

# **Isolation and Screening of Bacteria from Landfill Leachate for Lignocellulolytic Enzyme Activity**

Ogechukwu Chukwuma

*Universiti Sains Malaysia*

## **Abstract**

The study was to discover culturable lignocellulolytic bacteria from landfill leachate. A microorganism capable of producing several enzymes that can be deployed in the bio refinery process is seen as a solution in reducing cost and maximizing process efficiency. For this reason, isolates were screened using lignin and starch separately, as carbon sources in 24-hour growth experiments. Growth was monitored using OD 600nm and the initial screening showed more activity in the presence of lignin. However, only isolates with the best growth rate and generation times were chosen for further screening. Isolates were then further screened for cellulase activity using iodine and congo red. 16S rRNA gene sequencing was then carried out to identify the phyla of all isolates and further study their lignocellulolytic potential. The study revealed an affinity of leachate bacteria for lignin but also identified several bacteria that are capable of multi-enzymatic activity. This can be further harnessed for future waste to energy efforts.

**Keywords:** lignocellulolytic enzyme, lignocellulolytic bacteria, landfill leachate, lignin, growth rate