

A Drug Review On Muttai Thylam – A Siddha Herbal Formulation In The Management Of Maantha Sanni (Autism) In Children

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ABSTRACT:

The Siddha system of medicine is mainly practiced in the southern part of India. It is one of the earliest traditional medicine systems in the world, treating not only the body but also the mind and the soul. The current accepted practice of modern medicine has gradually developed over the years through the scientific and observational efforts of scientists. However, the basis of its development remains rooted in traditional medicine and therapies. In the Siddha literature in context with pediatric diseases, the symptoms of Maantham can be correlated to ASD in modern science. MaanthaSanni is a subtype of Maantham that is caused due to altered functions of Vatham, Pitham, and Kabam. Autism spectrum disorder (Mukkutradisease) is one of the neurodevelopmental disorders with its prevalence in one and a half years old children and is characterized by poor social interaction and communication skills. In Siddha texts, therapeutic management of MaanthaSanni is recommended with MuttaiThylam as internal medicine to regulate the affected mukkutram and neurobehavioral changes in children. The primary goal of this article is to provide data reviews on MuttaiThylam.

KEYWORDS: Siddha, MaanthaSanni, Autism, MuttaiThylam, Special children, Maantham.

I. INTRODUCTION:

Special-needs children are those who have both physical and mental disabilities caused by neuronal damage. Autism spectrum disorder is a term used to describe a constellation of early-appearing social communication deficits and

repetitive sensory-motor behaviors associated with a strong genetic component as well as other causes.

^[1] Although it appeared to be a rare disorder at that time, the prevalence of autism spectrum disorder (ASD) steadily increased. ^[2] Studies of the genetic heritability of ASD range from 40% to 90%, with the most recent estimates at nearly 50% genetic liability. (2) A recent systematic review of the Indian population has reported a prevalence rate ranging from 0.09% to 1.07% among children in the age group of 0–17 years with ASD. ^[3]

Siddha medicines are formulated based on the concepts of Panjabhootha theory, Arusuvaikal, and the three humors (Vali, Azhal, and Iyyam). The human body is formed by 96 basic factors. One of the main components is Uyirthaathukkal, which is made up of three humors, namely Vatham, Pitham, and Kabam, and any imbalance in these humors is the root cause of disease manifestation. Mukkuutra diseases are usually caused by the vitiation of all three humors. Autism spectrum disorder (Mukkuutra disease) is one of the neurodevelopmental disorders. According to the Siddha pediatric text, the symptoms of ASD can be correlated to MaanthamSaani which is a subtype of Maantham. which is due to the vitiation of Vatham, Pitham and Kabam. In Siddha texts, therapeutic management of MaanthaSanni is recommended with MuttaiThylam as internal medicine to regulate the affected mukkutram and neurobehavioral changes in children.

Various drugs have been tried, including dopamine antagonists (haloperidol), atypical neuroleptics (olanzapine, risperidone), Divalproex, secretin (peptide hormone, selective), serotonin

reuptake inhibitors (fluvoxamine), and famotidine. The management involves a combination of educational and behavioral strategies, along with drug treatment. In view of the potential need for long-term use, some of these medications produce irreversible side effects. [4,5] Therefore, children with autism will have significant gains through the Siddha therapeutic intervention of MuttaiThylam [6] as internal medicine. The main aim of this review is to explore the properties of MuttaiThylam, a Siddha Herbo-mineral formulation.

Special-needs children is a wall-to-wall term for those who have both physical and mental disabilities caused by neuronal damage. Autism spectrum disorder is a term used to describe a constellation of early-appearing social communication deficits and repetitivesensory-motor behaviors associated with a strong genetic component as well as other causes.^[1] Although it appeared to be a rare disorder at that time, the prevalence of autism spectrum disorder (ASD) steadily increased.^[2] Studies of the genetic heritability of ASD range from 40% to 90%, with most recent estimates at nearly 50% genetic liability.⁽²⁾ A recent systematic review of the Indian population has reported the percentage of prevalence rate ranging from 0.09% to 1.07% among children in the age group of 0– 17 years with ASD.^[3]

II. MATERIALS AND METHODS:

INGREDIENTS:

- KaattuSeeragam(Vernoniaanthelmintica) - 1 Kazhanju (5.1gram)
- Nilaver(Eudriluseugeniae) - 1 Kazhanju (5.1gram)
- Perungayam (Ferulaasafoetida) - 1 Kazhanju (5.1gram)
- KozhiMuttai(Hen’s Egg) –10.

PURIFICATION METHODS:

- KozhiMuttai – It is boiled using water and the yolk is taken for drug preparation.
- Nilaver–The live earthworm is soaked in milk and then it is soaked in limestone water. After this, the purified Earthworm is taken for drug preparation^[7]
- Perungayam - The drug is purified by Roasting it in a medium flame.^[8]
- KaattuSeeragam – The drug is purified for 6 hours by drying in sunlight and frying on low flame.

PREPARATION METHOD

The purified drugs are taken and ground separately then sieved in a fine cloth (Vasthrakaayam). Then the fried egg yolk is mixed with the above powder in medium flame. Then the separated oil from the content will be collected after filtration and it will be preserved in an air-tight container.

Dosage: Kaasedai (800mg)^[9] (0.8ml od) Before food.

Herbs	plants used	Action	chemical constitution	pharmacological activity
Kozhimuttai	Yolk	Laxative Demulcent	Composition of an Eggshell: The content of carbohydrates in egg yolk is about 0.7-1.0 % and it consists of oligosaccharides bound to protein, composed of mannose and glucosamine; the remaining 0.3% is free carbohydrate in the form of glucose. About 94% of the minerals are in the eggshell fraction; the rest are distributed in egg white and egg yolk. Egg yolk contains 2% minerals, phosphorus being the most abundant. More than 61% of the total phosphorus of egg yolk is contained in phospholipids.	Antimicrobial activity, Antiviral activity, Antigenic activity, Antihypertensive activity, Antioxidant activity, and Cryoprotective activity. ^[11]

			The major inorganic components of egg white are sulphur, potassium, sodium, and chlorine. (Anonymous,2012). ^[10]	
Nilaver	Whole worm	Stimulant	Earthworm is some feed source rich in CP (13.76 %), and CFA (2.06 %), with low ashes (2.53 %), with high content of essential amino acids such as lysine (3.10 %), phenylalanine (2.90 %), leucine (13.80 %), isoleucine (5.30 %), valine (3.60 %). Also, essential fatty acids are present, such as linoleic acid (Vielma, Durán, León & Medina, 2003). The earthworm (<i>Eisenia foetida</i>) has been considered an integral product for animal feed, it has a high content of crude protein (from 60 to 70 % on a dry basis) and essential amino acids deficient in many vegetable meals commonly used in diets such as lysine, threonine, arginine and valine. Besides, fatty acids of biological importance have been detected, such as octadecanoic acid (C18:0) linoleic acid (C18:2), and linolenic acid (C18: 3).	Anti-inflammatory activity, Antimicrobial activity, Anticoagulatory activity. ^[12]
Perungayam	Resin	Carminative Stimulant Laxative Anti-spasmodic Anthelmintic Diuretic	Achenes of <i>vernoniaanthelmintica</i> contain fixed oil (18.89%), brassicasterol, stigmasterol, resin (2%), myristic acid (7.4%), palmitic acid (7%), stearic acid (5.9%), oleic acid (5.7%), linoleic acid (9.6%), vernolic (epoxyoleic acid 62.4%) and methyl vernolate (2%). The seeds contain the main active principle Delta-7-avenasterol, also other sterols 4-alpha-methylvernosterol, vernosterol and avenasterol; main sterol7, (Z)-24(28)-stigmastadienol along other components 5-stigmasten-3β-ol and 7,22- stigmastadienol;	Anti-inflammatory activity, Antiviral activity, Antioxidant. ^[13]

			<p>4α-methylsterol; alkaloid vernovan; bitter principle Demanolide lactone; Seed oil of <i>V. anthelmintica</i> consist chief component trivernolin and minor components, 1,3-divernolin and vernolic acid. Leaf of <i>Vernonia anthelmintica</i> contains abscisic acid. Centratherin and germacranolide were isolated from the leaves and stem. The highly oxygenated stigmastane type steroids vernoanthelcin A-I; stigmastane type steroidal glycosides vernoantheloside A and B were isolated from the aerial parts of <i>V. anthelmintica</i>.^[13]</p>	
Kattuseeragam	Seed	Anthelmintic Diuretic Tonic Stomachic	<p>Achenes of <i>vernoniaanthelmintica</i> contain fixed oil (18.89%), brassicasterol, stigmasterol, resin (2%), myristic acid (7.4%), palmitic acid (7%), stearic acid (5.9%), oleic acid (5.7%), linoleic acid (9.6%), vernolic (epoxyoleic acid 62.4%) and methyl vernolate (2%). The seeds contain the main active principle Delta-7-avenasterol, also other sterols 4-alpha-methylvernosterol, vernosterol and avenasterol; main sterol 7, (Z)-24(28)-stigmastadienol along other components 5-stigmasten-3β-ol and 7,22- stigmastadienol; 4α-methylsterol; alkaloid vernovan; bitter principle Demanolide lactone; other constituents like vernodalin, vernodalin, butein; 3,4,2',4',5'-pentahydroxy- 6'- methoxy- 2- methyl chaltone, β-amyrin, β-sitosterol- β-D-glucoside and stigmasterol; Seeds consist flavonoids like 2',3,4,4'-tetrahydroxychalcone; 5,6,7,4'-tetrahydroxyflavone and butin; elemanolide dimers vernodalidimers A and B. Seed</p>	Antimicrobial Activity, Antioxidant Activity, Immunomodulatory Activity, Estrogen Biosynthesis Activity. ^[14]

			<p>oil of <i>V. anthelmintica</i> consist chief component trivernolin and minor components, 1,3-divernolin and vernolic acid. Leaf of <i>Vernonia anthelmintica</i> contains abscisic acid. Centratherin and germacranolide were isolated from the leaves and stem. The highly oxygenated stigmastane type steroids vernoanthelein A-I; stigmastane type steroidal glycosides vernoantheleoside A and B were isolated from the aerial parts of <i>V. anthelmintica</i>.^[14]</p>	
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KOZHI MUTTAI

Eng name -Hen's Egg

Family- Phasianidae

Parts used: Egg yolk

Description:

Chicken eggs are considered to be nature's perfect food. Eggs are not only a highly nutritious food, but also a rich source of diverse bioactive components including nutraceuticals.

NILAVAR

Botanical name: *Eudriluseugeniae*

Family - Lumbricidae

Parts used: Whole worm

Description:

Earthworms are commonly found in soil, eating a wide variety of organic matter. It is a terrestrial invertebrate that belongs to the phylum Annelida. An earthworm's digestive system runs the length of its body. Circumferential and longitudinal muscles edging each segment let the worm move. Similar sets of muscles line the gut, and their actions move digesting food toward the worm's anus.

PERUNGAYAM

Botanical name: *Ferulaasafoetida*

Family -Fagaceae

Parts used: Resin

Botanical description:

Asafoetida is extracted from the *Ferula* plants which have massive taproots or carrot-shaped roots, 12.5-15 cm in diameter at the crown when they are 4-5 years old. Just before the plants

flower, in March-April, the upper part of the living rhizome root is laid bare and the stem cut off close to the crown. A dome-shaped structure made of twigs and earth covers the exposed surface. A milky juice exudes from the cut surface. After some days, the exudates are scraped off and a fresh slice of the root is cut when more latex exudes; sometimes the resin is removed along with the slice. The collection of resin and slicing of the root are repeated until exudation ceases (about 3 months after the first cut). The resin is sometimes collected from successive incisions made at the junction of the stem or rhizome and the taproots.

KATTU SEERAGAM

Botanical name: *Vernoniaanthelmintica*

Family - Asteraceae

Botanical description:

Vernonia anthelmintica is an annual, erect, and leafy plant about 1.5m tall. The stems are branched and pubescent. Leaves are 5-9cm long, 2.5-3.2cm broad, lanceolate or elliptic-lanceolate, acute, coarsely serrate, pubescent on both surfaces, petiolate, and with tapering base. Heads are 1.3-2cm diameter, subcorymbose with about 40 flowers and linear bract near the top of the peduncle. Outer involucral bracts are linear, hairy, shorter than those of the inner rows; intermediate bracts with herbaceous hairy tips, linear, subacute, often tipped with purple. Pappus reddish, the exterior row very short, subpaleaceous, persistent, the inner hairs somewhat flattened, deciduous, much shorter than the glabrous corolla. Achenes are 4.5-6mm long, oblong-cylindrical, 10 ribbed, pubescent.

III. DISCUSSION:

Autistic disorder is classified as one of the pervasive developmental disorders, also called autism spectrum disorders, a cluster of syndromes that share marked abnormalities in the development of social and communicative skills. Although drug therapy may not completely correct complications associated with childhood disability, the evidence does show that it helps manage problems.

Children with autistic disorders (AD) show severe and pervasive impairments in reciprocal social interaction and communication and exhibit stereotyped behaviors as well as restricted interests and activities. However, the most obvious signs of autism and symptoms of autism tend to emerge between 2 and 3 years of age.

ASD is correlated to Maantham in Siddha literature, particularly in Maanthasanni. To treat ASD children, the trial drug MuttaiThylam for internal use was selected for administration. MuttaiThylam was used to manage the affected mukkutram, the neurobehavioral changes, and to regulate brain function.

IV. CONCLUSION:

The review article concludes that the ingredients present in MuttaiThylam are effective in treating Maanthasanni (Autism). The drugs that are present in this have anti-inflammatory and immune modulatory activity, and also the phytochemicals present in it have a significant effect in treating Maanthasanni (autism). Hence, MuttaiThylam is very effective and considered an efficient medicine for Maanthasanni (autism).

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