

**ISOLATION AND CHARACTERIZATION OF ANTIBIOTIC PRODUCING *BACILLUS*
SPECIES IN LAKE BOGORIA**

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ABSTRACT

Environmental microorganisms and their natural products are potentially important for the control of diseases caused by pathogenic microorganisms. With the emergence of antimicrobial resistance to most antibiotics, there is utmost need to carry out more research on organisms that may have potential to be the next generation antibiotic producers. This study aims to isolate, identify and characterize *Bacilli* species with the potential of antibiotic production that inhabit extreme environmental conditions specifically hot water springs (Loburu, Chemurkeu, and Ng'wasis, Koibobei and Losaramat) of Lake Bogoria. Though several studies have been conducted on microorganisms inhabiting some of the very extreme environments including high salt concentration, extreme salinity, extreme Ph, extreme temperatures among others and the biotechnological potential of these organisms, there is extremely scanty information of such or related studies conducted on Lake Bogoria with respect to antibiotic production by *Bacilli* species. Surface and sediment samples will be taken from these hot springs and transported to the lab in as identical conditions to the natural environment as possible. They will be cultured in nutrient broth and then in nutrient agar using the streak plate method to isolate pure colonies. Antimicrobial testing on bacterial fermentation extract products of pure isolates using agar well diffusion assays on standard ATCC organisms will be conducted. Genomic DNA of those that will show antimicrobial potential will be extracted and amplified. The 16s rRNA gene sequences of isolated species will be aligned to sequences in the public database using BLAST analysis. A phylogenetic tree will be constructed to show relationship. Permission to carry out the study will be sought from KWS.