

BIOETHANOL PRODUCTION FROM CANTEEN WASTES: EFFECT OF DIFFERENT PRETREATMENTS

P. M. Weerasuriya, H. R. T. Madushani, Y. P. S. S. K. Yapa, M. K. J. C. K. Gunarathna,
D. N. Herath, W. M. D. Priyadarshani

Department of Biosystems and Environmental Engineering, Faculty of Engineering, South Asian Institute of
Technology and Medicine (SAITM), Sri Lanka.
Email: deepika@saitm.edu.lk

ABSTRACT

Today's world faces progressive depletion of fossil fuels which is not compromise with the ever increasing demand. Many countries are pursuing the development of alternative fuels, including biofuels. Bioethanol is used as an important ingredient in food, pharmaceutical, petrochemical industries. In addition bioethanol is widely used as a biofuel in the modern world. Many research works have been demonstrated the ability of utilizing different kind of biomass for bioethanol production. Production of bioethanol from food and kitchen waste can be another solution for waste management. The present study is focused on fermentative production of bioethanol from university canteen waste subjected to different pretreatments

The biomass, canteen waste, was collected from the SAITM cafeteria with general composition of rice, vegetables, fish and meat wastes. The starchy component of the waste was collected for the research excluding meat bones. It was then thoroughly washed under the tap water and finally with distilled water to remove oily components. Sample was air dried and 10 g of sample was used for each pretreatment. Ten grams of sample was mixed with 100 ml of distilled water. pH of the mixture was adjusted to pH 1, 3, 5, 8, 10, and 12 by addition of conc. HCl and conc. NaOH. Acidic and basic thermal pretreatments were carried out by autoclaving samples at 120 °C for 30 min. Pretreated samples were cooled to room temperature and pH of the medium was adjusted to pH 6.5 -7.00. Commercial culture yeast *Saccharomyces cerevisiae* was added at the rate of 1%. The fermentation was carried out at 30 ± 1 °C temperature for 5 days with occasional shaking. Fermented samples were tested for pH and ethanol yield.

The pH of the fermented media is observed in between 3.50 to 3.65 except to the sample pretreated at pH 1. It is revealed that there is a difference in ethanol yield among different pretreatments. Results demonstrate the possibility of utilizing canteen waste as a biomass resource.

Key words: Canteen waste, Bioethanol