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STUDIES ON LIGNIN MODIFING MICROORGANISMS ISOLATED FROM THE COASTAL AREAS OF SOUTH INDIA

PRASAD MP[1*], SETHI R[2], PADMAVATHI T[2] AND JAIN AK[1]

1: Sangenomics Research Lab, Domlur Layout, Bangalore 560071, India

2: Department of Microbiology, Jain University, Bangalore, India

*** Corresponding Author: E Mail- prasad_m_p@hotmail.com; Ph.: 9844357929**

ABSTRACT

In nature, lignocellulose accounts for the major part of biomass and consequently, its degradation is essential for the operation of the global carbon cycle. Lignin is a major cell wall component which provides structural support to the plant and makes the polymer resistant to enzymatic degradation by microorganisms. In the present investigation, marine samples like sediments, water and floating plant material were collected for isolation of the microorganisms capable of oxidizing lignin. On plating the samples on marine agar and modified Potato dextrose agar over ninety bacterial species and around forty fungal species were isolated. These organisms were subjected to lignin modifying assay to screen for the production of ligninases. The result showed more bacterial species capable of oxidizing compared to fungi. This indicates the abundant presence of organic matter in the marine environment which have created the micro environment to thrive breaking down lignin and utilizing as a sole source of carbon. Such isolates allow the utilization of bound cellulose and hemicellulose which have applications in industries related to paper, textile, feed and also in the conversion of cellulose to biofuel.

Keywords: Lignocellulose, Ligninases, Marine sediment, Agro wastes, LBM Medium

INTRODUCTION

In recent years marine microorganisms have become important in the study of novel microbial products exhibiting antimicrobial, antiviral, antitumor as well as anticoagulant and cardio active properties **[1-3]**.

Among the three major habitats of the biosphere, the marine realm which covers 70% of the earth's surface provides the largest inhabitable space for living organisms, particularly microbes. Marine microbes thrive