு நாதனானோ

  முதிர்ந்த தொரு பூநீறு பூமிநாதந்

  தீர்க்கனா மொட்டச்சி ஊவுரமாம் வெள்ளை

சிறந்த பூசாரத்தி பாரத்தங்கு சத்தி

யாற்கனாம் வேதத்தி பூமிருது சவுடு

அழுக்ககற்றும் வண்ணாத்தி ஆதிமுதற் குருச்சி

ஊர்கனா முகந்துவரை காயத்தை திருத்த

யுற்ற பூவழலை யென்றுமுறை செய்தபடியே"

Bogar nigandu-1200

Other names of pooneru are *Moorkan, Tharani nadhan, boomi nadhan, deerkan, uvar, vellai, poocharathi, sathi,* ***poomirudhu,*** *savudu, vanaathi, aadimudarkuruchi*.

Valluvar Sindhamani:

Kaayam, Karpam, Kuligai, Karuvandu, Neyamuppu, ***Naadham, Karu, Sakthinaadham.***

Panchakaviya nigandu:

Uvarnaadham, ***naadham,*** *kootuman.*

In ***saambashivam pillai agaradhi*** it is given by the name ***Panchabootha uppu***.

Speciality of Pooneeru:

It is a prime ingredient of all the other drugs. It is a chief component of birth of other drugs. The speciality of pooneeru was described in Satamuni vaadha kaaviyam.

Occurance of pooneeru:

- "ஆமேதான் பூநீரின் வளப்பங் கேளீர்

  ஆகில மெல்லாம் பூநீர்கள் மெத்தவுண்டு

  தாமேதான் பாண்டிவள மெத்த நாடு

  தாக்கான ஆவனயார் பிரம்மதேசம்

  நாமேதான் கண்டபடி சேரநாடு

  நாதக்கள் சோழவள மெடுப்பார்பூமி

போமேதான் நெடுங்காலந் தன்னிற் சென்று
பொங்கமுடன் தானெடுப்பார் பூநீராமே”

Though it is found in many places, pooneeru found in Cheranaadu, Sozhanaadu, and Pandiyanaadu and Aavudaiyar temple are considered superior.

- “உற்றுப்பார் சிவனிருந்த பூமி தன்னில்
ஒரு பூண்டு முளையாது உவருப் பாலே
அற்றுப்போ மருதநில மயானருத்தன்
அவனுடனே சக்தியடுத் திருந்த தாலே
முத்துப்போற் கொஞ்சனஞ்சஞ் சலமுண்டாச்சு
முழுமோச மில்லாமற் பசுமை யாச்சு
சித்திக்கும் பசுந்தமண்ணுந் தண்ணீர் சுண்டாற்
சிவனுப்பு நிலமுவராந் தெளிந்து பாரே”

-Valluvar Sindhamani

Where pooneeru originates the place is devoid of any other flora growth.Place where will be combination of Shivan and Sakthi and little moisture pooneeru is found originating there.

Appropriate period for collection of pooneeru:

- “பார்த்திட்ட பூநீற்றின் பருவங்கேளு
பங்குனியுஞ் சித்திரைவை காசிக்குள்ளே
பூர்த்திட்ட ரவிசுருக்கிற் பொங்கிநீறும்
பூப்போன்மே னிற்குமதை வாரிக்கொள்ளு”

- Bogar 7000

Pooneeru can be obtained during months of *Panguni*, *Sithirai*, and *Vaikasi* (march to june). It is also described in siddha text Thiruvalluvar karpam, Thiruvalluvar navarathna sindhamani.

Pooneeru general properties:

- “கரப்பான் சீதத்தை கண்டிக்கும் பேதி
யுரப்பாகும் வாயுதனை யோட்டும் சுரப்பாக்கும்

உந்திவலி குன்மம் ஒழிக்கும் பூநீறனவே

செந்தாமரை முகத்தாய் செப்பு."

-Padhartha guna vilakam

Pooneeru is used as curative drug in *Karappan*(eczema), *Seedham*(cold), ***Vaayu***, *Undhivali* (stomach pain), *Gunmam* (Peptic ulcer). It acts as a laxative.

Action:

- Antacid
- Diuretic

Medicinal uses of pooneeru:

- When small amount of pooneeru is added in the *parpam* and *chenduram* increases the virulent of the drug and increases the life span of the drug.
- Along with calcium carbonate pooneeru is used in the purification process of *Amai odu*, *muttai odu*, *muthuchippi*, *sangu*. More over it is also involved in the purification process of *Padanams*.
- *Muppu* done by using *pooneeru* is explained as crown of Siddha medicine.

Medicinal Uses:

- It is used in early stage of dropsy acute rheumatism, catarrh and bleeding from lungs or stomach
- In colic pain it is mixed with pepper and sanchara salt in limejuice

5.Vallaiyalluppu

This is called as "madavarkarathuppu" by siddhar Therar. It is got from the salt which is used to prepare Bangles. So it is called as Vallaiyal uppu. The birth of is salt is described by Bogar as follows.

- ‘‘குழைந்து நின்ற பூநீற்றைக் காய்ச்சும் போது

குறியகரு மேகம்போன் மேலெ ழும்பும்

உரைந்துநின்ற உப்பெல்லா மேலெ ழும்பி

உருவாகத் தெல்லுப்போ லுப்பாய் நிற்கும்

வரைந்துநின்ற வளையலுப் பென்னும் பேரு

மகத்தான அக்கினியைச் செயித்த வுப்பே.’’

-Gunapadam thadu vargam

Podhu Gunam

- ‘‘துளையார் குடல்வாதத் தொந்தவா தத்தோ

டிளையாச் சுவாசமறு மின்னும்-வளையலுப்பாற்-

குன்மவலி சூலைவெப்பங் கூறாப்பி லீகமிவை

சென்மம்விட் டோடுமெனத் தேர்.’’

-Gunapadam thadu vargam

6. VENGARAM

SOSDII BI BORAS, SODII BORAS, SODIUM BIBORATE, BORAX.

Speciality of *Vengaram:*

- ‘‘காரமென்று இதற்குப்பேர் வந்தது எது

கட்டுமே அறுபத்து நாலு தாதும்

காரமென்று இதற்குப்பேர் வந்த தாலே

கடிசான உபரசநூற் றிரண்டும் சத்தாம்
காரமென்று இதற்குப்பேர் வந்ததென்றால்
கட்டாத சாரந்தான் இதற்குள் கட்டும்
காரமென்று இதற்குப்பேர் வந்த தாலே
களங்குகுரு சிந்தூரத்து ஆதி காணே''.

-Bogar 7000 irandaam kandam (page 40)

Borax

- It makes 64 drugs as *Kattu*
- It makes Kaaram as *Kattu*
- It is an prime ingredient for *Kalangu, Chenduram*

- ''நெளியான உருக்கினத்தைச் சொல்லக் கேளு
நேரான **வெண்காரம்** ஜவ்வாதுவீர
மொளியான ரெங்கிட்டால் உருக்கினத்துக்காத''.

-Sataimuni vaadha kaviyam (pg:166)

Podhu gunam

- ''சொறிபுடையெண் குன்மநமை சோரி யாசம்
புறிகிரகணி கல்லூனம் பன்னோய்-நெறியைத்
துதடங்கணங்க பங்கிருமி சர்ப்பவிடஞ் சந்நி
யிடங்கணங்க லக்கிற்போ மெண்.''

-Gunapadam thadu vargam

Internal Action:

- Refrigerant
- Diuretic
- Emmanogogue
- Parturifacient
- Lithontriptic

External Action:

- Neutralizer
- Alternative
- Antiseptic
- Astringent

Panchabootha Uppu:

According to "*Bogar 7000"*

- *Prithvi - Kalluppu*
- *Appu - Sathichaaram*
- *Theyu* - ***Vediuppu***
- *Vaayu - Cheenam*
- *Agayam* - ***Pooneeru***

According to "*Agathiyar vazhalai panirendu"*

- *Prithvi* -***Kambiuppu***
- *Appu -Paaraiuppu*
- *Theyu -Kaluupu*
- *Vaayu* -***Indhuppu***
- *Agayam* -***Vazhalaiuppu***

According to "Bogar kaarathurai"

- *Prithvi - Kalluppu* - ***Indhuppu***
- *Appu - Navaacharam - Sathichaaram*
- *Theyu* - ***Vediuppu*** *- Savutuppu*
- *Agayam - Pachaikarpooram* - ***Pooneeru***

According to " Karisal"

- *Prithvi* - ***Vediuppu***
- *Appu - Karuppu*
- *Theyu - Kalluppu*
- *Vaayu* - ***Indhuppu***
- *Agayam* - ***Pooneeru***

Panchauppu :

1. *Kariuppu*
2. ***Induppu***
3. ***Valaiyaluppu***
4. *Kalluppu*
5. ***Vediuppu***

- ‘‘வள்ளிய கரியுப் பிந்து வளையுப்புக் கல்லுப் போடு

  தெள்ளிய வெடியுப் பைந்தே.’’

-Nigandu

So the drugs involved in *Uppu parpam* are mainly a constituent of panchaboodham. Among that mainly *Vediuppu, Indhuppu, Pooneeru* are the main constituent of *THEYU, PRITHVI* and *AGAYAM*.

Other preparations of the drug

1.*Thayir sundi Choornam*

Drugs involved: ***Pooneru***, *Kalluppu,* ***Indhuppu***, ***Valaiyaluppu,*** *Sukku*, sour curd.

Uses*: Ajeerana Bedhi* (diarrhea due to indigestion)

2. *Kunma kudori*

Drugs involved: Pooneeru, Sunambu, Pulipu madhulam

Uses: stomach pain, indigestion, ulcer***, Soothagavaayu***

3. *Lavana Chooranam*

Drugs involved: ***Pooneeru***, *kariuppu,* ***vediuppu***

Uses: ulcer, stomach pain, indigestion, flatulence, constipation.

4. *Pancha lavana parpam*

Drugs involved: ***Vediuppu****, Sootruppu,* ***Indhuppu****,* ***Vengaram****, Kalluppu , Kupaimeni Chaaru, Kali paal, Oomathai illai chaaru*.

Uses: Ulcer, Pain(*Soolai),* indigestion.

5. *Rajalavana choornam*

Drugs involved: ***Vediuppu****, Kariuppu,* ***Valaiyaluppu****, Kaandham, Perungayam.*

6.Lavandhi Kuzhambu

Drugs involved: *Vediuppu, Valaiyaluppu, Indhuppu, Vengarm, Soodan, Aplakaram, Navacharam*

Uses: ulcer, colic pain.

- *Panchalavana karuppu*
- *Lahuhaya vanga sinduram*
- *Vengara parpam*
- *Vengara chunnam*
- *Poosana sanjeevi*
- *Aaryppu jeyaneer*
- *Panchalavana kattu*
- *Maha thiravagam*
- *Lavana thiravagam*
- *Pooneeru jeyaneer*
- *Vediuppu chunnam*
- *Astakunma thiravagam*
- *Ghandiuppu chooranam.*

These are some other drugs where or more drug of *uppu parpam* are ingredients in it

Parpam:

- It is one of the 32 internal medicine
- It has long half life period
- Small quantity can produce effective therapeutic value
- It has no taste and odour so it is easy to consume
- The nano particle size of the parpam absorbed and accimilated quickly and produce vigourous effect when administered therapeutically.

3.2 Mordern aspets of the Drugs:

Fuller's Earth- *Pooneeru*

Fuller's Earth is naturally-occurring calcium mont-morillonite clay of high purity.It has high magnesium content.

Table No:1 (Chemical analysis of Fuller's earth)

SiO_2 -60.1%	MgO -3.7%
Al_2O_3-15-17%	CaO -4.2%
Fe_2O_3 - 6.5%	Na_2O -0.6%
TiO_2 -0.7%	K_2O - 0.6%

Medicinal Uses:

- Fuller's earth is used in treating severe heavy metal poision. It is used as chelating agents to detoxify poisonous metal agents such as mercury, arsenic, and lead by converting them to a chemically inert form that can be excreted without further interaction with the body.
- It is used in the treatment of infection, indigestion, laxative and also in dermatological conditions.
- Mortality rate in rats where reduced by Fuller's earth, a lethal dose of paraquat when delayed for 2 or 3 hours after paraquat administration. Mechanism is
    - The very large surface area arising from the tiny Particle size (nano-scale), and
    - It is due to the fact that those particles are electrically charged, leading to strong electrostactic interactions relatively.
- Fuller's Earth use as an alkalizing agent, supplies alkali exchangeable cations

Pirrsonite:

Pirrsonite structure is found in *Pooneeru*.

Chemical formula: $Na_2Ca\ (CO_3)_2$-$2(H_2O)$

Composition: MW = 242.11 gm

Sodium, Calcium, Hydrogen, Carbon, Oxygen

Potassium Nitrate

Vernacular Names:

- Tamil Name - *Vediuppu*
- English Name - Salt Petre, Nitrate of potash
- Hindi - *Shora*
- Telugu - *Patlu uppu*
- Malayalam - *Vetiuppu*
- Gujarati - *Shorakhar*

Properties:

Molecular formula	:	KN03
Molar mass	:	101.1032 g/mol
Appearance	:	white solid
Odor	:	odorless
Density	:	2.109 g/cm3(16 °C)
Melting point	:	334 °C
Boiling point	:	400 °C decomp.

Potassium nitrate is a chemical compound with the formula KNO3. It is an ionic salt of potassium ions K+ and nitrate ions NO3−. Each molecule of potassium nitrate, chemical formula KNO3, contains one atom of potassium, one atom of nitrogen and three atoms of oxygen.

Occurrence:

It occurs as natural efflorescence on soils over Tamilnadu, Andhra and Mysore.Also in Bengal Punjab and other parts of world

Purification process:

The earth containing crude salt is dissolved in water, strained and recrystalised by boiling and evaporation.The impure nitre is called as Dhoah and contains 45 to 75% of actual salt, remainder being sulphate and chloride of sodium ,magnesium nitrate, calcium nitrate and insoluble matter.

Properties:

- It colourless transparent white powder
- It is odourless with saline taste

- They produces cooling sensation in mouth
- It is easily soluble in hot water, much less in cold and insoluble in alcohol

Actions:

- Refrigerant
- Diuretic
- Diaphoretic

Medicinal uses:

- Potassium nitrate is an constituent in some tooth paste for sensitive teeth.
- Potassium nitrate successfully action over high blood pressure
- It acts on vascular system and reduces the frequency of pulses
- It is useful in the early stages of dropsy, in cases of smallpox, bleeding from lungs, stomach, uterus and other internal organs attended by fever.
- Locally it is used in headache and delirium in fevers.

Borax-Sodii Biborax; S. Boras

Vernacular names:

- Sans - *Tankana*
- Eng - Sodium borate
- Hindi - Tinkal
- Tel - Velligaram
- Mal - Ponkaram

Source: It occurs as a natural deposit. Crude state is known as *Sohagoor* or *tinkala*.it is dirty white in colour. It exists as crystalline tough masses or in the form of translucent irregular masses. Exposed to air it becomes opaque.

Action:

Emmenagogue, astringent, antacid, and local sedative and antiseptic.

Medicinal uses:

- Internally in the dose of 10-30 grains administered in the acidity of the stomach, amenorrhoea, dysmenorrhoea, menorrhagia, puerperal convulsions and promotes pain during labour.
- Small dose acts as a laxative in children
- Given in gonorrhea, rheumatism, heart disease, epilepsy, hysteria
- Used in chronic bronchitis with profuse expectoration.
- Boroglycerine is useful as an antiseptic lotion in purulent opthalmia and diphtheria.
- Richard Olree as codified in Minerals for the Genetic Code:
    - ❖ Boron defends the heart.
    - ❖ Boron stopped the "China Syndrome" from occurring in Russia.
    - ❖ Boron is known as the calcium helper and for the metabolism of calcium, magnesium and phosphorus.
    - ❖ Boron improves retention of both calcium and magnesium and elevates circulation of serum concentrations of testosterone.

Sodium Chloridum or Sodium chloride impure

Vernacular names:

- Eng - Rock salt
- Hin - Sendhalon
- Sans - Saindhava
- Mal - Intu-uppu
- Tel - Saindhalavanam

Source: Found in extensive beds mostly associated with clay and calcium sulphate.

Characters : It is found in small white crystalline grains or transparent cubes.

Action :

In small doses it is highly carminative, stomachic and digestive.

In large doses it is cathartic

Still larger doses it is emetic.

Medicinal uses:

- Given in dyspepsia and other abdominal disorders

3.3 Siddha aspects of the disease

Other names of Madhavidai:

- ‘‘மாதவிடாய் பேர்தனையே வகுக்கக் கேளு
  மாதந்த வெள்ளமாஞ் சென்னீராகு

  விளங்கியதோர் மாதவிடாய்ப் பேருமாமே.’’

- Bogar nigandu 1200

Madhanda vellam, seneer, suronidham, Ratham, Naarimrundhu, Thuymai, Sakthi Nadam.

மாதவிடாயின் இயல்பு :

- ‘‘திங்களுறு மங்கையர்கள் கெற்பாசயமதை தாங்கியிரு சிவிகையுண்டு
  சிவிகையிரு பக்கமும் வீசியே நிற்குமதினின்றொரு குழல் நரம்பு
  பங்கமறவேயெழும் அடிவயிறு யோனியும் சுற்றிப் பிணைந்து கொண்டு
  பகருமதிலொரு முனை இரத்தாசயமதைக் கவ்விக் குவிந்திருக்கும்
  இங்கிதமதாகவே மறுமுனையது அரிவையர் கெற்பாசயம் புகுந்து
  இனிதாயரவினுட வாயளவாகவே மூவிரலசைந்து நிற்கும்
  மங்களமதாயிந்த நாதக்குழல் வழி ரத்தாசயத்தினின்று
  மறவகலவே காரிரத்தம் சுரந்தினி கெற்பாசயத்திலே தான்
  நிதமுமிது தவறாது ஓரே துளிவிழும் ஆறஞ்சதாம் நாளிலே
  நேசமொடு குழல்வழி உருகியது வெளியிலே பாயுது யோனிவழியாய்
  பதமாகவே சுகதேகிய துவாகிலோ பூத்த முதல் மூன்று நாளும்
  பகருதினிற் மோராற் கழஞ்சு நிறை பாயுமே’’

-Arivaiyar sindhamani

The Siddha literature illustrates physiology of Women’s menstrual cycle magnificently as before the development of modern technologies. The women uterus is attached to the ovaries with fimbria on either side through the fallopian tube. The 30 days cycle takes plae in healthy women for healthy women.Shedding of endometrium takes

place for three days. The amount of blood lost is about 32 ml in normal women. (6 kazhanju calculated as (6 x 5.2) = 32 ml)

- ‘‘கேளுமே **சூதகத்திலக்கினி வாய்வு**
  கெடுத்துவிடும் மாதவிடாய் கட்டிபோகும்
  ஆளுமே கருக்குழியும் தூர்ந்து தேகம்
  அப்பனே யுதிரமது அடிமூலத்தில்
  நீளுமே சூதகத்தில் வாய்வு தோன்றி
  நேரான அடிவயிறு வலிப்புக் காணும்
  பாளுமே தலைவலிக்கும் இடுப்பு ளைச்சல்
  பக்குவமாய் மருந்துண்ணத் தீருந்தானே.’’

-Aavialikum amudha murai surukam

In the soothagam(Ovaries) the combination of pitham and vaayvu leads to mensuration arrest, pain in the lower abdomen, head ache etc but if medicated properly it is cured.

நோய் காரணங்கள்:

- ‘‘வஞ்சனை தன்னினாலும் மருந்தீடு தன்னினாலும்
  மொஞ்சிடு சரீரவேட்கை யுறுதிசெய் தண்டிப்பாலும்
  அஞ்சலாம் பிள்ளைப் பேறிலடங்கிய இரத்தத்தாலும்
  மிஞ்சிய வாயுவாலுங் கருப்பநோய் மேவுமென்னே’’

- Dhanvantri vaithiyam

- ‘‘மேகமதினால் சூட்டினால் இதமான வாயுவால்
  கிருமியின் ஏதுவால் பூத்தபின் கணவனோடே
  சேருவதினாலேயும் கடுநடைகளாலும் சுமடு வெயில் தாக்குவதினால்
  விதமான நாதமது கூடும் குறைந்திடும் கெற்பமில்லாமலாகும்’’

-Arivaiyar sindhamani

Mega noi(gonorrhea), excessive heat, Vaayu, Kirumi, excessive walking etc leads to decrease or increase in ovulation and interferes with consumption.

Characteristic features of Soothgavaayu:

- ‘‘தானான சூதகத்தின் வாய்வின் தன்மை
  தானே அக்கினி வாய்வு சூதகத்தில் தங்கி
  மானே மாதவிடை கட்டிக் கொள்ளும்

மருவு சூதக நாளில் வாய்வுண்டாம்
தானாரே அடிவயறு புண்போல் நோகும்
தலைவலியுண்டாம் வயற்றில் நோவுண்டாகும்
ஆனாலும் வயறுடலும் தடித்திருக்கும்
அறிகுவாய் சூதகத்தின் வாய்வு காணே''.

- Arivaiyar sindhamani

The characteristic feature of Soothaga vaayu are suppression of menstruation, head ache, lower abdominal pain, odema of the body and the abdomen.

- ''பாதமொடு சூதக வாயுவது தன்மை கேள்
மாதவிடையது குறையுமே
புகழுரிய வயிறு கனமாகி யதி வேதனை
அடிவயிறு புண்போல நோவாம்
போதமுறு சென்னிவலி உச்சியதிலே குத்து
இரு கொங்கையது முளையுமே
மோதியதி தாயிரு கை கால் கடுக்குமே
கால் மண்ணையது முளையுமே
முதிய நாவானது வழுவழுப்பாயிடும்
அன்னம் குறைந்து வருமே''.

- Arivaiyar sindhamani

Oligomenorrhoea, distention and tenderness of the lower abdomen, painful swelling of both mammary glands,pain over the upper and lower extrimities, tongue becomes slippery and loss of appetite are the signs and symptoms of Soothagavaayu (Polycystic ovarian syndrome).

Naadi nadai:

- ‘‘மாதர் கை மிடித்தபோது வந்திடும் நாடி மூன்றும்
  சேதமாயிற்று நின்று சேரவே பதித்து நிற்கில்
  ஓதுமே **சூதகத்தில் ஓங்கிய வாய்வு நின்று**
  பேதமாய் வாதை பண்ணி பிணியினை விளைக்குந் தானே’’

-Padinen siddhargalin naadi sastiram –durgadas swami

When the naadi is felt in women if all the 3 nadi’s are found diffused and then felt together then those women is subjected to mensural troubles and those women has Soothga vaayu and has different types of physical, characteristic and mental changes and leads to problems.

3.4 Modern aspect of disease:

Anatomy & physiology of female genital organs:

"GYNE" a greek word which means "WOMEN" and "LOGOS" means "DISCOURSE". Gynecology is the science which deals with the study of female genital organs, external and intenal organs of reproduction.

External genitalia:

This comprises of the following structures,

- **Mons:** This is the outer most part of female genitalia where the pubic hairs develop at and after puberty.
- **Clitoris:** It is in front of symphysis pubis consisting of erectile tissues which is richly supplied by nerves. This is the most sensitive part of vulva.
- **Labia majora:** This consists of hair follicles, sebaceous glands and sweat glands.
- **Labia minora:** These are the folds beneath Labia majora.
- **Bartholin glands**: These are oval shaped and pea sized bilateral glands posterolateral to the vaginal opening.
- **Hymen:** It is a delicate membrane which covers the vaginal opening usually intact in virgins.
- **Urethra:** Lies beneath the clitoral firm nodule and is above the vaginal opening.
- **Perineum:** It is a region between the vaginal opening and anus.

The vagina:

It is a stretchable fibromuscular canal, joining the external genital organs with the cervix and the lower portion of the uterus. Hymen covers this opening.

The uterus:

It is a thick, muscular, hollow organ flattened anteoposteriorly and tapers down towards cervical canal. The different parts of uterus are fundus, corpus and cervix. The uterus is lined by specialized form of mucous membrane known as endometrium. The uterus stretches enormously during pregnancy and rises upto the xiphisternum at full term. Its normal positioin in the body is anteverted and anteflexed.

The cervix:

It is a tublar part which opens into the uterus at the level of internal os. It also has a canal and an outlet into the vagina known as the external os. The epithelium of cervix secretes an alkaline mucous rich in protein and fructose and also a gel which acts as a plug and prevents the entry of bacteria into the uterine cavity.

The fallopian tubes:

These are two tubular, hallow structures extending from the uterine cornu towards the ovaries. These tubes conduct the ova from the ovaries towards the uterus. It is divided into four parts. Those are Interstitial part, isthumus, ampulla, infundibulum.

The ovaries:

The two ovaries are bean shaped structures attached to the cornu by the ovarian ligaments. The surface is rough and corrugated and it is the only organ not covered by the peritoneum. It is the most important organ for reproduction in females. Its function is to produce ovum and sex harmones, through the stimulus from anterior pitutary gland.

These organs get their arterial supply through ovarian artery, uterine artery, vaginal artery, and internal pudendal artery. Those get their nerve supply from sympathetic nerves motor T5, T6 and sensory from T10 to L1 parasympathetic nerves both motor and sensory from S2, S3, S4 segments.

Menstruation:

It is define as the periodic shedding of blood, mucous and debris of endometrium from the uterus after every 28 to 30 days in a healthy woman. This process is governed by the ovarian harmones which are stimulated by the anterior lobe of pituitary gland. Menstruation may be regular or irregular, cyclical or acyclical, painless or painful, scanty or profuse and may be ovulatory or anovulatory.

During menstrual cycle changes are seen in endometrium, ovary, harmone levels in blood, vaginal epithelium and basal body temperature.

Endometrial cycle:

Proliferative phase: It is a period from mentruation upto ovulation. In this period the endometrium proliferates. The glands increase in size and oestrogen is secreted in large quantities by the graffian follicles in the ovary. At this time the ovary is governed by FSH and LH. A number of primordial follicles begin to ripen in both ovaries under the

influence of FSH. But only one of them will mature and release the ovum. This is known as OVULATION. This release occurs with the bursting of graffian follicle under the influence of LH and gets converted into corpus luteum.

Secretory phase: This phase starts after ovulation and lasts exactly for 14 days. The activity of this phase is chiefly governed by oestrogen and progesteron. Progesteron causes inhibition of LH and LTH because of which the endometrium become spongy, edematous with tortuous blood vessels forming suitable seat for fertilized ovum. If there is no conception, degeneration of corpus luteum takes place resulting in progesteron and oestrogen withdrawal. This results in the shedding of blood along with endometrial debris periodically.

Ovulation:

Release of an ovum from the ovary after the rupture of graffian follicle is termed as ovulation.

Any abnormality in any of the above mentioned organs or in their functions will result in menstrual disorders and infertility. One of the most common cause is POLY CYSTIC

Ovarian disease:

Poly cystic ovarian syndrome(PCOS) was originally described in 1935 by Stein and Leventhal as a syndrome manifested by amenorrhoea , hirsutism and obesity associated with enlarged polycystic ovaries.

Poly cystic ovarian disease is one of the most common female endocrine disorder. PCOD is a complex, heterogenous disorder of uncertain etiology, majorly genetic.

Poly cystic ovarian syndrome(PCOS) was originally described in 1935 by Stein and Leventhal as a syndrome manifested by amenorrhoea , hirsutism and obesity associated with enlarged polycystic ovaries.

This complex disorder is characterised by excessive androgen production by the ovaries/adrenal which interferes with ripening of the ovaries follicles. The incidence varies between 0.5 – 4 % , more common amongst infertile period.

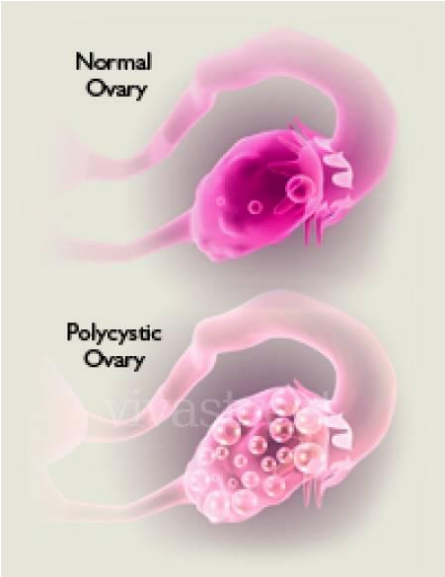


Figure No: 1 Ovaries

Classification :

The World Health Organization criteria for classification of anovulation include the determination of oligomenorrhea (menstrual cycle >35 days) or amenorrhea (menstrual cycle > 6 months) in combination with concentration of prolactin, follicle stimulating hormone (FSH) and estradiol. Almost 80% of anovulation patients have normal serum FSH and estradiol levels and demonstrate very heterogeneous symptoms ranging from anovulation, obesity, biochemical or clinical hyperandrogenism and insulin resistance. PCOS is the most common cause of anovulation in women with normal serum FSH and estradiol levels. Despite the heterogeneity in symptoms associated with PCOS, the essential feature is arrested follicular development at the stage when selection of the dominant follicle should normally occur.

The small ovarian follicles are believed to be the result of disturbed ovarian function with failed ovulation, reflected by the infrequent or absent menstruation that is typical of the condition. In a normal menstrual cycle, one egg is released from a dominant follicle essentially a cyst that bursts to release the egg. After ovulation the follicle remnant is transformed into a progesterone-producing corpus luteum, which shrinks and disappears

after approximately 12–14 days. In PCOS, there is a so-called "follicular arrest", i.e., several follicles develop to a size of 5–7 mm, but not further. No single follicle reaches the preovulatory size (16 mm or more).

Table no: 2 Clinical signs and symptoms associated with PCOS

Symptom	**Frequency**
Oligomenorrea	29-52%
Amenorrea	19-51%
Hirsutism	64-69%
Obesity	35-41%
Acne	27-35%
Alopecia	3-6%
Acanthosis nigricans	<1-3%
Infertility	20-74%
Elevated Serum LH	40-51%
Elevated testosterone	29-50%

Patho Physiology:

Typically, the ovaries are enlarged. The capsules are thickened and pearly white in colour. On bisection, multiple follicular cysts measuring about 5 mm in diameter are crowed around the cortex.

Histologically, there is thickening of tunica albuginea. The cysts are follicles at varying stages of maturation and regression. It should be remembered that PCOS may be unassociated with enlarged ovaries.

The pathophysiology of primary PCOS is obscure. There is abnormal pulse frequency of GnRH simultaneous with increased pituitary sensitivity to GnRH. The LH secretion is tonically elevated due to persistant high level of oestrone or androgens or both. FSH secretion remains either normal or decrease due to negative feedback effect of oestrogens and inhibin.

Hormonal inervation of PCOS:

Because of relative low levels FSH, there is defective ovarian folliculogenesis due to lack of aromalisation. The net effect is diminished oestradiol and increased inhibin production.Due to elevated LH, there is hypertrophy of theca cells and more androgens are produced either from theca cells or stroma.

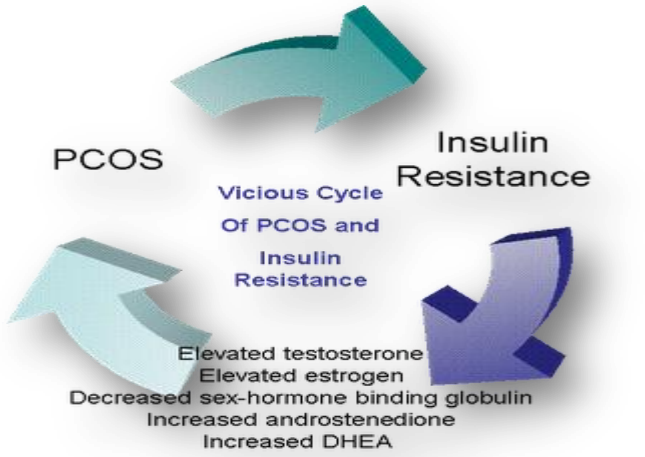


Figure No: 2 Hormonal inervation in PCOS

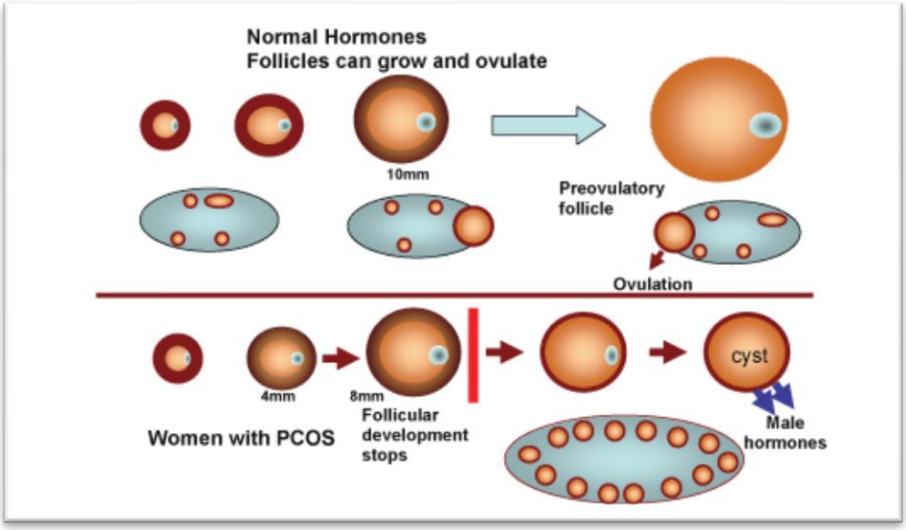


Figure No: 3 Difference between normal ovaries with polycystic ovaries

Clinical features

The patient complains of

- Increasing obesity.
- Menstrual abnormalities in the form of oligimennorhoea and ammenorrhoea.
- Infertility.
- There may be hirsutism. Virilism is rare, the patient may not always obese.
- Internal examination reveals bilateral enlarged cystic ovaries which however, may not be revealed due to obesity.

Investigation

- Sonography- Transvaginal sonography is specially useful in obese patient.
- Serum values:
  - LH level is elevated and/or the ratio LH:FSH is > 3:1
  - Reversible oestradiol : oestrone ratio (oestrone level is markedly elevated)
  - SHBG level is reduced.
  - Androstenedione is elevated.
  - Serum testosterone and DHEA-S may be marginally elevated.
- Laproscopy – Bilateral polycystic ovaries are characteristic of PCOS.

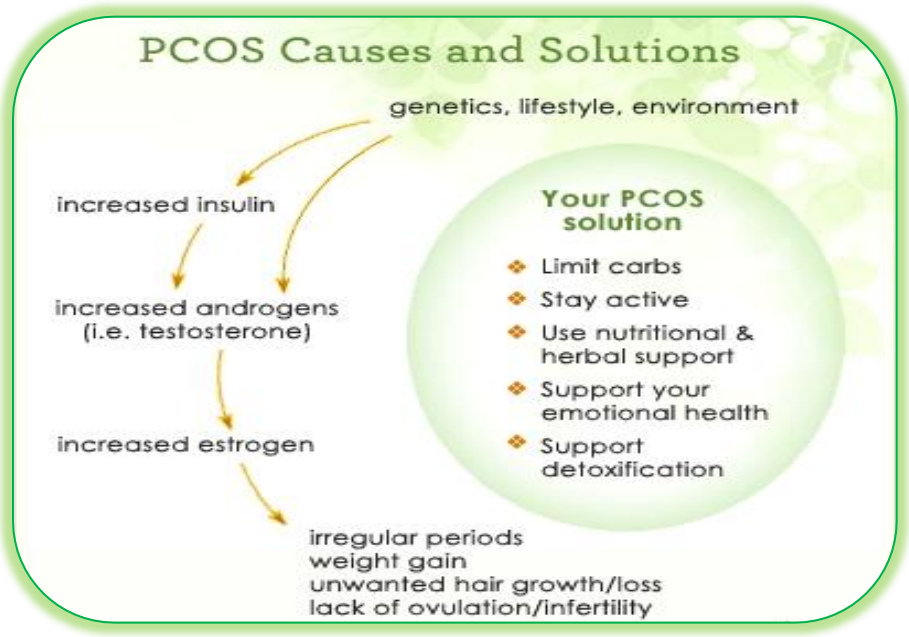
Adams et al (1960) found polycystic ovaries in 50%of patients with pelvic pain syndrome. Excess of estrogen is seen in PCOS patient causes dialatation of the pelvic veins (Reginald et al 1987). The estrogens inhibit the contraction of smooth muscles in the wall of theca veins.

PCOS – Tonically elevated LH- increased androgens production from the theca cells and stroma of the ovaries- decrease in SHBG- increased unbound oestrogen and androgens- pituitary sensitivity to GnRH is increased- preferential increased production of FSH due to inhibition. Disturbed adrenal function is also impliacated in androgen exess. A state of hyperandrogenism action.

Diet

Where PCOS is associated with overweight or obesity, successful weight loss is the most effective method of restoring normal ovulation/menstruation, but many women find it very difficult to achieve and sustain significant weight loss. Some experts recommend a low GI diet in which a significant part of total carbohydrates are obtained from fruit, vegetables and whole grain sources. Vitamin D deficiency may play some role in the development of the metabolic syndrome, so treatment of any such deficiency is indicated.

Figure No: 4 PCOS Causes and Solution



4. Materials and methods:

4.1 Preparation of *Uppu Parpam*:

Selection of drug:

The trial drug ***Uppu parpam*** was selected from the Siddha text "*Anubava siddha vaithiya muraigal*" by Balaramaiya.

Collection of drug:

The ingredients of Uppu parpam namely Vediuppu, Indhuppu Gendhiuppu, Valaiyal uppu, Vengaram was purchased from raw drug shop at Chennai and the raw drug namely Pooneeru was collected from Siddhamalli village near Uthiramerur .They were identified and confirmed by Siddha experts, PG Dept. of Gunapadam, GSMC Chennai.

Purification of the ingredients in the Drug:

1. Purification of Vediuppu:

Vediuppu and 4 parts of water is mixed and it is filtered and heated at low flame and when it starts boiling add a egg white to it .The dirt and impurities floats in the upper part are removed with wooden spoon and in its kulambu stage it is filtered into another vessel and dried in sunlight. This process is repeated again for 6 times and purified vediuppu is obtained.

2. Purification of Indhuppu:

Indhuppu is mixed with Kaadi and sundried for 3 days and its purified form is obtained

3. Purification of Gendhiuppu:

Gendhiuppu is mixed with kaadi and kept in sunlight for 3 days and it purified form is obtained.

Figure No : 5 Ingredients of *UPPU PARPAM*

1.Pottasium nitrate (Vediuppu)

2.Sodium chloride (Indhuppu)

3. Bit loban (Gendhiuppu)

4. Valaiyaluppu

5. Fuller's earth (Pooneeru)

6. Borax (Vengaram)

Figure No: 6 Preparation of *UPPU PARPAM*

Step 1: Drugs in the mud container

Step 2: Drugs in the mud container subiected to *seelaiman*

Step 3 : Container kept for *Pudam*

Step 4: After the process of *Pudam*

Step 5: Product obtained after the process of *Pudam*

Step 6: The final product ***Uppu Parpam***

4. Purification of Valaiyal uppu:

The purified form of valaiyal uppu is obtained when is it is dipped in cow's butter milk and in cow's urine and dried in sunlight.

5.Purification of Pooneeru:

Pooneeru one part is mixed with 4 parts of pure water and allowed to settle down for one night and then upper clear dissolved part discarding the settled contents is dried in sunlight in porcelain plate. The Pooneeru obtained after sun dried. This one time process is called as "*theetchai*" and continued for 10 times to get purified Pooneeru.

6.Purification of Vengaaram :

It is mixed with lemon juice and kept in sunlight and dried.

Preparation of Uppu parpam:

Ingredients:

1. Vediuppu 50 gms
2. Induppu 50 gms
3. Gendhiuppu 50 gms
4. Valaiyal uppu 50 gms
5. Pooneeru 50 gms
6. Vengaram 100 gms

Process :

Vengaram is grounded to fine powder in kalvam and it is divided into two parts and of the part is spread evenly and pressed inside the mud Kuduvai. Then other drugs from one to five are powdered separately and kept in the mudkuvai. Then the other half of vengaram is spread and pressed uniformly over the other drugs. Then another mud kuduvai which matches the already one is covered and 7 seelaiman is made and dried. It is subjected to pudam with 20 -25 cow dung cakes.

Storage:

The resultant is collected next day after getting cooled and kept it in an clean and air tight container.

Dosage: ½ to 1 gram two times a day

Form of medicine: Parpam

Route: Enteral

Vehicle: Hot water

4.2 STANDARDISATION OF *UPPU PARPAM:*

Standardization of drugs helps to confirm its identity and determination of its quality, effectiveness. Standardization of mineral drug is based on qualitative and quantitative analysis through physico-chemical properties, phytochemical and instrumental studies.

The physico-chemical analysis and elemental analysis of this mineral formulation have been done at SCRI, Chennai.

4.2.1 Physico-Chemical Investagations:

Physico-chemical studies like total ash, and acid Insoluble ash, water and alcohol soluble extract, particle size, loss on drying at 105°C and $_{P}$H.

PROCEDURES:

Total ash

Two grams of grounded air-dried material was accurately weighed in a previously ignited and tared silica crucible. The drug was gradually ignited by raising the temperature to 450°C until it was white. The sample was cooled in a desiccator and weighed. The percentage of total ash was calculated with reference to air-dried drug.

Acid Insoluble ash

The ash was boiled with 25 ml of 2 M hydrochloric acid for 5 minutes, the insoluble matter was collected on an ash less filter paper, washed with hot water, ignited, cooled in a desiccator, and weighed. The percentage of acid insoluble ash was calculated with reference to the air-dried drug.

Water Soluble ash

The ash was boiled with 25 ml of water for 5 minutes, the insoluble matter on ash less filter paper collected, washed with hot water, ignited, cooled in a desiccator, and weighed. The weight of the insoluble matter from the weight of the total ash was subtracted; the difference represents the water soluble ash. The percentage of water insoluble ash was calculated with reference to the air-dried drug.

Moisture content:

The shade-dried drug was grounded in a mixer grinder. The powder passed through #40 and retained on #120. Accurately weighed 10 g of # 40/120 drug powder was kept in a tared evaporating dish. This was dried at 105°C for 5 hours in tray drier and weighed. The drying was continued and weighing was done at one-hour interval until difference between two successive weighings corresponds to not more than 0.25 percent.

Drying was continued until a constant weight was reached with two successive weighings after drying for 30 minutes and cooling for 30 minutes in a desiccator was showing not more than 0.01 g difference.

Potential of Hydrogen **(pH):**

The pH scale is logarithmic and runs from 0.0 to 14.0 with 7.0 being neutral. Readings less than 7.0 indicate acidic solutions, while higher readings indicate alkaline or base solutions.

4.2.2 Proximate Chemical Analysis of a Drug

Methodology For Chemcial Analysis of *UPPU PARPAM*

Preparation of Extract :

Add 5 gm of the sample to 50ml of distilled water. Boil the solution for 20 minutes, cool and then filter. Use the Extract for the following tests.

Table No : 3 prilimanary chemical analysis of Uppu Parpam

S.No	Experiment	Observation	Inference
1.	**Test for reducing Sugar :** To 5ml of Benedicts qualitative reagent, add 10 drops of extract, then boil for two minutes	Green / Yellow / Red PPT	Presence of Reducing Sugar
2.	**Test for Starch :** To 5 ml of extract add 2ml of acetic acid and then add few drops of N/50 Iodine Solution.	Blue Colour	Presence of Starch
3.	**Test for Proteins :** To 2 ml of extract, add 2ml of 5% Sodium Hydroxide mix and add 2 drops of Copper Sulphate Solution.	Violet or Purple Colour	Presence of Proteins
4.	**Test for amino Acid :** Place 2 drops of extract on a filter paper and allow to dry well. Then spray 1% ninhydrin over the same and allow to dry.	Violet Colour	Presence of Amino Acid
5.	**Test for Albumin :** To 2 ml of extract, add 2ml of Esboch's reagent.	Yellow PPT	Presence of Albumin
6.	**Test for Phosphate :** To 2ml of extract, add 2ml of ammonium Molybdate solution and 2ml of concentrated Nitric Acid.	Yellow PPT	Presence of Phosphate
7.	**Test for Sulphate :** To 2 ml of extract add 2ml of 4% ammonium oxalate solution.	White PPT	Presence of Sulphate
8.	**Test for Chloride :** Add 2ml of extract to dilute nitric acid till the effervescence ceases. Then add 2 ml of Silver Nitrate Solution.	Cloudy White PPT	Presence of Chloride
9.	**Test for Iron :** To 2ml of extract, add 2ml of ammonium thio cynate solution and add 2ml of concentrated Nitric Acid.	Red Colour	Presence of Iron

10.	**Test for Calcium :** To 2 ml of extract, add 2 ml of 4% ammonium Oxalate Solution.	White PPT	Presence of Calcium
11.	**Test for Sodium :** Make a paste with 2 pinches of the sample with Hcl and Introduce it into the blue flame.	Yellow Flame	Presence of Sodium
12.	**Test for Potassium :** Add a pinch of the sample to 2 ml of Sodium Nitrate Solution. Then add 2ml of Cobal Nitrate in 20% acetic acid.	Yellow PPT	Presence of Potassium
13.	**Test for Zinc :** To 2ml of extract, add few drops of Sodium Hydroxide.	White PPT	Presence of Zinc
14.	**Test for Magnesium :** To 2ml of extract, add few drops of Sodium Hydroxide Solution	White PPT	Presence of Magnesium
15.	**Test for Alkaloids :** d. To 2ml of extract, add 2ml of Potassium Iodide Solution e. To 2ml of extract add 2ml of Picric Acid. f. To 2 ml of extract add 2ml of Phosphotunqstic Acid.	Red Colour Yellow Colour White PPT	Presence of Alkaloids Presence of Alkaloids Presence of Alkaloids
16.	**Test for Tannic Acid :** To 2ml of extract add 2 ml of Ferric Chloride Solution	Black PPT	Presence of Tannic Acid

4.2.3. Elemental Analysis of Drug:

Uppu parpam was subjected to elemental analysis at Anna University Chennai.Analysis through Fourier Transform Infrared Spectroscopy (FTIR), and Scanning Electron Microscope (SEM) are carried out.

FOURIER TRANSFORM INFRARED SPECTROSCOPY (FTIR)

Instrument details:

Model : Spectrum one: FT-IR Spectrometer

Scan Range : MIR 450-4000 cm-1

Resolution : 1.0 cm-1

Sample required : 50 mg, solid or liquid.

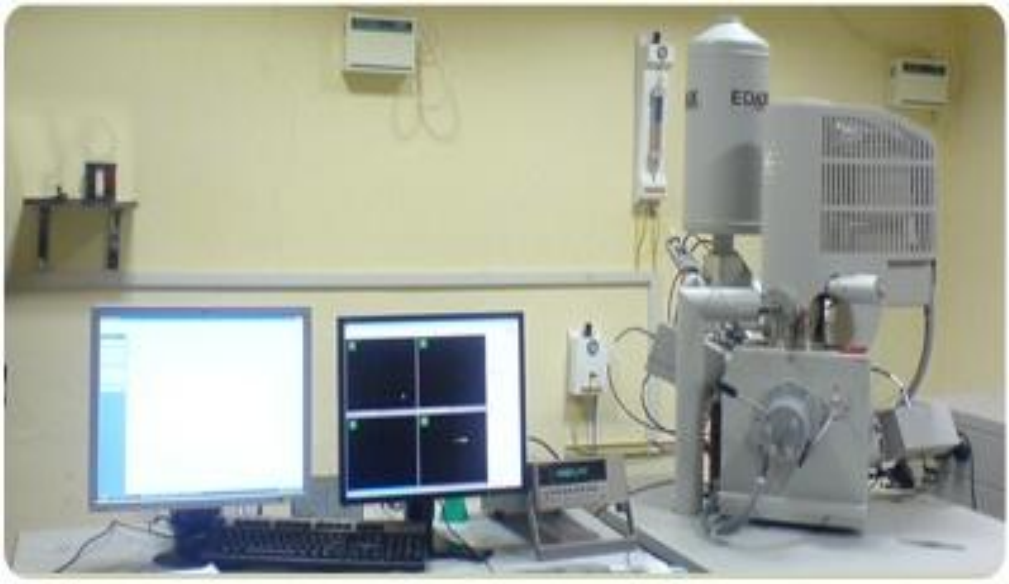
Fourier Transform Infrared Spectroscopy (FTIR) is an analytical technique used to identify mainly organic materials. FTIR analysis results in absorption spectra which provide information about the chemical bonds and molecular structure of a material. The FTIR spectrum is equivalent to the "fingerprint" of the material and can be compared with cataloged FTIR spectra to identify the material.

Fourier transform infrared spectroscopy analytical capabilities:

- Identifies chemical bond functional groups by the absorption of infrared radiation which excites vibrational modes in the bond
- Especially capable of identifying the chemical bonds of organic materials
- Detects and Identifies organic contaminants
- Identifies water, phosphates, sulphates, nitrates, nitrites, and ammonium ions
- Detection limits vary greatly, but are sometimes $<10^{13}$ bonds/cm^3 or sometimes sub monolayer
- Useful with solids, liquids, or gases
- To confirm the acid and basic radicals of the trial drug to ensure the inorganic constituents

Scanning Electron Microscope (Sem)

Figure 7: Scanning electron microscope



Resolution : 1.2 nm gold particle separation on a carbon substrate

Magnification : From a min of 12x to greater than 1, 00,000 X

The Scanning Electron Microscope (SEM) is a microscope that was electrons rather than light to form an image. There are many advantages to using the SEM instead of a light microscope.

The SEM has a large depth of field, which allows a large amount of the sample to be in focus at one time.

The SEM also produces images of high resolution, which means that closely spaced features can be examined at a high magnification. Preparation of the samples is relatively easy since most SEM one require the sample to be conductive.

The combination of higher magnification, larger depth of focus, greater resolution, and easy of sample observation marks the SEM one of the most heavily used instruments in research areas today.

4.3 TOXICOLOGICAL STUDY OF THE DRUG UPPU PAPRPAM:

Animals

Mice of either sex weighing 25-30g and rats weighing 210-240g were obtained from the animal house of Vels University. The animals were used with the approval of the Institute animal ethics committee and obtained from Vels University, Chennai. They were fed with a balanced standard pellet diet and maintained under standard laboratory conditions, providing 24-28^{0}C temperature, standard light cycle (12 h light, 12 h dark) and water ad libitum. Animals were kept in cages with raised floors of wide mesh to prevent coprophagy. Animal welfare guidelines were observed during the maintenance period and experimentation. The rats were randomly assigned to control and different treatment groups, six animals per group. The animals were acclimatized for one week under laboratory conditions.

Acute Toxicity Study-Oecd 425 Guidelines

Acute oral toxicity test for the Uppu Parpam was carried out as per OECD Guidelines 425. As with other sequential test designs, care was taken to ensure that animals are available in the appropriate size and age range for the entire study. The test substance is administered in a single dose by gavage using a stomach tube or a suitable intubation cannula. The fasted body weight of each animal is determined and the dose is calculated according to the body weight. After the substance has been administered, food was withheld for a further 2 hours in mice. The animals were observed continuously for the first 4 h and then each hour for the next 24 h and at 6 hourly intervals for the following 48 h after administering of the test drug, to observe any death or changes in general behaviour and other physiological activities. Single animals are dosed in sequence usually at 48 h intervals. However, the time interval between dosing is determined by the onset, duration, and severity of toxic signs. Treatment of an animal at the next dose was delayed until one is confident of survival of the previously dosed animal.

Observation of toxicity signs: General behavior, respiratory pattern, cardiovascular signs, motor activities, reflexes, change in skin and fur, mortality and the body weight changes were monitored daily. The time of onset, intensity, and duration of these signs, if any, was recorded.

Sub-Acute Toxicity

In a 28-days sub acute toxicity study, twenty four either sex (3+3) rats were divided into four groups of 6 rats each. Group I that served as normal control was administered with distilled water (p.o.) while groups II, III and IV were administered daily with the Uppu Parpam (p.o.) for 28 days at a dose of 25, 50 and 100mg/kg respectively. The animals were then observed daily for gross behavioural changes and any other signs of subacute toxicity. The weight of each rat was recorded on day 0 and weekly throughout the course of the study, food and water consumption per rat was calculated. At the end of the 28 days they were fasted overnight, each animal was anaesthetized with diethylether, following which they were then dissected and blood samples were obtained by cardiac puncture into heparinised tubes. The blood sample collected from each rat was centrifuged with 3000 X g at 4^{o}C for 10 min to separate the serum and used for the biochemical assays.

Hematological and blood biochemical analyses:

At the end of the study, all animals were kept fasted for 16-18 h and then anesthetized with anesthetic ether on the 28th day. Blood samples for hematological and blood chemical analyses were taken from retro orbital vein. Heparinized blood samples were taken for determining complete blood count (white blood cell count, differential white blood cell count, platelet count, red blood cell count, hematocrit, and hemoglobin) by semiautomated hematology analyzer. The serum from non-heparinized blood was carefully collected for blood chemistry and enzyme analysis (glucose, blood urea nitrogen (BUN), creatinine, total protein, albumin, total and direct bilirubins, serum glutamate-oxaloacetate transaminase (SGOT), serum glutamate pyruvate transaminase (SGPT), and alkaline phosphatase (ALP)) were automatically determined using autoanalyzer.

Necropsy:

All rats were sacrificed after the blood collection. The positions, shapes, sizes and colors of internal organs were evaluated. The Spleen, Testes, Pancrea, Lung, Liver, Brain, Heart, Stomach, Intestine, Bone, Ovary, and Kidney tissues were excised from all rats to visually detect gross lesions, and weighed to determine relative organs' weights and preserved in 10% neutral formalin for histopathological assessment. The tissues were embedded in paraffin, and then sectioned, stained with haematoxylin and eosin and were examined microscopically.

Statistical analysis

Values were represented as mean ± SEM. Data were analysed using one-way analysis of variance (ANOVA) and group means were compared using the Dunnet Multiple Comparison Test using GraphPad Instat-V3 software. P values < 0.05 were considered significant.

4.4 Pharmacological activity of drug

Animal Selection

Mice of either sex of wistar strain weighing 28-32gms and Female albino rats of wistar strain weighing about 95–135 gm were used. Pregnant animals were excluded. Animals were fed on conventional diets and water *ad libitum* and they were maintained under standard conditions of humidity, temperature (20- 24°C) and light (12 h light: 12 h dark cycle).Animals were kept in polycarbonate cages with laced steel roofs. The animals were acclimatized for one week under laboratory conditions. The study was conducted at the Vel's University, Chennai after obtaining Institutional Animals Ethical Committee clearance bearing the number XIII/VELS/PCOL/04/2000/CPCSEA/IAEC/08.08.2012.

Drug and stock solution

The Uppu Parpam was accurately weighed using electronic balance and suspended in 2% carboxy methyl cellulose solution to so as to get 200mg/kg of main stock solution and this was used in this study. All the chemicals and standard drugs were procured from authorized suppliers.

Acute toxicity study:

Acute oral toxicity test was carried out as per OECD Guidelines 425 up and down method. Animals are observed individually after dosing at least once during the first 30 minutes, periodically during the first 24 hours, with special attention given during the first 4 h, and daily thereafter, for a total of 14 days. Initially starting at a dose of 2000 mg/kg of Uppu Parpam was given. Body weight and behavioral changes were noted. Animals are observed individually and were systematically recorded. The acute toxicity was occurred at 500mg/kg after 48 hours of oral drug treatment. Hence, one-tenth and one fifth dose was

selected as therapeutic dose from maximum tolerable dose for further pharmacological study.

Ovulation stimulation activity:

In the present study, twenty four Virgin female wistar rats weighing of around (88-130 gm) of 2 month old were obtained from the animal house at Vel's University, Chennai. Before starting drug treatment, the reproductive cycles of the rats were synchronized by the following method. 100µg estradiol dissolved in 2 ml olive oil was injected subcutaneously. All rats after a 24 hr period, received intramuscular injections of 50 µg progesterone dissolved in olive oil. After few hours, Vaginal smears were obtained by vaginal lavage to monitor ovulation and oestrous cycle. Vaginal smears were prepared by washing vaginal opening with 0.9% w/v of sodium chloride with a glass dropper and placed in a clean glass slide and viewed under light microscope at 40X magnification. Examination of vaginal smears showed that all the animals were in the estrous stage. All the animals were weighed daily after drug administration for 10 days. The suitable sensitive rats were divided into four groups of six each as follows:

Group I Normal Control animals given only 2ml/kg of CMC solution.

Group II animals were administered 50 mg/kg of Uppu Parpam for 10days,

Group III rats were received 100mg/kg of Uppu Parpam for 10 days

Group IV received clomiphene 10mg/kg and served as standard. All the drugs were given orally.

2ml of blood was collected by retro orbital puncture. Blood samples were centrifuged for 15 minutes at 4000 rpm and the separated serum samples were frozen at -20°C and kept for later estimation of LH, FSH, Progesterone, Testesterone and estradiol by ELISA method. At the end of experiment, the animals were sacrificed using ether anesthesia and the uteri were removed and weight was recorded. The oviduct was dissected out from the rats, suspended in normal saline and placed on a microscopic slide with a cover slip to count the number of ova in the oviduct.

Statistical analysis

Statistical significance of data was assessed by analysis of variance (one-way ANOVA) followed by a comparison between different groups using Dunnet test.

4.5 CLINICAL ASSESSMENT OF UPPU PARPAM:

PCOS is one of the main female endocrine disorders emerging in modern era. It has become a most distressing problem among female of reproductive age. It is presently will be more beneficial if carried out with proper medications as in precious siddha plot rather than modern or hormonal administration and to produce perfect clinical trials. Uppu parpam has been indicated in siddha for a beneficial formulation against PCOS (Soothagavaayu).

Objectives:

- To evaluate the ovulation regulating activity of *Uppu parpam*.
- To explore the efficacy of UP in patients with polycystic ovarian syndrome.

Design of the Study:

The Open clinical trial – Phase II B

Study Centre:

- Arignar Anna Government Hospital of Indian Medicine and Homeopathy,
- Arumbakkam, Chennai – 106.

Study Participants:

Women members of all races and ethnic groups are eligible for this trial. Treatment will be administered on an *outpatient basis* and *Inpatient basis*. The patients will be selected from Out-patient department of Arignar Anna Government Hospital of Indian Medicine and Homeopathy, Chennai – 106.

Number of Subjects:

Number of participants will be 44

Registration Process:

A patient is registered, if the following documents are completed by the investigator.

- Copy of required laboratory tests
- Signed patient consent form
- Other appropriate forms (e.g., Trial profoma).

The investigator will then verify eligibility and then will assign a patient study number, drug dose and on the study the patient is registered.

Selection:

44 female patients of age groups 15 – 45 were selected for clinical trial.Among 44 patients 39 were treated as out-patient, 5 patients were treated as in- patients. The selection was based on the inclution and exclution criteria. They were clinically diagnosed on the basis of Siddha principles and with modern laboratory findings.

Sample Size:44 patients in the age group 15 – 45.

Selection Criteria:

Patients with the following criteria are included in the study:

- Irregular menstruation
- Oligomenorrhoea
- Dysmenorhoea
- Infertility
- miscarriage
- Over weight / Obese
- Constipation
- Acanthosis nigricans
- Hirsutism
- Poly cystic ovaries in ultra sound

Exclusion Criteria:

Patients with the following criteria are excluded in the study:

- Patients with positive gravindex index
- Diabetes mellitus
- Hypertension

Withdrawal Criteria:

Patients will be removed from study when any of the criteria listed below applies. The reason for study removal and the date of removal of patient had been documented in the Case Report Form.

- Irregular medication.
- Patients who are all not cooperating to take blood samples.
- Any adverse reactions during the study period.
- Patient decides to withdraw from the study, or
- Unwanted prolonged illness during the study period.

Evaluation of Clinical Parameters:

Patients are clinically evaluated by the following parameters:

History Taking:

Age, occupation, socio economic status, complaints and its duration, menstrual history, marital history. History of parity, family history, previous illness, and personal habits were recorded in the case sheet for every patient at the time of first visit to the OP.

Investigations:

All the patients were subjected to the laboratory investigations before and after the treatment.

Blood: Complete haemogram, Blood sugar fasting & post prandial,Blood urea, Serum creatinine, Serum cholesterol and hormonal assay.

Urine: Albumin, Sugar, Deposits,

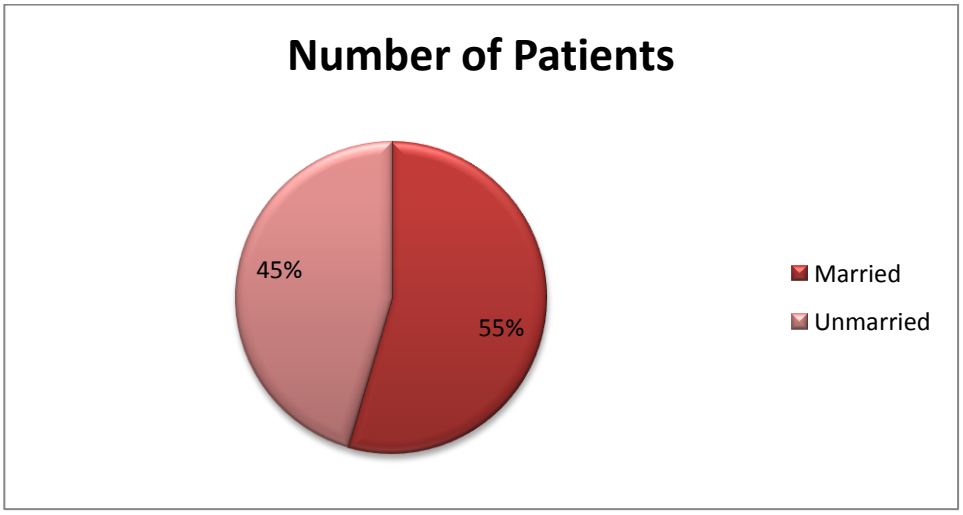
Ultra Sono Gram: Whole Abdomen and Pelvis.

Criteria for Assessment of Response to Therapy:

5) Marked response : 90% relief in signs and symptoms
6) Moderate response : 70 - 80 % relief in the presenting signs and symptoms
7) Mild response : 60-70% relief signs and symptoms.
8) Poor response : 50% relief of signs and symptoms no marked changes.

Table No: 4 (MARITAL STATUS)

SL. NO	Marital Status	NO. OF PATIENTS	PERCENTAGE (%)
1	Married	24	54.5
2	Single	20	45.5
TOTAL		44	100

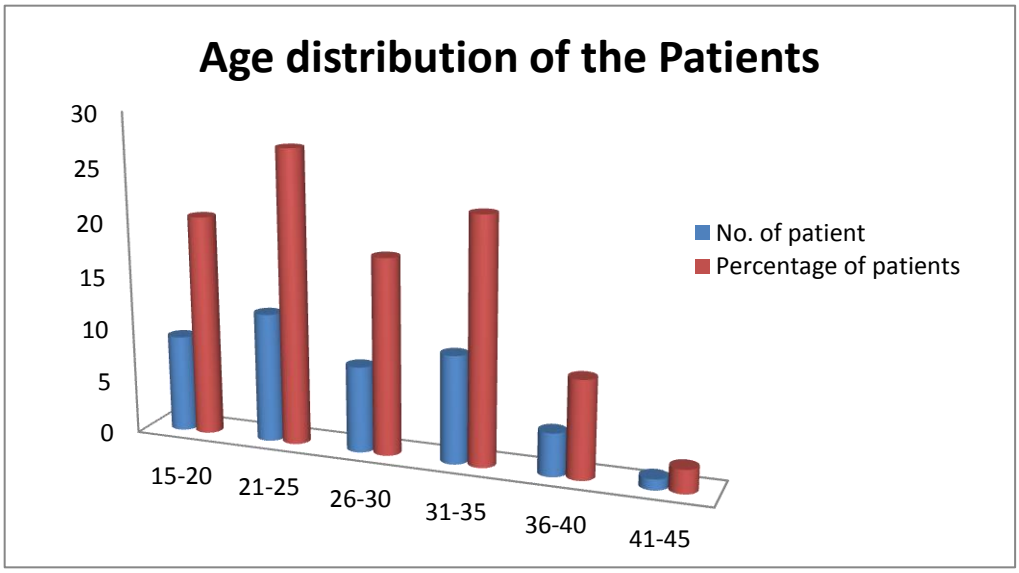


Inference:

Out of 44 Patients 24(55%) are married and 20(45%) are unmarried.

Table No : 5 (AGE DISTRIBUTION)

SL. NO	AGE IN YEARS	NO. OF PATIENTS	PERCENTAGE (%)
1	15-20	9	20.5
2	21-25	12	27.3
3	26-30	8	18.2
4	31-35	10	22.7
5	36-40	4	9.1
6	41-45	1	2.2
TOTAL		44	100



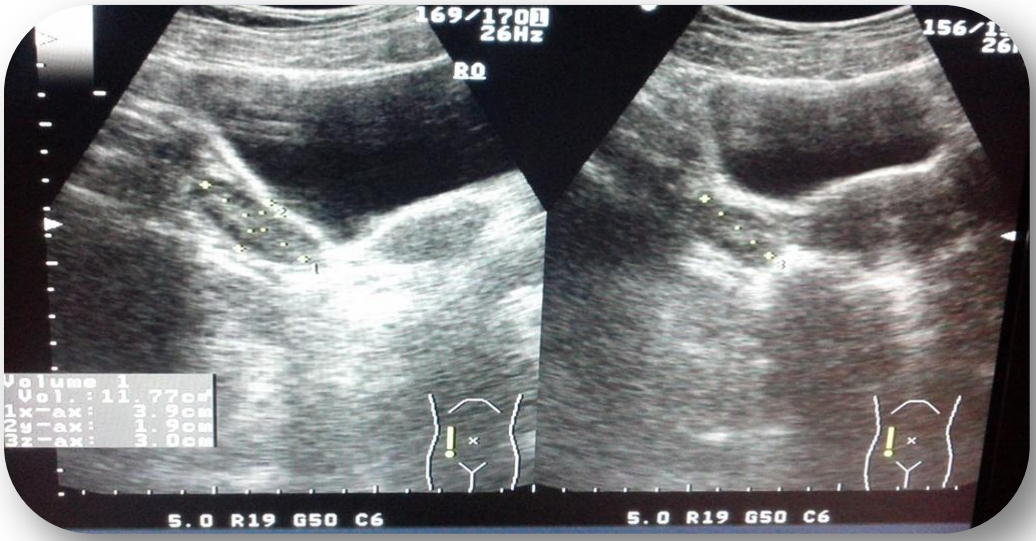
Inference:

Among 44 patients

- 9 patients belong to the age group 15-20 years
- 12 patients belong to the age group 21-25
- 8 patients belong to the age group 26-30 years
- 10 patients belong to the age group 31-35 years
- 4 patients belong to the age group 36- 40 years
- 1 patient belong to the age group 41-45 years.

Figure No: 8 USG Pevis showing Ovaries

Polycystic appearance of ovaries



Normal appearance of ovaries

Table No: 6 CLINICAL STUDY ON UPPU PARPAM IN THE MANAGEMENT OF *SOOTHAGAVAYU*(OP)

SI NO	Op. No	Name/ Age/ Sex	Complaints	Duration of Days	BT & AT	INVESTIGATION													Results
						BLOOD										Urine			
						TC cells/cumm	DC (%)			ESR(mm)		Hb gm	Sgr-mg/dl	Urmg/dl	Blood CL	Sgr	Alb	Dep	
							P	L	E	½ hr	1 hr								
1.	2811	Janaki 35/Female	Irregular menstruation,oligomenorhoea,body wt gain, low back pain	5.7.12 To 12.10.12	BT	9800	59	37	4	18	40	10.6	76	22	185	NIL	NIL	FPC	marked
					AT	9700	57	40	3	12	17	8.7	135	20	170	NIL	NIL	FPC	
2.	3983	Rupa 22/Female	Irregular menstruation,oligomenorhoea, low back pain	10.7.12 To 17.10.12	BT	9300	56	40	4	10	20	8.6	115	21	135	NIL	NIL	FPC	marked
					AT	9100	57	40	3	10	20	9.5	112	23	150	NIL	NIL	NIL	
3.	4401	Deepika 24/Female	Irregular,amenorrhoea menstruation,oligomenorhoea, low back pain	12.7.12 To 2.11.12	BT	9400	55	42	3	25	40	12	76	20	176	NIL	NIL	FPC	marked
					AT	9500	62	32	6	10	15	13	115	18	171	NIL	NIL	FPC	
4.	5696	Janaki 36/Female	Irregular menstruation,oligomenorhoea, low back pain	17.7.12 To 1.11.12	BT	9600	52	41	7	25	55	11	93	24	142	NIL	NIL	NIL	marked
					AT	9700	56	39	5	17	22	12	110	25	145	NIL	NIL	NIL	
5.	9232	Datchayini 32/Female	Irregular menstruation,oligomenorhoea, low back pain	30.7.12 To 20.11.12	BT	9800	57	39	4	20	45	13.2	108	25	150	NIL	NIL	FEC	Moderate
					AT	9700	57	40	3	22	45	13.5	110	24	160	NIL	NIL	NIL	

CLINICAL STUDY ON UPPU PARPAM IN THE MANAGEMENT OF *SOOTHAGAVAYU* (OP)

SI NO	Op. No	Name/ Age/ Sex	Complaints	Duration of Days	BT & AT	INVESTIGATION													Results
						BLOOD										Urine			
						TC cells/cumm	DC (%)			ESR(mm)		Hb Gm	Sgr mg/dl	Ur mg/dl	Blood CL	Sgr	Alb	Dep	
							P	L	E	½ hr	1 hr								
6.	3654	Sundari 38/female	Irregular menstruation,oligomennorhoea, low back pain	18.8.12 To 20.10.12	BT	9700	56	40	4	12	28	11.8	83	23	194	NIL	NIL	FPC	poor
					AT	9500	57	39	4	14	22	12	90	22	180	NIL	NIL	FPC	
7.	3985	Shobana 31/Female	Irregular menstruation,oligomennorhoea, low back pain	20.8.12 to 10.11.12	BT	9000	56	40	4	10	22	10	86	28	165	NIL	NIL	FPC	marked
					AT	9200	58	38	4	11	22	11.5	87	30	167	NIL	NIL	NIL	
8	8272	Bharathi 28/Female	Irregular menstruation,oligomennorhoea, low back pain	28.8.12 To 22.10.12	BT	9000	58	37	5	10	33	10.7	85	21	154	NIL	NIL	FPC	marked
					AT	9100	58	36	6	15	32	11	95	20	155	NIL	NIL	NIL	
9.	8475	Nandhini 22/Female	Irregular menstruation,amennorhoea, low back pain	8.9.12 To 28.12.12	BT	9200	55	41	4	10	20	10.4	95	28	155	NIL	NIL	FEC	marked
					AT	9200	55	40	5	12	23	11.5	100	24	158	NIL	NIL	NIL	
10.	8510	Aaarthipriya 23/Female	Irregular menstruation,oligomennorhoea, low back pain	8.9.12 To 20.11.12	BT	9700	53	40	7	8	14	13	86	24	167	NIL	NIL	FPC	marked
					AT	9800	55	38	7	9	16	13	90	23	168	NIL	NIL	FPC	

CLINICAL STUDY ON UPPU PARPAM IN THE MANAGEMENT OF *SOOTHAGAVAYU* (OP)

SI NO	Op. No	Name/ Age/ Sex	Complaints	Duration of Days	BT & AT	INVESTIGATION													Results
						BLOOD										Urine			
						TC cells/cumm	DC (%)			ESR(mm)		Hb Gm	Sgr mg/dl	Ur mg/dl	Blood CL	Sgr	Alb	Dep	
							P	L	E	½ hr	1 hr								
11.	2448	Bhuvana 35/Female	Irregular menstruation,oligomennorhoea, low back pain	22.9.12 To 18.11.12	BT	9600	56	39	5	14	30	10.5	88	23	135	NIL	NIL	FEC	moderate
					AT	9200	54	39	7	11	23	11	85	25	146	NIL	NIL	NIL	
12.	3551	Kaviya 16/Female	Irregular menstruation,oligomennorhoea, low back pain	30.8.12 To 25.10.12	BT	9500	58	37	5	14	28	12	116	27	168	NIL	NIL	NIL	marked
					AT	9300	56	41	3	10	21	11.5	120	24	155	NIL	NIL	NIL	
13.	6088	Bhuvaneshwari 16/Female	Irregular menstruation,oligomennorhoea, low back pain	10.10.12 To 25.11.12	BT	9400	54	42	4	18	32	11	98	25	162	NIL	NIL	FPC	mild
					AT	9500	59	38	3	10	24	12	110	27	175	NIL	NIL	NIL	
14.	6249	Gowri 20/Female	Irregular menstruation,oligomennorhoea, low back pain	10.10.12 To 16.11.12	BT	8800	59	35	6	20	30	11.5	112	19	154	NIL	NIL	FEC	marked
					AT	9000	57	38	5	10	15	11	115	20	150	NIL	NIL	NIL	
15.	7034	Saroja 32/Female	Irregular menstruation,oligomennorhoea, low back pain	14.10.12 To 25.11.12	BT	9400	58	36	6	28	40	10.5	110	20	135	NIL	NIL	FPC	marked
					AT	9500	59	37	4	10	20	10.5	116	21	145	NIL	NIL	NIL	

CLINICAL STUDY ON UPPU PARPAM IN THE MANAGEMENT OF *SOOTHAGAVAYU* (OP)

SI NO	Op. No	Name/ Age/ Sex	Complaints	Duration of Days	BT & AT	INVESTIGATION													Results
						BLOOD										Urine			
						TC cells/cumm	DC (%)			ESR(mm)		Hb gm	Sgr mg/dl	Ur mg/dl	Blood CL	Sgr	Alb	Dep	
							P	L	E	½ hr	1 hr								
16.	8038	Geetha 30/Female	Irregular menstruation,oligomenorhoea, low back pain	18.10.12 To 25.11.12	BT	8800	54	40	6	20	30	11.5	95	25	165	NIL	NIL	NIL	marked
					AT	8500	55	40	5	15	30	11	110	23	163	NIL	NIL	NIL	
17.	8039	Shalini 30/Female	Irregular menstruation,oligomenorhoea, low back pain	18.10.12 To 20.12.12	BT	9400	56	39	5	16	20	11.7	95	26	167	NIL	NIL	NIL	marked
					AT	9000	57	39	3	15	22	11.5	110	25	154	NIL	NIL	NIL	
18.	5047	Savithri 32/Female	Irregular menstruation,oligomenorhoea, low back pain	28.10.12 To 18.12.12	BT	9500	59	39	2	22	40	12	70	23	142	NIL	NIL	FPC	mild
					AT	9600	58	38	4	15	30	11.5	90	25	146	NIL	NIL	NIL	
19.	970	Gaythri 17/Female	Irregular menstruation,oligomenorhoea, low back pain	3.11.12 To 9.1.13	BT	9400	54	42	3	40	78	10.6	88	18	153	NIL	NIL	FEC	marked
					AT	9500	56	40	4	22	33	12	115	18	150	NIL	NIL	FPC	
20.	1237	Carmel 23/Female	Irregular menstruation,oligomenorhoea, low back pain	5.11.12 To 4.1.13	BT	8500	53	43	4	27	45	8	92	21	143	NIL	NIL	FPC	marked
					AT	8700	54	42	4	15	22	9	101	21	140	NIL	NIL	NIL	

CLINICAL STUDY ON UPPU PARPAM IN THE MANAGEMENT OF *SOOTHAGAVAYU* (OP)

SI NO	Op. No	Name/ Age/ Sex	Complaints			BLOOD									Blood CL	Urine			Results
						TC cells/cumm	DC (%)			ESR(mm)		Hb gm	Sgr mg/dl	Ur mg/dl		Sgr	Alb	Dep	
							P	L	E	½ hr	1 hr								
21.	1668	Devi 22/Female	Irregular menstruation,amennorhoea, low back pain	6.11.12 To 21.12.12	BT	9200	53	41	6	30	60	7	85	24	154	NIL	NIL	FEC	moderate
					AT	9300	56	41	3	27	50	8	90	22	143	NIL	NIL	FPC	
22.	1919	Latha 33/Female	Irregular menstruation,oligomennorhoea, low back pain	7.11.12 To 5.1.13	BT	9200	58	35	7	16	28	12.5	80	24	146	NIL	NIL	FPC	marked
					AT	9300	57	36	7	10	16	13	95	25	148	NIL	NIL	NIL	
23.	1921	Ramya 26/Female	Irregular menstruation,oligomennorhoea, low back pain	7.11.12 To 12.12.12	BT	9400	55	40	5	15	25	11.5	96	28	157	NIL	NIL	NIL	marked
					AT	9300	57	42	3	12	24	12	102	25	155	NIL	NIL	NIL	
24.	1776	Corolin 18/Female	Irregular menstruation,oligomennorhoea, low back pain	7.11.12 To 5.12.12	BT	9700	59	38	3	10	20	11	90	24	145	NIL	NIL	FPC	marked
					AT	9600	58	39	3	10	22	10.5	95	23	138	NIL	NIL	FPC	
25.	2623	Monika 16/Female	Irregular menstruation,oligomennorhoea, low back pain	10.11.12 To 31.12.12	BT	9700	58	33	9	23	35	9	89	28	155	NIL	NIL	FEC	moderate
					AT	9800	58	37	5	16	33	10	115	18	143	NIL	NIL	NIL	

CLINICAL STUDY ON UPPU PARPAM IN THE MANAGEMENT OF *SOOTHGAVAYU* (OP)

SI NO	Op. No	Name/ Age/ Sex	Complaints	Duration of Days	BT & AT	INVESTIGATION													Results
						BLOOD										Urine			
						TC cells/cumm	DC (%)			ESR(mm)		Hb Gm	Sgr mg/dl	Ur mg/dl	Blood CL	Sgr	Alb	Dep	
							P	L	E	½ hr	1 hr								
26.	2544	Gomathi 34/Female	Irregular menstruation,oligomennorhoea, low back pain	10.11.12 To 30.12.12	BT	9500	56	38	6	23	50	10	100	22	160	NIL	NIL	FEC	marked
					AT	9600	57	40	3	20	30	9.5	115	21	153	NIL	NIL	NIL	
27.	3557	Ramya 23/Female	Irregular menstruation,oligomennorhoea, low back pain	16.11.12 To 5.1.13	BT	10300	58	36	6	15	34	11.5	85	23	160	NIL	NIL	FEC	marked
					AT	9800	57	39	4	11	15	12	95	23	145	Nil	NIL	NIL	
28.	3554	Parvathi 40/Female	Irregular menstruation,oligomennorhoea, low back pain	16.11.12 To 25.12.12	BT	9500	56	39	5	10	74	10.4	103	19	143	NIL	NIL	FPC	Poor
					AT	9300	56	40	4	22	38	11.2	116	20	150	NIL	NIL	FPC	
29.	3767	Sulochana 30/Female	Irregular menstruation,oligomennorhoea, low back pain	17.11.12 To 10.1.13	BT	9700	58	36	6	15	26	12.5	88	25	160	NIL	NIL	FPC	Moderate
					AT	9600	56	38	6	16	28	12	85	23	150	NIL	NIL	NIL	
30.	4143	Latha 36/Female	Irregular menstruation,oligomennorhoea, low back pain	19.11.12 To 23.12.12	BT	8600	56	40	4	15	30	11	124	24	158	NIL	NIL	FPC	marked
					AT	8800	58	36	6	20	40	11.5	110	23	145	NIL	NIL	NIL	

CLINICAL STUDY ON UPPU PARPAM IN THE MANAGEMENT OF *SOOTHGAVAYU* (OP)

SI NO	Op. No	Name/ Age/ Sex	Complaints	Duration of Days	BT & AT	INVESTIGATION													Results
						BLOOD									Blood CL	Urine			
						TC cells/cumm	DC (%)			ESR(mm)		Hb gm	Sgr mg/dl	Ur mg/dl		Sgr	Alb	Dep	
							P	L	E	½ hr	1 hr								
31.	4984	Karpagam 29/Female	Irregular menstruation,oligomennorhoea, low back pain	22.11.12 To 28.12.12	BT	9200	56	41	3	22	42	12	90	23	128	NIL	NIL	FEC	marked
					AT	9300	57	39	4	10	20	12.5	105	25	135	NIL	NIL	FPC	
32	5485	Geetha 18/Female	Irregular menstruation,oligomennorhoea, low back pain	24.11.12 To 28.12.12	BT	9700	59	36	5	8	20	11.5	80	26	149	NIL	NIL	FEC	mild
					AT	9500	57	40	3	11	22	11	85	23	145	NIL	NIL	NIL	
33.	5452	Kalpana 20/Female	Irregular menstruation,oligomennorhoea, low back pain	24.11.12 To 29.12.12	BT	10100	58	36	6	10	24	11.5	83	20	178	NIL	NIL	FPC	marked
					AT	9900	57	38	5	13	24	11.8	88	21	165	NIL	NIL	FPC	
34.	5484	Karthika 21/Female	Irregular menstruation,oligomennorhoea, low back pain	24.11.12 To 3.1.13	BT	8800	58	40	2	10	20	11	100	28	153	NIL	NIL	FPC	marked
					AT	8900	59	38	3	11	23	11.6	95	27	148	NIL	NIL	NIL	
35.	6203	Shankari 20/Female	Irregular menstruation,oligomennorhoea, low back pain	27.11.12 To 28.12.12	BT	9500	60	37	3	8	16	9.5	95	24	145	NIL	NIL	FPC	marked
					AT	9600	59	37	4	10	18	10	115	25	155	NIL	NIL	NIL	

CLINICAL STUDY ON UPPU PARPAM IN THE MANAGEMENT OF *SOOTHGAVAYU* (OP)

SI NO	Op. No	Name/ Age/ Sex	Complaints	Duration of Days	BT & AT	INVESTIGATION													Results
						BLOOD										Urine			
						TC cells/cumm	DC (%)			ESR(mm)		Hb gm	Sgr mg/dl	Ur mg/dl	Blood CL	Sgr	Alb	Dep	
							P	L	E	½ hr	1 hr								
36.	6204	Lalitha 25/Female	Irregular menstruation,oligomennorhoea, low back pain	27.11.12 To 29.12.12	BT	9800	56	37	7	10	30	10.7	86	23	163	NIL	NIL	FEC	marked
					AT	9900	56	40	4	12	28	11.2	92	25	155	NIL	NIL	NIL	
37.	7175	Vanitha 30/Female	Irregular menstruation,amennorhoea, low back pain	1.12.12 To 31.12.12	BT	8500	58	39	3	45	80	12	110	25	148	NIL	NIL	FPC	marked
					AT	8300	56	39	5	22	44	12	115	27	145	NIL	NIL	NIL	
38.	7176	Kalyani 42/Female	Irregular menstruation,oligomennorhoea, low back pain	1.12.12 To 5.1.13	BT	9000	64	32	4	12	22	10.7	83	25	160	NIL	NIL	FEC	Mild
					AT	9300	60	35	5	13	22	11.5	85	22	158	NIL	NIL	FEC	
39.	7169	Usha 35/Female	Irregular menstruation,amennorhoea, low back pain	1.12.12 To 8.1.13	BT	9700	58	39	3	9	20	12	80	28	145	NIL	NIL	FPC	marked
					AT	9800	59	35	6	15	27	13	84	26	147	NIL	NIL	NIL	

Table No: 7 CLINICAL STUDY ON UPPU PARPAM IN THE MANAGEMENT OF SOOTHAGAVAYU (IN PATIENT DEPRTMENT)

SI NO	Ip. No	Name/ Age/ Sex	Complaints	Duration of Days	BT & AT	INVESTIGATION													Results
						BLOOD										Urine			
						TC cells/cu mm	DC (%)			ESR(mm)		Hb gm	Sgr-mg/dl	Ur mg/dl	Blood CL	Sgr	Alb	Dep	
							P	L	E	½ hr	1 hr								
1.	1481 /9350	Leenamary 25/Female	Irregular menstruation,oligomenorhoea,body wt gain, low back pain	12.9.12 To 26.9.12	BT	8800	55	39	6	18	40	10	76	22	175	NIL	NIL	FEC	Moderate
					AT	9700	55	40	5	12	17	10.5	135	23	165	NIL	NIL	NIL	
2.	101 /2591	Nirmala devi 33/ Female	Irregular menstruation,oligomenorhoea, low back pain	26.9.12 To 4.10.12	BT	9300	56	40	4	10	20	12	115	23	145	NIL	NIL	FPC	Mild
					AT	9100	62	32	6	10	20	11.5	112	21	153	NIL	NIL	FPC	
3.	27/ 729	Bhuvaneswari 24/ Female	Irregular,amenorrhoea menstruation,oligomenorhoea, low back pain	18.9.12 To 21.10.12	BT	9400	55	42	3	25	40	9	76	22	172	NIL	NIL	FEC	Marked
					AT	9500	54	40	6	10	15	9.2	115	19	171	NIL	NIL	FEC	
4.	149/ 4074	Bhuvaneshwari 16/ Female	Irregular menstruation,oligomenorhoea, low back pain	2.10.12 To 12.11.12	BT	9600	52	41	7	25	55	10.2	93	23	143	NIL	NIL	NIL	Marked
					AT	9700	56	39	5	17	22	10.5	110	25	144	NIL	NIL	NIL	
5.	219/ 6334	Bhavani 28/ Female	Irregular menstruation,oligomenorhoea, low back pain	11.10.12 To 27.10.12	BT	9800	57	39	4	20	45	11.2	108	24	146	NIL	NIL	FEC	Marked
					AT	9700	57	38	5	22	45	11	110	25	148	NIL	NIL	NIL	

5.RESULTS AND DISSCUSSION

The excellently cataloged mineral drug Uppu parpam had continued with different types of studies to confirm the siddhars Obligation as accurate. Many studies such as Literary collections, physicochemical and Phyto chemical analysis, toxicological study, pharmacological study and clinical study are done to prove Uppu parpam in the administration of PCOS.

Literary Review

Uppu parpam has ingredients of six Kaarasaaram namely Vediuppu, indhuppu, valaiyaluppu, gendhiuppu, pooneeru and vengaram. In which out of 6 three drugs N=namely Vediuppu, Indhuppu and Pooneeru are the Panchaboothauppu Theyu, Prithvi and Agayam respectively. These Panchabootha principle acts on the three humours and makes it in equilibrium and acts in the last 7^{th} udal thadhu and will have action over it and also it acts as chatru mithru principle and cures the disorder caused in females so called as Soothaga Vaayu.

Standardisation of *Uppu parpam:*

Physical investagations*:*

Table No 8

S.No	Sample	Colour-Under ordinary light
1	Powdered material	Dull white

Physico-chemical properties of *Uppu parpam*:

Table No.9

S.No	**Parameter**	**Mean Value**
1.	Loss on Drying at 105°C	8.535 %
2.	Total Ash	78.81 %
3.	Acid insoluble Ash	0.388 %
4.	Particle size	Completely passes through sieve no.44
5.	pH	12.0

Interpretation:

Colour of the drug is dull white under both ordinary and UV light rays shows there is no radioactive components in it. The acid insoluble ash value is 0.38% (w/w) is very low. And the particle size reveals the size of the parpam particles are very low and the alkalinity when administered with adjuvant will help in treating the condition PCOS.

Preliminary Chemical Analysis of *UPPU PARPAM*:

Presence of Phosphate, chloride, iron and potassium.

Preliminary chemical studies on *Uppu Parpam:*

Table No.10

Test for chemicals	Observation	Inference
Reducing sugar	No appearance Green / Yellow / Red PPT	-
Starch	No Blue colour is formed	-
Proteins	No Violet or Purple Colour	-
Amino acids	No Violet Colour	-
Albumin	No appearance of Yellow PPT	-
Phosphate	Formation of Yellow PPT	+
Sulphate	No apprearance of White PPT	-
Chloride	Cloudy White PPT is formed	+
Iron	Apperence of Red Colour	+
Calcium	No appreance of White PPT	-
Sodium	No coloured Flame is formed	-
Potassium	Formation of Yellow PPT	+
Zinc	No appreance of White PPT	-
Magnesium	No appreance of White PPT	-
Alkaloids	No Red or yellow or white coloured PPT are formed.	-
Tannic Acid	No appreance of Black PPT	-

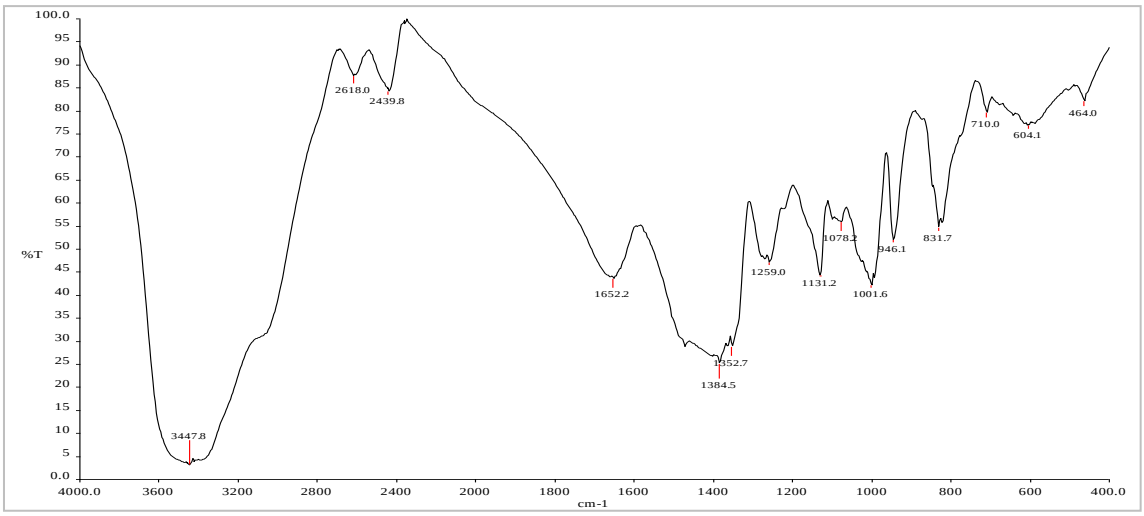
Interpretation:

- Phosphate is required for cellular function and skeletal mineralization. It also make up genetic materials that comprise over DNA.
- Chloride is most common electrolyte in the body and it maintains immune system.
- Potassium regulates heart function and also an important electrolyte
- Iron is an important component of the heame, it is stated that iron content in carpus leuteal cells are high and it absorbs the clot and removes it. So it can make carpus leuteum too grow larger thus maintaining consumption.
- Thus the chemicals present in the drug helps to increase immunity and improves female genral health and helps in treating PCOS

Elemental Analysis Of Drug:

Fourier Transforms Infrared Spectroscopy (FTIR):

The interpretation of infrared spectra involves the correlation of absorption bands in the spectrum of an unknown compound with the known absorption frequencies for types of bonds. This table will help users become more familiar with the process. Significant for the identification of the source of an absorption band are intensity (weak, medium or strong), shape (broad or sharp), and position (cm-1) in the spectrum.



KADA44~1.SP 3601 4000.0 400.0 3.1 100.0 4.0 %T 4 2.0

PT

REF 4000 94.2 2000 81.8 600
3447.8 3.1 2618.0 87.6 2439.8 84.2 1652.2 43.6 1384.5 25.2
1352.7 28.9 1259.0 47.2 1131.2 44.3 1078.2 55.9 1001.6 42.1
946.1 52.1 831.7 54.8 710.0 79.7 604.1 76.9 464.0 82.2
END 15 PEAK(S) FOUND

Table no:11 FTIR group

3447.8	Carboxylic acid
1652.2	Alkenes C=C stretch (isolated
1384.5;1352.7; 1259	Alkenes C-H in- plane bend
1131	Alcohols C-O stretch
1078.2;1001.6	Ethers C-O-C stretch
946.1	Anhydrides C-O strech
831.7	Aromatics C-H (para)
710	Acid chlorides C-Cl stretch
604.1;464.0	Alkyl halides C-l stretch

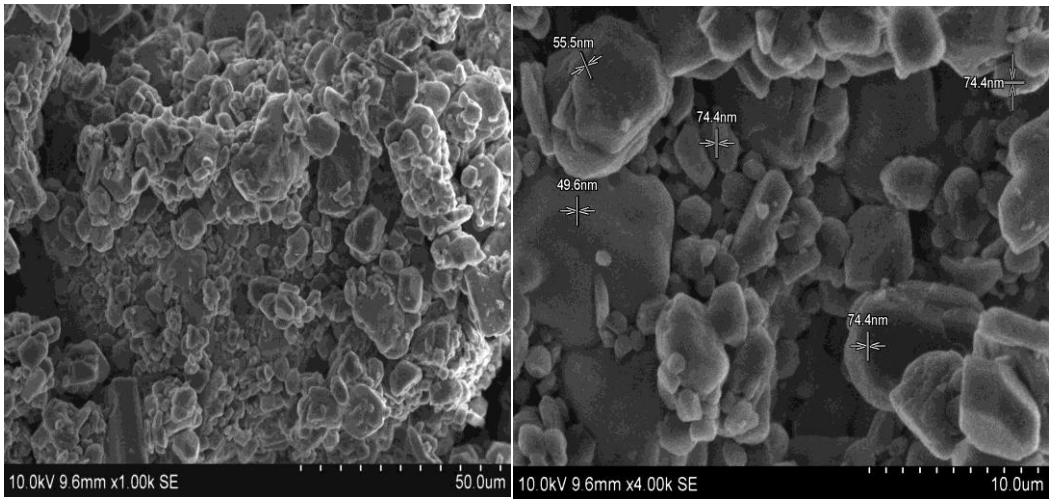
Interpraetation:

From the analysis shows the stated groups available in the drug and helps in the activity of the drug

Scanning Electron Microscope (SEM):

The SEM has a large depth of field, which allows a large amount of the sample to be in focus at one time.The SEM also produces images of high resolution, which means that closely spaced features can be examined at a high magnification. Preparation of the samples is relatively easy since most SEM one require the sample to be conductive. The particle size is 500 nm.

Figure: 9 SEM of *Uppu parpam*



Interpretation:

According to this study it reveals the nano particle size of the drug uppu parpam. This reduces the effect of drug on other sites while it maximizing the therapeutic effect on the target organ.it increases the solubility, stability and absorption of the drug more effectively without producing any side effect.

Toxicological evaluation of Uppu Parpam:

Acute and Sub acute toxicity on Uppuu parpam in Rodents:

1) All the animals from control and all the treated dose groups up to 50mg/kg survived throughout the dosing period of 28 days.

2) No signs of major or significant intoxication were observed in animals from lower to higher dose groups during the dosing period of 28 days.

3) Animals from all the treated dose groups exhibited comparable body weight gain with that of controls throughout the dosing period of 28 days.

4) Food consumption of control and treated animals was found to be comparable throughout the dosing period of 28days.

5) Ophthalmoscopic examination, conducted prior to and at the end of dosing period on animals from control and all the treated dose groups did not reveal any abnormality.

6) Haematological analysis conducted at the end of the dosing period on day 28, revealed no significant abnormalities attributable to the treatment.

7) Biochemical analysis conducted at the end of the dosing period on day 28, revealed no remarkable abnormalities attributable to the treatment.

8) Functional observation tests conducted at termination revealed no abnormalities.

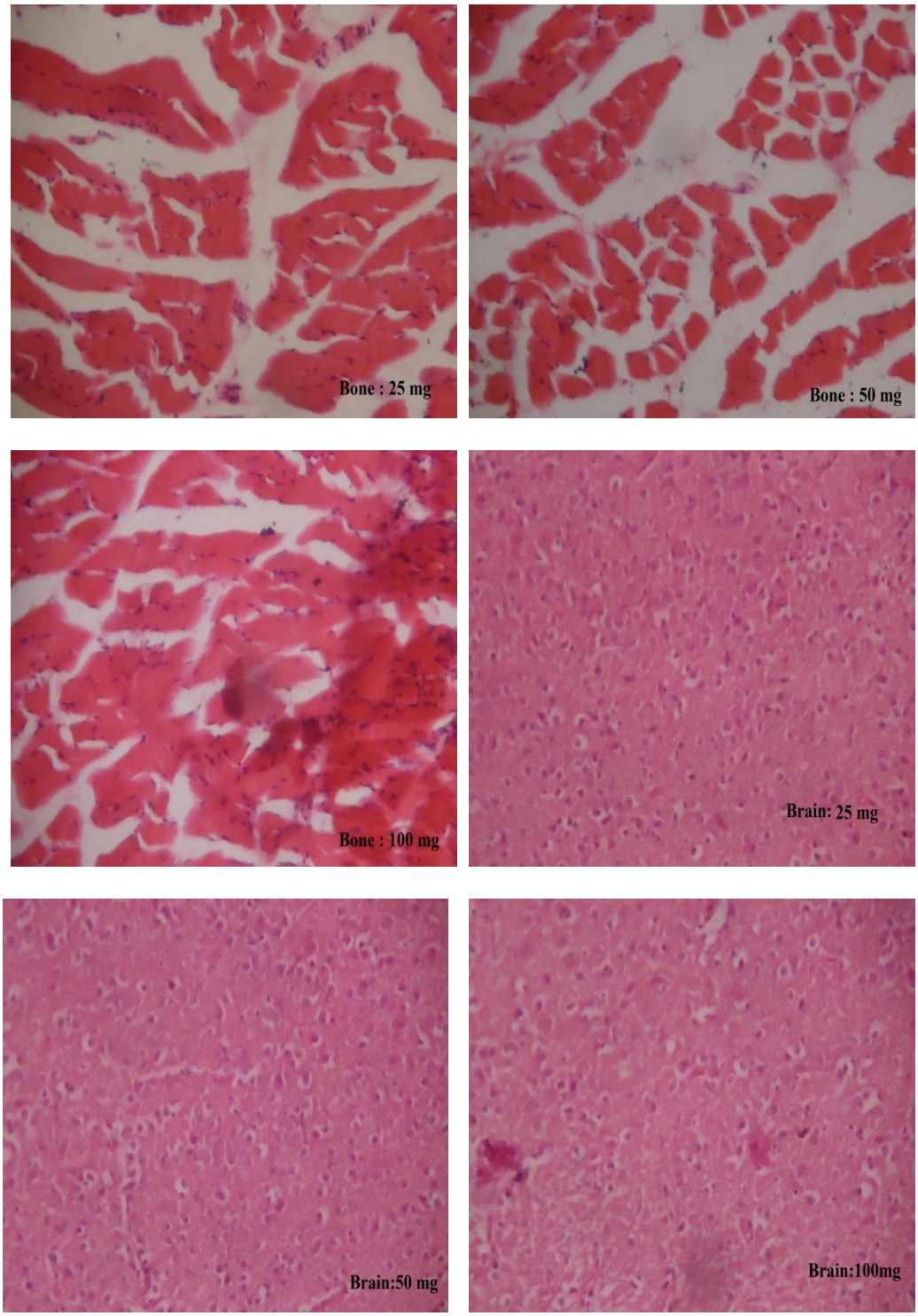
9) Urine analysis, conducted at the end of the dosing period in week 4 revealed no abnormality attributable to the treatment.

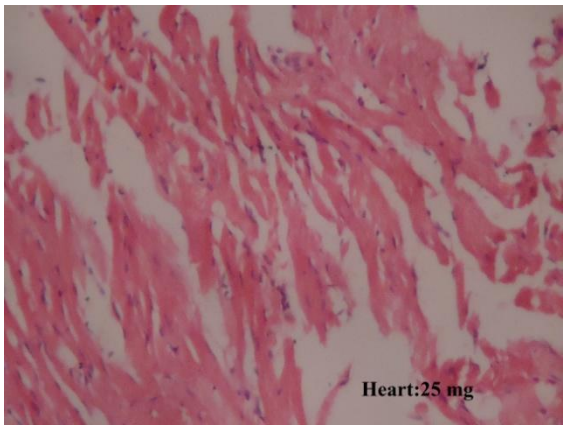
10) Organ weight data of animals sacrificed at the end of the dosing period was found to be comparable with that of respective controls.

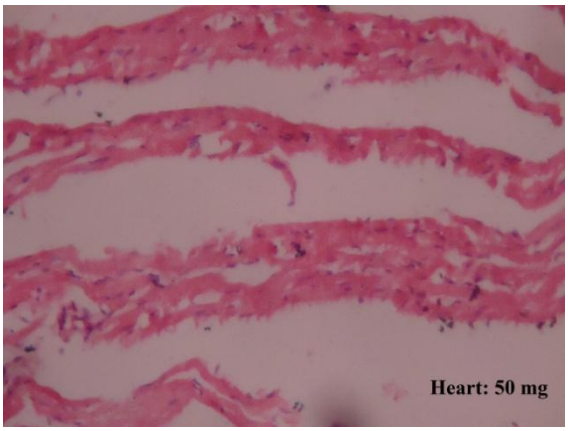
11) Gross pathological examination did not reveal any abnormality.

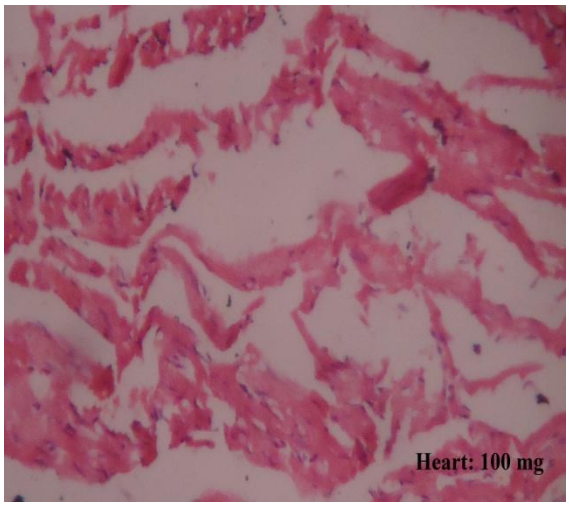
12) Histopathological examination did not reveal any abnormality.

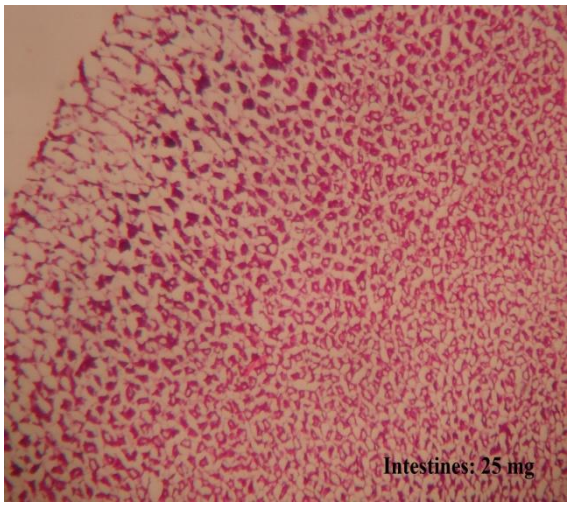
Figure No : 10 Histopathological Pictures

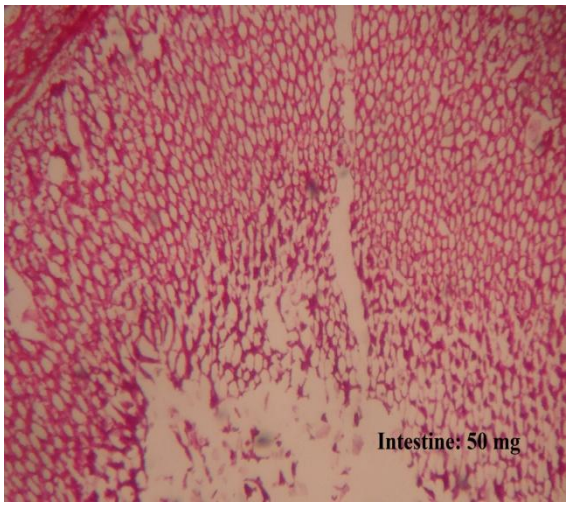


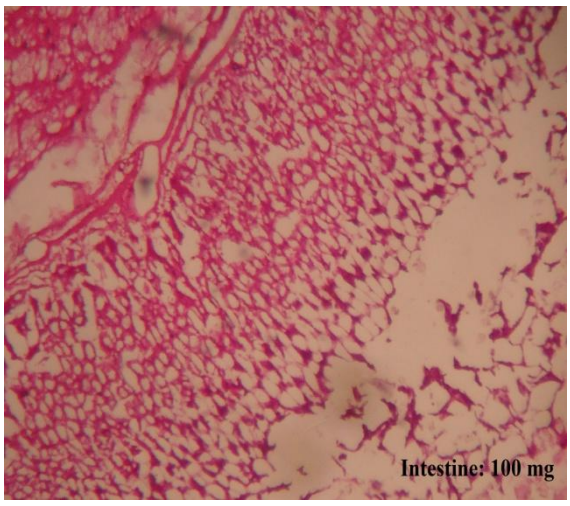

Heart:25 mg

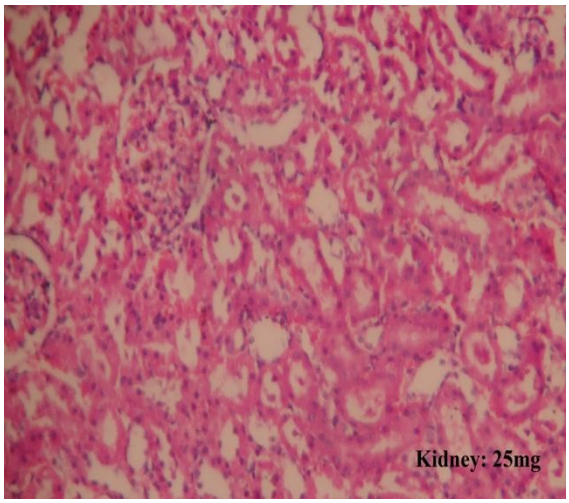

Heart: 50 mg

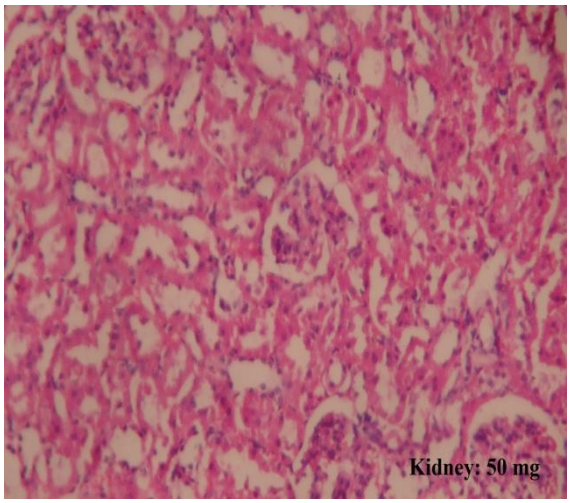

Heart: 100 mg

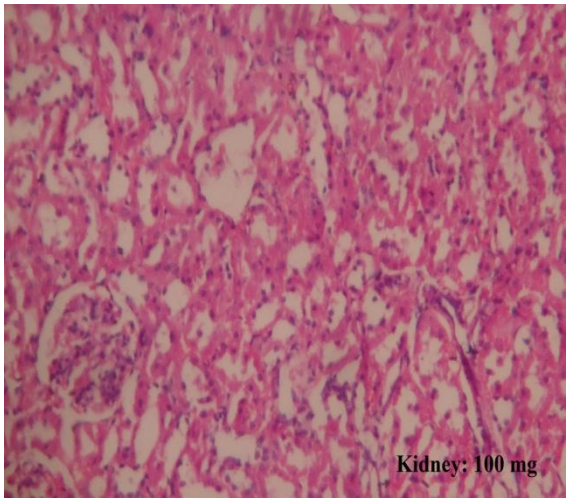

Intestines: 25 mg

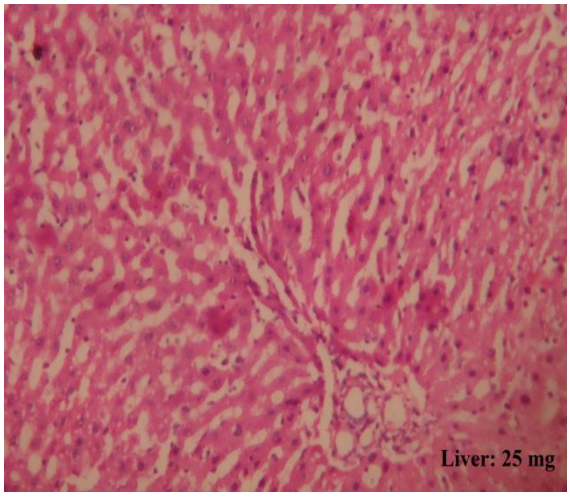

Intestine: 50 mg

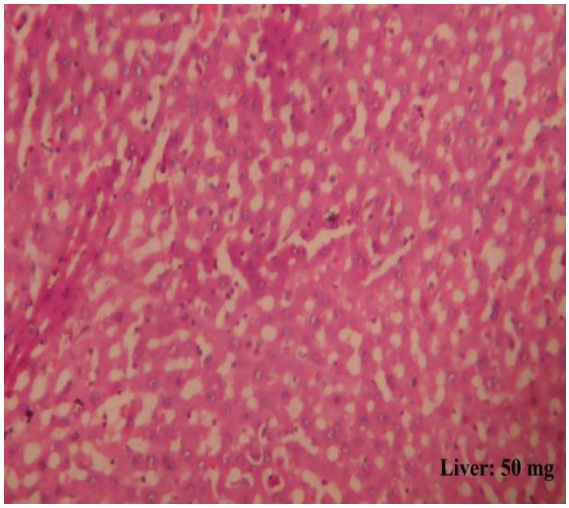

Intestine: 100 mg

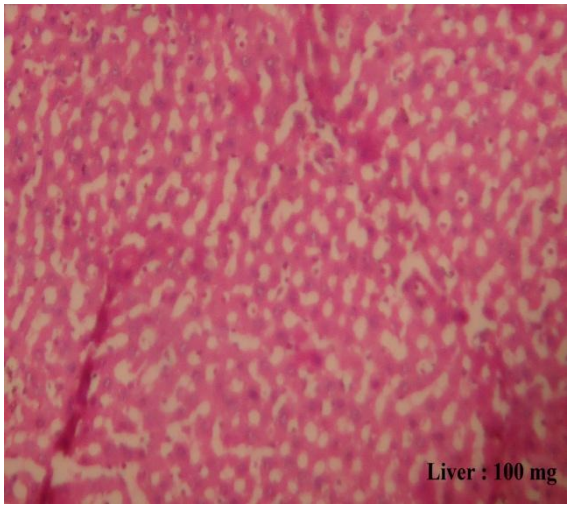

Kidney: 25mg

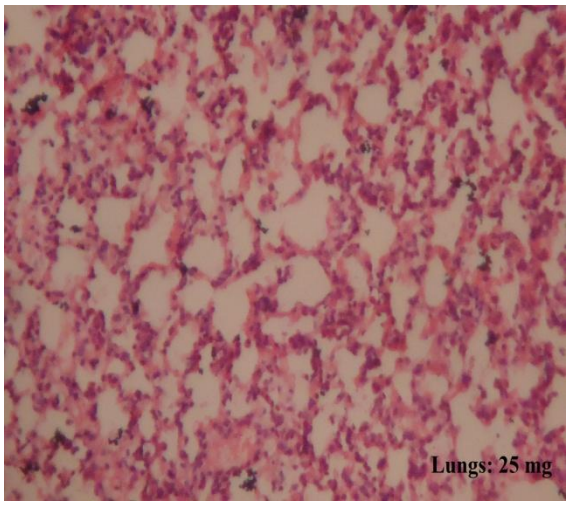

Kidney: 50 mg

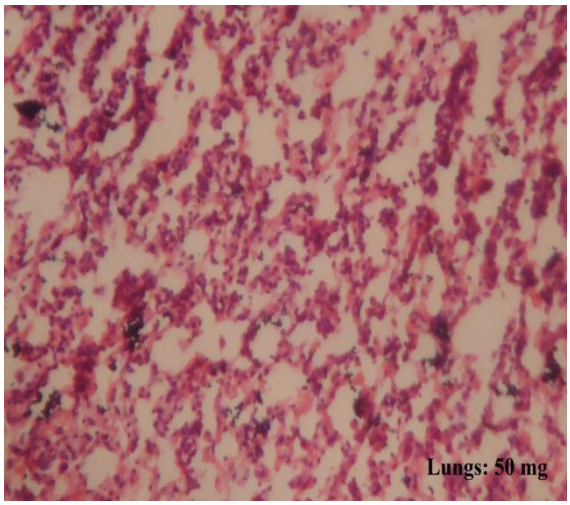

Kidney: 100 mg

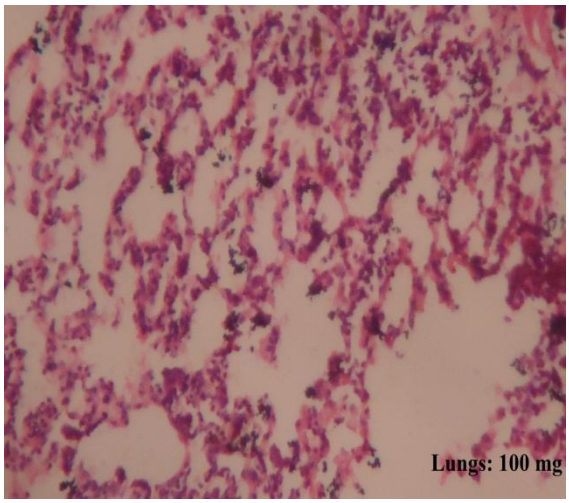

Liver: 25 mg

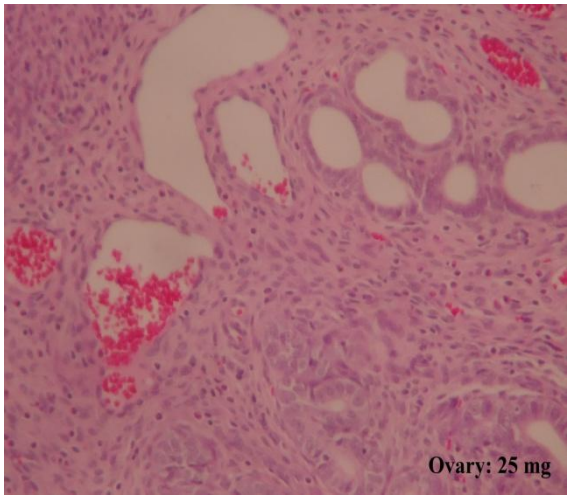

Liver: 50 mg

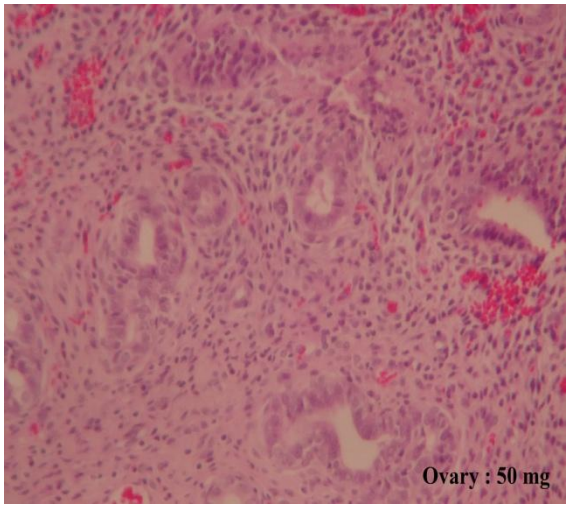

Liver : 100 mg

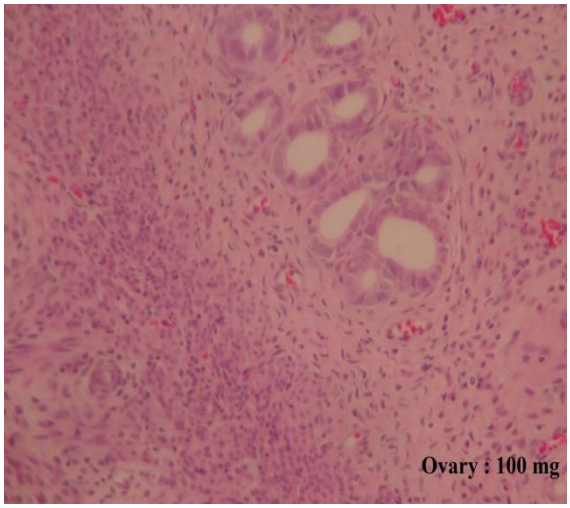

Lungs: 25 mg

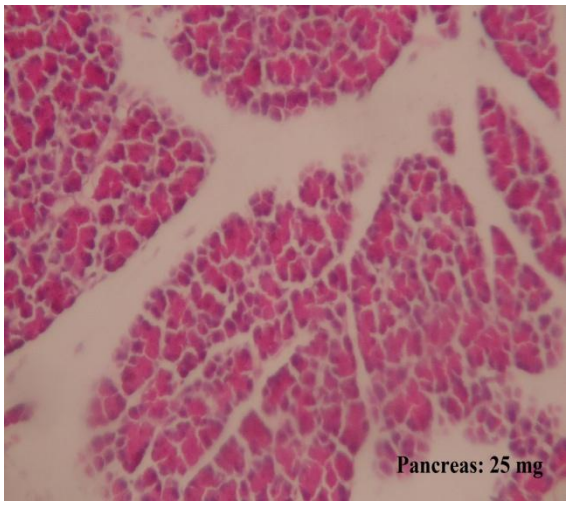

Lungs: 50 mg

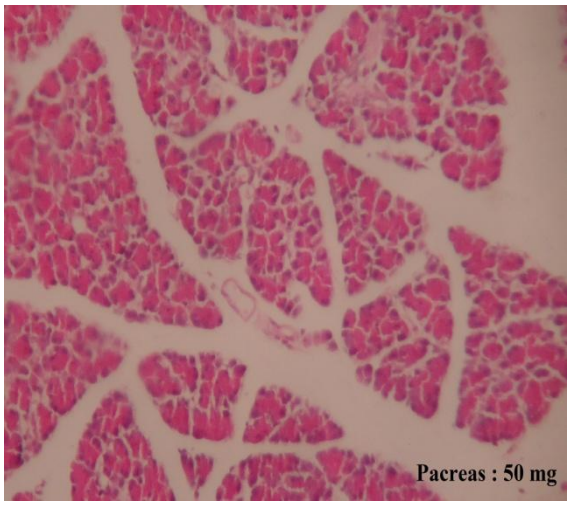

Lungs: 100 mg

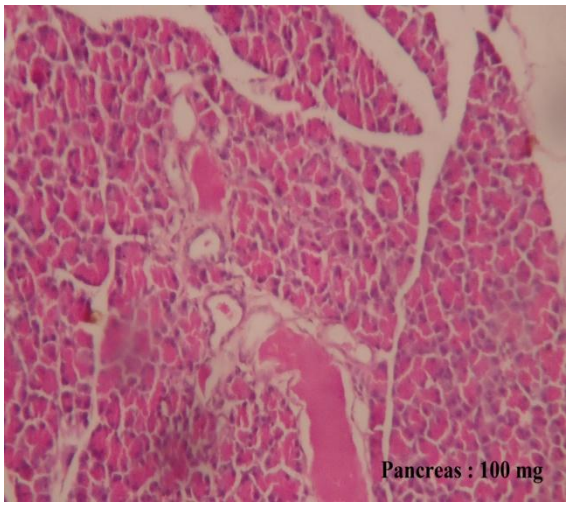

Ovary: 25 mg

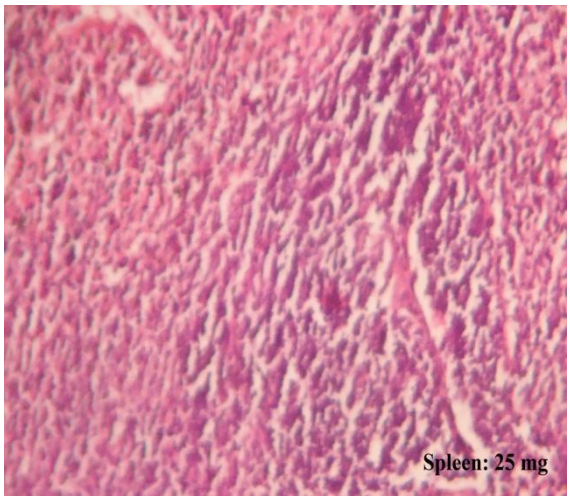

Ovary : 50 mg

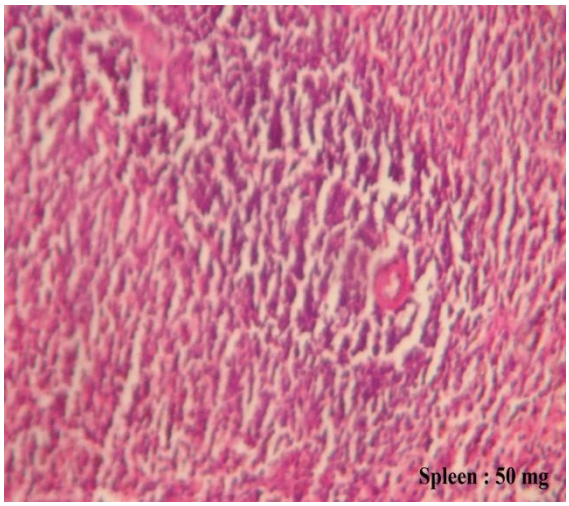

Ovary : 100 mg

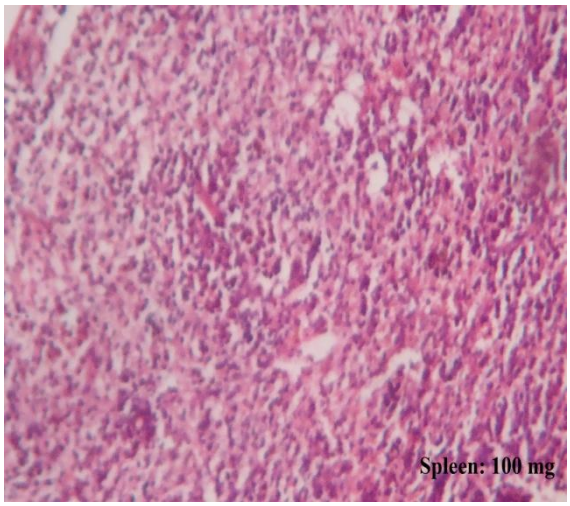

Pancreas: 25 mg

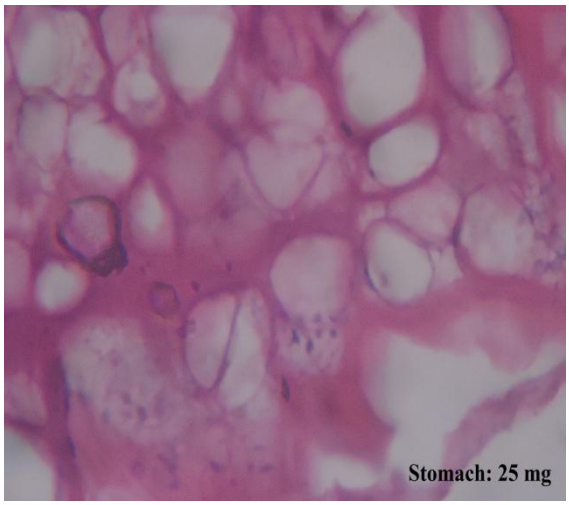

Pacreas : 50 mg

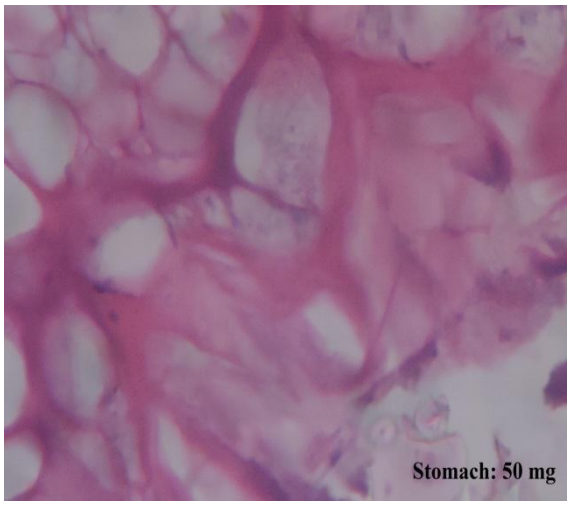

Pancreas : 100 mg

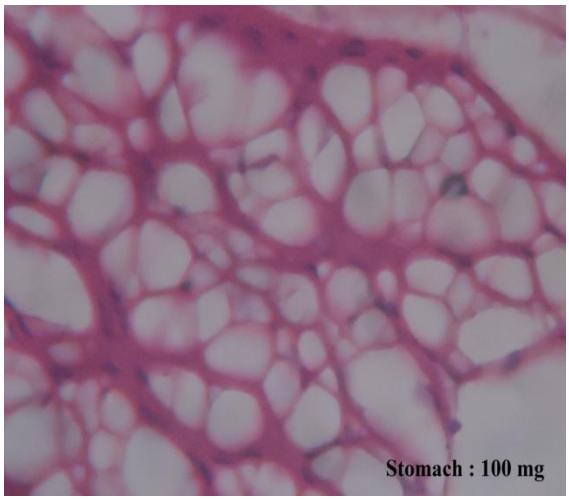

Spleen: 25 mg

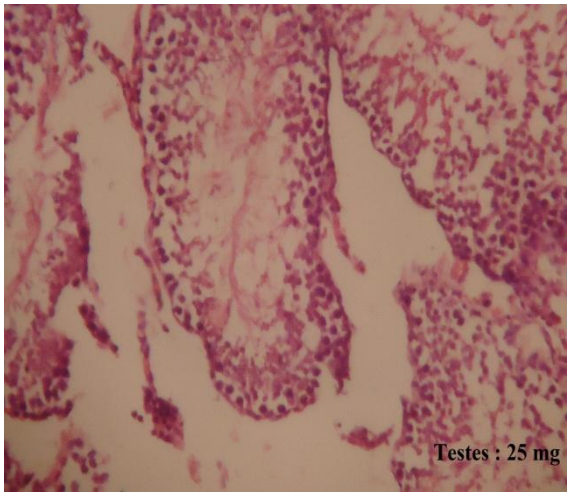

Spleen : 50 mg

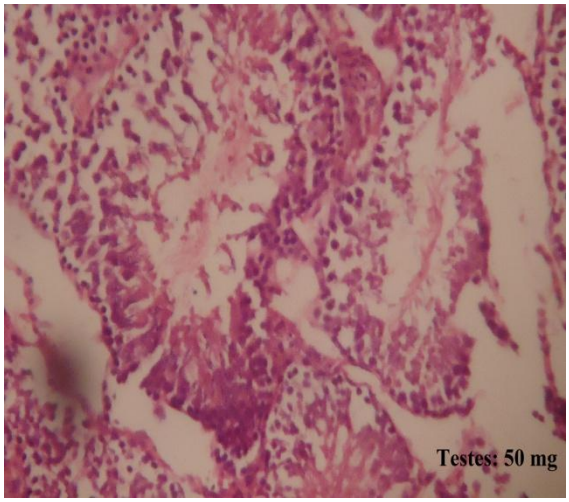

Spleen: 100 mg

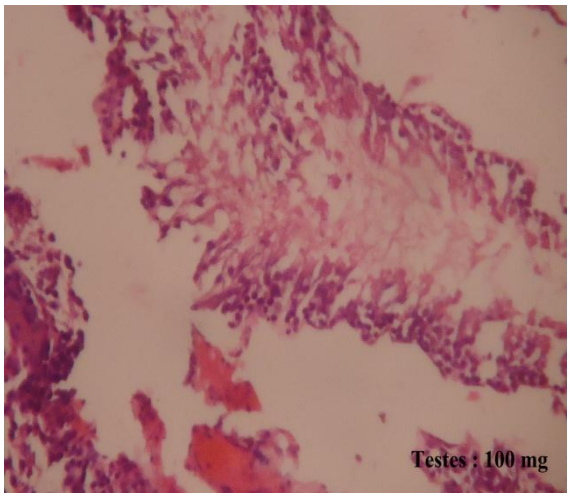

Stomach: 25 mg


Stomach: 50 mg


Stomach : 100 mg


Testes : 25 mg


Testes: 50 mg


Testes : 100 mg

Ovulogenesis activity

The Uppu Parpam had no toxic effect at 500mg/kg on mice after 48 hours of oral drug treatment. The relative weight of uterus and ovary were significantly increased ($P<0.05$) in experimental groups that received 100mg/kg at the end of the tenth day as compared with CMC treated normal female rats. There was no significant changes were observed in 50mg/kg and vehicle treated female rats. PCOS is a complex, heterogeneous disorder of uncertain aetiology. There is strong evidence that it is a genetic disease. Such evidence includes the familial clustering of cases, greater concordance in monozygotic compared with dizygotic twins and heritability of endocrine and metabolic features of PCOS. The clinical severity of PCOS symptoms appears to be largely determined by factors such as obesity.

Reproductive health is even in the 21st century still a potential source of mortality for both gestation mothers and their developing foetuses in the underdeveloped world. Uppu Parpam up to 100mg/kg administration shows gradual increase in body weight, and vehicle alone. The ability of FSH to induce ovulation has been previously analysed in various model systems and it can be concluded that, in the absence of LH, FSH alone cannot induce ovulation. The concentration of LH, FSH, estradiol hormones showed a significantly ($P<0.05$) increased level in test group.

Histological studies revealed that Uppu Parpam treated at 100mg/kg dose level showed remarkable alterations in ovarian tissues with increased number of Primordial follicles, matured graffian follicles and corpus luteum. Results showed that there was a marked increase in body, uterine and ovary weight, LH, FSH, estradiol is noted in Uppu Parpam 100mg/kg. p.o treated rats compared to normal control and comparable with standard drug treated group. Follicle development is a complex and dynamic process requiring the coordinate interactions of multiple intra gonadal and extra gonadal factors.

The results of Uppu Parpam suggested the ovulatory response in female rats. The body weights of the rats treated with Uppu Parpam increased significantly. It may stimulate hypothalamus-pituitary-ovarian axis which is responsible for the synthesis and storage of gonadotropins LH and FSH which play a major role as regulators of folliculogenesis. Research reveals that in females, plasma progesterone concentration

remains relatively constant throughout the follicular phase of the menstrual cycle. The concentration then increases rapidly following ovulation and remains elevated for 4-6 days and decreases to the initial level 24 hours before the onset of menstruation.

In pregnancy, placental progesterone production rises steadily to levels of 10 to 20 times those of the luteal phase peak. Diseases related to estrogen include breast and uterine diseases, including cancers, fibroid, premenstrual syndrome, reproductive dysfunctions such as infertility or lactation suppression. Histology of the uterus of control shows the normal structure of the uterus with endometrium having large epithelial cells with nuclei. And the uterus of rats treated with 50 and 100mg/kg of Uppu Parpam shows the intact endometrial glands with significant histological changes. Photomicrograph of the uterus of standard drug treated rats shows the tissue with mild cellular and pale stroma and normal histology of the uterus. Histological examinations of follicles of ovaries treated with Uppu Parpam showed an increase in the number of primary and secondary follicles, graffian follicle and corpus luteum with less atretic follicles.

Administration of Uppu Parpam increases FSH, LH and estradiol may be due to ovarian steroidogenesis. The increase in ovarian weight is regulated by plasma gonadotropins (FSH and LH) and uterine weight by ovarian steroids (estrogen and progesterone). In this investigation, results suggest that ovarian steroidogenic function is increased after treatment with Uppu Parpam along with increased pituitary gonadotropins release when compared to control and standard group. Hence, this study confirms Uppu Parpam influence enhances folliculogenesis.

Table-12: Effect of Uppu Parpam on weight of uterus and ovary after 10 days treatment

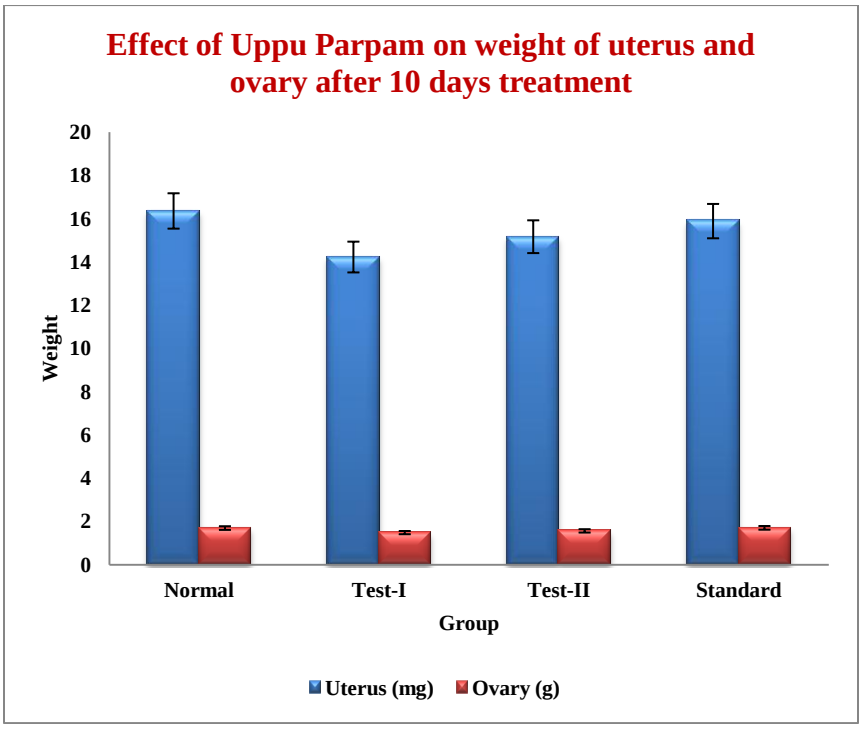
S.No	Group	Treatment and dose	Weight of uterus (mg)	Weight of ovary (g)
1.	Normal	2ml/kg 2% CMC	16.35±1.2	1.69±0.14
2.	Test-I	Uppu Parpam 50mg/kg	14.22±0.62	1.48±0.18
3.	Test-II	Uppu Parpam 50mg/kg	15.16±1.01	1.56±0.15
4.	Standard	Clomiphene 10mg/kg	15.88±+0.72	1.70±0.15

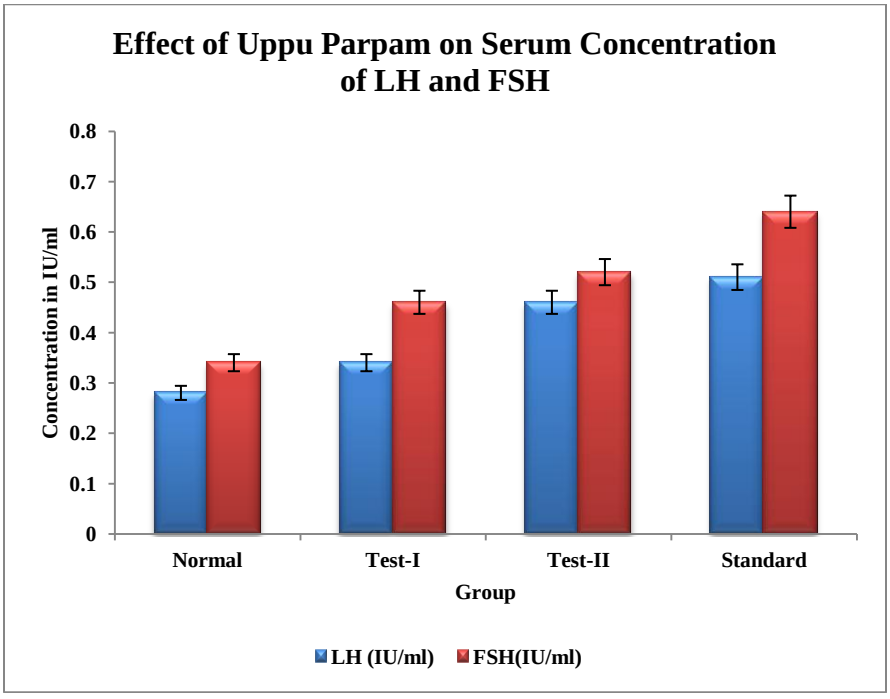
N = 6. Values are expressed as Mean±SEM. ^{ns}P>0.05 compared to normal control.

Table-13:Effect of Uppu Parpam on Serum Concentration of reproductive hormones of female rats after 10 days treatment.

S.No	Group	Treatment and dose	LH (IU/ml)	FSH (IU/ml)	Estrogen (pg/ml)	Progesterone (pg/ml)	Testesterone (ng/ml)
1.	Normal	2ml/kg 2% CMC	0.28±0.04	0.34±0.02	63±3.2	8.6±1.22	1.3±0.11
2.	Test-I	Uppu Parpam 50mg/kg	0.34±0.06	0.46±0.05	55±2.8^{a}	7.6±1.03	0.9±0.04^{**,a}
3.	Test-II	Uppu Parpam 50mg/kg	0.46±0.09	0.52±0.06	50±1.7^{**,a}	7.2±0.88	0.6±0.02**
4.	Standard	Clomiphene 10mg/kg	0.51±0.12	0.64±0.08**	32±1.2**	6.5±0.69	0.4±0.02**

N = 6. Values are expressed as Mean±SEM. **p<0.01 Vs Normal control; ^{a}p<0.01 Vs Standard.


Effect of Uppu Parpam on weight of uterus and ovary after 10 days treatment
Weight
20
18
16
14
12
10
8
6
4
2
0
Normal
Test-I
Test-II
Standard
Group
Uterus (mg)
Ovary (g)


Effect of Uppu Parpam on Serum Concentration of LH and FSH
Concentration in IU/ml
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Normal
Test-I
Test-II
Standard
Group
LH (IU/ml)
FSH(IU/ml)

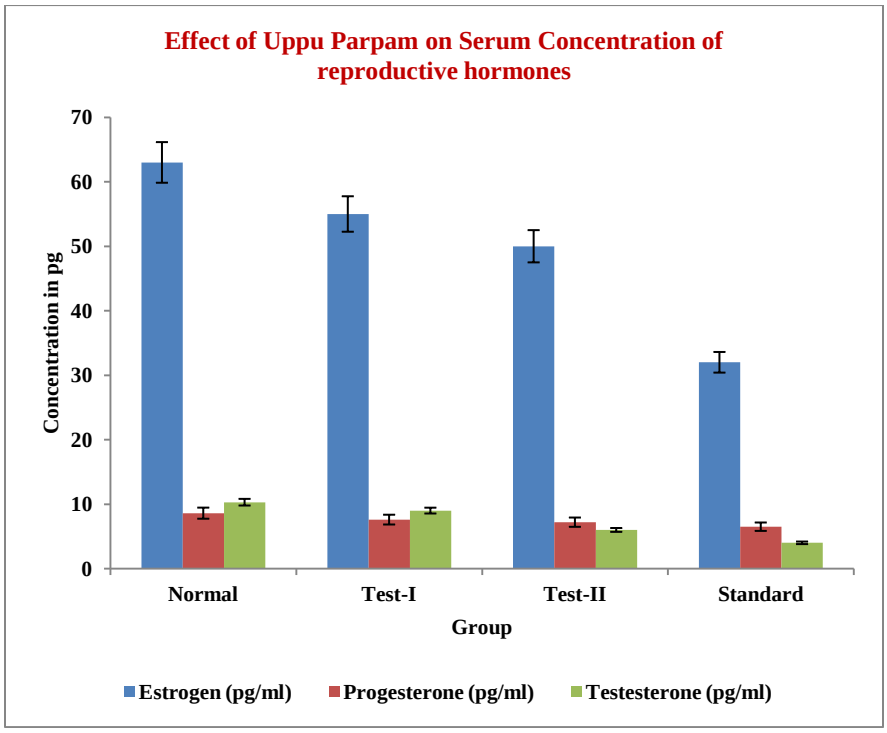
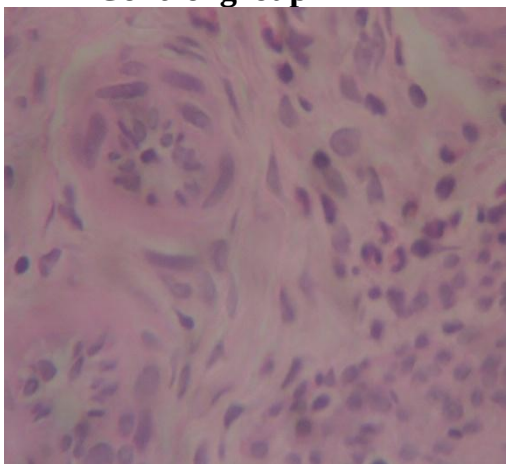
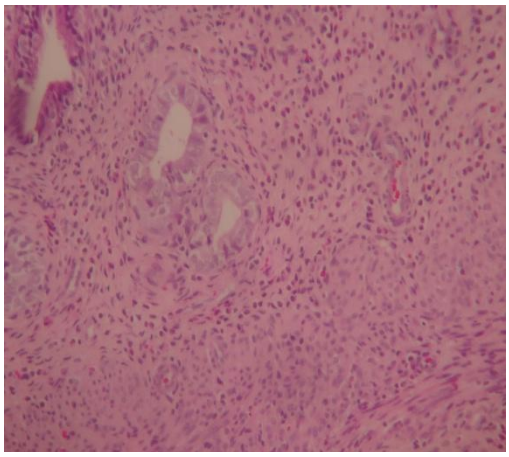

Effect of Uppu Parpam on Serum Concentration of reproductive hormones
Concentration in pg
70
60
50
40
30
20
10
0
Normal
Test-I
Test-II
Standard
Group
Estrogen (pg/ml)
Progesterone (pg/ml)
Testesterone (pg/ml)

Figure No:11 Activity of UPPU PARPAM

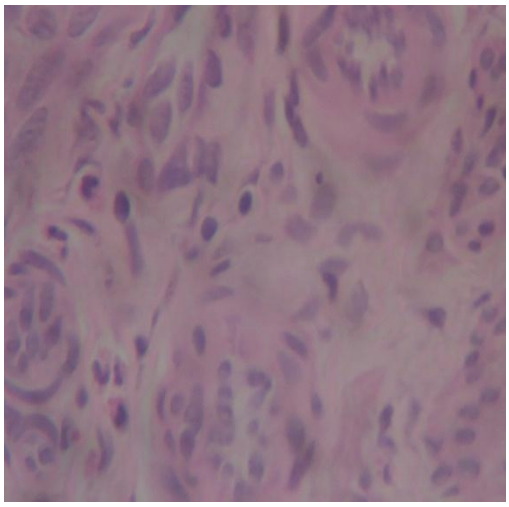
Control group



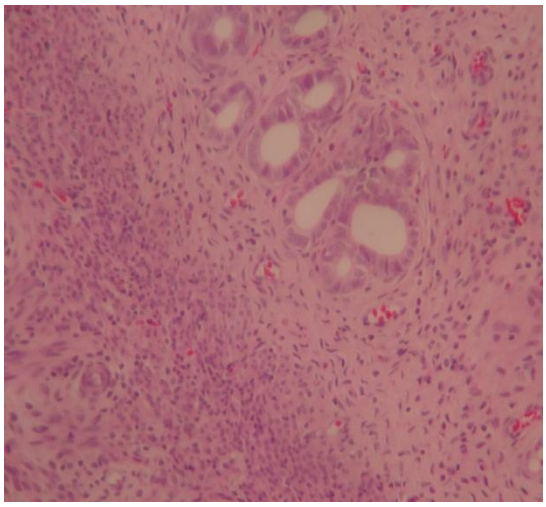
Normal group



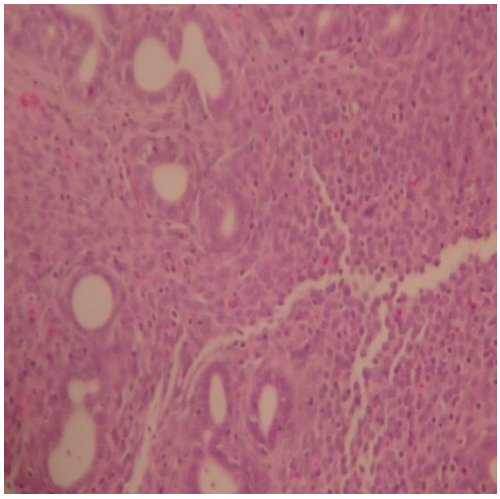
Standard



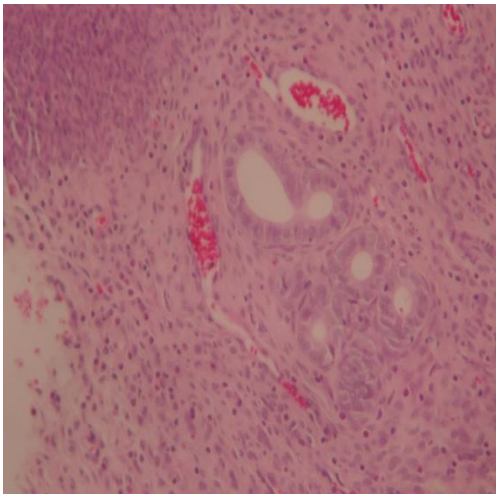
Standard



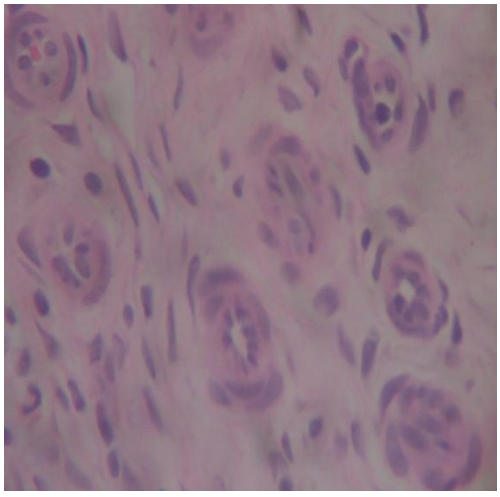
Uppu Parpam- 50 mg



Uppu Parpam-100 mg



Uppu Parpam -50 mg



Uppu Parpam- 100 mg

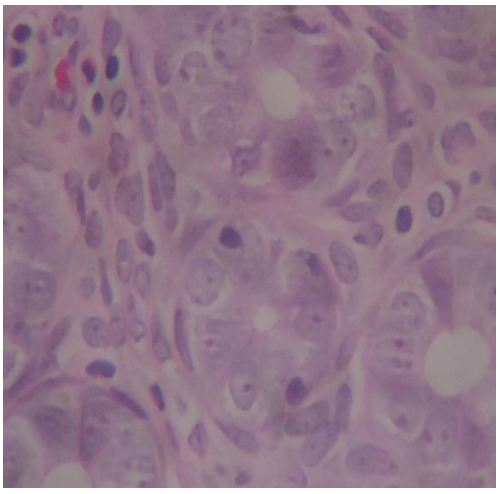


Table 14: Dose finding experiment and its behavioral Signs of Toxicity

No	Dose mg/kg	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1.	500	+	-	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	1000	+	+	-	+	-	+	-	-	-	+	-	-	-	-	-	-	-	-	+	+
3	2000	+	+	-	+	-	+	-	+	-	+	-	-	-	-	-	-	+	-	+	+

1. Alertness 2. Aggressiveness 3. Pile erection 4. Grooming 5. Gripping 6. Touch Response 7. Decreased Motor Activity 8. Tremors 9. Convulsions 10. Muscle Spasm 11. Catatonia 12. Muscle relaxant 13. Hypnosis 14. Analgesia 15.Lacrimation 16. Exophthalmos 17. Diarrhoea 18. Writhing 19. Respiration 20. Mortality

Table 15. Effect of Uppu Parpam on Clinical blood chemistry examinations in rats.

Parameter	Control	Uppu Parpam		
		25 mg/kg	50 mg/kg	100 mg/kg
Glucose (mg/dL)	133.60±5.61	138.20±10.21	141.22±10.00	132.16±8.82
BUN (mg/dL)	21.90±1.11	25.02±1.60	25.30±1.18	20.10±0.52
Creatinine (mg/dL)	0.36±0.02	0.42±0.02	0.44±0.02	0.47±0.03**
Total Protein (g/dL)	5.42±0.10	5.77±0.14	5.50±0.12	5.26±0.11
Albumin (g/dL)	3.81±0.06	3.83±0.09	3.72±0.09	3.80±0.08
Total Bilirubin (mg/dL)	0.17±0.02	0.18±0.02	0.17±0.02	0.20±0.05
Direct Bilirubin (mg/dL)	0.08±0.02	0.07±0.01	0.10±0.08	0.10±0.10
SGOT (IU/L)	120.32±5.51	118.02±6.00	115.73±7.92	124.11±10.00
SGPT(IU/L)	34.00±4.45	38.10±5.46	37.05±5.56	40.43±4.32*
ALP (IU/L)	107.00±8.22	104.02±4.15	110.44±8.92	107.83±6.92

Values are expressed as mean S.E.M, n =6, *p < 0.05**;**P<0.01**..

Table 16. Effect of Uppu Parpam on Hematological examinations of rats.

Group	Dose (mg/kg)	Red Blood cell ($x10^6$/ml)	Hemoglobin (g/dl)	Hematocrit (%)	MCV (fl)	MCH (pg)	MCHC ($X10^5$/ml)	Platelet (g/dl)
Control	-	6.72±0.28	14.62±0.40	41.55±1.00	62.13±1.41	22.44±0.42	36.10±0.42	8.66±0.22
Uppu Parpam	25	7.44±0.15*	15.60±0.38	43.47±0.72	61.00±0.50	21.21±0.34	35.22±0.34	7.64±0.24*
Uppu Parpam	50	7.32±014	15.54±0.36	44.28±1.02	60.06±0.42	21.27±0.45	34.68±0.82	7.24±0.26**
Uppu Parpam	100	7.45±0.12*	16.24±0.31*	46.10±1.23*	61.32±0.40	21.43±0.34	34.74±0.51	8.24±0.24

Values are expressed as mean S.E.M, n = 6, *****p < 0.05**;**P<0.01**..

Table 17. Effect of Uppu Parpam on Differential White Blood Cell Counts of rats.

Group	Dose (mg/kg)	White Blood cell ($x10^3$/ml)	Neutrophil (%)	Lymphocyte (%)	Monocyte (%)	Eosinophil (%)	Basophil (%)
Control	-	2.75±0.28	14.72±1.00	74.45±0.90	7.76±0.35	2.22±0.30	0.00±0.00
Uppu Parpam	25	2.59±0.32	21.04±0.51**	68.13±1.20**	7.34±0.40	2.24±0.28	0.00±0.00
Uppu Parpam	50	3.28±0.35	16.48±1.22	71.22±1.16	7.97±0.36	2.50±0.35	0.00±0.00
Uppu Parpam	100	4.14±0.42*	21.20±2.11**	70.00±1.23*	8.02±0.28	1.02±0.24*	0.00±0.00

Values are expressed as mean S.E.M, n = 6, *p < 0.05;**P<0.01.

Table-18 Urine Analysis

Parameters	Control	25 mg/kg	50 mg/kg	100 mg/kg
Colour	Yellow	Yellow	Yellow	Yellow
Transparency	Clear	Slightly turbid	Slightly cloudy	Slightly turbid
Specific gravity	1.010	1.010	1.010	1.010
PH	>7.2	>8.0	>8.0	>9.0
Protein	Nil	3+	3+	3+
Glucose	Nil	Nil	Nil	Nil
Bilirubin	-ve	-ve	-ve	-ve
Ketones	-ve	+ve	+ve	+ve
Blood	Absent	Absent	Absent	Absent
Urobilinogen	Normal	Abnormal	Abnormal	Abnormal
Pus cells	0-cells/HPF	1-cell/HPF	2-cells/HPF	1-cell/HPF
RBCs	Nil	Nil	0-1cells/HPF	Nil
Epithelial cells	Nil	1-cell/HPF	Nil	1-cell/HPF
Crystals	Nil	Nil	Nil	Nil
Casts	Nil	Nil	Nil	Nil
Others	Bacteria seen	Bacteria seen	Bacteria seen	Bacteria seen

Table 19. Effect of oral administration of Uppu Parpam on organ weight

Dose (mg/kg)	Control	Uppu Parpam (25mg/kg)	Uppu Parpam (50mg/kg)	Uppu Parpam (100g/kg)
Liver (g)	5.20±0.17	5.32±0.15	4.92±0.12	5.15±0.18
Heart (g)	0.62±0.04	0.62±0.05	0.59±0.04	0.58±0.04
Lung (g)	1.49±0.06	1.44±0.14	1.36±0.24	1.52±0.15
Spleen (g)	0.65±0.05	0.68±0.04	0.66±0.04	0.65±0.05
Ovary (g)	1.69±0.14	1.78±0.15	1.68±0.18	1.76±0.15
Testes (g)	1.48±0.10	1.45±0.12	1.46±0.15	1.49±0.15
Brain (g)	1.56±0.15	1.58±0.13	1.56±0.14	1.53±0.14
Kidney (g)	0.73±0.04	0.71±0.04	0.70±0.04	0.72±0.05
Stomach (g)	1.36±0.12	1.34±0.10	1.38±0.11	1.35±0.12

Values are mean of 6 animals ± S.E.M. $^{ns}P>0.05$ *vs control*.

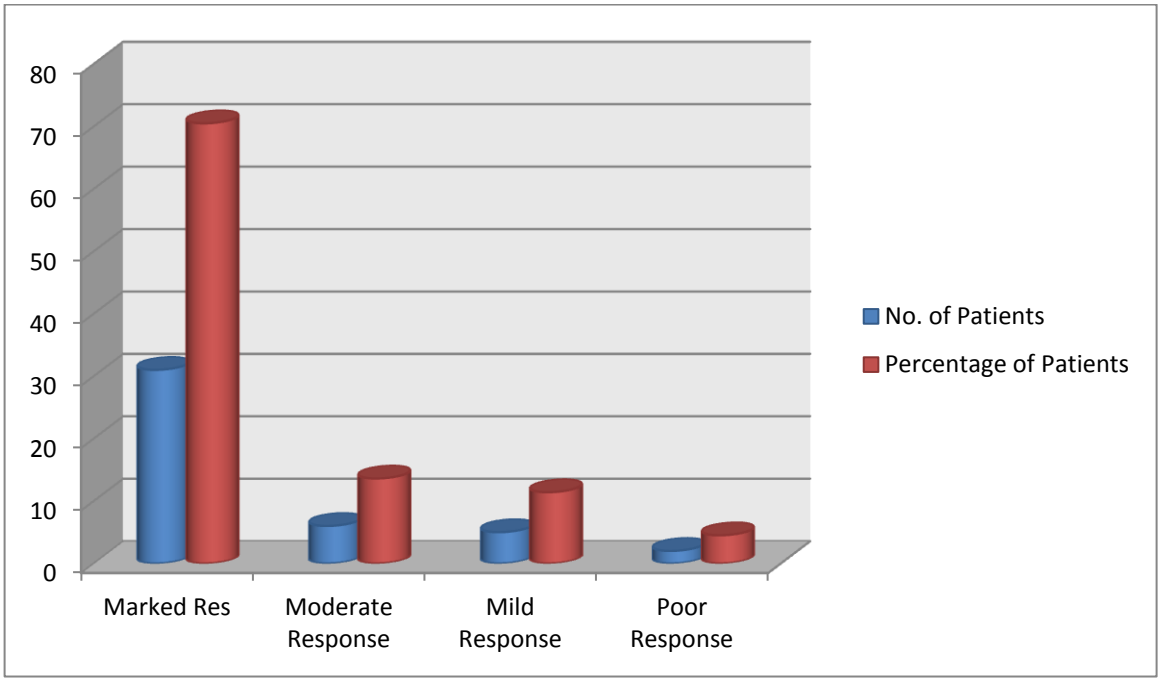
CLINICAL ASSESMENT OF *UPPU PARPAM:*

44 patients of female sex various age groups from 15-45were selected for clinical trial. Among 44 patients 39 patients were treated as out-patients, 4 patients were treated as in-patients. The selection was based on the inclusion and exclusion criteria. They were clinically diagnosed on the basis of siddha principles with modern laboratory findings.

Table No.20

Gradation result

SL. NO	LEVEL OF IMPROVEMENT	NO.OF PATIENTS	PERCENTAGE (%)
1	Marked Responese	31	70.5
2	Moderate Responese	6	13.6
3	Mild Responese	5	11.4
4	Poor Responese	2	4.5
TOTAL		44	100



Inference:

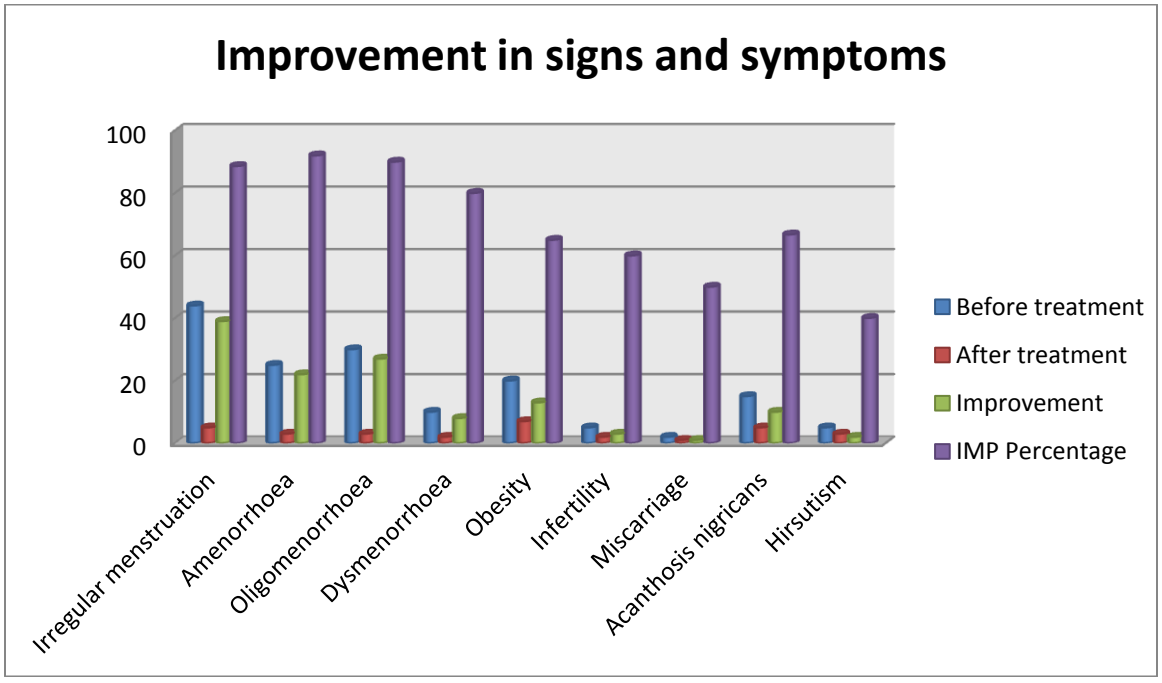
Among 44 patients,

- 31 patients had marked response.
- 5 patients had moderate respone.
- 5 patients had mild response.
- 2 patients had poor response.

Table NO.21

Improvement In Signs And Symptoms

SL.NO	SIGNS AND SYMPTOMS	No of Patients			
		BT	AT	IMP	IMP %
1	Irregular menstruation	44	5	39	88.6
2	Amenorrhoea	25	3	22	92
3	Oligomenorrhoea	30	3	27	90
4	Dysmenorrhoea	10	2	8	80
5	Obesity	20	7	13	65
6	Infertility	5	2	3	60
7	Miscarriage	2	1	1	50
8	Acanthosis nigricans	15	5	10	66.7
9	Hirsutism	5	3	2	40



Inferance:

Among 44 patients,

- 22 out of 25 were relieved from irregular menstruation.
- 27 out of 30 were relieved from amenorrhoea
- 8 out of 10 were relieved from dysmenorrhoea
- 13 out of 20 were relieved from obesity
- 3 out of 5 were relieved from infertility
- 1 out of 2 were prevented from miscarraige
- 10 out of 15 were relieved from acanthosis nigricans
- 2 out of 5 were relieved from hirsutism.

Statastical analysis

P value and statistical significance:

The two-tailed P value equals 0.0017

By conventional criteria, this difference is considered to be very statistically significant.

Confidence interval:

The mean of Group One minus Group Two equals 3.50

95% confidence interval of this difference: From 1.83 to 5.17

Intermediate values used in calculations:

t = 4.9497

df = 7

standard error of difference = 0.707

Table No:

Group	Group One	Group Two
Mean	17.33	15.38
SD	13.86	13.02
SEM	4.62	4.60
N	9	8

6. CONCLUSION

The trial drug *Uppu parpam is* selected from the classical siddha literature *Anubava siddha vaithiya muraigal* by Balaramaiya for the evaluation of assurance and administration in the condition known as PCOS (Polycystic Ovarian Syndrome)

The trial drug was identified and authenticated by the gunapadam experts. The literary reflection along with Phytochemical, chemical constituents, elemental analysis, standardisation of the drug by physic chemical analysis acts as a pillar for the potent activity of the drug.

Pooneeru is antagonist (sathru *saraku*) to *Vediuppu* .Hence the drug works by the phenomena of *sathru – mithru* combination; thereby increase their potency within each other. Salt taste of *Uppu parpam* decreases vatham, the dearanged humor in Soothagavaayu.

Based on acute and sub acute toxicological study, no toxic effect was observed upto 50mg/kg of Uppu Parpam treated via oral route over a period of 28 days. So, it can be concluded that the Uppu Parpam can be prescribed for therapeutic use in human with the dosage recommendations of upto 50mg/kg. body weight p.o.

The results of this study ensures that *Uppu Parpam* was significantly increases the number of ova in the oviduct of treated rats ($p<0.05$) when compared with the control indicates enhancement of ovulation and also elevates the serum concentrations of LH, FSH and estradiol hormones, and increased ovarian weight. Hence it can be concluded that the Uppu Parpam promotes folliculogenesis and thereby it can be used clinically in reproductive hormonal disorders and in infertility condition in female.

Through the elaborate study Uppu parpam has it sphere of action over the female reproductive especially over the ovaries condition called PCOS.

7.SUMMARY

Mineral drug Preparation Uppu parpam was prepared as per Sidha text evidence and prepared as per and its capability on PCOS (Soothagavaayu) was appraised.

The literary review in Siddha and modern aspect are discussed completely and the valubility of drug had been determined.

Various studies involving phytochemical, chemical, elemental and physio chemical analysis were executed to make its ability more spectacular.

The pharmacological analysis proved that the drug has got significant activity over the condition called PCOS (Soothagavaayu)

In clinical study the drug has showed 70% marked response and the poor response to Uppu parpam in PCOS is negligible.

This current analysis is to authenticate that *Uppu parpam* has impressive ovulation activity over PCOS (Soothagavaayu) in females and declare the intelligence of the siddha literature and makes it superior and trust worthy.