

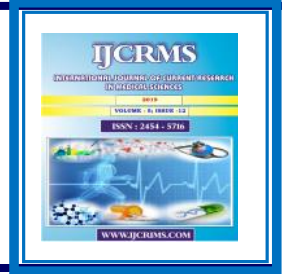


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**Review Article**

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## ***Omathi urundai a sathric Siddha* formulation for the management of *Veeka mantham* (Hypoproteinemia) in children: A Review**

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### **Abstract**

Siddha system of medicine is most popular in Southern region of India. The timeline of its origin seems to be unpredictable. Ancient sages gave us lot of therapeutic valued drugs to treat various diseases. Many diseases, especially in childhood, can be treated properly through Siddha system of medicines. Health of infant and toddlers, from conception to early childhood, depends on the health of the mother. Insufficiency of nutritious elements in the mother's diet will definitely affect the intellect, the structural growth and the functioning of the neural tube in the foetus. Optimal nutrition and healthy atmosphere for the mother is essential for the survival and development of a healthy child. In Siddha literature *Veeka mantham* is mentioned as one of the types of *Mantham* in *Karuvil thondrum noigal* (Diseases due to intra uterine factors). Though these literature were written by ancient sages of South India thousands of years ago, it is quite interesting to know that parallel analysis of these age old poems have revealed its correlation with modern Paediatrics texts and terminologies. Therefore, this literature analysis was undertaken to correlate concurrence of *Veeka mantham* which is mentioned in Siddha literature with that of the signs and symptoms of Hypoproteinemia.

**Keywords:** Veeka mantham, Hypoproteinemia, Siddha paediatrics, Balavagadam, Karuvil thondrum noigal

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## Introduction

Siddha system – The time honoured medicine which has been prevalent of yore is the foremost of all medical system in world. The words of the Siddhars are indeed difficult to interpret and to be translated effectively in a foreign medium. It has been described that the number of diseases comes up to 4448. *Kuzhanthai maruthuvam* is the branch of medical science of *Siddhars* which deals with the diseases of children, their essential nature, especially on the functional changes together with planetary influence, morbid diathesis etc. on the treatment.

*Mantham* is a group of gastrointestinal disturbances in which enzymatic insufficiencies such as lactose intolerance and up to gluten enteropathy is discussed. *Mantham* is a group of digestive disorders which leads improper assimilation and absorption. This in turn leads to loss of micro and macro nutrients. Around 53 types of *Mantham* have been explained by various Siddhars; almost all are comparable with gastrointestinal disturbances that can lead to nervous debility like *janni*, *valippu* (epilepsy) in children. If it is left untreated or inadequately treated it may lead to retardation of mental or physical growth. This hypothesis of relationship between *Mantham* and neurological diseases is evident from even recent theories of autism. *Mantham* occurs in three stages of growth in children. They are when the child is in exclusive breast feeding, while the weaning period during when the child is given both milk and solid foods and later stage where the child is given solid feeds (late weaning period). Malnourished children are also affected by *Mantham*. Symptoms of *Mantham* vary from indigestion, regurgitation, constipation to diarrhoea, vomiting, anorexia, dehydration, febrile conditions and convulsions.

In a healthy human, the three humors *Vatham*, *Pitham* and *Kabam* should be in a well-balanced state. Any derangement in the state of humors causes disease. In *Mantham*, the stomach is affected. There is derangement in *Pitham*, which affects *Kabam* and its residing places, the chest. *Mantham noi* is thus preceded by *Kanam* (Primary complex). *Mantham* is usually treated

with pungent decoctions and drugs which will lead to a proper digestion and reduce the dominating *Kabam* and deranged *Vatham*.

In *Balavagadam* text, there are about 21 types of *Mantha noi* which are described with symptoms. Out of that *Veeka mantham* is one among them. *Veeka mantham* is the digestive disease of the children marked by swelling of eyes, ears, inflammation of tongue and fever <sup>[1]</sup>. *Veeka mantham* may be compared with the hypoproteinemia.

## Hypoproteinemia:

Hypoproteinemia is a condition where there is abnormal lower levels of protein in the body. Protein is an essential nutrient found in almost every part of body including bones, muscles, skin, hair, and nails. Protein keeps bones and muscles strong. It makes up a molecule called hemoglobin, which carries oxygen throughout the body. It also produce chemicals called enzymes. Foods like red meat, chicken, fish, eggs, dairy, and nuts are rich in proteins. Severe protein deficiency can be life-threatening <sup>[2]</sup>. Hypoproteinaemia is always associated clinically with impairment in kidney function in which there is a chronic loss of large quantities of protein in the urine. Formerly the fundamental cause for this was attributed to a loss of protein in the urine, a lack of protein in the diet, an impairment of or an injury to the serum protein regenerating mechanism, may be an accessory, if not the primary factor, in the production of hypoproteinaemia.<sup>[3]</sup>

It is believed that the adequate approach to the solution of the problem of hypoproteinaemia may well include attempts to find a way for stimulating internally the serum protein regenerating mechanism, which seems to involve in some manner the capacity of the tissues to furnish protein for the needs of the plasma. The present practice of feeding relatively high-protein diets in cases of hypoproteinaemia, especially when the condition is associated with prolonged loss of protein in the urine, should be looked upon merely as a temporary expedient, not only because such a procedure is based upon the belief

that the proteinuria is solely responsible for the onset and persistence of the hypoproteinaemia but also because the consumption of such a ration may possibly operate as part of a vicious cycle and eventually be actually injurious to the individual.<sup>[3]</sup>

In determining the requirement for protein, the requirements for the essential amino acids should be considered first. The required amounts of the nine essential amino acids must be provided in the diet, but because cysteine can replace approximately 30% of the requirement for methionine, and tyrosine about 50% of the requirement for phenylalanine, these amino acids must also be considered. The essential amino acid requirements of infants, children, men, and women were studied extensively from 1950 to 1970. Except for infants, where the criterion was growth and nitrogen accretion, the requirement was accepted to be the amount of intake needed to achieve nitrogen equilibrium in short-term studies of adults or positive balance in children.<sup>[22]</sup>

## Materials and Methods

### Ingredients of Omathi urundai

*Omathi Urundai* is a polyherbal formulation which is used in the management of all types of *Mantham* in children. It consist of ingredients such as Omam (*Trachyspermum ammi* Linn., ), Thippili (*Piper longum* Linn.), Chukku (*Zingiber officinalis* Linn.), Seeragam (*Cuminam cyminam* Linn.), Karunseragam (*Nigella sativa* Linn.), Kothamalli (*Coriandarum sativam* Linn.), Kurosani omam (*Hyoscyamus niger* Linn.), Aamai ottu kari.<sup>[1]</sup>

### Methods used to collect review information

Content of this article is collected through authorised Siddha literatures, Siddha dictionaries, International journals, Government organised websites.

**Table 1:** Ingredients of Omathy Urundai:

Sl.no	Plant name	English name	Botanical name	Useful parts	Suvai (Taste)	Veeriyam
1	Omam	Ajowan seed	<i>Trachyspermum ammi</i> Linn.,	Seed	Pungent	Pungent
2	Thippili	Long pepper seed	<i>Piper longum</i> Linn.,	Seed	Sweet	Sweet
3	Chukku	Dried ginger	<i>Zingiber officinalis</i> Linn.,	Rhizome	Pungent	Pungent
4	Seeragam	Cumin seed	<i>Cuminam cyminam</i> Linn.,	Seed	Pungent, Sweet	Sweet
5	Karunseeragam	Black cumin seed	<i>Nigella sativa</i> Linn.,	Seed	Bitter	Pungent
6	Kothamalli	Coriander seed	<i>Coriandarum sativam</i> Linn.,	Seed	Pungent	Pungent
7	Kurosani omam	Henbane seed	<i>Hyoscyamus niger</i> Linn.,	Seed	Pungent, Small Bitter	Pungent
8	Ammaiottukari	Tortoise shell	-	Shell		

**Table 2:** Ingredients of Omathy urundai (Cont.):

Sl.no	Plant name	Phytochemicals	Pharmacological actions
1	Omam	Protein (17.1%) <sup>[14]</sup> , carbohydrates, glycosides, saponins, phenolic components, volatile oil like thymol, terpinene, para cymen, alpha and beta pinene, protein (15.4%), fat, fibre and mineral matter containing calcium, phosphorous, iron and nicotinic acid. <sup>[4]</sup>	Antioxidant, Cytotoxic, Anthelmintic, Antiplatelet activity, Hypolipidemic, anti-inflammatory, digestive stimulant, hepatoprotective, gastroprotective, stomachic, carminative. <sup>[4]</sup>
2	Thippili	Starch protein, alkaloids, saponins, volatile oil, carbohydrate, amygdaline, piperine, piperlongumin, piperlonguminine and methyl-3,4,5-trimethoxycinnamate are the major chemical constituents. Other constituents are piperonaline, pipericide, sesamine, B-sitosterol and dihydrostigmasterol, free aminoacids like L-Tyrosine, L-cysteine hydrochloride, DL-Serine and L-Aspartic acid in fruit. <sup>[5]</sup> Also there is organic nitrogen component and phytochemical protein target complexes. <sup>[15]</sup>	Hepatoprotective activity, hypocholesterolaemic activity, bio availability enhancement, antiamoebic activity, immunodepressant, stimulant effect, anti-inflammatory activity. <sup>[5]</sup>
3	Chukku	Terpenes and oleoresin, volatile oils about 1% to 3% and non-volatile pungent components oleoresin, phenolic compounds which are shogaol and gingerol and lipophilic rhizome extracts, yielded potentially active gingerols, which can be converted to paradol, zingerone and shogaols. <sup>[6]</sup>	Antioxidant activity, anti-inflammatory activity, hepato-protective activity, gastroprotective activity. <sup>[6]</sup>
4	Seeragam	A nonspecific lipid transfer protein, cuminaldehyde, limonene, - and - pinene, 1, 8-cineole, <i>o</i> - and <i>p</i> -cymene, - and -terpinene, linolool, safranal, vitamins, proteins, amino acids, minerals, sugar, starch, and other carbohydrates, tannins, phytic acid and dietary fibre components. <sup>[7]</sup>	Antioxidant, immunomodulatory, drug bioavailability enhancing activities. <sup>[7]</sup>

5	Karunseeragam	<p>Proteins, alkaloid, saponin, essential oil. The fixed oil (32-40 %) contains unsaturated fatty acids which include: arachidonic, eicosadienoic, linoleic, linolenic, oleic, almitoleic, palmitic, stearic and myristic acid as well as beta-sitosterol, sterol esters and sterol glucosides. The volatile oil (0.4-0.45 %) contains saturated fatty acids which includes: nigellone that is the only component of the carbonyl fraction of the oil, Thymoquinone (TQ), thymohydroquinone (THQ), dithymoquinone, thymol<sup>[8]</sup>. Potassium, phosphorus, sodium, iron, zinc, calcium, magnesium, manganese and copper. Glutamic acid, arginine and aspartic acid were the main amino acids present while cystine and methionine were the minor amino acids.<sup>[9][10]</sup></p>	<p>Immuno-potentiating, antioxidant, gastroprotective, anti-inflammatory, immunomodulatory, hepatoprotective effect, protective effects on lipid peroxidation.<sup>[8][10]</sup></p>
6	Kothamalli	<p>Protein, lipid, carbohydrate, fibre, calcium, iron, phosphorus, magnesium, potassium, sodium, zinc, vitamin C, thiamin, riboflavin, niacin, vitamin B, vitamin A, vitamin D]. The phytochemical screening of plant showed the presence of essential oil, tannins, terpenoids, reducing sugars, alkaloids, phenolics, flavonoids, fatty acids, sterols and glycosides.<sup>[11]</sup></p>	<p>Anti-inflammatory, antimutagenic, hypolipidemic, antioxidant, carminative, gastrointestinal, hepatoprotective effect.<sup>[11]</sup></p>
7	Kurosani omam	<p>Hyoscyamine-N-oxide (roots, stem, leaf); hyoscyamine, hyoscine, skimmianine, apo-hyoscine, apo-atropine, tropine, - and -belladonines (aerial part); atropine, scopolamine, hyoscypikrin, cuscohygrine, 6-hydroxyhyoscyamine, hyoscine-N oxides (leaf); hyoscyamine, hyoscyamide, 1,24-tetracosanediol diferulate, grossamide, cannabisin D, cannabisin G, N-trans-feruloyl tyramine, 1-O-octadecanoyl glycerol, rutin, vanillic acid, sitosterol, daucosterol, 7-hydroxyhyoscyamine (seeds), alkaloids, coumarins, flavonoids, sterols, tannins and terpenes.<sup>[12]</sup></p>	<p>Anti-histamine, anti-inflammatory, antiallergic.<sup>[12]</sup></p>

8	Ammaiottukari	The collagen, a fibrous protein is converted to gelatin. Collagen is the most abundant protein in higher animals, making up one-third or more of the total body protein of vertebrates. Calcium compounds make up about half of the tortoise. There are also small amounts of chondroitin, fats, magnesium, trace minerals, such as zinc, and vitamins, including Vitamin D, in the tortoise shells. <sup>[13]</sup>	
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## Observation and Discussion

The literature review revealed that all the ingredients of *Omathy urundai* has phenolic components, proteins, amino acids, vitamins, minerals etc. and also pharmacological actions like bioavailability enhancing action, immune-potentiating, anti-inflammation, gastro productive and hepatoprotective actions that may help the drug to cure the cause of Hypoproteinaemia. As we are known, amino acids are required for the synthesis of protein there are many amino acids present in the ingredients of *Omathy urundai*.

Main amino acids present in the ingredients of *Omathy urundai* are, *Cysteine*, L-cysteine is a proteinogenic amino acid contributing to building protein and includes the element sulphur. It can be synthesised in the human liver and is therefore not an essential amino acid. It should be however, be supplemented in order to cover the required daily amounts. L-cysteine supports the synthesis of the highly anti oxidative Glutathione and can also be stored in this chemical form. It therefore plays an important part in detoxification and the resulting protection of several tissues and organs. Glutathione also inhibits inflammation and leads to an overall strengthening of the immune system. It stimulates the productions of so-called Leukotriene, which supports the defensive work of the macrophages, which are key elements in the immune system.<sup>[17]</sup>

*Serine* is a non-essential amino acid. It is formed from another amino acid called glycine. Serine is important for both mental and physical health. It has a critical role in ensuring that the central nervous system and the brain are functioning

correctly. Additionally it has a role in forming phospholipids required for cell production. This amino acid is also important in the function of DNA and RNA, muscle formation and metabolism of fats. Furthermore, serine is used to produce antibodies. These chemicals are important in supporting a healthy immune system.<sup>[18]</sup>

*Tyrosine* is a non-essential amino acid, which the body makes from its precursor phenylalanine. The body requires tyrosine for many functions. In particular, this amino acid is closely linked to nervous system function, metabolism and regulating mood. The body needs tyrosine to produce the brain chemicals that help to regulate pain sensitivity and appetite.<sup>[19]</sup>

*Aspartic acid* is known in two forms, L-aspartic acid and D-aspartic acid. L-aspartic acid is the only form incorporated directly into proteins. This non-essential amino acid has an important role in the Krebs cycle, also known as the citric acid cycle. During this process biochemical and other amino acids are synthesized, such as lysine, arginine, asparagine's, threonine, methionine, isoleucine, and several nucleotides. Aspartic acid is needed for the production of immunoglobulins and antibodies. These are glycoprotein molecules produced by white blood cells (plasma cells). They are a critical component of the body's immune function. Immunoglobulins and antibodies are responsible for recognising and binding to antigens, such as viruses and bacteria. They also help to destroy these foreign bodies. There are many different immunoglobulin isotypes and without L-aspartic acid many of these compounds cannot be synthesized.<sup>[20]</sup>



*Gelatin* contains several amino acids. The most abundant amino acids in gelatin include glycine, proline, and valine. Gelatin also contains the amino acids lysine, alanine, and arginine. Valine is an essential amino acid that cannot be produced by the human body, which means it must come from the diet. Gelatin may aid digestion in several different ways. For instance, the glycine in gelatin may promote a healthy mucosal lining in the stomach. It also stimulates the production of gastric juices, which facilitates proper digestion. [21]

From the above discussion it is observed that the ingredients of *Omathy urundai* are rich in protein and has anti-inflammatory and immuno modulatory actions which are helpful to reduce the symptoms of *Mantham* and to increase the protein level in body. Further research works needs to carry on for scientific validation.

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