

# Exploring The Antimicrobial Activity Of Pattu Karuppu: A Siddha Approach To Infectious Disease Management

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## Abstract

Siddha medicine, one of the oldest medical systems in the world, has its roots in Southern Tamil Nadu and dates back approximately 3000 years. This holistic system employs a diverse range of components, including herbs, minerals, metallic salts, and animal products to treat various ailments. The primary objective of this study is to evaluate the antimicrobial potential of Pattu Karuppu a classical formulation outlined in Siddha literature, particularly the Siddha Vaithiya Thirattu, which is traditionally indicated for conditions such as Dysmenorrhoea (Soothaga soolai), Hysterical convulsions (Soothaga sannai), Leucorrhoea (Soothaga vettai). In this research, Pattu Karuppu was assessed for its microbial load and antimicrobial efficacy against a range of enteric pathogens including *Salmonella* species, *Escherichia coli*, *Staphylococcus aureus*, *Bacillus cereus*, *Pseudomonas aeruginosa*, *Proteus vulgaris*, *Klebsiella pneumoniae*. The antimicrobial properties were evaluated using the agar well diffusion method. The results demonstrated that Pattu Karuppu exhibited significant antimicrobial activity, with inhibition zones ranging from 15 - 25 mm against *Staphylococcus aureus* followed by this 09 - 24 mm of zone against *Bacillus cereus*, 09 - 13 mm of zone against *Pseudomonas aeruginosa* and 10 - 15 mm zone against *Escherichia coli*, 09 - 18 mm of zone against *Proteus vulgaris* at the concentration of 100mg/ml. In conclusion, this study confirms that Pattu Karuppu possesses noteworthy antimicrobial activity, suggesting its potential as a therapeutic agent for treating various infectious diseases in the near future.

**Keywords:** Pattu karuppu, Siddha medicine, antimicrobial activity, herbo-mineral formulation.

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## INTRODUCTION

In the 21<sup>st</sup> century, predicting the dynamics between hosts and pathogens, along with understanding the principal mechanisms that drive these interactions, remains a significant challenge for researchers and health care professionals. As our knowledge of the intricate relationships between hosts, pathogenic organisms, and chronic diseases evolves, the patterns of infectious diseases are becoming increasingly complex and nuanced <sup>[1, 2]</sup>. This evolving understanding necessitates new approaches to disease prevention, diagnosis, and treatment, highlighting the need for continued research in this critical area of public health.

Infectious diseases continue to be major contributors to the pervasive poverty affecting large populations across the globe. Annually, these diseases claim the lives of nearly 9 million individuals. Beyond mortality, they inflict considerable long term disabilities, imposing substantial burdens on families and communities. Intensifying research into the underlying causes of these diseases, as well as developing effective treatment and prevention strategies, could profoundly influence initiatives aimed at alleviating poverty and fostering a healthier, more equitable future for generations to come <sup>[3]</sup>.

For many years, herbo mineral preparations have been an essential component of health and wellness. The increasing focus on infectious diseases, particularly in developing countries, is largely due to their high prevalence within marginalized communities. Recent surveys indicate that healthcare expenditures related to infectious diseases have risen dramatically in these regions. The Siddha system of traditional medicine, which originated in Tamil Nadu, offers effective treatments for many severe infectious diseases as outlined in ancient Vedic literature. Siddha medicine provides a wide range of effective and safe

therapeutic options that have been used for extended periods, often surpassing the longevity of modern medical treatments. Among these, *Pattu karuppu* is a classical formulation found in the Siddha text, *Siddha Vaithiya Thirattu*, and is traditionally indicated for conditions such as Dysmenorrhoea (*Soothaga soolai*), hysterical convulsions (*Soothaga sanni*), and leucorrhoea (*Soothaga vettai*).<sup>[4]</sup>

*Pattu karuppu* is composed of several active ingredients, including Red sulphide of mercury (natural) - vermilion (Lingum), Hydrargyrum - quicksilver (Rasam), Sulphur (Ganthagam), Hydrargyrum subchloride (Pooram), Hydrargyrum perchloride (Veeram), Arsenium acidum white arsenic (Vellai), Magnetic oxide of Iron (Kaantham), *Aconitum ferox* - Indian Aconite (*Naabi*), *Syzygium aromaticum* - Clove (Kirambu), *Ricinus communis* - Castor oil (*Aamanakku ennai*), *Plumbago zeylanica* - Leadwort (*Chithiramoolam*). The present investigation was conducted to evaluate the microbial load and assess the antimicrobial activity of ethanolic extract of *Pattu karuppu* against selected Gram-positive and Gram negative bacteria.

### AIM AND OBJECTIVE

The primary objective of this study is to evaluate the antimicrobial potential of *Pattu Karuppu* a classical formulation outlined in Siddha literature, particularly the *Siddha Vaithiya Thirattu*, which is traditionally indicated for conditions such as Dysmenorrhoea (*Soothaga soolai*), Hysterical convulsions (*Soothaga sanni*), Leucorrhoea (*Soothaga vettai*).

### MATERIALS AND METHODS

The Siddha formulation *Pattu karuppu* was obtained from IMCOPS (Indian Medical Practitioners Co-operative Pharmacy and stores limited), located in Arumbakkam, Chennai 600106 and was utilized in the present study. The analysis of microbial load<sup>[5]</sup> and anti-microbial activity<sup>[6]</sup> was performed by using the cup plate method. These tests were conducted at the Regional Research Institute of Unani Medicine (RRIUM), Rayapuram, Chennai.

#### PREPARATION OF THE EXTRACT FROM *PATTU KARUPPU*

The test drug *Pattu karuppu* was extracted in soxhlet extraction apparatus with distilled ethanol for 18 hrs and the solvent was removed under vacuum on rotary evaporator to yield a crude extract. The final extract was used for the antimicrobial evaluation.

#### COLLECTION OF MICROORGANISM

To evaluate the microbial studies, the cultures were procured from various hospitals and laboratories in and around Chennai. The organisms were used such as *Salmonella species*, *E.coli*, *Staphylococcus aureus*, *Bacillus cereus*, *Proteus vulgaris*, *Klebsiella pneumoniae*, *Pseudomonas aeruginosa*.

#### CUP PLATE METHOD

The procedure was employed in microbial assay were cylinder plate method or cup plate method. In the cup plate method, the anti-microbial substance diffuses from the cup through a solidified agar layer in a petri dish or a plate to an extent so that the growth of added microorganism is inhibited entirely in a circular area or zone around the cavity containing the solution of a known quantity of anti-microbial substance. The anti-microbial activity is expressed as the zone of inhibition in millimeters, which is measured with a zone reader.

### RESULTS AND DISCUSSION

#### a. Analysis of Microbial Load

The procedures recommended for analysis of Microbial Load as per WHO (World Health Organization), 2007.

#### b. Antimicrobial Activity

The procedures performed using cup plate method as recommended in Indian pharmacopoeia (Anonymous, 1996).

Results of antimicrobial screening ethanolic extract of *Pattu karuppu* were measured in terms of zone diameter (table 2) and photographs were shown below.

The result of antimicrobial study of the test drug *Pattu karuppu* exhibited bigger zone of inhibition about 15 - 25 mm against *Staphylococcus aureus* followed by this 09 - 24 mm of zone against *Bacillus cereus*, 09 - 13 mm of zone against *Pseudomonas aeruginosa* and 10 - 15 mm zone against *Escherichia coli*, 09 - 18 mm of zone against *Proteus vulgaris* at the concentration of 100mg/ml. From this study the trial drug *Pattu karuppu*

exhibits an effective antimicrobial activity. Hence this Siddha herbo mineral formulation *Pattu karuppu* may serve as a forthcoming drug for treating several infectious diseases in nearby future.

The study reveals that the ethanolic extract of *Pattu karuppu* exhibits significant antimicrobial activity against afore mentioned Gram-positive and Gram-negative bacteria. The effectiveness of this extract varies among the different test organism, with the antimicrobial activity observed to decrease in the following order.

Table no: 1 Analysis of Microbial Load

S. No.	Parameters	Results	Permissible Limit for Internal use
1	Total Bacterial Count (TBC)	Absent	$10^5$ cfu/g
2	Total Fungal Count (TFC)	Absent	$10^3$ cfu/g
3	Enterobacteriaceae	Absent	$10^3$ cfu/g
4	<i>Escherichia coli</i>	Absent	10 cfu/g
5	Salmonella Spp	Absent	Absent
6	<i>Staphylococcus aureus</i>	Absent	Absent

Figure 1: Antimicrobial activity of *Pattu karuppu* against *Staphylococcus aureus*



Figure 2: Antimicrobial activity of *Pattu karuppu* against *Bacillus cereus*



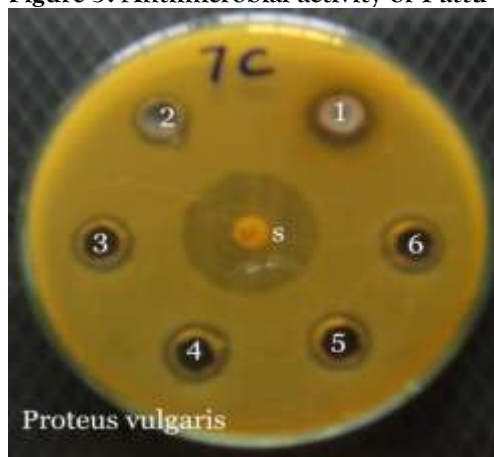
Figure 3: Antimicrobial activity of *Pattu karuppu* against *Pseudomonas aeruginosa*



Figure 4: Antimicrobial activity of *Pattu karuppu* against *Escherichia coli*



Figure 5: Antimicrobial activity of *Pattu karuppu* against *Proteus vulgaris*



1.100mg/ml  
2.50mg/ml  
3.25mg/ml  
4.12.5mg/ml  
5.6.25mg/ml  
6.3.125mg/ml  
S – Ampicillin

Table no : 2 Antimicrobial Activity of *Pattu karuppu*

S.No.	Organisms	Inhibition Zone diameter in mm							MIC mg/ml
		1	2	3	4	5	6	Std	
1	<i>Staphylococcus aureus</i>	25	24	22	20	18	15	+	0.781
2	<i>Salmonella typhimurium</i>								-
3	<i>Bacillus cereus</i>	24	18	16	13	10	9	+	1.56
4	<i>Klebsiella pneumonia</i>	-	-	-	-	-	-	-	-
5	<i>Pseudomonas aeruginosa</i>	13	11	9	-	-	-	-	25
6	<i>Escherichia coli</i>	15	10	-	-	-	-	+	50
7	<i>Proteus vulgaris</i>	18	16	15	12	10	9	+	3.125

Conc: 1: 100mg/ml; 2: 50mg/ml; 3: 25mg/ml; 4: 12.5mg/ml; 5: 6.25mg/ml; 6: 3.125mg/ml

## CONCLUSION

The findings of this study indicate that the ethanolic extract of *Pattu karuppu* demonstrates a significant reduction in microbial load and exhibits excellent antimicrobial activity. The In-vitro results suggest that this Siddha medicine can be as effective as modern medicine in eliminating pathogenic microorganisms. The antimicrobial evaluation concluded that *Pattu karuppu* shows high sensitivity to *Staphylococcus aureus*, *Bacillus cereus*, *Pseudomonas aeruginosa*, *Escherichia coli*, and *Proteus vulgaris* highlighting its potent antimicrobial properties against selective gram-positive and gram-negative organism. However, the extract did not demonstrate any antimicrobial activity against *Salmonella typhimurium*, *Klebsiella pneumonia*. Given the promising potential of *Pattu karuppu*, it could serve as a valuable option for the effective control and

clinical management of various infectious and stress – related diseases in humans in the future. This research will provide empirical evidence supporting the antimicrobial efficacy of *Pattu karuppu*, encouraging further exploration and validation of traditional Siddha formulations in modern medicine. Further studies could investigate toxicity and the practicality of utilizing this formulation in clinical settings.

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#### AUTHORS CONTRIBUTION

Conceptualization of the study was performed by Dr.Tamil muhil, Validation and formal analysis were conducted by Dr.Dhanalakshmi, The original draft was prepared by Dr.Ramani, while writing, editing and methodology were handled by Dr.Malarvizhi, Visualization and supervision were provided by Dr.Meenakshi, Publication were conducted by Dr.Selvakumar. All authors have reviewed and approved the final version of the manuscript for publication.

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#### REFERENCES

1. B. Michael B, Emerging Infectious Diseases, 2005, 11, 1197.
2. M. Ramani, M. Pitchiahkumar, G. Dhanalakshmi, V. Velpandian and V. Banumathi, Antimicrobial and antioxidant evaluation of a retrospective siddha formulation *Dhasalavana dhravagam* used for the treatment of infectious disease, Der Pharma Chemica, 2015, 7(11):104-109 (<http://derpharmachemica.com/archive.html>)
3. WHO, A summary of the key findings and supporting materials, 2012, 03
4. Dr.K.N.Kuppuswamy Mudhaliyar, Dr.K.S.Uthamarayan, *Siddha Vaithiya Thirattu*, Department of Indian medicine and Homeopathy Chennai – 600 106, 2009, pp no: 162
5. Seeley HW, Van Denmark PJ. A laboratory manual of microbiology. 2nd ed. Bombay D.B. Taraporewala sons and co, 1975.
6. VCJ Mol, S Vasanth, P Shanmugapriya, R Madhavan, S. Murugesan, V Manjari, M Murugesan; Antimicrobial Activity of Padigalinga Chenduram against Enteric Pathogens; PharmaTutor; 2014; 2(7): 98-101.