ABSTRACT

The rapid emergence of drug resistance among various pathogenic bacteria stresses the need to look for new compounds used in the production of antibiotics. This study aimed to isolate novel actinomycetes that can be a new source of inhibitory compounds to various pathogenic organisms. The soil samples were collected from a dumpsite in Los Baños, Laguna. The actinomycetes were isolated in specific medium using Yeast-Malt extract Agar (YMA). A total of 44 Actinomycetes strains were isolated and screened for their *in vitro* antagonistic activities against a panel of test organisms which were: Methicillin-resistant *Staphylococcus aureus* (MRSA), *Klebsiella pneumoniae* (KP), *Staphylococcus epidermidis* (SE), *Pasteurella multocida* (PM), *Staphylococcus aureus* (SA), and *Pseudomonas aeruginosa* (PA). The actinomycetes strains were subjected to preliminary screening using agar plug method to determine their inhibitory activity. The results indicated that a broad spectrum of inhibitory activity was observed in some of the isolates. These strains can be potential source for new compounds for antibiotic production against different pathogens. Moreover, the six most potent actinomycetes strains with the largest broad spectrum of antibacterial activity against each of the test organisms were selected. The isolates were then subjected to cup cylinder assay. The isolates have shown ability to produce substances that can inhibit drug resistant bacteria. In addition, the best isolate which displayed the greatest antagonistic activity in the cup cylinder assay against any of the test organisms was selected and identified. The isolate A20 was identified to be *Tsukamurella tyrosinosolvens* M12400 using 16S ribosomal RNA gene sequencing method. This study signifies that actinomycetes isolated in extreme environment such as landfills can be a great source of bioactive compounds.