

APPROACH AND MANAGEMENT OF NAAGA PUCHI NOI (ASCARIASIS) ALONG WITH SIDDHA POLYHERBAL FORMULATION OF “PIRANDAI KUDINEER” AND MODERN SCIENCE.

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Abstract- The worm infestation or helminthiasis is one of the most common problems in pediatrics practice especially in developing countries due to the poor hygiene. The common parasitic infection in children is *Ascaris Lumbricoides* (AL) (Round worm) also known as soil transmitted helminthes (STH). Ascariasis parasite lives in intestine passed from feces of infected people. Negative effects of ascariasis include diminished physical fitness and growth retardation and delayed intellectual development and cognition. Indeed, ascariasis have been linked with an increased risk for nutritional anemia, protein- energy malnutrition. In siddha system ascariasis described as NAAGA PUCHI NOI according to the symptoms given in the siddha literature Baalavagadam, Albendazole, mebendazole drugs are commonly using medication for helminthes for children and adults. Although synthetic molecules are effective in the treatment/ management of parasitic infections, they suffer from limitations of side effects or toxicity. There are numerous treatment methods and preparation for worm infestation in the siddha system of medicine. PIRANDAI KUDINEER is the one of the treatments in siddha system which is given in siddha literature of GUNAPPADAM – MOOLIGAI VAGUPPU having indications of abdominal distension and pain, intestinal worm infestations

Key Words: ASCARIASIS, NAAGA PUCHI NOI, PIRANDAI KUDINEER, SIDDHA POLYHERBAL FORMULATION.

1.INTRODUCTION:

Helminthes or worm infestation refers to worms live as parasites in the human body and are a fundamental cause of disease associated with health and nutrition problems beyond gastrointestinal tract disturbances, worm infestation constitutes an important limitation on growth and development of children. There are numerous species of parasites are present in environment. One well known soil transmitted helminthiasis is Ascariasis. This parasite lives in intestine passed from feces of infected people. In India incidence maybe high (80% - 90%) in rural areas with poor sanitation, lack of personal hygiene, contaminated food, water and poor socio-economic status are contributed for the occurrence of the intestinal worm infestation. High incidence of cases was noted in the age of ranging between 5-12 years (62%). Infection with *Ascaris lumbricoides* is the most prevalent human helminthiasis. The mode of transmission to human is hand to mouth by the soil contact. Negative effects of ascariasis include diminished physical fitness and growth retardation and delayed intellectual development and cognition. Indeed, ascariasis have been linked with an increased risk for nutritional anemia, protein- energy malnutrition. In siddha system ascariasis described as NAAGA PUCHI NOI according to the symptoms given in the siddha literature Baalavagadam. There are numerous treatment methods and preparation for worm infestation in the siddha system of medicine. PIRANDAI KUDINEER is the one of the treatments in siddha system which is given in GUNAPPADAM – MOOLIGAI VAGUPPU having indications of abdominal distension and pain, intestinal worm infestations

2. SIGNS AND SYMPTOMS OF ASCARIAIS – MODERN ASPECT

Ascariasis is one of the common diseases in regular basis especially for children affecting one fourth of the world's population. Young children have a high infection rate and suffer with a heavy worm burden of *A. lumbricoides*. In INDIA incidence maybe high (80% - 90%) in rural areas with poor sanitation, lack of personal hygiene, contaminated food and poor socio-economic status are contributes for the occurrence of the intestinal worm infestation.

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The metabolites of *Ascaris* may produce sensitization phenomenon of allergic manifestations such as

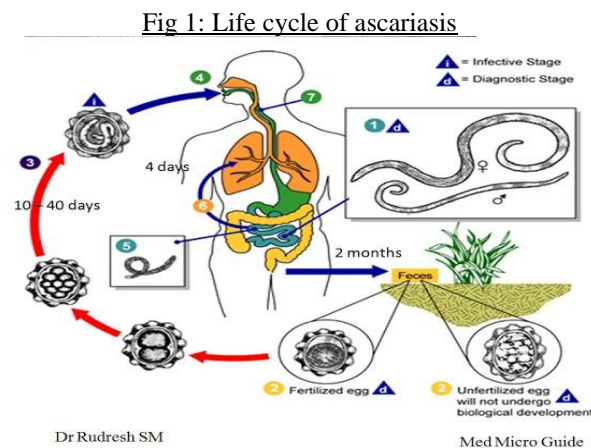
- Skin - Urticaria
- Nose - Rhinitis
- Lungs - Bronchial asthma

- Intestinal tract - Intestinal diarrhoea
- Eye - Conjunctivitis

Table :1

CLINICAL FEATURES	DIAGNOSIS	TREATMENT
Pain, distension, vomiting Passage of worms in stool/vomitus Obstruction of intestine Pulmonary: Loeffler syndrome Growth failure	Eggs in stool sample Worms in stool / vomitus Imaging	Albendazole 400 mg Once (Taken with food) Other options are Mebendazole, Ivermectin and Nitazoxanide

Ascariasis parasites live in the intestine. Ascaris eggs are passed in the feces (poop) of infected people. If an infected person defecates outside (for example, near bushes, in a garden, or in a field), or if the feces of an infected person is used as fertilizer, worm eggs are deposited on soil. The worm eggs can then grow into a form of the parasite that can infect others. Ascariasis is caused by ingesting those worm eggs. This can happen when hands or fingers that have contaminated dirt on them are put in the mouth, or by eating vegetables or fruits that have not been carefully peeled, washed, or cooked.



2.1 Classification of Helminths

Generally, helminths having multicellular bodies and complex life cycles involving in maturation in host bodies. Helminthes are divided into three main groups based in their morphology. Namely: nematodes (round worm), trematode (flukes), cestodes (tape worm).

3. SIGNS AND SYMPTOMS OF ASCARIASIS – SIDDHA ASPECT:

Ascariasis lumbricoides described in siddha system as NAAGA PUCHI NOI in siddha literature BAALAVAGADAM.

3.1 Table Possible correlation of Naaga puchi noi and Ascariasis

Symptoms of naaga puchi noi	Symptoms of ascariasis
Vayiru, koppuzh peruthal	Abdominal distension and pain
Suram adithal	fever
Okkaliththu vanthi	Nausea and vomiting

3.2 Treatment of ascariasis (Naaga puchi noi) in siddha system:

There are numerous treatment methods and preparation for worm infestation in the siddha system of medicine. Pirandai Kudineer is the one of the treatments in siddha system which is given in gunappadam – mooligai vaguppu having indications of abdominal distension and pain, intestinal worm infestations.

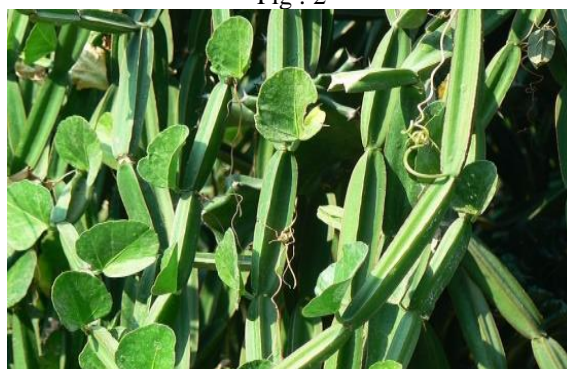
3.3 Preparation of Pirandai Kudineer:

The ingredients of Pirandai kudineer consist of Pirandai (*Cissus quadrangularis*), Perilanthai (*Ziziphus mauritiana*), Veppa eerkku (Stem of *Azadirachta indica*), Murukkan vithai (Seeds of *Butea monosperma*) and Omam (*Trachyspermum ammi*) all of which are to be taken in equal quantity and ground coarsely. The mixture is to be boiled with 3 parts of water until it reduces to one part and to be filtered and consumed. This preparation has been indicated in the Siddha literature Gunapaadam - Mooligai

vaguppu (Siddha material medica herbal division) for the treatment of flatulence and intestinal worms.

3.3.1 Veldt grape - *Cissus quadrangularis*

Fig : 2



Taxonomy

1. Kingdom : Plantae
2. Subkingdom : Tracheobionta; vascular plants
3. Super division : Spermatophyta; seed bearing plants
4. Division : Magnoliophyta; flowering plants
5. Class : Magnoliopsida
6. Sub Class : Rosidae
7. Order : Vitales
8. Family : Vitaceae
9. Genus : Cissus
10. Species : Quadrangularis

Cissus quadrangularis belonging to the family Vitaceae is commonly used as a folk medicine in India for promoting the fracture healing process. It is also locally known as bone setter due to its bone fracture healing potential. Various phytochemicals such as high contents of ascorbic acid, carotene, anabolic steroidal substances, and calcium have been reported to be present in *Cissus quadrangularis*. The stem of *Cissus* contains two asymmetric tetracyclic triterpenoids, and two steroidal principles along with β -sitosterol, δ -amyrin, δ -amyrone, and flavanoids (quercetin). Among these phytochemicals, analysis of the crude extract revealed the presence of tannins among other chemical constituents contained within them. Tannins were shown to produce anthelmintic activities.

3.3.2. Indian jujube - *Ziziphus mauritiana*

Fig:3



Taxonomy

1. Kingdom : Plantae
2. Subkingdom : Tracheobionta; vascular plants
3. Super division : Spermatophyta; seed bearing plants
4. Division : Magnoliophyta; flowering plants
5. Class : Magnoliosida
6. Sub Class : Rosidae
7. Order : Rosales
8. Family : Rhamnacea
9. Genus : Ziziphus
10. Species : Mauritiana

Ziziphus mauritiana is most commonly found in the tropical and sub-tropical regions of the globe and cultivated throughout the greater part of India. It is well known as jujube and it is an evergreen tree of various size. Phytochemical analysis of *Z. mauritiana* plant contains flavonoids, alkaloids, cardiac glycosides, saponins, resins, polyphenols, mucilage and vitamins. The fruits are good source of vitamin C, sugars and contain various minerals. The pulp contains moisture, protein, fat, carbohydrates, calcium, phosphorous, iron, carotene, thiamine, riboflavin and fluoride. The Fruits also contain tannins, flavonoids, saponins, mucilage, reducing sugar, ascorbic, tartaric acid and citric acid. investigated the in-vitro ovicidal effects aqueous and methanolic extract of *Z.mauritiana* using egg hatch test on nematode ova. The results revealed that *Z. mauritiana* showed anthelmintic activity and the lethal concentration value of aqueous and methanolic extract recorded as 0.1773 and 0.6778. The results also revealed that aqueous extract shows stronger anthelmintic activity than that of methanolic extract. And this is the first scientific evidence that says about its anthelmintic property.

3.3.3. Neem - *Azadirachta indica*

Fig:4



Taxonomy

1. Kingdom : Plantae
2. Subkingdom : Tracheobionta; vascular plants
3. Super division : Spermatophyta; seed bearing plants
4. Division : Magnoliophyta; flowering plants
5. Class : Magnoliosida
6. Sub Class : Rosidae
7. Order : Sapindales
8. Family : Meliaceae
9. Genus : Azadirachta
10. Species : Indica

Azadirachta indica, commonly known as Neem tree is a tropical evergreen tree with a wide adaptability. The phytochemicals present in Neem tree have been divided into isoprenoids such as diterpenoids and triterpenoids, limonoids, azadirone, gedunin, vilasinin type of compounds such as nimbin, salanin and azadirachtin and non-isoprenoids, which are amino acids, polysaccharides, sulphureous compounds, flavonoids and their glycosides, coumarins, tannins and aliphatic compounds. Aqueous extract of Neem exhibited anthelmintic activity in dose-dependent manner and exhibited more potent activity at lowest concentration (10 mg/ml) against (roundworm). The anthelmintic activity of Neem extract was compared with the standard drug Piperazine citrate. The anthelmintic property of neem probably was probably due to the presence of an active alkaloid, Azadirachtin, which interferes with the central nervous system parasite via inhibition of excitatory cholinergic transmission and partly blocks the calcium channel resulting in expulsion parasites from host body.

3.3.4. Flame-of-the-forest - *Butea monosperma*

Fig : 5



Taxonomy

1. Kingdom : Plantae
2. Subkingdom : Tracheobionta; vascular plants
3. Super division : Spermatophyta; seed bearing plants
4. Division : Magnoliophyta; flowering plants
5. Class : Magnoliopsida - Dicotyledons
6. Sub Class : Rosidae
7. Order : Fabales
8. Family : Fabacea
9. Genus : Butea
10. Species : Monosperma

Butea monosperma is commonly known as Flame of forest, belongs to the family Fabaceae. The flowers are widely used in treatment of hepatic disorders, viral hepatitis, diarrhea, depurative and tonic. The flowers are also good source of flavonoids. The contents of flowers are Butein, Butrin, Isobutrin, Plastron, coreipsin, and Isocoreipsin. This plant species has been found to display a wide variety of biological activities. The plant is traditionally reported to possess astringent, bitter, alterative, aphrodisiac, anthelmintic, antibacterial and anti-asthmatic properties. The anthelmintic activity of the lactone, palasonin, isolated from the ethanolic extract of *Butea frondosa*

[*Butea monosperma*] seeds, and its piperazine salt. Kymographic studies with normally expelled human *Ascaris* indicated that palasonin was more effective against *Ascaris lumbricoides* than piperazine or santonin and the effects of the piperazine salt were found to be similar to, but less pronounced than those produced by palasonin alone.

3.3.5. Bishop's weed - *Trachyspermum ammi*

Fig:6



Taxonomy

1. Kingdom : Plantae
2. Subkingdom : Tracheobionota – Vascular Plants
3. Super Division : Spermatophyta – Seed Plants
4. Division : Magnoliophyte – Flowering Plants
5. Class : Magnoliopsida - Dicotyledons
6. Sub Class : Rosidae
7. Order : Apiales
8. Family : Apiacea
9. Genus : Trachyspermum
10. Species : Ammi

Trachyspermum ammi is a member of the Apiaceae family and it is commonly known as "OMAM in Tamilnadu. It is distributed throughout India and is mostly cultivated in Gujarat and

Rajasthan (ajwain). Studies reveal the presence of various phytochemical constituents mainly carbohydrates, glycosides, saponins, phenolic compounds, volatile oil such as thymol, terpinene, para-cymene and pinene, protein, fat, fiber and mineral matter

containing calcium, phosphorous, iron and nicotinic acid. Various pharmacological studies have proven to possess various pharmacological activities like antifungal, antioxidant, antimicrobial, antinociceptive, cytotoxic, hypolipidemic, antihypertensive, antispasmodic, broncho-dilating actions, antilithiasis, diuretic, abortifacient, antitussive, nematicidal, anthelmintic and antifilarial. The main component of this oil is thymol, which is used in the treatment of gastro-intestinal ailments, lack of appetite and bronchial problems.

4. Mechanism of action of Helminthes

➤ Parasitic worms or helminths required nutrients are derived from the host, causing the parasitic activity of most helminths. Helminths consume buried from their host, thereby causing or aggravating malnutrition which results in retard growth and physical development. Consequently, symptoms like retarded cognitive development, iron deficiency anaemia, abdominal pains and related health problems are characteristic features of most heavy helminth infections. Also worth considering is the fact that the immune response triggered by helminth infection may drain the body's ability to fight other diseases, making affected individuals more prone to co-infection.

➤ Ascariasis has been tied to temporarily induced lactose intolerance and vitamin A, nitrogen and fat mal absorption. impaired nutrition uptake may result from direct damage to the intestine's mucosal walls as a result of the worm's presence, meanwhile worms release protease inhibitors to defend against the body's digestive process which may impair the breakdown of other nutritious substances, finally, worm infections may also cause diarrhea and speed transit time through intestinal system. Thus reducing the body's opportunity to capture and retain the nutrients presents in food.

5. Side effects / toxicity/limitation of modern anthelmintic therapy:

Although synthetic molecules are effective in the treatment/ management of parasitic infections, they suffer from limitations of side effects or toxicity.

1.1. Albendazole:

It produces few side effects when used for short term therapy of gastrointestinal helminthiasis. Transient mild GI symptoms are epigastric pain, diarrhea, nausea and vomiting, dizziness and headache. Sometimes allergic phenomena such as edema, rashes and urticaria also occur. In children with asymptomatic trichuriasis, albendazole reportedly impaired growth in children. The most common side effect is an increase in serum aminotransferase activity; rarely jaundice or chemical cholestasis may be noted.

1.2. Mebendazole:

Transient symptoms of abdominal pain, distension, and diarrhea have occurred in case of massive infestation and expulsion of gastrointestinal worms. Rare side effects in patients treated with high dose of mebendazole include allergic reactions, alopecia, reversible neutropenia, agranulocytosis and hypospermia and may be associated with occipital seizures. Mebendazole is a potent embryonic toxin and teratogen in lab animals, despite lack of evidence for teratogenicity in human, it is advised that mebendazole not be taken by pregnant women or to children less than 2 years of age.

5.3. Pyrantel pamoate:

Transient and mild GI symptoms occasionally are observed in humans, as are headache, dizziness, rash, and fever. Pyrantel pamoate has not been studied in pregnant women. Thus, its use in pregnant patients and children less than 2 years of age is not recommended.

6. DISCUSSION

Helminthes infections are the most common infections in man affecting the large proportion of the world's population. The synthetic anthelmintics used are not very safe as they suffer from problem of side effects and toxicity and many of them are not recommended for young children and pregnant ladies. Epidemiological studies have reported lower health outcomes including the higher prevalence of lethargy, stunting, wasting and anemia for infected relative to uninfected school age children. In addition, some epidemiologic studies have reported a higher prevalence of school absenteeism and performance on a range of cognitive tests. In treatment of parasitic diseases, the anthelmintic drugs are used indiscriminately. Recently the use of anthelmintic produces toxicity in human beings. Additionally due to modern medicine there are other side effects which are heavy burden for pediatric age group like hallucination, fever, chills, confusion, nausea, vomiting, skin rashes, dark urine, blurred vision, seizure and jaundice. Hence the development and discovery of new substances acting as anthelmintic are being derived through plants, anthelmintics are those drugs are used in expelling out the worms that are parasitic in nature by either stunning them by killing them.

7. CONCLUSION:

Helminthes infections are most common infections in children affecting the large proportion of the world's population especially by *Ascariasis lumbricoides*. The synthetic anthelmintics used are not very safe as they suffer from the problem of side effects and toxicity and many of them are not recommended for children and pregnant ladies. In last few years usage of herbal anthelmintics across world is increased due to this side effect state of modern medication.

Through the siddha formulation PIRANDAI KUDINEER we could remove the intestinal worms, loss of appetite and other symptoms related with gastro intestinal tract produced by worm infestation, focusing on GIT issues may prevent the mal absorption, and anemia mainly in pre-school and school aged children.

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