A Review on Anti Microbial Herbs in Siddha Medicine

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ABSTRACT
Microorganisms include bacteria, fungi, virus, protozoa are present everywhere in the soil, water, atmosphere and on the body surfaces are solely responsible for large number of infectious diseases in mankind. Commonly infectious organisms attacks, respiratory tract, Gastro intestinal tract, Urogenital tract, Skin etc. The use of antibiotics against these infections cause many adverse effects. This leads to the use of medicinal plants to treat the infections. Many of the herbs possess anti microbial activity against the dreadful microorganisms. Siddha medicine is one of the ancient systems of medicines, treats the infections with herbs (mooligai), Inorganic substances (thathu) and animal products (Jeeva). Many of the Siddha formulations possess the herbs which has antimicrobial activity helps to treat acute and chronic infections. This article reviews on antimicrobial property possessing herbs in siddha medicine. This review has offered herbs in siddha medicines as an antimicrobial agent for further research to treat the acute and chronic infections.

Keywords: Infections, Siddha herbs, Microorganisms, Anti bacterial herbs, Minimum Inhibitory Concentration (MIC), Traditional Indian Medicine.

INTRODUCTION
Medicinal herbs are moving from periphery to mainstream use with greater number of people seeking remedies and health approaches free from side effects caused by synthetic chemicals. WHO has listed 21,000 plant species used around the world for medicinal purpose. In India about 2,500 plants species belonging to more than 1000 genera are being used in the indigenous system of medicine. The WHO estimated that about an 80% population of developing countries relies on traditional medicines, mostly plant drugs, for their primary health care needs. Despite of tremendous progress in human medicines, infectious diseases caused by bacteria, fungi, viruses and parasites are still a major threat to public health. The characteristics of the plants that inhibit microorganisms and are important for human health have been researched in laboratories since 1926. The development of bacterial resistance to currently available antibiotics has made it necessary to search for new antibacterial agents. New sources, especially natural products from plants, are being investigated because medicinal plants have been widely used for treatment of many types of acute and chronic diseases in Asia and many plants with antimicrobial activity have been reported. The toxicity to humans and other animals from antibiotics is generally considered low. However, prolonged use of certain antibiotics can decrease the number of gut flora, which may have a negative impact on health. To counteract these adverse effects siddha system is used nowadays. Siddha medicine is one of the ancient most system of medical practice known to mankind. Siddha s fundamental principles never differentiated man from the universe. According to them, Nature is man and man is nature and therefore both are essentially one. Man is said to the microcosm and the universe is macrocosm, because what exist in the universe exist in man. Agasthiyar was the first siddhar and his disciples and siddhars from other schools produced thousands of texts in siddha including medicine and form the propounders of the system to the world.

Some Of Antimicrobial Siddha Herbs
- Kuppiayeni - Acalypha indica
- Agathi - Sesbania grandiflora
- Nilavembu - Andrographis paniculata
- Adatheendalai - Aristolochia bracteolata
- Azhavanam – Lawsonia inermis
- Vijnukiranti – Evolvulus alsinoides
- Palasu – Butea monosperma
- Vaivilangam – Embelia ribes
- Akashagarudan – Corallocarpus epigaeus
- Manjal - Curcuma longa

Microbiological studies
Acalypha indica : Annual erect herb. Family-Euphorbiaceae.Useful parts are leaves, roots, whole plant. It has astringent, cathartic, emetic, diuretic, emmenagogue actions. It cures dental carries, burns, gastritis, haemorrhoids, pruritis. The plant is used as expectorant as a substitute for senega, it has also diuretic action. Useful remedy for bronchitis, asthma, pneumonia, and rheumatism. It was formerly employed as a purgative and anthelmintic.

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Analyzing the anti microbial activity, the ethanol extract of acalypha indica showed maximum solubility against B.cereus, B.subtilis, E.coli, S.typhi, V.Cholera and S.aureus, K.pneumoniae, V.cholerae and Bacillus cereus. The ethyl acetate extract of Acalypha indica showed maximum inhibition against S.aureus, K.pneumoniae and S.flexeri. Ethyl acetate was resistant to vibrio cholera and B. cereus. Pseudomonas aeruginosa was resistant to ethyl acetate extract of Acalypha indica. The ethanol and water extract of leaves, stems, seeds and roots from Acalypha indica were effective against two bacterial Escherichia coli, Aspergillus fumigates and Candida albicans were resistant to both ethanol and water extract of all Acalypha indica.1 Sessbania grandiflora: Tall slender tree. Family-papilionaceae. Useful parts are leaves, flowers, bark, root. It has antidote, refrigerant, laxative, vermifuge actions. It helps in digestion, lowers the pitha, removes toxins bark is astringent, leaves have a sharp bitter, sweet taste, anthelmintic, alyteretic, cures kapha, itching, leprosy. night blindness, epilepsy, gout. Useful in ophthalmia.leaf has tonic, anti pyretic action, cures night blindness and biliousness. fruit is bitter, acrid, alyteretic, laxative, cures tridosa, fever, pain, bronchitis, anaemia, tumours.9 According to the study Polyphenolic extracts (PE) of edible flower of Sessbania grandiflora were tested to evaluate its anti-microbial effect against some common pathogenic bacteria and growth promoting property against probiotic organism Lactobacillus acidophilus. The antimicrobial activity of S. grandiflora flower PE against selected pathogens was evaluated using in vitro. In vitro studies suggested that PE has inhibitory effect against Staphylococcus aureus, Shigella flexneri , Salmonella Typhi, Escherichia coli and Vibrio cholerae. The gram-positive organism S. aureus was the most sensitive organism to PE and minimum inhibitory concentration (MIC) was found to be 0.08 mg/mL where as the MIC of PE against V. cholerae was the highest (0.25 mg/mL).10

Andrographis paniculata: An erect branched annual shrub . Family -Acanthaceae. Useful parts are stem, leaves. It has stomachic, tonic, alterative, stimulant action. It cures all types of fever, sinusitis, giddiness.8

On studying the activity, the methanol extracts of whole plant showed significant and highest antibacterial activity against Bacillus subtilis and Staphylococcus aureus. Moderate degree of activity against E.coli, K.pneumoniae and P.vulgaris. The water extract of the same showed moderate activity against S.aureus, B.subtilis and P.vulgaris. The methanol extract of leaf showed a positive significant anti bacterial activity against S.aureus and B.subtilis.

Moderate activity against E.coli, K.pneumoniae and P.vulgaris.The water extract of the same exhibited moderate degree of activity against Staphylococcus and Bacillus subtilis but low activity against E.coli.11

Aristolochia bracteolata: A slender perennial .family-Aristolochiaceae. Useful parts are leaves, seeds, root, whole plant. It has anthelmintic. Stimulant, tonic, purgative, alterative, anti periodic, emmenagogue actions. It cures poisons due to insect and spider bites, worm infestations, eczema.8 The plant is bitter and useful in vata, kapha fevers, painful joints .9

According to study the different extracts (Aqueous,methanol and chloroform) of this plant were effective against the bacterial strains Escherichia coli, Bacillus subtilis, Staphylococcus aureus, Klebsiella pneumoniae, Pseudomonas fluorescens, Shigella flexneri, Proteus vulgaris and the fungal strains like Aspergillus Niger,Aspergillus terreus, Penicillium notatum and Rhizopus stolonifer. Among the three extracts, methanol extract was found to have the significant activity followed by the chloroform extract against certain bacteria. Water extract did not have any activity against bacteria12.

Lawsonia inermis: Shrub or small tree . Family-Lytheaceae. Useful parts are leaves, flowers, seeds, bark. It has astringent, detergent, deodorant actions. It helps to cure arthritis, cephalgia, leucoderma, peripheral neuritis.8 On analysing the ethanol and water extract of the bark of Lawsonia inermis showed antimicrobial activity against Diacyclpentenoid and its Fyroselialcosyenia were identified at the constituent responsible for this activity. The aqueous extracts of L.inermis inhibits the S.aureus, S.mutans and P.aeruginosa potentially at 100%.13

Evolvalus alsinoides : A Perennial herb. Family-convolvulaceae. Whole plant is useful. It has diaphoretic, tonic ,alterative, febrifuge, anthelmintic, expectorant actions. It cures fevers, cough, diarrhoeal fever, nervousness.3 The plant is useful in bronchitis, biliousness, epilepsy, leucoderma,teethings of infants, brightens the intellect, improves complexion, appetite.9

According to the study, Aqueous extract (AE) has highest activity against S.aureus, S.epidermidis, K.pneumoniae and Vibrio cholerae as compared to ciprofloxacin moderate activity was observed against E.coli, Pseudomonas aeruginosa, S.paratyphi, S.typhi. the isolate S.paratyphi A did not respond to both extracts.14

Another study indicates that the ethanolic extract exhibited activity against Pseudomonas aeruginosa and E.coli but inactive against S.aureus and C.albicaro. None of the test concentration enhanced comparable activity with the reference control ampicillin/hydrate.15

Butea monosperma: An erect tree. Family-papilionaceae,useful parts are leaves, flowers, seeds, bark, gum. It has astringent, tonic, aphrodisiac, diuretic, laxative, anthelmintic actions. Helps to cure diarrhoea, body aches, tridosa ,teania infections, eczema, snake venom, sinusitis, dysentery, haemoptysis.8 Bark is hot, acrid , bitter, oily. Useful in fractures of bones. The fruits and seeds are bitter and oily. Useful in piles, eye diseases, inflammations.9

Analysing the study, The ethanolic bark extract had a good control on drug sensitive strains of S.aureus, Bacillus cereus,P.aeruginosa and E.coli with the highest sizes of zones of inhibition against the used bacteria at around 100 mg/ml with the aqueous extract of the plant. Ethanolic extract of B.monosperma bark inhibited the growth of drug sensitive strains of S.aureus, P.aeruginosa and the fungus, Candida albicans at 400 to 800 mg/ml. Antimicrobial activity of the bark extract with petroleum

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ether and ethanol in controlling S. aureus, B. subtilis, S. typhimurium and E. coli were the minimum. Embelia ribes: Climber, family-Euphorbiaceae. Bitter in taste. It has anthelmintic, carminative, stomachic, stimulant actions. It cures anemia, snake venom, gastric and peptic ulcers, worm infestations scorpion sting. Prevents the diseases of head, nose and stomach.

The ethanolic extract of embelia ribes fruits showed highest zone of inhibition against Pseudomonas aeruginosa while the lowest activity was demonstrated by the water extract showed lower activity against test organisms compared to the ethanolic extract. Corallocarpus epigaeus: Climber. Family-cucurbitaceae. Root is useful part. Bitter, alterative, tonic. Cures pricking pain, anaemia, tridoshas, herpes zoster, leprosy, poisons, pruritis, dysentry. The chloroform and acetone extract of the plant showed significantly equal activity against S. aureus (9.33 and 9.67 mm at 100% concentration) similar activity was also observed in P. aeruginosa by chloroform and methanol extract (7.03 and 7.06 mm at 100% concentration). When compared to methanol and acetone extracts the chloroform extract showed maximum zone of inhibition against S. marcescens (7.67 mm at 100% concentration) whereas with E. coli methanol extract (11.33 mm at 100% concentration) shows maximum zone of inhibition. The organism Klebsiella pneumoniae was extremely resistant to all extracts. The chloroform extract showed maximum zone of inhibition against S. aureus (11.33 mm at 100% concentration) while in P. aeruginosa the methanol extract (9.00 mm at 100% concentration) showed highest activity. The chloroform and acetone extract showed equal zone of inhibition against P. aeruginosa (5.90; 5.68 mm at 100% concentration) whereas in E. coli methanol, chloroform and acetone extract (6.00, 6.73 and 6.8 mm at 100% concentration) showed significantly equal activity.

Curcuma longa: A perennial herb. Family-Zingiberaceae. Rhizome is the useful part. It has carminative, stimulant, hepatoplastic activity. It cures cephalalgia, leucorrhoea, swelling, insect bites, vomiting, wounds, scabies, boils, flatulence, intermittent fever, eye diseases, poisons, leech bites. Given complex to the skin.

On analysing the study, Curcumin exhibited very good activity against B. subtilis, E. coli, S. aureus and P. mirabilis, whereas it showed moderate activity against K. pneumoniae, Enterobacter aerogenes and Pseudomonas aeruginosa. Curcumin exhibited very good activity against both fungi, viz. A. niger and C. albicans. Demethoxy-curcumin exhibited some degree of activity against B. subtilis, S. aureus, E. coli, P. mirabilis, K. pneumoniae, Enterobacter aerogenes, C. albicans, no activity against Pseudomonas aeruginosa, A. niger.

CONCLUSION
Siddha medicine employs a variety of herbs and minerals, many of which were developed in the ancient past under advanced scientific techniques, even by today’s standard. Siddha medicine deals with several herbs for treating acute and chronic infections. In this review article, we have discussed elaborately about the antimicrobial activity of some herbs in the siddha system of medicine. This review article may be helpful for the other research scholars for further studies.

REFERENCES