

## Isolation and Characterization of Antibiotic Producing Bacteria from Soil

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Antibiotics are one of the most significant groups of secondary metabolites that have been used to treat diseases. Soil dwelling microorganisms have been studied extensively to identify those who could produce antibiotics. This study was carried out to isolate antibiotic producing bacteria from soil and compost samples and to characterize those isolates. Potential antibiotic producing bacteria were isolated from soil and compost samples using crowded plate technique and the isolates were tested against three different group of sensitive microorganisms, namely; (1) unidentified sensitive bacteria that were isolated from the same soil and compost sample (2) two pathogenic test bacteria with known antibiotic sensitivity profiles [*Escherichia coli* (ATCC 25922) and *Staphylococcus aureus* (ATCC 25923)], and (3) phosphorus solubilizing bacteria isolated from soil (*Pseudomonas marginalis*, *Acinetobacter baumannii*, *Bacillus pacificus*, *Lysinibacillus spaericus*, *Staphylococcus warneri*, *Stenotrophomonas sp.*, *Bacillus sp.*, *Bacillus cereus*, and *Bacillus subtilis*). Antimicrobial screening was carried out by using streak agar plate method and inhibition zone method. Out of 13 isolates, 8 isolates caused inhibition of the growth of one or more sensitive bacteria. Two bacterial isolates (A2 and A5) caused a wide spectrum of inhibition against test bacteria. Isolate A2 inhibited the growth of some microorganisms (A2R, A4R and A5R), *Bacillus pacificus* and *Lysinibacillus spaericus* in streak agar method. The results obtained from streak agar plate method and inhibition zone methods were not consistent. Isolate A5 caused inhibition against some sensitive soil bacteria (A2R and B1R) and *Acinetobacter baumannii*, *Stenotrophomonas sp.*, *Bacillus sp.*, in streak agar method. The result of present study revealed that identified antibiotic producing bacteria did not inhibit the activity of pathogenic test bacteria (*E.coli* and *S. aureus*), but inhibited the growth of some unidentified bacteria used in this study.

**Keywords:** Antimicrobial screening, Inhibition zone, Potential antibiotic producers, Streak agar method, Turbidity method

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