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RESEARCH ARTICLE

INVITRO.ANTI MICROBIAL ACTIVITY OF HERBAL FORMULATION-KAZHINICHOORANAM

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ABSTRACT

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 Developing countries like India, Children with respiratory tract infections are often due to bacteria. Therefore, there is a need to develop alternative antimicrobial drugs for the treatment of infectious diseases. As a result medicinal herbals are still recognised as the bedrock for the Modern medicine to treat infectious diseases. In this study, an attempt has been made to highlight the in depth scientific value and antimicrobial sensitivity testing of the Siddha herbal formulation kashini chooranam against respiratory tract infections, to ensure quality health.

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INTRODUCTION

A tremendous interest exists in global herbals and herbal based medicine is rapidly increasing the 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.

MATERIALS AND METHODS

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

Uses: Management of respiratory tract infections (1)

Invitro Anti-microbial activity

The aqueous extract of test drug was subjected to Anti-microbial sensitivity testing using Disc Diffusion Method at Malar Micro Labs, Palayamkottai. Out of organisms tested, the Siddhadrug was sensitive against Staphylococcus aureus and Streptococcus pneumonia. The zone of inhibition given below.

Solvent : Distilled water
Method : Kirby Bauer
Medium : Prepared plates of Muller Hinton Agar (M173).

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Preparation of plates Muller Hinton Agar (M173)

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*c for one over night and observed over night and observed for the susceptibility shown up clearance around the test drug.

RESULTS

The test siddha drug Kazhinichooranam was sensitive against Streptococcus pneumonia with zone of inhibition 20 mm and moderate sensitive against Staphylococcus aureus with zone of inhibition 7 mm

DISCUSSION

Description about the causative micro organisms

Staphylococcus aureus: Gram positive cocci that occur in grape-like clusters. They are ubiquitous and are the most common cause of localised suppurative lesions in human beings.

Table. Information about the ingredient of test drug

S. No	Botanical name	Vernacular Name	Family	Part Used	Chemical constituents	Uses
01	Piper longum	Thippili	Piperaceae	Dried fruit	Piperine, volatile oil, caryophyllene, piperinepiplartine, sesquiterpene, methyl- 3,4,5 trimethoxyinnamate, dimethylene dioxybenzene	Cough, bronchial asthma, ear-nose-throat infections, eye diseases
02	Terminalia chebula	Kadukaai	Combretaceae	Seed	Tannin, Chebulic acid	Bronchial asthma.

Table : Anti-microbial sensitivity testing

S.No	Organisms	Extract(mm)	Positive Control Amikacin (mm)
1	Streptococcus pneumonia	20	24
2	Staphylococcus aureus	7	20
3	E.coli	--	24

**Fig. 1. The Aqueous extract of test drug was screened against bacterial strains by using Muller Hinton Agar (M173) agar disc –diffusion Kirby Bauer Method**

Pauster (1880) obtained liquid cultures of the cocci from pus and produced abscesses by inoculating them into rabbits.

Morphology: They are spherical cocci, arranged in grape like structure. Cluster formation is due to cell division occurring in three planes, with daughter cells tending to remain in close proximity. They are non motile and non sporing.

Pathogenicity: Staphylococcal infections are among the most common of bacterial infections and range from the trivial to the fatal. Staphylococcal infections are characteristically localised pyogenic lesions, in contrast to the spreading nature of Streptococcal infections. Common Staphylococcal infections in Respiratory system are Tonsillitis, pharyngitis, sinusitis, otitis, bronchopneumonia, lung abscess, empyema, rarely pneumonia.

Streptococcus pneumonia: Pneumococcus, a Gram-positive, lanceolated diplococcus, formerly classified as Diplococcus pneumonia, has been reclassified as Streptococcus pneumonia

because of its morphology, bile solubility, optochin sensitivity and possession of a specific polysaccharide capsule. Pneumococci are normal inhabitants of the human upper respiratory tract. They are the single most prevalent bacterial agent in pneumonia and in otitis media in children. They can also cause sinusitis, bronchitis, bacteremia and other infections.

Morphology: Streptococcus pneumonia are typically small, slightly elongated cocci, with one end broad or rounded and the other pointed, presenting a flame-shaped or lanceolate appearance.

Pathogenicity : Streptococcus pneumonia colonise the human nasopharynx and cause infection of the middle ear, paranasal sinuses and respiratory tract by direct spread. The commonest pneumococcal infections are otitis media and sinusitis. Pneumococci are one of the most common bacteria causing pneumonia, both lobar and broncho pneumonia. They also cause acute tracheobronchitis and empyema (Ananthanarayan, 2010).

Description about Positive control Amikacin

Aminoglycosides are antibiotics with amino sugars joined by glycosidic linkages. They are derived from the soil actinomycetes of the genus *Streptomyces* and the genus *micro-monospora*- hence the difference in spelling. Amikacin and netilmicin are newer semisynthetic products.

Antibacterial-spectrum

Amino glycosides have a narrow spectrum and are effective mainly against aerobic organisms and are used in the treatment of infections due to bacteria. Amino glycosides are also used in Streptococcal infections. Amikacin a semi synthetic derivative of kanamycin, has widest antibacterial spectrum among amino glycosides because it is resistant to amino glycoside inactivating enzymes (PadmajaUdaykumar, 2011).

Test drug

Kazhinichooranam was sensitive against *Staphylococcus aureus* and *Streptococcus pneumoniae*, thus it is proved as an antimicrobial drug in management of respiratory tract infections.

Conclusion

We conducted an invitro study of antibacterial activity of Aqueous extract of Siddha drug Kazhinichooranam.

Thus, herbal drug proves to play a vital role in management of respiratory tract infections and considered to be a heart of the new antimicrobial siddha drug discovery. 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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