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A Review on Use of Anthelmintic Herbs in Siddha System of Medicine on Children

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Abstract: Anti-helminthics are a group of anti-parasitic drugs that expel the parasitic worms and other internal parasites from the body by killing them without causing significant damage to the host or the children. The current review focuses on the phytochemical screening *in vitro* and *in vivo* studies on herbs such as Akkrothu (*Juglans regia*), Aamanakku (*Ricinus communis*), Sathakkuppai (*Anethum graveolens*), Utthamani (*Pergularia daemia*), Kuppaimeni (*Acalypha indica*), Manalikeerai (*Gisekia pharnaceoides*), Moongil (*Bambusa arundinaceae*) which were claimed in siddha system for anti-helminthic activity. Thus, herbal medicines play a wide role in removing the parasites of paediatric age group. In siddha system of medicine, there are plenty of herbs mentioned for anti-helminthic property. This study shows that how the single herb which is effective for parasites and also the scientific validation of the herbs which contains the medicinally active components for children.

Keywords: Siddha, Anthelmintic herbs, *Juglans regia*, *Ricinus communis*, *Anethum graveolens*, *Acalypha indica*, *Pergularia daemia*

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Introduction

Being multicellular pathogens, intestinal helminthes infect a wide variety of hosts, including humans and animals. Around a billion

people, including over 400 million school-aged children, are estimated to be chronically infected with soil-transmitted helminthes, according to

the World Health Organization (STH). *Ascaris lumbricoides*, *Trichostrongylus trichuris*, *Ancylostoma duodenale*, and *Nectar americanus* are four of the most frequent soil-transmitted nematode species that cause illness in the gastrointestinal system. Parasitism from a wide variety of helminthes has spread widely due to factors like poverty, poor hygienic living conditions (such as contamination of water, soil, and food by faeces), and the practise of playing in the sand. Raw vegetable, fish, and meat consumption also contributes to the spread of helminth infection. There are still many helminth parasites that cause a lot of illness in third world nations. Parasites may cause a variety of health problems, including stunted growth, mental retardation, liver and biliary illness, and intestinal obstruction. Lack of nutrition and anaemia in children have both been connected to helminth infections.

There is no conventional medical system anywhere in the world that does not rely heavily on plants. A primary and easily available source of healthcare in impoverished nations are traditional remedies based on medicinal plants. Historically, humans have fought worm infestations with the use of plant extracts and components for many years. Within the realm of Indian medicinal practises, the utilisation of the plant's leaf, root, and seed oil has been observed for the amelioration of inflammatory conditions and hepatic ailments. The number of research looking into the antiparasitic properties of plants, both in the lab and in the context of their traditional medicinal applications, has exploded in recent years.

There has been a diligent endeavor to amalgamate the developmental stages (paruvams) with childhood disorders. This phenomenon exhibits uniqueness within the Siddha system. The clinical manifestations have been comprehensively elucidated. The interventions encompass a combination of botanical and pharmacological substances, complemented by traditional practices rooted in

tantric rituals. In this review, we assess the current level of knowledge around the treatment of worm infestations using traditional medicinal herbs.

Antihelminthic Herbs in Siddha System (Table 1):

Juglans regia:

The initial phytochemical analysis conducted on various leaf extracts of *Juglans regia* L indicated the existence of alkaloids, flavonoids, tannins, and saponins. The presence of tannins and polyphenolic compounds has been demonstrated to exhibit anthelmintic activities. The extracts derived from *J. regia* L. may potentially induce the uncoupling of oxidative phosphorylation in helminth parasites, akin to the mechanism observed in synthetic phenolic antihelmintics. In the field of Ayurveda, Balamirtham is formulated utilising this particular substance. In the realm of worm management, the utilisation of leaf decoction is employed at a dosage range of 30-40 ml, whereas the administration of bark decoction is carried out at a dosage range of 30-40 ml (Krishnamurthy, 1983).

Ricinus communis:

Ricinus communis Linn, a member of the Euphorbiaceae family, is a widely distributed soft-wooded small tree found in various tropical and warm temperate regions across the globe. It is commonly referred to as Eranda in Ayurveda (Kirtikar and Basu, 1985). Within the realm of Ayurveda, the utilisation of Eranda's roots is observed in the therapeutic management of Amavata, a condition characterised by rheumatism. Additionally, Eranda's roots are employed in addressing Sotha, denoting inflammation, as well as Katisula, referring to backache. Furthermore, these roots find application in the treatment of Udararoga, encompassing various ailments affecting the abdomen, and Jwara, signifying fever, among other uses. The roots of this have also garnered attention for their Vrishya (aphrodisiac) and

Vatahara properties, as noted by Acharya Charaka.

The foliage of *Ricinus communis* Linn demonstrates antihelmintic properties against a variety of worm species. Hence, the pursuit of further investigation regarding the bioactive constituents inherent in these foliage specimens may potentially unveil hitherto unknown chemical entities capable of efficaciously counteracting parasitic infestations (Doshi *et al.*, 2013).

Anethum graveolens:

Anethum graveolens L., commonly known as dill, has a long history of utilisation in ayurvedic medicinal practises dating back to ancient times. This herb is highly esteemed for its aromatic properties and is extensively employed as a culinary spice. Additionally, it possesses the ability to produce essential oil, further enhancing its value and versatility. It is classified as an aromatic and annual herb belonging to the family Apiaceae. The genus *Anethum* derives its name from the Greek term "aneeson" or "aneeton," which signifies a characteristic of emitting a potent aroma. The prevalent application of this substance in Ayurvedic medicine pertains to its efficacy in addressing abdominal discomfort, colic, and facilitating the process of digestion. The shatapushpa exhibits the following Ayurvedic characteristics: it possesses the katu tikta rasa (bitter and pungent taste), usna virya (hot potency), katu vipaka (pungent metabolic effect), laghu (light), tiksna (sharp), and snigdha (unctuous) gunas (Jana and Shekhawat, 2010). This remedy exhibits curative properties for the ailments associated with the imbalances of the 'vata' and 'kapha' doshas, as well as providing relief for ulcers, abdominal discomfort, ocular disorders, and uterine pains. 2-3 g of dill seed powder, empirically referred to as Shatapushpa choornam, is administered to paediatric patients to address helminthic infections. When administered in quantities of 60 minims for children, the compound anethole exhibits

considerable efficacy as a vermicide against hookworms (Kirtikar and Basu, 1985).

Pergularia daemia:

Pergularia daemia Forsk., a member of the Asclepiadaceae family, is a perennial twinning herb that exhibits widespread growth along the roadsides of India, as well as in tropical and subtropical regions. The entire botanical specimen exhibits a notable pharmacological potency and has been historically employed in the therapeutic management of diverse maladies afflicting *Homo sapiens*. This particular botanical specimen has been historically employed by individuals in the treatment of jaundice, as an anthelmintic agent, a laxative, an anti-pyretic substance, an expectorant, and has also been utilised in cases of infantile diarrhoea. The plant has undergone phytochemical investigation, revealing the presence of cardenolides, alkaloids, triterpenes, and saponins (Vaithiyanathan and Mirunalini, 2015). As per the findings of Kumar *et al.* (2014), the ethanolic extract of *P. daemia* demonstrates superior anthelmintic potential in comparison to the aqueous extract. To induce anthelmintic activity, the entirety of the plant extract is ingested on an empty gastric environment in children.

Acalypha indica:

The *Acalypha indica* plant exhibits therapeutic properties that have been utilized in Siddha and Ayurveda as medicinal agents. This particular botanical specimen has been documented as having potential therapeutic properties in the management of pneumonia, asthma, rheumatism, and various other medical conditions. Additionally, it has been noted to possess emmenagogue properties. The utilization of *Acalypha indica*'s ayurvedic preparations encompasses various forms such as infusion, powder, succus (expressed juice), tincture, liquid extract, cataplasm, and decoction. The foliage of *Acalypha indica* exhibits the presence of laxative characteristics when processed into a powdered form. The combination of *Allium sativum* and

Table 1: Siddha herbs for antihelminthic infections

S. No.	BOTANICAL NAME	TAMIL NAME	TASTE	ACTIONS
1.	<i>Juglans regia</i>	Akkrottu	Bitter	Laxative Alterative Aphrodisiac Cholagogue Vermifuge
2.	<i>Ricinus communis</i>	Sittraamanakku	Bitter	Laxative Emollient
3.	<i>Anethum graveolens</i>	sathakuppai	Sweet, Pungent	Antispasmodic Carminative Diuretic Stomachic
4.	<i>Pergularia daemia</i>	Utthaamani	Bitter	Expectorant Antihelminthic Emetic
5.	<i>Acalypha indica</i>	Kuppaimeni	Biter, Pungent	Anodyne Antihelminthic Cathartic Diuretic Emetic Expectorant Emmenagogue
6.	<i>Gisekia pharnaceoides</i>	Manalikerai	Astringent, Sour, Little bitter	Anti helminthic Expectorant Astringent.
7.	<i>Bambusa arundinaceae</i>	Moongil	Astringent	Emmenagogue Antihelminthic Stimulant Astringent Antispasmodic

Table 2: Herbs used for childrens in helminthiasis

S. No.	HERB	PARTS USED	METHODS OF ADMINISTRATION
1.	<i>Juglans regia</i>	Nut	The Oil of akkrottu is given for elimination of roundworms.
2.	<i>Ricinu scommunis</i>	Seed	The oil of Ricinuscommunis acts as bestremedy for laxative of the childrens. It can be given as a dose of half table spoon to one table spoon
3.	<i>Anethum graveolens</i>	Leaf,flower, seed	The juice of sathakuppai(10-20)drops ismixed with honey and given with the duration of once in four hours.
4.	<i>Pergulariadaemia</i>	Leaf, Root	The decoction of leaves is given as 3 Tablespoons. It eliminates the worms.
5.	<i>Acalypha indica</i>	Leaf, Root, Whole plant.	The leaf is powdered and given for children. It eliminates the worms.
6.	<i>Gisekia pharnaceoides</i>	Leaf	The plant samoolam is added with water and grind it it into paste and taken the karkam in empty stomch.It specially removes the flat worms.
7.	<i>Bambusa arundinaceae</i>	Leaf, seed, rice	The bark of Bambusa is added with water inthe ratio of 1:20 and the decoction is given for worm infestations.



Juglans regia



Ricinus communis



Anethum graveolens



Pergularia daemia



Acalypha indica



Gieskia pharnacoides



Bambusa arundinaceae

Fig. 1: Siddha herbs for antihelminthic infections.

Acalypha indica powder is utilized as an anthelmintic agent against helminths. The findings of this study lead the researchers to the conclusion that the hydroalcoholic extracts of *Acalypha indica* leaves have the potential to operate as a more efficient herbal therapy for helminth infections and can also be successfully formulated as an effective dosage form.

Gisekia pharnaceoides:

Gisekia pharnaceoides Linn is a herbaceous plant characterized by its diffuse growth habit, succulent-like nature, and absence of hair on its surface. The substance in question possesses aromatic properties, exhibits aperient effects, and demonstrates potent anthelmintic activity specifically in cases involving taenia. The plant exhibits antibacterial properties, as well as the ability to depress the central nervous system and act as an anthelmintic agent (Stella *et al.*, 2004). The leaf, root, stalk, and seed of this plant all contain active components that have medicinal properties, including those that are anti-inflammatory, antiulcer, anti-diabetic, anti-oxidant, anthelmintic, astringent, and emmenagogue.

Bambusa arundinaceae:

Bambusa arundinaceae, commonly known as bamboo, is a species of flowering plant in the family Poaceae. Vanshalochana, scientifically known as Bambusoideae, is the accepted nomenclature for the plant commonly referred to as bamboo. Diverse components of this botanical organism, include the foliage, rhizome, stem, and reproductive unit. The compound exhibits anti-inflammatory, anti-ulcer, anti-diabetic, anti-oxidant, anthelmintic, astringent, and emmenagogue properties. The infusion of delicate foliage employed in the treatment of helminthiasis in children at a dosage of 30-40 ml. It also reduces vatha and dosha (Krishnamurthy, 1983).

Antihelminthic medicines for paediatric age group:

- Sirupeelainei
- Naayuruvinei
- Ilaneernei
- Elisevi kudineer
- Murungai kudineer, ennai
- Paagalennai
- Purasamvithai kudineer.

Conclusion

Optimal use of antihelminthics in children is of prime importance because the parasites involved causing reduced functions in childrens globally. Single herbs have been used in therapeutic use in siddha and other integrated systems of medicine from ancient period. This article could overlay the way to look all together the single drug contains potent efficient activities against antihelminthic infections. To conclude, the future intervention is made to standarize the plant extracts with good herbal formulation rather synthetic ones.

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