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**INVESTIGATE BIOETHANOL PRODUCTION THROUGH OPTIMISE  
CELLULASE PRODUCING THERMOPHILIC MICROBIAL CONSORTIA**

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**ABSTRACT**

Due to various factors depletion of fossil fuels occur (First generation fuels) by which there is high requirement of fuels which should forms through biomass rather than slow geological process. Fossil fuels like coal, natural gas etc diminish day by day it leads to high demand of fuel for future use known as biofuel which forms from lignocellulosic biomass like wood, sawdust, sugarcane bagasse etc. Production of bioethanol can be enhanced if we optimise microbial consortia which produce cellulase enzymes, cellulase enzyme helps to degrade lignocellulosic biomass and lead to higher product formation. So, we isolated, screened and characterized morphology of cellulase producing thermophilic microbes. Thermophilic microbial consortia which can sustain in high temperature and lead to bioethanol production. Basic liquid mineral was used for growth of strains, serial dilution was used, CMC (Carboxymethylcellulose agar) was used to know cellulase activity. Morphology characterization and biochemical analysis like estimation of total cellulase activity and endoglucanase activity, gram staining, indole test etc. was checked.

**Keywords:** Lignocellulosic Biomass, Bioethanol Production, Thermophilic Microbes.