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## *In Vitro* Antimicrobial Activity of Siddha Drug Maantha Kiyaalam (Kudineer)



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**R.UTHAYA GANGA<sup>1\*</sup>, S.GANTHIMATHI<sup>2</sup>,  
V.RANI<sup>3</sup>**

*\*<sup>1</sup> P.G.Scholar, P.G.Kuzhanthai Maruthuvam*

*Dept.Govt.Siddha Medical College, Chennai.Tamilnadu.  
India.*

*<sup>2</sup> Guide, P.G.Kuzhanthai Maruthuvam Dept.Govt.Siddha  
Medical College, Chennai.Tamilnadu. India.*

*<sup>3</sup> H.O.D, P.G.Kuzhanthai Maruthuvam  
Dept.Govt.Siddha Medical College, Chennai.Tamilnadu.  
India.*

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### ABSTRACT

In siddha medical system, pediatric diseases are explained elaborately and so many simple herbal remedies are given without producing side effects. This scientific paper evaluate anti microbial activity of Maantha Kiyaalam which is indicated to treat Neer kana Maantham (Acute naso Pharyngitis - Common Cold) in Children. Anti microbial activity is evaluated by Agar disc diffusion method. Zone of inhibition values were compared with standard Ciprofloxacin in concentration 10 mg/ml. The results reveal this siddha drug inhibit both gram negative and gram positive bacterial growth.



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## INTRODUCTION

Common cold (Acute Naso Pharyngitis) is the most common infectious condition of children. It is caused by viruses and bacteria. The higher number of incidence occurs in first 3 years of life due to exposure of nursery schools and poor immunity. Most often prescribed medications for common cold are Anti-biotics, Anti-tussives and Anti Histamines. They produce many side effects in paediatric age group. Maantha Kiyalam is mentioned in Siddha literature and used to cure common cold in children. It consists of Adhathodai (*Justicia adhatoda*), Seenthil kodi (*Tinospora cordifolia*), Kandankathiri (*Solanum xanthocarpum*), Sukku (*Zingiber officinale*), Pei pudal (*Trichosanthes cucumerina*), Parpadagam (*Mollugo cerviana*) and Nilavembu (*Andrographis paniculata*).

### Aim

To study anti-microbial activity of Maantha Kiyalam and provide scientific value for siddha medicine.

## MATERIALS AND METHODS

The siddha drugs were procured from TAMPCOL (drug shop) Chennai 106. The raw drugs were identified and authenticated by Siddha Central Research Institute (SCRI) Chennai 106. The drugs were cleaned and decoction was prepared as per the procedure is given in the Siddha text book KANNUSAMY PARAMBARAI VAITHIYAM.

### Antibacterial Activity Assay

Test drug was screened for antimicrobial activities at the concentration of 50, 100 and 200 microgram by agar disc diffusion technique. Compounds are screened *in vitro* for their antimicrobial activity against *E. coli*, *S. aureus*, *P. aeruginosa* and *B. subtilis* are compared with standard drug ciprofloxacin (std disc). The zones of inhibition formed for the compounds against bacteria were calculated. Test compound showed certain degree of anti-bacterial activities. Zone of inhibition was observed for 24 hours and also for 48 hrs.

### Detail of the organism used for the study.

Grams strain	Name of the organism	Std Code
Gram-negative rod	<i>Pseudomonas aeruginosa</i>	(ATCC-2853)
Gram negative	<i>Escherichia coli</i>	(ATCC-25922)
Gram- positive bacterium	<i>Bacillus subtilis</i>	(ATCC-6051)
Gram-positive spherical bacteria	<i>Staphylococcus aureus</i>	(ATCC-9144)

### Disc-diffusion assay

The antibacterial activities of all test compounds were carried out by disc diffusion method. The concentrations of the test compounds were used in the concentration of 50, 100, 200 µg/ml diluted with DMSO.

The target microorganisms were cultured in Mueller– Hinton broth (MHB). After 24 h the suspensions were adjusted to standard sub culture dilution. The Petri dishes containing Muller Hinton Agar (MHA) medium were cultured with diluted bacterial strain. Disc made of Whatman No.1, diameter 6 mm was pre-sterilized and was maintained in aseptic chamber. Each concentration was injected into the sterile disc papers (Whatman No. 1, diameter 6 mm). Then the prepared discs were placed on the culture medium. Standard drug Ciprofloxacin (10 µg) was used as a positive reference standard to determine the sensitivity of each microbial species tested. Then the inoculated plates were incubated at 37°C for 24 h for the tested microorganisms. The diameter of the clear zone around the disc was measured and expressed in millimeters as its anti-microbial activity. Four discs per plate were used.

Anti-bacterial activity of test compound was tested against the *E. coli*, *S. aureus*, *P. aeruginosa* and *B. subtilis*.

## RESULTS

Zone of Inhibition in mm				
CODE	50 µg	100 µg	200 µg	Std. Ciprofloxacin (10 µg)
HMF/04/EC <i>E. coli</i>	13	17	19	20
HMF/04/SA <i>S. aureus</i>	3	05	06	25
HMF/04/BS <i>B. subtilis</i>	18	18	20	33
HMF/04/PA <i>P. aeruginosa</i>	8	12	15	36

## CONCLUSION

The findings of present research work revealed the antimicrobial activity of Maantha Kiyaalam which is indicated to treat Neer Kana Maantham (Common cold) in pediatric age group.

From the observation of zone of inhibition it was concluded that the test compound was highly effective against *B. subtilis* with maximum zone of inhibition of about 20 mm at the concentration of 200 µg and also significantly effective against *E. coli* with zone of inhibition of about 19 mm at the concentration of 200 µg.

Test compound also shown significant activity against maximum inhibitory zones against *P. aeruginosa* with zone of inhibition of about 15 mm and minimal zone of inhibition of about 06 mm against *S. aureus*.

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