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An *In vitro* Evaluation of the Antimicrobial Activity of Siddha polyherbal formulation Soiyeekkerai vithai chooranam against Selected Pathogenic Micro organisms

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Abstract

The greater interaction between traditional systems of medicine with modern tools has opened up the possibility to insight antimicrobial activities of herbal preparations . Target Anti bacterial herbal drug selection plays a vital role and considered to be a heart of the new siddha drug discovery. In a great majority of gynaecological cases, bacterial species are considered to be the most commonly isolated organisms especially in septic abortion and during puerperium . A tremendous interest exists in global herbals and herbal based medicine is rapidly increasing commercial and scientific value. Till now, the concept of herbal combination is appreciated with its superior efficacy and lesser side effects in comparison with either single isolated constituents of herbal. Dating back to Siddha literature, “Siddha materia medica” indicates Soiyeekkerai vithai herbal preparations for preventing gynaecological disorders. In this article, an attempt has been made to highlight the indepth scientific value and antibacterial sensitivity testing of the Siddha drug Soiyeekkerai vithai chooranam ,to ensure quality health especially for the women.

Keywords: Siddha, Soiyeekkerai vithai chooranam, Gynaecological disorders, Antibacterial sensitivity.

Introduction

The emergence of new infectious diseases, the resurgence of several infections that appeared to have been controlled and the increase in bacterial resistance have created the necessity for studies directed towards the development of new antimicrobials. In recent times, the search for potent antibacterial agents has been shifted to herbals. The anti microbial efficacy value attributed to some herbals is beyond belief. Therefore, there is a need to develop alternative antimicrobial drugs for the treatment of infectious diseases .As a result herbals are still recognised as the bedrock for the modern medicine to treat infectious diseases.

Materials and Methods

The ingredient was collected, identified, purified as per the Siddha Materia Medical procedures and made into fine powder.

Table: Information about the ingredient of test drug

S no	Botanical name	Vernacular name	Family	Part used	Chemical constituents	Uses
01	*Anethum graveolens*	Soiyeekkerai vithai	Apiaceae	Seed	Anethine, Phellandrene, Apiol .	Highly useful to women in confinement especially in cases of rumbling of the stomach, indigestion, colic etc., externally used for abscesses to hasten suppuration.
02	*Nigella sativa*	karun seeragam	Ranunculaceae	Seed	Nigellime N-oxide,nigellicine,campesterol, Stigmasterol-7ene, palmitic acid, stearic acids, butyrospermol, cycloartenol, sitosterol.	In small doses,it has a well marked emmenagogue effect,being useful in dysmennorhea. It has decided action not only as a galactagogue and serves in puerperal diseases.

Uses: Management of Gynaecological disorders.

In vitro Anti-microbial activity:

The Soiyeekkerai vithai chooranam was subjected to Anti-microbial sensitivity testing using Disc Diffusion Method at Malar Labs, Palayamkottai. Out of organisms tested, the drug was sensitive against *Escherichia coli*, *Staphylococcus aureus*. The zone of inhibition given below.

Sample name : Soiyeekkerai vithai chooranam
Solvent : Distilled water
Method : Kirby Bauer
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	17.5 gms/lit
Distilled water	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 10 ml distilled water) was placed on the medium. This is incubated at 37℃ for one over night and observed over night and observed for the susceptibility shown up clearance around the drug.

Results

The test drug Soiyeekkerai vithai chooranam was sensitive against *Staphylococcus aureus* zone of inhibition 18 mm and moderately sensitive against *Escherichia coli* with zone of inhibition 8 mm.

The Soiyeekkerai vithai chooranam was screened against bacterial strains by using agar disc –diffusion as shown in Table 1 and Figure 1

Table 1: Anti-microbial sensitivity testing of Soiyeekkerai vithai chooranam.

S.No	Organisms	Extract(mm)	Positive Control Amikacin(mm)
1	*Streptococcus pneumoniae*	--	20
2	*Staphylococcus aureus*	18	20
3	*E.coli*	8	12
4	Proteus Species	--	20

Fig. 2 : The Soiyeekkerai vithai chooranam was screened against bacterial strains by using Muller Hinton Agar (M173) agar disc –diffusion Kirby Bauer Method

Discussion

Escherichia coli

Escherichia coli is a Gram-negative ,straight rod colon bacilli .It is motile by peritrichate flagella,though strains are non motile.It causes pyogenic infections,septicaemia,genitourinary tract infection. Aerobic vaginitis (AV) is defined as a disruption of the lactobacillary flora, variably accompanied by signs of inflammation and the presence of a rather scarse, predominantly aerobic microflora, composed of enteric commensal pathogens . Peurperal sepsis is a maternal health issue that needs to be addressed through both improved preventive strategies and treatment . *E. coli* can play an important role in Aerobic vaginitis Puerperal sepsis is an infection of the genital tract which occurs as a complication of delivery: Maternal sepsis was the third most important cause after haemorrhage and hypertensive disorders ,responsible for 11.6% of maternal deaths in Asia.

Staphylococcus aureus

In vaginal carriage *Staphylococcus aureus* is about 5-10 per cent, which rises greatly during menses,a factor relevant in the pathogenesis of TSS related to menstruation. *Staphylococcus aureus* is Gram-positive cocci (staphyle, in Greek,meaning "bunch of grapes"; kokkos, meaning a berry) due to the typical occurrence of the cocci in grape-like clusters in pus and in cultures. They are ubiquitous and are the most common cause of localised suppurative lesions in human beings. Staphylococci are the primary parasites of human beings, normally resides in bowel and also, colonize the perineum, vagina. Toxic shock syndrome (TSS) is a potential fatal multisystem disease .TSS was first identified in 1978 in children and adolescents, but became widely known only in 1980 following outbreaks in the USA in menstruating women using highly absorbent vaginal tampons. Their vaginal swabs showed heavy growth of *Staphylococcus aureus*, though blood cultures were invariably negative. Though tampon-related TSS is now rare, this syndrome occurs in mucosal sites and in surgical wounds. Staphylococcal infections in soft tissues causes abscess (particularly Breast abscess).

Thus, the test sample polyherbal formulation was sensitive against pathogenic micro organisms namely, *Staphylococcus aureus* with zone of inhibition 18 mm and moderately sensitive against Escherichia coli with zone of inhibition 8 mm respectively.

.Conclusion

We conducted an *in vitro* study of antimicrobial activity of Siddha polyherbal formulation Soiyeekkerai vithai chooranam was sensitive against *Staphylococcus aureus* and *Escherichia coli* . Thus, this *in vitro* study revealed that the Siddha polyherbal formulation Soiyeekkerai vithai chooranam proves to play a vital role in preventing gynaecological disorders and considered to be a heart of the new antimicrobial siddha drug discovery. Thus, Siddhar's literature evidence in "Siddha Materia Medica" becomes true to this scientific world Apart from their theoretical knowledge, our Ancestor have acquired great experience through their forefathers and palm leaf manuscripts. It is the duty of the Graduates of Siddha medicine to bring out these experiences, evaluate them and document them. We have taken a small initiative towards this step. We hope to extend the search for finding and documenting such good medicine with scientific sensitivity for overcoming various health problems.

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