

**PHYTOCHEMICAL SCREENING OF *PODUTHALAIYATHI KUDINEER* IN THE
MANAGEMENT OF *POR MAANTHAM* (ACUTE DIARRHOEAL DISEASE) IN
CHILDREN**

G. Pandipriya*¹, K. Shyamala*², J. Sriram², A. Anbumalar*³, T. Maharasi Maniselvi*⁴

*¹Presenting author, Third Year PG Scholar, Department of Kuzhanthai Maruthuvam, Government Siddha Medical College, Palayamkottai, Tirunelveli.

*²Lecturer, Department of Kuzhanthai Maruthuvam, Government Siddha Medical College, Palayamkottai, Tirunelveli.

*³Reader and *⁴HOD, Department of Kuzhanthai Maruthuvam, Government Siddha Medical College, Palayamkottai, Tirunelveli.



***Corresponding Author: G. Pandipriya**

Presenting author, Third Year PG Scholar, Department of Kuzhanthai Maruthuvam, Government Siddha Medical College, Palayamkottai, Tirunelveli.

DOI: <https://doi.org/10.5281/zenodo.17473547>



How to cite this Article: G. Pandipriya*, K. Shyamala*, J. Sriram, A. Anbumalar*, T. Maharasi Maniselvi*. (2025). Phytochemical Screening of Poduthalaiyathi Kudineer In The Management of Por Maantham (Acute Diarrhoeal Disease) In Children. European Journal of Biomedical and Pharmaceutical Sciences, 12(11), 45–50.
This work is licensed under Creative Commons Attribution 4.0 International license.

Article Received on 23/09/2025

Article Revised on 13/10/2025

Article Published on 01/11/2025

ABSTRACT

Siddha, one of the oldest traditional systems of medicine, offers a holistic approach to health and wellness. Poduthalaiyathy Kudineer, a classical polyherbal formulation described in the Siddha text Balavadagam, is traditionally used to treat Por Maantham, which correlates with acute diarrhoeal disease (ADD). This formulation comprises 10 herbal ingredients, leveraging the synergistic potential of phytochemicals to promote therapeutic efficacy. In this study, Poduthalaiyathy Kudineer was evaluated for its phytochemical profile using standard methods. The phytochemical evaluation provides valuable insights into the potential mechanisms underlying the formulation's therapeutic effects. The findings of this study contribute to the standardization and quality control of Poduthalaiyathy Kudineer, supporting its traditional use in the management of acute diarrhoeal disease. By establishing a robust phytochemical profile, this research lays the groundwork for further studies on the formulation's efficacy and safety. This study underscores the importance of traditional medicine in contemporary healthcare, highlighting the potential of Poduthalaiyathy Kudineer as a valuable therapeutic option for ADD.

KEYWORD: Balavadagam, Poduthalaiyathy Kudineer, Por Maantha, Acute Diarrhoeal Disease, Phytochemical.

1. INTRODUCTION

Maantham comes under the *Aga Karana Noigal*, which is the most common disease affecting the paediatric age group (1-3 years). According to *yugimuni* classification in the *Balavadagam* literature, *Maantham* is classified into 21 distinct types.^[1] Among these types, the signs and symptoms of *Por Maantham* are correlated with acute diarrhoeal disease. *Poduthalaiyathy kudineer* was evaluated for phytochemicals as per the standard method. These characterisation parameters may serve as quality control analysis of *Poduthalaiyathy kudineer*. This study explores the clinical use of *Poduthalaiyathy Kudineer* for *Por Maantham* by identifying key phytochemicals that contribute to its therapeutic properties.

2. MATERIALS AND METHODS

2.1. Plant materials

The drug, *Poduthalaiyathy Kudineer*, is composed of ten herbal ingredients, is referred to in the literature as Balavadagam, viz., *Poduthalai eerku* (*Phyla nodiflora*), *Vembu eerku* (*Azadirachta indica*), *Ma eerku* (*Mangifera indica*), *Puli eerku* (*Tamarindus indica*), *Nuna eerku* (*Morinda tinctoria*), *Nochi eerku* (*Vitex negundo*), *Veliparuthi eerku* (*Pergularia daemia*), *Omam* (*Trachyspermum ammi* L.), *Vellaipoondu* (*Allium sativum*), *Thippili* (*Piper longum*). The word *eerku* represents the twig part of the plant. The twig of *poduthalai*, *vembu*, *ma*, *puli*, *nochi*, *veliparuthi*, *seed of omam*, *rhizome of vellaipoondu* and *fruit of thippili* were employed for the preparation of the formulation.

2.2. METHOD

2.2.1. Collection of raw drugs

The raw drugs mentioned above were procured from a several-year-old traditional raw drug shop in Nagercoil.

2.2.2. Authentication of raw material

The ingredients of poduthalayathy kudineer was authenticated by the Department of Gunapadam in

Government Siddha Medical College, Palayamkottai. Voucher specimens of all these ingredients were deposited in the herbarium of the Department of Gunapadam, Government Siddha Medical College and Hospital, Palayamkottai, Tirunelveli.

2.2.3. Table 1: Ingredients of the kudineer.^[1]

S.NO	NAME	BOTANICAL NAME	FAMILY NAME	PART USED	QUANTITY
1.	<i>Poduthalai eerku</i>	<i>Phyla nodiflora</i>	Verbenaceae	Twig	10gm
2.	<i>Vembu eerku</i>	<i>Azadirachta indica</i>	Meliaceae	Twig	10gm
3.	<i>Ma eerku</i>	<i>Mangifera indica</i>	Anacardiaceae	Twig	10gm
4.	<i>Puli eerku</i>	<i>Tamarindus indica</i>	Fabaceae	Twig	10gm
5.	<i>Nunna eerku</i>	<i>Morinda tinctoria</i>	Rubiaceae	Twig	10gm
6.	<i>Nochi eerku</i>	<i>Vitex negundo</i>	Lamiaceae	Twig	10gm
7.	<i>Veliparuthi eerku</i>	<i>Pergularia daemia</i>	Apocynaceae	Twig	10gm
8.	<i>Omam</i>	<i>Trachyspermum ammi</i> L.	Apiaceae	Seed	5gm
9.	<i>Vellaipoondu</i>	<i>Allium sativum</i>	Amaryllidaceae	Bulb	5gm
10.	<i>Thippili</i>	<i>Piper longum</i>	Piperaceae	Fruit	5gm



Phyla nodiflora



Azadirachta indica



Mangifera indica



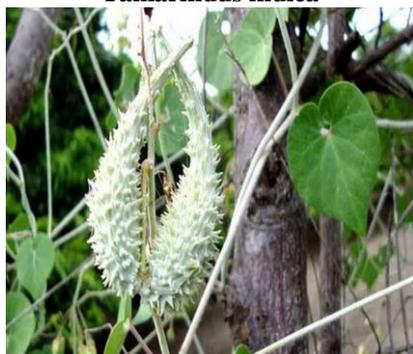
Tamarindus indica



Morinda tinctoria



Vitex negundo



Pergularia daemia



***Trachyspermum ammi* L.,**



Allium sativum



Piper longum

2.2.4. Purification

All ingredients were purified according to traditional Siddha methods, as described in classical texts such as Sigicha Rathina Deepam^[2] and Sarakku Suthi Seyimuraikal.^[12] Specifically:

- *Thipilli* (Piper longum) was soaked in lemon juice for 3 hours and then dried.
- *Omam* (Trachyspermum ammi) was soaked in lime water for 3 hours, then fried.
- *Vellaiipoondu* (*Allium cepa*) was sliced into small pieces and dried thoroughly.
- The twigs of the remaining ingredients were washed and shade-dried before use.

2.2.5. Preparation

Poduthalaiyathy kudineer was prepared as per the standard method described in the *Balavagadam* text. After purification, *Poduthalaiyathy Kudineer* decoction was prepared by boiling the coarse powder of purified ingredients in 8 times water, reducing it to 1/8th of the original volume.^[1]



Coarse Powder Of Poduthalaiyathy Kudineer.

2.2.6. Authentication of prepared drug

The prepared drug will be authenticated by the renowned experts in the department of Gunapadam, ensuring its quality and adherence to traditional standards.

2.2.7. Administration of drug

Drug format: *Kasayam* (*kasayam* prepared from the above-mentioned *kudineer* powder (coarse powder)^[1]
Route of administration: oral^[1]

2.2.8. Dosage

Poduthalaiyathy kudineer: 1 to 5 years- 5ml to 15ml, twice a day after food. Depending upon the age & body weight of the child.^[1]

3. CLINICAL FEATURES OF POR MAANTHAM

Vayiru porumi kaliyum (abdomen tympanitis or rumbling and diarrhea), *vayiru purattal* (nausea), *vali* (pain), *thayppal unna mudiyamal mangum* (inability to take breastfeed & fatigue), *vanti* (vomit), *kan kuli vizhum* (sunken eyes), *na varatchi* (dryness of tongue), *suram* (fever), *maarpu tutikkum* (palpitation), *talai purattum* (rolling the head very often), *sornthu mayankum* (drowsiness), *netri narampu putaippu* (frontal vessel prominent), *vayum nenjum ularum* (dryness of mouth and throat), *vayiru oothum* (abdomen distension), *udal vaadum* (tiredness).^[1,13]

CLINICAL FEATURES OF ACUTE DIARRHOEAL DISEASE

As per WHO(2024), diarrhoea is defined as the passage of **3 or more loose or liquid stools** per day (or more frequent passage than is normal for the individual). Dehydration during a diarrhoeal episode, water and electrolytes (sodium, chloride, potassium and bicarbonate) are lost through liquid stools, vomit, sweat, urine and breathing. Severe dehydration symptoms, **lethargy / unconsciousness, sunken eyes, unable to drink or drink poorly**, skin pinch goes back very slowly (>2 seconds). Mild dehydration, restlessness, irritability, sunken eyes, drinks eagerly, thirsty.^[3]

Clinical features of *Por Maantham* may be correlated with acute diarrhoeal disease.

4. RESULT

Phytochemical

The phytochemical evaluation of *Poduthalaiyathy Kudineer* was conducted in accordance with the Pharmacopeial Laboratory for Indian Medicine (PLIM) guidelines for AYUSH formulations, ensuring standardization.

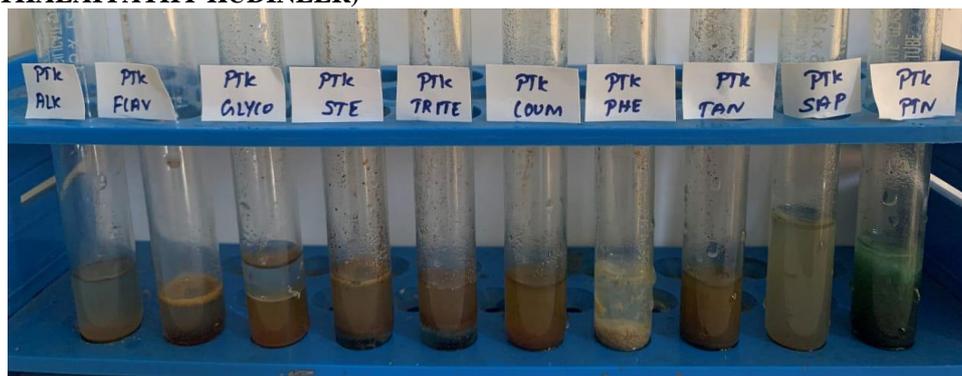


Fine Powder of Poduthalaiyathy Kudineer For Phytochemical Analysis.

Preparation of the extract^[4]

S.NO	EXPERIMENT	OBSERVATIONN	INFERENCE
1.	Test for alkaloids: Mayer's Test: To the test sample, 2ml of Mayer's reagent was added.	A dull white precipitate revealed the presence of alkaloids	PRESENCE
2.	Test for coumarins: To the test sample, 1 ml of 10% sodium hydroxide was added.	The presence of coumarins is indicated by the formation of yellow colour.	PRESENCE
3.	Test for saponins: To the test sample, 5 ml of water was added and the tube was shaken vigorously.	Copious lather formation indicates the presence of Saponins	PRESENCE
4.	Test for tannins: To the test sample, ferric chloride was added.	Formation of a dark blue or greenish black colour showed the presence of tannins.	PRESENCE
5.	Test for glycosides: Borntrager's Test The test drug is hydrolysed with concentrated hydrochloric acid for 2 hours on a water bath, filtered, and the hydrolysate is subjected to the following tests. To 2 ml of filtered hydrolysate, 3 ml of chloroform is added and shaken, the chloroform layer is separated, and 10% ammonia solution is added to it.	Pink colour indicates the presence of glycosides	ABSENCE
6.	Test for flavonoids: Alkaline reagent test. Two to three drops of sodium hydroxide were added to 2 mL of extract.	Initially, a deep yellow colour appeared, but it gradually became colourless by adding a few drops of dilute HCL, indicating that flavonoids were present.	PRESENCE
7.	Test for phenols: Lead acetate test: To the test sample, 3 ml of 10% lead acetate solution was added	A bulky white precipitate indicated the presence of phenolic compounds.	PRESENCE
8.	Test for steroids: To the test sample, 2ml of chloroform was added with a few drops of concentrated Sulphuric acid (3ml), and shaken well.	The upper layer in the test tube turned into red, and the sulphuric acid layer showed yellow with green fluorescence. It showed the presence of steroids.	PRESENCE
9.	Triterpenoids Liebermann–Burchard test: To the chloroform solution, a few drops of acetic anhydride were added, then mixed well. 1 ml concentrated sulphuric acid was added from the sides of the test tube	The appearance of a red ring indicates the presence of triterpenoids.	PRESENCE
10.	Test for Cyanins A. Anthocyanin: To the test sample, 1 ml of 2N sodium hydroxide was added and heated for 5 min at 100°C.	Formation of a bluish green colour indicates the presence of anthocyanin.	ABSENCE
	B. Betacyanin: To the test sample, mix the solvent with ethanol	Red violet indicates the presence of betacyanin	PRESENCE
11.	Test for Carbohydrates - Benedict's test To the test sample, about 0.5 ml of Benedict's reagent is added. The mixture is heated on a boiling water bath for 2 minutes.	A characteristic coloured precipitate indicates the presence of sugar.	PRESENCE
12.	Proteins (Biuret Test) To extract 1% solution of copper sulphate was added, followed by 5% solution of sodium hydroxide,	Formation of violet-purple colour indicates the presence of proteins.	ABSENCE

QUALITATIVE PHYTOCHEMICAL INVESTIGATION (PTK-PODUTHALAIYATHY KUDINEER)



5. DISCUSSION

Phytochemicals & their action of *poduthalaiyathy kudineer*

Alkaloid

Piper longum is an ingredient in *poduthalaiyathy kudineer*, which has alkaloid piperin, which has calcium channel blockage activity, which is responsible for anti-diarrheal and anti-spasmodic activity. By blocking calcium channel, which reduce intestinal muscle contraction and decrease fluid secretion, which contributes to their anti-diarrhoea activity.^[5]

Tannin

Tannins denature proteins in the intestinal mucosa more resistant to chemical alteration and reducing secretion.^[6]

Tannin in Phyla Nodiflora decreases gut motility, increasing colonic water electrolyte reabsorption, and tannins could also decrease the irritability of the bowel, thereby reducing peristaltic. Tannins that are present in antidiarrheal plants could denature proteins in the intestinal mucosa by forming protein tannates, which may reduce secretion. Tannin produces a temporary protective layer of coagulated protein on the mucosal membrane of the gut, possibly desensitising sensory nerve endings and reducing provocative peristaltic stimuli. Tannins also form a protective pellicle that prevents the absorption of toxic substances. Tannins are astringent, bitter plant polyphenols which either bind and precipitate or shrink proteins. Moreover, herbs with astringent properties are recommended as a treatment for diarrhoea.^[7]

Flavonoids

Flavonoids inhibit the release of autacoids and prostaglandin, thereby inhibiting motility and secretion.^[8] In phyla nodiflora, flavonoids are known to inhibit intestinal motility and hydroelectrolytic secretion.^[6] Plants such as Phyla nodiflora, Mangifera indica, Morinda tinctoria, and Allium sativum have tannins and flavonoids.

Phenol

Inhibit the release of autacoids and prostaglandin, thereby inhibiting motility and secretion.^[9]

Trachyspermum ammi exhibit antispasmodic activity. Thymol(2-isopropyl-5-methylphenol) is a phenolic monoterpene []compound. Essence in Trachyspermum ammi are thymol (49.0%), γ -terpinene (30.8%), p-cymene (15.7%), β -pinene (2.1%), myrcene (0.8%), and limonene (0.7%). As a rule of thumb, smooth muscle contraction is a calcium- and adenosine triphosphate (ATP)-dependent process, and thymol exerts its relaxant effect through opposing this process. It can also block the Ca²⁺ influxes through the cell membrane and reduce the calcium content of the sarcoplasmic reticulum. On the other hand, carvacrol, which is another pharmacologically active constituent of the essence, has been shown to possess a significant relaxant effect on smooth muscles through its blocking action on muscarinic receptors and/or β -adrenergic stimulation. It has been demonstrated that Pinene compounds, which are present in essence, exhibit a relaxant effect on the tonic contractions induced by either KCl (potassium chloride) or acetylcholine. Since these inhibitory compounds are mainly deposited in the essence, the more potent spasmolytic effect of essence as compared to extract may be related to the possible mechanisms of action ascribed to these constituents.^[14]

Triteripenoid

Triteripenoid inhibits the intestinal motility and inhibits the release of prostaglandin which exhibits its anti-diarrhoeal activity.^[10,8]

Saponin

Saponin exhibit the antidiarrhoeal activity by inhibiting the release of histamine.^[11]

In *Poduthalaiyathy Kudineer*, plants such as phyla nodiflora, Mangifera indica, Morinda tinctoria, and Allium sativum have tannins and flavonoids. And due to the presence of phytochemical compounds in *Poduthalaiyathy Kudineer*, viz., alkaloid, tannin, flavonoid, phenol, triterpenoid, saponin, steroid, and their action, exhibit the antidiarrhoeal efficacy of *Poduthalaiyathy Kudineer*.

6. CONCLUSION

Siddha medicine *Poduthalaiyathy Kudineer* traditionally indicated for *Por Maantham*, which is correlated to acute diarrheal disease. This study demonstrates that *Poduthalaiyathy Kudineer* have antidiarrheal efficacy attributed to its phytochemical composition. Further studies are warranted to assess its therapeutic potency.

DECLARATION OF COMPETING INTERESTS

The authors declare that they have no financial or personal conflicts of interest related to this research.

ACKNOWLEDGEMENT

The author expresses their gratitude to all those who were involved and helped to completing this paper successfully.

REFERENCE

1. Dr. K.S. Murugesu Muthaliyar, Dr. Gurusironmani. Balavagadam. Chennai-600106; India Maruthuva Homoeopathy Department, 118, 139.
2. S.kannusamy pillai. Sigicha Rathina Deepam. Chennai; B.Rathina Naicker son press, 1951.
3. <https://www.who.int/news-room/fact-sheets/detail/diarrhoeal-disease>
4. **Brain KR, Turner TD. The Practical Evaluation of Phytopharmaceuticals. Bristol: Wright Scientehnica, 1975; 36-45.**
5. Taqvi, S. I. H., Shah, A. J., & Gilani, A. H. Insight into the possible mechanism of antidiarrheal and antispasmodic activities of piperine. *Pharmaceutical Biology*, 2009; 47(8): 660–664. <https://doi.org/10.1080/13880200902918352>
6. V. Hazeena Begum, P. Muthukumaran* and K.Suganthi, Evaluation of Anti-Diarrhoeal Activity of *Lippia nodiflorai* Leaves Extracts in Experimental Rats; DOI: P.Muthukumaran et al. *Ijppr. Human*, 2016; 6(1): 140-149.
7. Dicky A Wibowo, 1 Florensia Nailufar, 1 Raymond R Tjandrawinata2, Antidiarrheal Effect of DLBS1Y62, a Bioactive Fraction of *Uncaria gambir* Roxb. Dried Sap Extract, in Wistar Rats, DOI: <https://doi.org/10.2147/JEP.S299001>
8. Sahoo HB, Sagar R, Kumar A, Bhajji A, Bhattamishra SK. Antidiarrhoeal investigation of *Apium leptophyllum* (Pers.) by modulation of Na+K+ATPase, nitrous oxide and intestinal transit in rats. *Biomed J.*, Dec. 2016; 39(6): 376-381. doi:10.1016/j.bj.2016.11.003. Epub., 2016 Dec 21. PMID: 28043416; PMCID: PMC6138502.
9. Hemayet Hossain, Md. Sariful Islam Howlader, Shubhra Kanti Dey, Arpona Hira3and Arif Ahmed, Antidiarrhoeal and Cytotoxic Activities of Ethanolic Extract of *Bacopamonnieri*(L); *British Journal of Pharmaceutical Research*, 2012; 2(3): 188-196.
10. Bogale A, Alemayehu H, Nedi T, Engidawork E. Antidiarrheal and Antibacterial Activities of *Calpurnia aurea*: Benth Seed Different Extracts. *Evid Based Complement Alternat Med.*, Aug. 31, 2022; 2022: 9582687. Doi: 10.1155/2022/9582687. PMID: 36091586; PMCID: PMC9451978.
11. Yakubu MT, Nurudeen QO, Salimon SS, Yakubu MO, Jimoh RO, Nafiu MO, Akanji MA, Oladiji AT, Williams FE. Antidiarrhoeal Activity of *Musa paradisiaca* Sap in Wistar Rats. *Evid Based Complement Alternat Med.*, 2015; 2015: 683726. doi: 10.1155/2015/683726. Epub 2015 Mar 29. PMID: 25893000; PMCID: PMC4393921.
12. Sarakku-Suthi Seyimuraikal(Tamil Maruthuva Nool Varisai-8). First Edition. Chennai-106; Siddha Maruthuva Nool Publication India Maruthuva-Homoeopathy, 2008.
13. T.V. Sambasivam Pillai. *Siddha Medical Dictionary*. Second Edition-March. Chennai-106; Dept. of Indian Medicine-Homoeopathy, 1998.
14. Hejazian SH, Bagheri SM, Safari F. Spasmolytic and Anti-Spasmodic Action of *Trachyspermum ammi* Essence on Rat's Ileum Contraction. *N Am J Med Sci.*, Dec. 2014; 6(12): 643-7. Doi: 10.4103/1947-2714.147982. PMID: 25599053; PMCID: PMC4290054