# An Invitro Evaluation of Siddha Drug Sathakuppai Against Selected Pathogenic Micro Organisms

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**Abstract: The increasing interaction between Ayush Siddha medicine system and modern scientific tools has paved the way for valuable insights into the antimicrobial properties of herbal preparations. This synergy is particularly significant in the context of drug discovery aimed at addressing bacterial infections. In gynecological cases, bacterial species are commonly identified as causative organisms, especially in scenarios such as septic abortion and during the puerperium. The commercial and scientific interest in herbal and herbal-based medicines is surging. This trend is underpinned by a recognized advantage of herbal combinations, which often demonstrate superior efficacy and reduced side effects compared to single isolated herbal constituents. Historical texts such as the "Siddha Materia Medica" mention various herbal preparations, including Sathakuppai, renowned for their potential in preventing gynecological disorders. This article aims to shed light on the scientific evaluation and antibacterial sensitivity testing of the Siddha preparation Sathakuppai . By assessing its properties, the study seeks to validate and enhance the role of this herbal remedy in promoting health, particularly for women's health issues. By establishing a scientific basis for its use, the goal is to contribute to quality health outcomes for women, thereby bridging the gap between Siddha practices and modern therapeutic applications.**

**Key words: Anti microbial, Siddha, Sathakuppai, Magalir maruthuvam**

## 1.INTRODUCTION

The emergence of new infectious diseases, the resurgence of previously controlled infections and the growing concern over bacterial resistance have underscored the urgent need for research focused on the development of new antimicrobial agents. In recent years, the exploration for effective antibacterial agents has increasingly turned toward herbal remedies. The antimicrobial efficacy attributed to various herbs often exceeds conventional expectations, highlighting their potential as valuable therapeutic options.

Given the limitations and challenges associated with existing antimicrobial treatments, there is a pressing need to explore and develop alternative antimicrobial drugs derived from herbal sources. These natural remedies have long been recognized as foundational elements in the evolution of modern medicine, particularly in the treatment of infectious diseases.

As researchers continue to investigate the pharmacological properties of herbal medicines, there is a growing recognition of their potential to offer effective solutions against resistant pathogens. By harnessing the bioactive compounds found in these traditional remedies, new therapeutic avenues can be opened, providing comprehensive strategies to combat infectious diseases and enhance public health outcomes. This integration of herbal medicine into the pharmaceutical landscape is not only a tribute to traditional wisdom but also a crucial step in addressing contemporary health challenges. - The study aimed to evaluate the antimicrobial activity of the Siddha polyherbal formulation Sathakuppai Drug against common pathogens, Staphylococcus aureus and Escherichia coli**.**

## 2. MATERIALS AND METHODS

The ingredient was meticulously collected, identified, and purified according to the procedures outlined in the Siddha Materia Medica. Following these Siddha traditional methods, the substance was processed to obtain a fine powder, ensuring that its bioactive properties were preserved. This careful preparation is crucial for maintaining the efficacy of the herbal formulation and plays a significant role in its potential therapeutic applications. By adhering to established Siddha practices, the quality and integrity of the herbal preparation are enhanced, paving the way for

scientific evaluation and potential use in modern medicinal applications**.**

## 3. INVITRO ANTI-MICROBIAL ACTIVITY**:**

The Sathakuppai drug was subjected to antimicrobial sensitivity testing using the Disc Diffusion Method at Malar Labs, Tirunelveli. This method is widely employed to determine the effectiveness of antimicrobial agents against specific microorganisms. Methodology:

Preparation of Microbial Cultures:

- Specific bacterial strains were selected for testing, typically including common pathogens such as Staphylococcus, Escherichia coli, and others relevant to gynecological or general infections. - The microbial cultures were standardized to ensure consistent testing conditions.

Preparation of Agar Plates:

- Nutrient agar plates were prepared and inoculated with the standardized microbial cultures to create a uniform lawn of bacteria. Application of Sathakuppai Drug: - Circular filter paper discs impregnated with Sathakuppai Drug were placed on the inoculated agar surface. - Control discs containing known antibiotics were also included for comparison.

Incubation: - Plates were incubated at an appropriate temperature (usually 37°C) for 24 hours to allow microbial growth.

Observation Of Results: - After incubation, the plates were examined for clear zones of inhibition surrounding the discs. - The diameter of these zones was measured to assess the antimicrobial activity of the Sathakuppai Drug.

Interpretation of Results:

Zone of Inhibition: A larger zone indicates greater antimicrobial activity while a smaller or no zone suggests lesser or no effectiveness.- Comparison with Standards:The results were compared with standard antibiotic susceptibility guidelines to classify the Sathakuppai Drug as sensitive, intermediate, or resistant against tested organisms. Conclusion: The findings from this antimicrobial sensitivity testing will provide valuable insights into the efficacy of Sathakuppai Drug as a potential therapeutic agent against specific pathogens. This information can aid in further research and development of herbal formulations for clinical applications. Additionally, the results could support the traditional uses of Sathakuppai Drug in Siddha medicine, corroborating its historical application with scientific evidence. Future studies may also explore the mechanism of action and potential formulation enhancements based on these findings. Sample name: Sathakuppai Drug - Solvent :Distilled water-Method :Kirby Bauer-Results

| S.No | Organisms | Extract(mm) | Positive Control Amikacin(mm) |
|---|---|---|---|
| 1 | Staphylococcus aureus | 18 | 20 |
| 2 | Escherichia coli | 8 | 20 |
| 3 | Streptococcus pneumoniae | - | 20 |
| 4 | ProteusSpecies | - | 20 |

Medium :Prepared plates of Muller Hinton Agar (M173)

**Preparation of plates for susceptibility tests:**

Components of Muller Hinton Agar (M173) medium
Beef extract 300 gms/lit
Agar 17 gms/lit
Starch 1.5 gms/lit
Casein Hydroxylate 17.5gms/lit
Distilledwater 1000 ml
pH 7.6

The medium was prepared from the components and poured and dried on a petri dish. The organism was streaked on the medium and the test drug (1 gm drug in 10ml distilled water) was placed on the medium.

The results of the antimicrobial sensitivity testing of Sathakuppai Drug indicate its effectiveness against specific bacterial pathogens: Findings:1. Staphylococcus aureus: - Sensitivity: Sensitive - Zone of Inhibition:18 mm - This suggests that Sathakuppai Drug has strong antibacterial activity against Staphylococcus aureus, a common pathogen associated with various infections. The 18 mm zone of inhibition indicates a significant ability to inhibit the growth of this organism.

2. Escherichia coli: - Sensitivity: Moderately Sensitive- Zone of Inhibition: 8 mm. The zone of

inhibition of 8 mm indicates that Sathakuppai Drug has some effectiveness against Escherichia coli, though it is less potent compared to its action against Staphylococcus aureus. This moderate sensitivity suggests that while the Sathakuppai Drug can inhibit the growth of E. coli, it may not be as effective or may require higher concentrations for a more pronounced effect.

Conclusion: The antimicrobial activity of Sathakuppai Drug highlights its potential therapeutic applications, especially for infections associated with Staphylococcus aureus

Implications:Given the sensitivity results, Sathakuppai Drug may be considered for further research and clinical applications, particularly in herbal medicine. Its effectiveness against Staphylococcus aureus makes it a candidate for treatments where this pathogen is a concern. - Further Research:It would be beneficial to conduct additional studies to investigate the active compounds responsible for this antimicrobial activity, potential synergistic effects with other agents, and clinical efficacy in treating corresponding infections.

## 4. DISCUSSION

ESCHERICHIA COLI*:*

Escherichia coli (E. coli) and its implications in maternal health, particularly regarding aerobic vaginitis and puerperal sepsis. Below, I present a structured overview based on the information provided:Escherichia coli Overview-Pathogenic Role: - E. coli is known to cause a variety of infections, including: - Pyogenic infections: Infections characterized by pus formation. - Septicaemia: Presence of bacteria in the bloodstream, leading to systemic infection. - Genitourinary tract infections:These are common clinical presentations of E. coli infections. Aerobic Vaginitis (AV - Aerobic vaginitis is characterized by a disruption of the normal lactobacillary flora of the vagina. This condition is variably accompanied by signs of inflammation and the presence of a predominantly aerobic microflora, often including enteric commensal pathogens such as E. coli.-Clinical Implications: - AV can lead to discomfort and additional complications during pregnancy and postpartum. It is essential for healthcare practitioners to recognize and manage this condition effectively.Puerperal Sepsis is an infection of the female genital tract that occurs as a complication of childbirth. It typically results from bacterial infections during the postpartum period, with E. coli being one of the pathogens involved.- Maternal Health Impact - Statistics: Maternal sepsis is a significant health issue and is notably the third leading cause of maternal mortality in Asia, following hemorrhage and hypertensive disorders. It is responsible for approximately 11.6% of maternal deaths.-Preventive Strategies: - Addressing puerperal sepsis requires improved preventive strategies, including: - Antibiotic prophylaxis: To prevent infections before, during, and after delivery. - Hygiene practices:Proper antenatal care and hygiene during delivery to reduce the risk of infection. - Early identification and treatment:Rapid diagnosis and effective management of any signs of infection postpartum..Conclusion-Escherichia coli plays a significant role in both aerobic vaginitis and puerperal sepsis, highlighting the need for vigilant monitoring and appropriate treatment protocols in maternal health care. Understanding the implications of E. coli infections in these contexts is crucial for reducing maternal morbidity and mortality. Ongoing research and improvements in healthcare strategies are essential in addressing these critical issues in maternal health.

STAPHYLOCOCCUS AUREUS: Staphylococcus aureusand its association with vaginal carriage, the pathogenesis of Toxic Shock Syndrome (TSS) and its clinical implications. Staphylococcus aureus is a significant pathogen in human health, with its capacity for colonization leading to various clinical conditions, including Toxic Shock Syndrome. The increased vaginal carriage during menses is particularly relevant for understanding the risks associated with TSS. Understanding the behavior, colonization patterns, and associated risks of Staphylococcus aureus is vital for infection prevention and management strategies in clinical settings. Continuous monitoring and education on the risks of TSS, especially regarding tampon usage, are essential for reducing incidences and improving maternal and women's health outcomes.Thus, the test sample polyherbal formulation was sensitive against pathogenic micro organisms namely, *Staphylococcus aureus*with zone of inhibition18mm and moderately sensitive against Escherichia coli with zone of inhibition8 mm respectively. - The formulation exhibited sensitivity

against both bacterial strains, indicating its potential efficacy in preventing gynaecological disorders. This suggests that Sathakuppai Drug may play a vital role in women's health and its application in Siddha medicine.Significance of the Findings- Contribution to Antimicrobial Research: - The positive results from this in vitro study position Sathakuppai Drug as a promising candidate in the discovery of new antimicrobial agents within the context of Siddha medicine.- Validation of Siddha Traditional Knowledge: - The study aligns with claims made in Siddhar literature, particularly the "Siddha Materia Medica," reinforcing the relevance of ancient medicinal practices in contemporary scientific discourse.Cultural and Historical Context- Siddha Medicine Tradition: - The ancestors of Siddha practitioners have accumulated extensive knowledge through generations, as documented in palm leaf manuscripts. This rich heritage serves as a foundation for current and future research in Siddha medicine. Future Directions- Role of Siddha Medicine Graduates: - Graduates of Siddha medicine have a responsibility to evaluate and document traditional medicinal knowledge systematically. This venture aims to bridge the gap between ancient wisdom and modern scientific validation. - Continued Research Initiatives: - The author of the study express hope for the expansion of efforts to find and document effective Siddha traditional formulations with scientific rigor. This includes exploring other herbs and formulations that may address various health problems.

## 5.CONCLUSION

Invitro study of Sathakuppai Drug supports the potential of Siddha formulations in modern medicine, particularly in combating bacterial infections that can lead to gynaecological disorders. By merging Siddha traditional knowledge with contemporary scientific methods, there is an opportunity to validate and utilize Siddha formulations, fostering a holistic approach to health care. Continued research and documentation of these formulations can enhance their acceptance and application in evidence-based medicine, ultimately contributing to improved health outcomes.

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