

## **Applied Microbes-2019: Study of antimicrobial potential of important Indian medicinal plant extracts against pathogenic bacteria and fungi - Satish Kumar - Auj Innovedic, India**

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India Presently emergence of multiple drug resistance to human pathogenic organisms is serious problem around the world, so development of alternative antimicrobial drugs for the treatment of infectious diseases is the need of hour. One approach is to search for medicinal plants, for possible antimicrobial property. In the present study five solvents viz. ethanol, methanol, chloroform, hexane and water was used for extraction from eleven selected plants and used against *E. coli*, *P. aeruginosa* which normally found in diabetic patients while *C. albicans* found in cancer patients. A total of 55 plant extracts were used in the present study. Antimicrobial activity of plant extract found maximum in *Azadirachata* sp. followed by *Embilica* sp., *Psidium* sp., *Citrus* sp., *Murraya* sp., *Cannabis* sp. and *Piper* sp. and minimum in *Amaranthus* sp. and *Coriandrum* sp. Ethanolic extracts of *Azadirachata* sp. and *Embilica* sp. while aqueous extracts of *Cannabis* sp. and *Embilica* sp. was most effective against *E. coli*. Ethanolic extract of *Cannabis* sp. showed maximum zone of inhibition against *P. aeruginosa* and methanolic extract of *Citrus* sp. found most effective against *C. albicans* among eleven selected anticancer and antidiabetic plants. The MIC value of the ethanol extract of most promising plant i.e *Azadirachata indica* was recorded at 5% (5g/100ml). Results from the present study showed that 95% of ethanol extracts of *Azadirachata indica* had antimicrobial activity against all tested microorganisms. Antibiotic susceptibility of test microorganisms displayed that imipenem antibiotic has higher zone of inhibition of against *E. coli* followed by levofloxacin, cefotaxime, aztreonam, ceftazidime and amikacin. Against *P. aeruginosa* showed maximum inhibition zone followed by cefotaxime, amikacin, imipenem, azetronam and ceftazidime, while maximum zone of inhibition was recorded against *C. albicans* using ketoconazole followed by miconazole, nystatin, clotrimazole. These antibiotic principles are

actually the defensive mechanisms of the plants against pathogens. Laboratory and clinical studies of eleven selected medicinal plants especially the most promising plant extract are required in order to better understand the antimicrobial properties so as to allows the scientific community to recommend their uses as an accessible alternative to synthetic antibiotics.

Plants have been utilized for a huge number of years to flavor and ration food, to treat wellbeing issue and to forestall maladies including pandemics. Anti-microbial obstruction is a difficult that keeps on testing the medicinal services segment in a huge piece of the world in both creating and created nations. The rise and spread of multidrug safe pathogens have significantly compromised the present antibacterial treatment. This has required a quest for another wellspring of antimicrobial substances, for example, plants as they produce an assortment of bioactive mixes of known helpful properties. This examination has been led to assess the antimicrobial action of various restorative plant separates against human pathogens. The information on their recuperating properties has been transmitted throughout the hundreds of years inside and among human networks. Dynamic mixes delivered during optional vegetal digestion are normally liable for the natural properties of some plant species utilized all through the globe for different purposes, including treatment of irresistible illnesses. Antimicrobial action of various plants, so far thought about experiment have been deductively affirmed, correspondingly with the expanding number of reports on pathogenic microorganisms impervious to antimicrobials. Items got from plants may possibly control microbial development in various circumstances and in the particular instance of illness treatment, various investigations have expected to portray the compound creation of these plant antimicrobials and the systems engaged with microbial development restraint, either independently or related

with regular antimicrobials. Along these lines, in the current work, therapeutic plants with accentuation on their antimicrobial properties are reviewed. The rise and spread of anti-toxin obstruction, just as the advancement of new strains of illness causing specialists, are of incredible worry to the worldwide wellbeing network. Successful treatment of a sickness involves the advancement of new pharmaceuticals or some potential wellspring of novel medications. Usually utilized therapeutic plants of our locale could be an amazing wellspring of medications to fend off this issue. This examination is centered around investigating the antimicrobial properties of the plants that are regularly being utilized as conventional meds. The antimicrobial capability of four distinctive plant extricates was screened against twelve pathogenic microorganisms and two reference bacterial strains. Methanolic concentrates of *Oxalis corniculata*, *Artemisia vulgaris*, *Cinnamomum tamala*, and *Ageratina adenophora* were exposed to a trial of their antimicrobial properties by agar well dispersion strategy. The outcome showed that the vast majority of the concentrates displayed antimicrobial properties. The most noteworthy potential was seen in the concentrate of *O. corniculata* against *Escherichia coli*, *Salmonella Typhi*, MDR *Salmonella Typhi*, *Klebsiella pneumoniae*, and *Citrobacter koseri* with zone of hindrance (ZOI) of 17 mm, 13 mm, 16 mm, 11 mm, and 12 mm, individually. *Oxalis corniculata* likewise indicated the most elevated MIC against test creatures. The methanolic concentrate of *Artemisia vulgaris*, *Cinnamomum tamala*, and *Ageratina adenophora* indicated viability against *Staphylococcus aureus*. *Ageratina adenophora* likewise indicated antifungal action against *Rhizopus* spp. The investigation affirmed the viability of some chose plant removes as normal antimicrobials and recommended the chance of utilizing them in drugs for the treatment of irresistible illnesses brought about by the test creatures.

Medicinal plants are generally utilized worldwide as solutions for the treatment of different maladies, including asthma, gastrointestinal indications, skin issue, respiratory and urinary issues, and hepatic and cardiovascular sickness. These discoveries demonstrate that further research is important to

determine the effect of therapeutic plant species with differentiating antimicrobial movement on the endophytic microbial network in more detail, and to recognize organic dynamic mixes created by the hosts and their endophytes. These plants combine a different cluster of organically dynamic mixes cap are significant for them to endure and thrive in the regular habitat, incorporating defensive capacities regarding abiotic stresses got from temperature, water status, mineral supplement gracefully and to bug bugs. In this way, the current exploratory examination was intended to assess whether therapeutic plants with differentiating antimicrobial exercises affect plant-explicit characteristics engaged with bio control and plant development advancement of root-related cultivable endophytic microscopic organisms.