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UTILIZATION OF CANTEEN AND CONVENT REFUSE OF MOUNT CARMEL COLLEGE TO HARVEST BIOFUEL

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ABSTRACT

The environmental crisis, depletion of fossil fuels and increased levels of greenhouse gases(GHG) has stressed the need to utilization of other forms of energy which are degradable, renewable and eco –friendly such as- bio fuels. Since tones and tones of kitchen waste is generated and it has been a great challenge in disposal ofthese kitchen wastes. A common practice of the disposal is by waste incineration method which is a source of Carbon di oxide, Carbon monoxide, Phosphorous, Nitrogen, Methane gases which add on to the GHG and its impacts on the human health. Thus there is an increasing demand for utilization of kitchen waste for the production of biofuel which is economicaland the alternative form of petroleum. Bio fuel is derived from various raw materials of biological sources. Fermentative bacteria are present in fruits and vegetable wastes which are rich in carbohydrates. These bacteria can produce bioethanol by fermentation of different carbohydrates. Biofuel has been produced previously from various sources like plants waste, chicken stalk, corn, molasses, palm fruits etc. Biofuel produced by this method can meet the needs of 50% of fuel consumption. Mount Carmel College canteen and convent kitchen caters around 2000 people per day and 6-10kg of refuse is produced approximately from this. Kitchen waste is characterized by high organic material as it contains carbohydrates, proteins, lipids, starch and other compounds making it a potential fermentative substrate for the production of bioethanol. In the present study College canteen and convent kitchen waste was used as a raw material to produce bioethanol. In a lab scale study, efficiency of different inoculum to ferment the

raw material to produce bioethanol was conducted. Fermentation was carried in an anaerobic condition at room temperature for 21 days. Fermentation using *Saccharomyces cerevisiae*gave the highest percentage of alcohol (14%). Large scale bioethanol production was done using yeast as the inoculum. After fermentation the broth was filtered and the filtrate was subjected for qualitative analysis for the presence of ethanol. The filtrate was then distilled. The results show that the utilization of kitchen waste was suitable for the production of ethanol which can fulfill the requirements of a microbiology laboratory. Significant reduction in the biomass showed that the method could solve the problems associated with waste disposal. The solid biomass separated after fermentation was used for vermicomposting.