Title: Isolation, Identification and Characterization of Cellulose Degrading Bacteria From the Soil in the Forest of University of Embu

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Abstract

Cellulolytic bacteria are freely found in the soil and are responsible for degradation of cellulose. Cellulose occurs in a wide variety of living species from the worlds of plants, animals and bacteria as well as amoebas. Cellulose is degraded by cellulase enzyme which consists of three classes of soluble extracellular enzymes: endoglucanases, exoglucanases and beta-glycosidases. The key objective of the study was to isolate, identify and characterize cellulolytic bacteria from the soil collected from a forest environment within the University of Embu. Soil samples were collected few meters from the main campus and taken to the laboratory. The soil samples were inoculated separately to obtain single bacterial isolates and grown in culture medium under favorable laboratory conditions. A total of five bacterial isolates namely X1, X2, X3, X4 and X5 were found likely to belong from the bacillus genus. Gram staining was done as the first step of identification and 3 bacterial isolates were found to be gram positive and two gram negative bacteria. Morphological identification included colony characteristics and microscopic features. Finally various biochemical tests were done to determine the isolates ability to degrade various substrates such as citrate and starch. This study shows that the forest soils of the University of Embu is potent source of celluloytic microbes that could be utilized in industrial and biotechnological research.