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## Research Article

### NOVEL ACTION OF *THIPILI RASAYANAM* –SIDDHA DRUG AGAINST RESPIRATORY PATHOGENS

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#### ABSTRACT

Siddha medicine is one of the important ancient Indian medicine. According to Siddha literature, there are about 4448 types of diseases<sup>1</sup>. In which, under the topic of kabha, respiratory ailments are included. Actions of various siddha medicine is given under the context of kabha in the Agasthiyargunavagadam, Theraiyarkaviyam, Pathartha guna Chinthamani. These medicines are given in the form of Chooranams, Rasayanam, kudineer, where in rasayanam plays a vital role in the treatment against respiratory pathogens. Over a period of 500 years, Thipili Rasayanam<sup>2</sup> which is a polyherbal formulation is well known for its efficacy against respiratory infections. This novel drug is highly potential in treatment of Sinusitis (Peenisam), Bronchitis (Kasam), Bronchial asthma (Swasa kasam) and other chronic respiratory diseases. Mainly efficacious against staphylococcus aureus, Streptococcus pyogenes, E.coli, Klebsiella & Pseudomonas.

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#### INTRODUCTION

India is a vast country with immense geographical and environmental diversities, which affects the prevalence of chronic diseases like chronic respiratory diseases including asthma and chronic obstructive pulmonary disease (COPD) which is estimated to be about 100 million sufferers in India. Air pollution, Overcrowding, Low Socio-economic status, malnutrition, poor oral hygiene, increased incidence of resistant infections, misuse of antibiotics are the major factors that contributes to the increased incidence and prevalence of respiratory fatal infections and chronicity. Being a polyherbal formulation, it has got both anti-bacterial and anti-fungal activities. Specifically active against both gram positive and gram negative micro organisms. It is more effective since its minimum inhibitory concentration (MIC) values are higher. Well documented reports of its pharmacological action studied in humans and animals proves as a scientific rationale and its safety is ensured in resistant infection.

Insearch (PHASE I)<sup>3</sup> data includes the prevalence of chronic bronchitis in adults over 35 years of age which revealed that it was diagnosed in 4% individuals with a male to female ratio of 1.56 to 1. Indian study and Epidemiology of Asthma, Respiratory symptoms and chronic bronchitis (INSEARCH) is conducted as a sequelae of Phase I and studied using questionnaires based on the International union against

Tuberculosis and Lung diseases (IUATLD) and peak expiratory flow rate measurements.

#### MATERIALS AND METHODS

Web sources of online information collected by applying the ingredients of *Thippili Rasayanam* and its relevant data summarized based on the recent scientific studies. The studies then listed out for its beneficial activities.

#### DISCUSSION

The pharmacological activities of individual medicinal plants which are relevant to the review are summarized (Table.1) and the described as below

##### *Piper longum*

Mohibkhan and Mustafasiddhique have reviewed in their article about the Benzene, Chloroform, Ethanol extract of this plant with various antimicrobial activity against *S.album*, *S.typhi* and *E.coli*

##### *Piper nigrum*

Shivarani S.K. *et al.*, have reviewed that piperine has action against *S.aureus* (Zone of Inhibition – 8 – 18mm), *B.Subtilis* (14mm), *Pseudomonas* (9mm) in their article

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**Table.1** Antimicrobial Activities of *Thippili Rasayanam*

Sl.No	Botanical Name / Tamil Name	Family	Parts used	Anti microbial Activity	Important Phytochemical constituents
1.	<i>Piper longum</i> Linn. ARSITHIPPILI	Piperaceae	Fruits	E.coli, B.Megaterium, S.albus, Salmonella typhi, P.aeruginosa	Piperine, Piperolactam, A, B., $\beta$ .sitosterol, Cephadione A, B., Methyl Pluviatilol <sup>4</sup>
2.	<i>Piper nigrum</i> Linn. MILAGU	Piperaceae	Fruits	E.coli, B.Megaterium, S.albus, S.typhi, P.aeruginosa, Aspergillus flavus, A.niger, S.aureus, Proteus Sp	Hentriacontane, Amide - pipericide, volatile oil <sup>5</sup>
3.	<i>Zingiber officinale</i> . Roscoe CHUKKU	Zingiberaceae	Rhizome	E.Coli, P.aeruginosa, S.aureus, V.cholerae, Klebsiella sp & Salmonella sp.	Diarylheptanoids, Essential oil, Gingerol, paradol, <sup>6</sup>
4.	<i>Cuminum cyminum</i> Linn. CHEERAKAM	Apiaceae	Fruits	Clavibacter, Rhodococcus, Erwinia, Xanthomonas, Agrobacterium	Cauminaldehyde <sup>7</sup>
5.	<i>Nigella sativa</i> Linn., KARUNCHEERAGAM	Ranunculaceae	Seed	P.aeruginosa, E.coli, S.aureus, yersinia enterocolitica, K.pneumonia, proteus vulgaris, streptococcus pyogenes	Dithymoguinone, Nigilline, Aarmacenine <sup>8</sup>
6.	<i>Trachyspermum ammi</i> (L) Spraque OMAM	Apiaceae	Seed	Pseudomonas sp., E.coli, B.subtilis, S.aureus, Aspergillus flavus, Aspergillus niger, candida albicans	Ajowan oil, Bergapten, phenolic Galactoside <sup>9</sup>
7.	<i>Alpinia galanga</i> SW, PERARATHAI	Zingiberaceae	Rhizome	S.aureus, E.coli, S.typhi, B.Subtilis, Enterobacter faecalis, K.pneumonia, Pseudomonas aeruginosa, streptococcus	Methyl cinnamate, Camhor, Phenolic constituents <sup>10</sup>
8.	<i>Alpinia calcarata</i> Roscoe CHITRATTAI	Zingiberaceae	Rhizome	E.Coli, S.aureus, streptococcus pneumoniae, Pseudomonas aeruginosa, Enterobacter Salmonella paratyphi, V.cholerae and Bacillus subtilis	Flavanoids, Essenital Oil, Camphor, Caryophyllenol I and II <sup>11</sup>
9.	<i>Terminalia chebula</i> Retz, KADUKKAI	Combretaceae	Fruit	B.Subtilis, B.aureus, S.epidermidis, E.coli, S.flexneria & Pseudomonas aenginosa	Glycoside, Phenolic compounds, Fatty acids, Gallic acid <sup>12</sup>
10.	<i>Terminalia bellerica</i> (Garten) Roxb THAANDRIKKAI	Combretaceae	Fruit	E.Coli, Pseudomonas aeruginosa, K.Pneumoniae, Shigella flexneri, S.typhi, Aspergillus niger, A.flavus, A.fumigatus	Glucoside, $\beta$ -Sitosterol, Gallic acid, Cardiac glycoside <sup>13</sup>
11.	<i>Emblca officinalis</i> Linn NELLIKAI	Euphorbiaceae	Fruit	S.aureus, K.pneumonia, streptococcus pyogenes, Bacillus sp., P.aeruginosa, Enterococcus proteus sp., S.paratyphi	Trigalloyl glucose, Ellagic acid, Phyllembic acid, Vitamin C <sup>14</sup>
12.	<i>Syzygium aromaticum</i> (L) Merr & perry KIRAMBU	Myrtaceae	Flower bud	S.aureus, P.aeruginosa, E.coli, K.pneumoniae, S.pneumoniae, citrobacter.	Ellagitanin, Nephthlane, Volatile Oil, Benzyl Salicylate, Propyl benzoate <sup>15</sup>
13.	<i>Cinnamomum verum</i> , J.S, Presl SIRUNAGAPOO	Lauraceae	Bark	S.epidermis, vibrio cholerae, Streptococcus agalactiae, Shigella sonnei, Streptococcus Pyogenes, S.aureus, S.Saprophyticus	Linalool, Cinnamaldehyde, Benzaldehyde, Isobutyric acid, Pinene <sup>16</sup>
14.	<i>Cinnamomum Zylanicum</i> Bl LAVANGAPATTAI	Lauraceae	Bark	Streptococcus mutans, Staphylococcus aureus, Candida albicans, Sachromyces cerevisiae	Methyl amyl ketone, Cymene, Cumicaldehyde, $\alpha$ - Terpeneol <sup>17</sup>
15.	<i>Taxus baccata</i> . Linn THALISATHI	Taxaceae	Leaves	P.aeruginosa, S.aureus, E.coli, Candida albicans	Taxin <sup>18</sup>
16.	<i>Plumbago zeylanica</i> Linn CHENKUDIVELI	Plumbaginaceae	Root	S.aureus, S.epidermis	Dihydroflavonol, plumbaginol, plumbagin <sup>19</sup>
17.	<i>Saccharm officinarum</i> Linn, KARUMBU	Poaceae	Root Juice	S.aureus, S.albus, streptococcus, S.thermophilus, E.coli, E.faecalis, P.aerogenosa, S.typhi, V.cholerae, C.albicans	Glycans – Sacchrans A, B, C, D., Neocarlinoside, Orientin, Ferulic, Caffeic acid <sup>20</sup>
18.	<i>Elettaria cardamomum</i> (L) Marton ELAM	Zingiberaceae	Seed	S.aureus, Candida albicans, S.Mutant, S.cerevisiae, S.typhi, E.coli, M.Smegmatis, K.Pneumoniae	Essential Oil, Oleum, Cardamoni, Cineol, Borneol <sup>21</sup>

### *Zingiber officinale*

KamrullIslam *et al.*, have reviewed in their article about the antimicrobial action of ethanolic extract, against S.aureus & E.coli.

### *Cuminum cyminum*

Jacobellis NS *et al.*, have reviewed in their article about its action against clavibacter, Rhodococcus by agar diffusion method.

### *Nigella sativa*

Hanafy MS and Hatem ME has studied its Diethyl Ether extract antimicrobial action against S. aureus, P. aeruginosa and E.coli

### *Trachyspermum ammi*

Masihusha has studied its ethanolic extract action against E.coli pseudomonas, S.aureus

### *Alpinia galanga*

Kiranmaaroo *et al.*, have studied the methanolic, Diethyl ether extract against P.aeruginosa by Agar Diffusion methods

### *Alpinia calacarata*

Jeyachandran *et al.*, have studied the methanolic extract action against E.coli, S.Aureus, P.aeruginosa, Vibriocholeerae, S. Paratyphi

### **Terminalia chebula**

Manojkumara *et al.*, have studied (NCIM 2493) its ethanolic extract against B.subtilis, S.aureus (NCIM 2079), E.coli, P.aeruginosa (NCIM 2200)

### **Terminalia bellerica**

P.Nithyadevi *et al.*, have studied its ethanol acetate and methanolic extract action against E.coli, P.aeruginosa, K.pneumonia, S.typhi

Aartisaxena and Krishnanpal *et al.*, have studied its ethanolic extract against B.subtilis (ATCC 66 33), B.AUREUS (atcc 14579) aureus (ATCC 25293), S.enterica, (ATCC 1244), K.Pneumonia (ATCC 10031), A.Niger (ATCC 16404), A.flavus (ATCC 9643), Rhizopus (ATCC 6227).

### **Emblica officinalis**

Prachijavale and Shilpasabnis *et al.*, have studied its methanolic extract action against S.aureus, K.pneumoniae & S. Pyogenes.

Varghese L.S. *et al.*, have studied its soxblet extract action against S.aureus, E.coli, S.typhi, S.Paratyphi, Pseudomonas and Klebsiella.

### **Syzygium aromaticum**

Amitpandey and Parulsingh *et al.*, have studied its., Ethanolic, methanolic extract action against S.aureus (MTCC 2940), P.aeruginosa (MTCC 2453), E-coli (MTCC 739)

### **Cinnamomum tamala**

Anujjain *et al.*, have studied its methanolic extract action against S.aureus (MTCC8), E.coli (MTCC 44), K.Pneumoniae (MTCC 109), P.aeruginosa (MTCC 741), M.Gypseum (MTCC 2819)

Rahman M., *et al.*, have studied its ethanolic extract action against S.typhi and A.niger

### **Cinnamomum zeylanicum**

Anaeja, K. R., *et al.*, have studied its acetone, ethanolic, methanolic extract action against S.mutans, S.aureus, C.albicans

### **Taxus baccata**

Maryamafsharzodeh., A., *et al.*, have studied its methanolic extract action against P.aeruginosa, S.aureus, E.coli, C.albicans

### **Plumbago indica**

Jeyachandran.R., *et al.*, have studied its methanol chloroform and aqueous extract action against E.coli, S.typhi, S.aureus, K.Pneumoniae, P.aeruginosa.

### **Saccharum officinarum**

Jayalakshmi. S., *et al.*, have studied its hydroalcoholic extract action against S. aureus (NCTC 7447) E.faecalis (MTCC459), S. pyogenes (NCTC 10869), E.coli (NCTC 10418), P.aeruginosa (ATC 10662), V.cholerae (ATCC 14104) C.albicans (ATCC 10231)

### **Elettaria cardamomum**

Aneja, *et al.*, have studied its acetone, ethanol, methanol extract action against S.aureus (MTCC940), C.albicans (MTCC 277), S.cerevisiae, S.mutans (MTC497)

## **CONCLUSION**

Being a highly contagious disease in developing countries like India, respiratory infections poses a threat if not treated efficiently. Usage of novel Siddha drugs confers greatest benefit than the precarious, resistance inducing antibiotics. Thipilli Rasayanam sets a typical example for the effective medication due to its recognised Antibacterial, Antifungal and Anti-oxidant properties, which is indeed a novel drug. Medications alone can never eradicate the disease unless the initial risk factors are controlled.

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