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Literature Review of Herbomineral formulation Thanga Uram

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Abstract

Siddha System of Medicine is a complete reputed medical system that has been practiced in India. Its origin dates back to BC 10,000 to BC 4,000 . The name Siddha medicine owes its origin to medicinal ideas and practices of a class of Tamil sages called the Siddhars-“Perfected” or “Holy immortals who are still believed to have superhuman powers. Siddha medicine is the only medicine which bestows longevity. Siddhars explained human life based on Trithodam principle from

embryonic stage to death not only about stages of human life they were also explained disease manifestations and treatment aspect ,they have classified disease into 4448 types. An maladu is one among them. According to Yugi muni in Anmaladu the semen exhibits the following characters such as absence of sweetness, buoyancy on water. Thanga uram is one of the Herbo mineral formulation mentioned in classical siddha text Gunapadam Thathu Jeeva Vaguppu indicated particularly for

all male and female urogenital (janana urupugal) diseases. It also used to treat naatpatta vellai (chronic leucorrhoea) and megam (venereal diseases). It also improves appetite, memory power and strengthens the body. It also improves spermatogenesis .

Keywords: siddha, review, thanga uram ,rasam, gandhagam

Introduction

Siddha System of Medicine is a complete reputed medical system that has been practiced in India. Its origin dates back to BC 10,000 to BC 4,000 . The name Siddha medicine owes its origin to medicinal ideas and practices of a class of Tamil sages called the Siddhars-“Perfected” or “Holy immortals who are still believed to have superhuman powers. Siddha medicine is the only medicine which bestows longevity. The word Siddha comes from the word ‘Siddhi’ which means an object to attain perfection or heavenly bliss.

Siddhars explained human life based on Trithodam principle from embryonic stage to death not only about stages of human life they were also explained disease manifestations and treatment aspect ,they have classified disease into 4448 types. Aan maladu is one among them. According to Yugi muni in Aan maladu the semen exhibits the following characters such as absence of sweetness, buoyancy on water.

Traditional system of medicine especially Siddha system has a remarkable role in the treatment of infertility. Infertility is defined as ‘Inability of a couple to achieve conception after a year of regular unprotected Intercourse’. This means either a woman’s inability to conceive and bear child or a man’s inability to impregnate a woman. Most couples that are evaluated are sub-fertile rather than sterile.

RASAM

SIDDHA ASPECT [1]

Chemical name: Rasam (Hydragyrum) (Mercury or Quick silver)

Mercury comes under the classification of ‘Panchasoothaam’. It has many connotations such as sootham, punniyam, bharatham, inimai, sivasathi, kesarietc, according to Dasanganigandu.

Mercury is obtained from its ores in countries like Spain, California, Russia, China and Japan. It is separated from its ore Cinnabar.

Antagonists to Mercury:

Singi, Gowri, Vellai, Kudhirai pall, Saththicharam.

Agonists to Mercury:

Appragam, Kaareeyam, Silai, Kenthi, Veeram.

Types of Mercury:

Mercury was classified into five types.

1. Rasam
2. Rasendhiran
3. Sootham
4. Misaragam
5. Baaratham

Properties:

1. Vitalizer
2. Tonic
3. Laxative
4. Diuretic
5. Neutralisingpitham
6. Sialagogue
7. Antiinflammatory

Medicine for venereal disease

Taste:Six tastes dominated by sweet.

Potency:Hot and cool (both-specialty)

Special properties of Mercury:

Unlike other drugs Mercury is useful in the treatment of diseases caused by both heat and cold.

Thodam (Impurities) of Mercury:

It is considered that there are two types of thodam of Mercury. They are

1. Thodam
2. Sattai(Kavasam)

In Thodam there are 8 types of impurities in Mercury producing various diseases as shown below

Impurities Disease caused by them

1. Undheenam Soolai (Throbbingpain)
2. Kowdilayam Kapalanoi (Disease of thehead)
3. Anavartham Biramai (Manicillness)
4. Sangaram
Thathunattam(Spermatorrhoea)
5. Sandathvam Distress 6.Panguthvam
Kuttam(Leprosy)
7. Samalathvam Moorchai(Syncope)
8. Savisthavam Sareera Elaippu (Loss ofweight)

Sattai is an another one classification, there are 7 types of impurities in Mercury which producing various diseases as shown below

Impurities Disease Caused by Them

1. Naagam Moolam(Haemorrhoids)
2. Vangam Tholnoikal (Skindisease)
3. Malam Arivinmai(Idiocy)
4. Vidam Maranam(Death)
5. Akkini Morbid thrist (Polydypsia)
6. Giri Sattium(Distress)
7. Sabalam Thathunattam(Spermatorrhoea)

General properties of Mercury:

Proper use of Mercury as a medicine can able to cures the following diseases they are disease in eyes, syphilis, eight types of ulcers (gunmam), throbbing pain (soolai), chronic ulcers (perumpun) and Leprosy(kuttam)^[2].

Purification and detoxification of Mercury:

Mercury -
35gram

Brickpowder -
100gm Turmeric powder - 100gm Acalypa indica
juice - 1.3lit

Mercury is triturated with brick powder and then turmeric powder for one hour respectively and washed with water cleanly. Then the Mercury is boiled with the juice of Acalypa indica, it is detoxified and then finally it is washed with water then stirs it by using cotton cloth Mercury is purified.^[3]

Preparations of Mercury:

- Soothakaruppu
- Rasamezhugu
- Rasathailam
- Megaviranakalimbu
- Rasakuligai

Modern aspect

Modern aspect of mercury

Mercury is the only common metal which is liquid at room temperature. Mercury is sometimes called quicksilver. It is a heavy, silvery-white liquid metal. It is a rather poor conductor of heat when compared with other metals but it is a fair conductor of electricity. It alloys easily with many metals, such as Gold, Silver, and Tin. These alloys are called amalgams.

Chemical properties of mercury

- o Atomicnumber -80
- o Atomicmass -200.59g.mol-1
- o Electronegativity -1.9
- o Density - 13.6g.cm-3 at20°C
- o Meltingpoint --38.9°C
- o Boiling point -356.6°C
- o Radius -0.157nm
- o Ionicradius - 0.11nm(+2)
- o Isotopes -12
- o Electronicshell-[Xe]4f14
- o Standardpotential --+0.854V

Mercury salts:

The most important Mercury salts are mercuric chloride HgCl_2 (corrosive sublimate - a violent poison), mercuric chloride Hg_2Cl_2 (calomel, still used in medicine occasionally), Mercury fulminate ($\text{Hg}(\text{ONC})_2$, a detonator used in explosives) and mercuric sulphide (HgS , vermilion, a high-grade paint pigment)

Applications [4]

Mercury metal has many uses. Because of its high density it is used in barometers and manometers. It is extensively used in thermometers, thanks to its high rate of thermal expansion that is fairly constant over a wide temperature range. Its ease in amalgamating with gold is used in the recovery of gold from its ores. Industry uses Mercury metal as a liquid electrode in the manufacture of chlorine and sodium hydroxide by electrolysis of brine. Mercury is still used in some electrical gear, such as switches and rectifiers, which need to be reliable, and for industrial catalysis. Much less Mercury is now used in consumer batteries and fluorescent lighting, but it has not been entirely eliminated.

Mercury compounds have many uses. Calomel (Mercurous chloride, Hg_2Cl_2) is used as a standard in electrochemical measurements and in medicine as a purgative. Mercuric chloride (corrosive sublimate, HgCl_2) is used as an insecticide, in rat poison, and as a disinfectant. Mercuric oxide is used in skin ointments. Mercuric sulphate is used as a catalyst in organic chemistry. Vermilion, a red pigment, is mercuric sulphide; another crystalline form of the sulphide (also used as a pigment) is black. Mercury fulminate $\text{Hg}(\text{CNO})_2$ is used as a detonator.

Mercurial preparations:

- Mercury with Chalk (Grew powder)
- Yellow mercuric oxide(HgO)

- Mercuric oxide
- Oleated Mercury
- Mercurous chloride(HgCl -Calomel)

Tests for Purity:

It has been tested for weight per ml (at 25°C is about 13.5g). Non volatile matter residue at 300°C (not more than 0.02 w/w)

Assay:

An accurately weighed quantity (0.49g) is dissolved in equal parts (20ml) of water and nitric acid. It is heated gently until the solution becomes colourless. The solution is then diluted with water (150ml) and a sufficient quantity of potassium permanganate is added till a permanent pink colour is produced. A trace of ferrous sulphate to discharge pink colour is added. Then the solution is titrated with standard 0.1N Ammonium thiocyanate (1ml of 0.1N Ammonium thiocyanate

=0.01003g), using ferric ammonium sulphate as indicator. The temperature during the titration should not exceed above 20°C .

Uses: It finds use as a pharmaceutical aid and for preparing Mercury with chalk. Formerly metallic Mercury found use as such therapeutically as a cathartic and parasiticide. But it is more used as such, as it has been extremely poisonous and prolonged inhalation of even very minimal amounts of Mercury prove fatal. Almost all the salts of Mercury with the exception of the sulphide, has been poisonous.

1. Mercury with chalk (Grew powder)

- ❖ It is having 31 -35 w/w of Mercury and 62-70 w/w of CaCO_3
- ❖ It is used as a purgative (Dose 60-300mg)

2. Yellow mercuric oxide(HgO)

- ❖ It is having not less than 99.5 % HgO
- ❖ It is used as a mild antiseptic and used as anti infective, anti bacterial agents.

3. *MercuricOxide:*

❖ It contains not less than 95 but not more than 105 w/w of the stated amount of yellow mercuric oxide

❖ It is used in ophthalmology, 1 ointment to treat mild inflammatory conditions for the treatment of blepharitis and conjunctivitis.

4. *OleatedMercury:*

❖ It has the equivalent of 20% of yellow mercuric oxide x It is used as an anti infective.

5. *Mercuric chloride (HgCl)(Calomel):*

❖ It is being not less than 99.6% of HgCl

❖ It has been used for centuries as a cathartic but recently it is replaced by other drugs.

❖ Calomel has been insoluble in gastric juice and has been not absorbed from the stomach. It gets absorbed in the intestine by the alkaline pancreatic juice where it slowly gets dissociated into Mercury and irritant mercuric compounds which have been exerting a cathartic action

GANTHAGAM

Siddha Aspect ^[5]

Chemical name : Sulfur

Synonyms :

Kaariyichainnaatham, Paraiveeriam,
Atheethaprakasam, Peejam, Sakthi,
Sakthipeesam, Selvivindhu, Naatham, Naatram,
Deviuram.

General properties

Taste : Gandhagam is bitter and astringent in taste.

Actions:

) Laxative
) Tonic
) Antiseptic

It increases the various secretions of the body including skin. When used in high doses, it causes diarrhea.

Types

Gandhagam is divided into four types depending upon their colour, appearance and properties.

) White colored Sulfur
) Red colored Sulfur
) Golden yellow colored Sulfur
) Black colored Sulfur.

In addition, gooseberry Sulfur and stick Sulfur (Vaanagandhagam) have been mentioned in most of the text books of ancient Siddha medicines. Gooseberry Sulfur is often used in medicinal preparations.

General characters of Gooseberry Sulfur (Nellikai gandhagam)

It is used in the treatment of 18 types of skin diseases, liver enlargement, abdominal distension, eye diseases, chronic venereal diseases, chronic diarrhea, gastric ulcer, poisonous bites, fever, and chronic dysentery.

Method of purification

Sulfur is placed in an Iron ladle. A small quantity of cow's butter is added and the ladle is heated till the butter melts, this mixture is poured in inclined position in cow's milk. This procedure is repeated for 30 times to get purified Sulfur. Each time fresh milk is to be used.

Preparations of Sulfur

- ❖ Kandhagaparpam
- ❖ Sarvavidathodarikuligai
- ❖ Kandhagachendhooram
- ❖ KandhagaMezhugu
- ❖ KandhagaMaathirai
- ❖ KandhagaThylam
- ❖ Kandhaga Vadagam
- ❖ KandhagaRasayanam

Modern Aspect of Ganthagam :

Sulphur or Sulfur is a Greek word which means “to burn”. Sulfur is a chemical element with the symbols. It is a plentiful, multivalent non-metal. It occurs in nature as the pure element and as Sulfide and Sulfate minerals. Sulfur is referred to in the Bible as brimstone (burn stone) in English.

History:

- Sulfur was discovered by Chinese before 2000BC and is recognized as an element by Antoine Lavoisier in the year 1777.
- Sulfur is mentioned in Bible and was best known for destroying Sodom and Gomorrah. It was also known to the ancient Greeks and burnt as a fumigant. Sulfur was mined near Mount Etna in Sicily used for bleaching cloth and preserving wine, both of which involved burning it to form Sulfur dioxide and allowing this to be absorbed by wet clothes or the grape juice. For centuries, sulfur along with Mercury and salt, was believed to be a component of all metals and formed the basis of alchemy whereby one metal could be transmuted into another.
- Antoine Lavoisier thought that Sulfur was an element, but in 1808 Humphry Davy said it contained hydrogen.

Properties^[6] General properties:

Symbol -S
Number -16

Element category -
polyatomic nonmetal

Physical properties:

Phase -solid
Density - 1.96 g·cm⁻³ Liquid density at M.P
- 1.819 g·cm⁻³ Heat of fusion - 1.727 kJ·mol⁻¹
Heat of vaporization - 45 kJ·mol⁻¹
Molar heat capacity -
22.75 J·mol⁻¹·K⁻¹
Electronegativity -
2.58 (Pauling scale)

Chemical properties:^[7]

Solubility - Insoluble in water
Vanderwaals radius - 0.127 nm
Ionic radius - 0.184 (-2) nm; 0.029 (+6)
Isotopes -5
Electronic shell - [Ne]3s²3p⁴
Standard potential - 0.51 V

Image explanation

- The alchemical symbol for sulfur is shown against a „fire and brimstone“ background.
- Appearance
- There are several allotropes of sulfur. The most common appears as yellow crystals or powder.

Uses

Sulfur is used in the vulcanisation of black rubber, as a fungicide and in black gunpowder. Most sulfur is however used in the production of sulfuric acid, which is perhaps the most important chemical manufactured by western civilisations. The most important use of sulfuric acid is in the manufacture of phosphoric acid to make phosphates for fertilisers.

Mercaptans are a family of organosulfur compounds. Some are added to natural gas supplies because of their distinctive smell, so

that gas leaks can be detected easily. They are also used in Silver polish and in the production of pesticides and to eradicate weeds. Sulfites are used to bleach paper and as preservatives in many foodstuffs. Many surfactants and detergents are sulfate derivatives. Calcium sulfate (gypsum) is mined on the scale of 100 million tonnes each year for use in cement and plaster.

Biological role:

Sulfur is essential to all living beings. It is taken up as Sulfate from the soil or sea water by plants and algae. It is used to make two of the essential amino acids needed to make proteins. It is also needed in some co-enzymes. The average human body contains 140 grams and takes in about 1 gram a day, mainly in proteins. Sulfur and Sulfate are non-toxic. However, Carbon disulfide, Hydrogen sulfide and Sulfur dioxide are all toxic. Hydrogen sulfide is particularly dangerous and can cause death by respiratory paralysis.

Natural abundance Sulfur occurs naturally as the element, often in volcanic areas. This has traditionally been a major source for human use. It is also widely found in many minerals including Iron pyrites, Galena, Gypsum and Epsom salts. Elemental Sulfur was once commercially recovered from wells by the Frasch process. This involved forcing super-heated steam into the underground deposits to melt the Sulfur, so it could be pumped to the surface as a liquid. Modern Sulfur production is almost entirely from the various purification processes used to remove Sulfur from natural gas, oil and tar sands. All living things contain Sulfur and when fossilized (as in fossil fuels) the Sulfur remains are present. If unpurified fossil fuels are burnt, Sulfur dioxide can enter the atmosphere, leading to acid rain^[25]

NAVACHARAM

Siddha aspect ^[8]

Chemical name : (Ammonium chloride)

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Synonyms:

Istigal, salliga, sooligai, Padu

This is available in small quantities in the brick stone furnace. This is also obtained by sublimation of coal, salt and dung ashes of cained; it has no smell, solid in water and alcohol.

Organoleptic characters:

Colour	: white or Grey
colour Taste	: bitter,sour
Potency	: Hot
Smell	: Urinesmell

Actions:

-) Tonic
-) Pithaneutralizer
-) Rubefacient
-) Diaphoretic
-) Stimulant
-) Expectorant
-) Diuretic

Purification and Detoxification:

The ammonium chloride is dissolved in hot water and filtered. After, it has cooled, it is poured in a broad mouthed vessel and isolated, and the salt is formed in a purified form. It is preserved with small quantity of the root of jequirity in a bottle.

General properties:

Kunmam, peruvayiru, kalladaippu, kalleeral veekkam, manneeral veekkam.

Dosage : 325 mg to 975 mg.

Uses:

Preparation: 1

•	Ammoniumchloride -	4.2 g
•	Alcohol	- 28 ml
•	Rosewater	- 560 ml

Ammonium chloride is dissolved in alcohol and rose water mixture. A cloth is soaked in this solution and applied over the mammary gland.

Indications: suppression of the secretion of breast milk,.

Ammonium chloride 325 mg to 975mg is dissolved in water and gives 4 times a day.

Indications: facial palsy, lumbago

The salt may be taken in the root decoction of Indian sarsaparilla (hemidesmus indicus) for chronic arthritis, disease of tooth, chest pain and for tiredness due to excessive work.

The salt dissolved in camphorated water and administrated twice daily for the disease like flatulence, pain and swelling in the uterus, bilious vomiting, and headache.

The ammonium chloride is dissolved in the root decoction of jequirity and given to the old age patients who are suffering from chronic cough in the dose of 4 to 5 times. The salt (8.4gm) may be added to 500ml of boiled rice- gruel and may be taken in little by little for treatment of leucorrhoea blood disorders, chronic dysentery, bronchitis, and diseases of stomach and urinary bladder.

The salt is dissolved in the decoction of hydrophilia auriculate may act as a diuretic and may be effective in the treatment of jaundice, liver enlargement, splenomegaly. Ammonium chloride and potassium nitrate solution may be used for pain in the eye and excessive lacrimation.

Dosage : 0.21 g/kg

Medicinal uses:

- Metabolic alkalosis
- Treatment of some urinary tract disorders.

Side effects

- Metabolic acidosis.
- Breathing difficulty
- Rash.
- Sweating
- EEG abnormalities.
- High level chloride in blood (Hyperchloremia)
- Seizures.
- Mental confusion.
- Irritability.
- Drowsiness.
- Slow and irregular heartbeats

Velvangam STANNUM (TIN)

SIDDHA ASPECT^[9]

Synonyms

Velleeyam Ven nagam Kutilam
Thavala vangam Suvetha vangam Paandi
Maarasam

Type :

Misaram –white color is good
Kuragam – black colour

Organoleptic characters:

Colour : white, black
colour Taste :bitter
Potency : Hot

Actions:

Antiseptic Astringent
Anti inflammatory

Purification Velvanganam:

Molten velvanganam is poured in a pot containing goat's urine, gingelly oil and karkam of pirandai root (*Cissus quadrangularis*). It is then allowed to cool

Preparation of velvanganam:

Velvanga parpam Velvanga chendooram
Velvanga chunnam

Modern aspect :

Tin is a chemical element with the symbol **Sn** (from Latin: *stannum*) and atomic number 50. Tin is a silvery metal that characteristically has a faint yellow hue. Tin, like indium, is soft enough to be cut without much force^[28]. When a bar of tin is bent the so-called "tin cry" can be heard as a result of sliding tin crystals reforming; this trait is shared by indium, cadmium and frozen mercury. Pure tin after solidifying keeps a mirror-like appearance similar to most metals. However in most Tin alloys (for example, Pewter) the metal solidifies with a dull gray color. Tin is a post-transition metal in group 14 of the periodic table of elements. It is obtained chiefly from the mineral cassiterite, which contains stannic oxide, SnO₂. Tin shows a chemical similarity to both of its neighbours in group 14, germanium and lead, and has two main oxidation states, +2 and the slightly more stable +4. Tin is the 49th most abundant element and has, with 10 stable isotopes, the largest number of stable isotopes in the periodic table, thanks to its magic number of protons. It has two main allotropes: at room temperature, the stable allotrope is β -tin, a silvery-white, malleable metal, but at low temperatures, it transforms into the less dense grey α -tin, which has the diamond cubic structure. Metallic tin does not easily oxidize in air.

The first tin alloy used on a large scale was bronze, made of 1/8 tin and 7/8 copper, from as early as 3000 BC. After 600 BC, pure metallic tin was produced. Pewter, which is an alloy of

85–90% tin with the remainder commonly consisting of copper, antimony, and lead, was used for flatware from the Bronze

Age until the 20th century. In modern times, tin is used in many alloys, most notably tin/lead soft solders, which are typically 60% or more tin, and in the manufacture of transparent, electrically conducting films of indium tin oxide in optoelectronic applications. Another large application for tin is corrosion-resistant tin plating of steel. Because of the low toxicity of inorganic tin, tin-plated steel is widely used for food packaging as tin cans. However, some organotin compounds can be almost as toxic as cyanide.

Physical characters :

Tin is a soft, malleable, ductile and highly crystalline silvery-white metal. When a bar of tin is bent, a crackling sound known as the "tin cry" can be heard from the twinning of the crystals^[29]. Tin melts at low temperatures of about 232 °C (450 °F), the lowest in group 14. The melting point is further lowered to 177.3 °C (351.1 °F) for 11 nm particles.^{[10][11]}

Commercial grades of tin (99.8%) resist transformation because of the inhibiting effect of the small amounts of bismuth, antimony, lead, and silver present as impurities. Alloying elements such as copper, antimony, bismuth, cadmium, and silver increase its hardness. Tin tends rather easily to form hard, brittle intermetallic phases, which are often undesirable. It does not form wide solid solution ranges in other metals in general, and few elements have appreciable solid solubility in tin. Simple eutectic systems,

Chemical character :

Tin resists corrosion from water, but can be attacked by acids and alkalis. Tin can be highly polished and is used as a protective coat for other metals.^[13] A protective oxide (passivation) layer prevents further oxidation, the same that forms on pewter and other tin alloys

VEDIYUPPU^[14] (potassium nitrate)

Synonyms:

Padairaasan

- Inangan
- Poonathan
- Boomi koormai
- Navachaaramithru
- Pottiluppu

It cures diseases like 8 types of kunmam, uthara katti, neerarugal, kalladaippu, and neerkattu.

ACTION:

- Refrigerant
- Demulcent
- Astringent
- Diuretic

Purification:

1.4-gram vediuppu (potassium nitrate) was taken. Add 6500 ml of water into it and boil it well. Now add white of 4 hens' egg. The waste materials floated on the top and it was immediately removed. Then the above mixture was filtered into another vessel. Then it was dried in sunlight. Repeat this process again for seven times.

occur with bismuth, gallium, lead, thallium and zirconium
Siddha Formulations Using vediuppu As Ingredient:

Uloga mandurachenmduram^[15]

Dose : 130-260mg
 Indications : pandu, sobai, kamalai

Vediuppu Chunnam^[16]

Dose : ½ - 1 arisiedai
 Adjuvant : Ilaneer
 Indications : Kalladaippu, Sadhaiadaippu, Neer Kattu

Naaga Chenduram^[17]

Dose : 130mg
 Adjuvant : Thirikatuku chooranam
 Indications : gunmam, peruvayaru, vellai 4. Sanga thravagam.^[18]
 Dose : 1 thuli
 Adjuvant : w

ater : Indications : m

aarvali
 .Annabedhi chenduram:^{19]}
 Dose : 130 mg
 Indications : Pandu,
 Sobai, Kamalai

Potassium nitrate

English name :
Tamil name :
Malname :

Occurrence :

Bengal, Punjab, and upper India, naturally as efflorescence on the soil, for medicinal use, the earth containing the curd salt is dissolved in water, strained and Recrystallised by boiling and evaporation

PHYSICAL PROPERTIES

Molecular formula : KNO_2
Appearance : white crystals Odour , sour or salty
Solubility : 36gm/100ml water
Melting point : 333°C (631°F)
Vapor density : 3.00
Vapor pressure : negligible@ 20°C
Stability : stable under ordinary condition of use
And storage
Molar mass : 85.103g/mol
Atomic no: 19
Atomic mass: 39.0983

ACTION:

- Refrigerant
- Demulcent
- Astringent

GENERAL PROPERTIES:

- ❖ It is a salt which is prepared after five process from fuller's earth.
- ❖ It is a salt prepared from the human skull.
- ❖ It consists of white crystalline masses possessing a saline taste, it exists in a natural state in many parts of India.
- ❖ Those sold in the bazaars are sometimes are not sufficiently pure for internal use and it may be readily cleaned by dissolving it in hot water straining and setting the solution aside to crystallise needle shaped crystals will be formed and they are pure.

MEDICINAL USES: Salt petre stimulates the skin and the kidney increases perspiration and flow of urine and so cooling the body. It is very useful in fevers in inflammatory affection, common cold, rheumatism, gout, bronchitis etc.

❖ Potassium nitrate in solution is a refrigerant, efficient, diuretic and diaphoretic. It acts on the vascular system and thus reduces the frequency of the pulse.

❖ It is useful also in the early stages of dropsy in case of small pox, measles, influenza,

catarrh, gonorrhoea, acute rheumatism, bleeding from the lungs, stomach, uterus or other internal organs attended by fever.

❖ A mixture of nitre 2 parts and leaf juice of the radish 1 part is given in dose of 80 grains to relieve scalding and retention of urine also suppression or scantiness of urine.

❖ In obstinate cases of leucorrhoea a combination of nitre 10 grains and alum 5 grains is recommended to be taken thrice daily.

❖ It may be advantageously given with infusion of moringa root.

PHARMACEUTICAL REVIEW CHENDHURAM

Chendhuram is one of the 32 types of Internal medicine. In which, metallic substances or arsenical compounds are made into red coloured powder by the process of burning, frying or insulating or keeping them in specialized *pudams* by grinding them with decoctions, *ceyanears*, juices etc.^[21]

CLASSIFICATION OF CHENDHURAM^[22]

Chendhuram is classified into five different modes based on the processing methods. They are as follows,

✓ 'Chendhuram' prepared without heating. (*Araippu Chendhuram*)

✓ 'Chendhuram' prepared by open heating. (*Erippu or Varuppu Chendhuram*)

✓ 'Chendhuram' prepared by capsule heating. (*Puda Chendhuram*)

✓ 'Chendhuram' prepared by sand bath process. (*Kuppi erippu Chendhuram*)

✓ 'Chendhuram' prepared by applying heat in the range close to 100°C . (*Laghu puda Chendhuram*)

EXAMPLES

Few examples have been stated for the above said methods they are as follows;

✓ *Araippu Chendhuram - Chandamaarutha Chendhuram*^[23]

✓ *Erippu or Varuppu Chendhuram - Ayaveera Chendhuram*^[24] &

Thaalaga Chendhuram^[25]

✓ *Puda Chendhuram - Aya Chendhuram*^[26],

Ayakkaantha Chendhuram^[27] &
Naaga Chendhuram^[28]

✓ *Kuppi erippu Chendhuram - Nagarasa chendhuram*^[29]

✓ *Nerpuda chendhuram - Kadikara chendhuram*^[30]

SAND BATH HEATING PROCESS^[31]

Among the above said processes, sand bath heating is the complex one while other processes are simple. It has been said that heat resistant glass flasks should be used in this process, in old references. But it has been found in practice and from the point of view of economy and convenience, to use two identical bowls of enamelled iron with one hole punched in one of their bottoms centrally and 3 or 6 coinciding holes in the rims of the two bowls for binding them together.

The processed ingredients are put in the unpunched bowl and the punched bowl is inverted over it and the two are bound together with wires passed through the small holes at the region of their of the bowls. Then the whole capsule is sealed around with claysmeared ribbon, excepting the top hole. When the seal is dry, the capsule is placed in the sand bath prepared in the following way.

A sturdy earthen were larger than the capsule is taken. Some gravel is placed in its bottom and covered with a thin layer of sand. Then the capsule is placed in it and properly centered. The sides are packed with sand so that the upper bowl projects just half an inch above the sand bath. Then heating is commenced, first mild (*Deepakini*), then moderate (*Kamalakkini*) and finally intense (*Kadakkini*). however, too intensification of fire will spoil the medicine as the correct stage of preparation will become uncontrollable.

After some time when intense fire is applied, a blue flame appears through the hole in the capsule. Now the intensity of fire should be regulated carefully and no over heating or intensification of fire should be done.

At this stage, if a long iron spoke or probe is inserted through the hole in the capsule, drawn out after a few seconds are inspected, a whitish coat would have formed. There should be no black sticky substance and the smell of burning sulphur should be absent. The blackening of the end of the probe and the smell of burning sulphur indicate that the formation of *chendhuram* is not complete.

The sand bath is removed from the oven in the correct stage, the hole sealed with a piece of broken earthen ware and mud paste and allowed to cool.

Then the capsule is taken out and opened. The *chendhuram* will be seen on the top bowl around tie perforation. This is carefully removed without mixing with

foreign matter like clay and enamel pieces. (If any of drug put in remains still at the bottom, it is reground and re-sublimed). The *chendhuram* should now be very powdered and taken for use.

It is very important that one should remember that metals other than mercury do not sublime during this treatment with sulphur, in the top bowl. So the remnants in the bottom bowl will contain these metals. This should not be discarded, but should positively be ground into a very fine

powder and mixed with the *chendhuram*. Otherwise, the preparation of medicines like *Poorana chandrodhayam* and *Velli chendhuram* will be meaningless.

STEPS USED TO PREPARE CHENDHURAM

The following processes are involved

- Elimination of harmful matter from the drug.
- Modification of undesirable physical properties of the drug.
- Conversion of some of the characteristics of the drug to different stages.
- Enhancement of the therapeutic action of the particular drug.

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