

TITLE: Quantification of Microorganisms with Enzymatic Activities Isolated from Landfill Soil

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Soil microorganisms are represented by bacteria, fungi, arches, algae, protozoa and microfauna. These microorganisms are dependent on organic matter, and the decomposition of this is characterized by an enzymatic process where the organisms capable of degradation produce a set of enzymes involved in the hydrolysis of organic compounds. In soil, the accumulated enzymes are primarily derived from microbial cells. There are microorganisms that are indicators and can be used in the estimation of these transformations, for example, cellulase and protease and phosphatase. Therefore, this work had as objective the isolation and quantification of microorganisms with potential enzymatic activity. Soil samples from solid waste from the Waste Management Company (CGR) were collected and processed in the Laboratory of Microbiology of UNIVAG University Center, where 5 g of soil were placed in the extraction solution and serial dilution was performed. Subsequently, 100 µl of the dilutions were inoculated into Petri dishes containing culture media for bacteria and total heterotrophic fungi and also in specific media by the "Spread Plate" method and incubated for 24/48 hours in an oven at 37 ° C. After this period, colonies were counted, where 5.7×10^3 and 2.6×10^4 CFUs of fungal colonies, 9×10^4 CFUs of BHTs, and 9×10^4 UFCs of cellulite bacteria were observed. Gram-positive analysis showed that 50% of the isolates were Gram-positive bacilli. Also 9 fungal genera were identified. Microbiological analysis of soil has shown that microorganisms are the main responsible for the processes of biodegradation of solid waste through the production of degrading enzymes.

Keywords: Microbiota, Enzymes, Solid wastewater