Abstract

The present study was conducted to characterize and screen the pathogenic bacteria from the soil at Shahdara Lahore. Blood agar test was performed to check the pathogenicity of the isolated strains. All the strains showed the beta hemolysis that confirmed their pathogenicity. Evaluation for the susceptibility of pathogenic bacteria against nanoparticles and various plant extracts was done. There was no significant difference occurred in the antibacterial activity of nanoparticles ($p > 0.05$) and they all showed good antibacterial activity as demonstrated by their zone of inhibition. Plant extract of *Eucalyptus radiata* and *Azadirachta indica* demonstrated good antibacterial activity against the isolated pathogens. Assessment for the resistance of pathogenic bacteria against variety of antibiotics was done . There was a significant difference in the values of various antibiotics ($p < 0.05$) as indicated by the results of one-way ANOVA. Further post hoc analysis by tukey and bonferroni test indicated that the value of chloramphenicol was quite different while all the other antibiotics showed similar antibacterial activity. All the antibiotics showed good antibacterial activity except chloramphenicol that showed less antibacterial activity. The study concluded that soil at Shahdara Lahore contain different pathogenic bacteria that cause various infections in humans and animals. These pathogenic bacteria present in the soil are also harmful for the plants. Antibiotic resistance has been established in bacteria as a result of overuse and misuse of these drugs to treat infections. It is advised that various biological tools, such as plant extracts and nanoparticles, be examined more as antibacterial techniques so that pathogens may not have evolved resistance.

Keywords: Pathogenic Bacteria, Nanoparticles, Plant Extracts, Antibiotic Resistance