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COMPARATIVE OF BIO ETHANOL PRODUCTION FROM PRETREATED ORGANIC WASTE SAMPLES USING FUNGI

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ABSTRACT Bioethanol, an ethanol liquid that is a clean fuel for combustion engines, is a readily available substitute since it can be derived from plant-based materials. India achieved its highest ethanol market penetration at 3.3 percent (national level blend) in 2016.Eventhough, there is a demand for the ethanol production, and hence the agricultural wastes are used in the production of bioethanol made effective. Lignocellulosic biomass materials constitute a substantial renewable substrate for bioethanol production that do not compete with food production and animal feed. The result of the study suggest that over all synthesis of Bioethanol from used agricultural feedstock was determined 65% from the utilized sources.

KEYWORDS : Bioethanol, agriculture waste, coffee pulp, food waste, fungi

INTRODUCTION

Fossil fuels are the major source of energy worldwide and their use is associated with global warming, climate change, and a variety of energy and security problems. The world's present economy is highly dependent on various fossil energy sources such as oil, coal, natural gas, etc. These are being used for the production of fuel, electricity and other goods. The improvement of living standard urges the hunt for sustainable energy in order to meet energy consumption across the world.

Biofuels can be divided into primary and secondary biofuels based on the processing they undergo prior to their utilisation. Argonne National laboratory analyzed the greenhouse gas emissions of many different engine and fuel combinations. It can be used as a gasoline improver or octane enhancer and in bioethanol-diesel blends to reduce the emission of exhaust gasses .Bioethanol offers several advantages over gasoline such as higher octane number (108), broader flammability limits, higher flame speeds and increased heats of vaporization.

In this study the production of Bio-Ethanol from lignocelluloic materials, food waste and coffee pulp combination of *Aspergillus niger & Saccharomyces cerevisiae (Brewer'syeast)* as cells by 4-stages, pre-treatment, hydrolysis, fermentation and recovered by Distillation process.

MATERIALS AND METHODS

The agricultural wastes were collected from many agricultural lands and are dries in sunlight. Food waste from hostel and households were collected. Coffee pulp were collected from coffee producing industry and all are dried in sunlight, pulverized into powder. Fungi was isolated from soil. Pretreatment of lignocellulose biomass, food waste and coffee pulp was done. Enzymatic hydrolysis, reducing sugar tests and fermentation was done. Extraction, confirmation, estimation of ethanol was done. Comparative study of samples.

RESULT

Table 4.5 showing Estimation of ethanol recovery by potassium dichromate method.

Sugar	(LCW)	(FW)	(CW)
Glucose	1.305 μl	4.032 μl	1.094 μl

Overall reaction

Sample2g+Sugars5g+Culture(5ml)=2ml Bioethanol

By using a different samples with different concentration of sugars yield a 40-60% bioethanol. Efficiency of conversion of waste agricultural product made a useful product as Bioethanol. Hence, it is not possible to use crop plant for fuel resources because of facing food crisis will increase. In these situations, agricultural wastes are good alternative production for Bio-Ethanol.

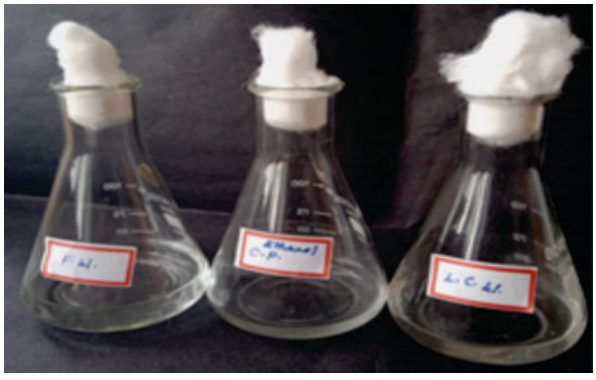

Fig 4.8 Ethanol Recovered

CONCLUSION AND SUMMARY

Bioethnaol can be produced from strachy materials like Lignocellulosic biomass, coffee pulp and food waste. In fact, residues are often available and do not compete with food production in terms of land destination.

This study compared the bioethanol yield from Lignocellulose biomass, Coffee pulp and Food waste. From the results, the yield from Lignocellulose biomass in terms of quantity and concentration of bioethanol was slightly higher than that of other two samples, Food waste and coffee pulp. Food waste and coffee pulp recorded lower amounts of fermentable sugar and ethanol. The ethanol samples from food waste have stronger odour when compared with the samples from lignocellulose biomass and coffee pulp. This implies that lignocellulose biomass are better substrates for the production of bioethanol when compared with the other two samples.

Bioethanol can be used as transport fuel as gasoline equivalent. Agricultural biomass waste was suitable material for production of Bio-Ethanol. Nowadays in many countries, Bioethanol is blended with gasoline in fixed porportion and then used as fuel.Substanial cost reduction may be possible if cellulose based agricultural wastes such as lignocelluloic materials, food waste and coffee pulp are used for Bio-Ethanol production. It is produced by fermentation of carbohydrates and lignocelluloic compounds is used for production of bioethanol. In this study the production of Bio-Ethanol from lignocelluloic materials, food waste and coffee pulp combination of *Aspergillus niger & Saccharomyces cerevisiae(Brewer'syeast)*as cells by 4-stages, pre-treatment, hydrolysis, fermentation and recovered by Distillation process.

Hydrolyzed sugar from biomass was estimated by DNS method. Total 22% of biomass was converted into simple monomeric carbohydrates. Amount of ethanol produced from biomass is estimated by potassium dichromate method, it was found to be that 65% of simple monomeric carbohydrates was converted into bioethanol.

The result of the study suggest that agricultural wastes that contain fermentable sugars can no longer be discarded into our environment but should be converted to useful products like Bio-Ethanol. Over all synthesis of Bioethnaol from used agricultural feedstock was determined 65% from the utilized sources.

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