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Anaerobic fermentations: Production of methane and detection by ballon method from glucose.

S.Sreeremya,
Department of Biotechnology
Mercy College, Palakkad.

ABSTRACT

This study focuses on the determinationof anaerobic fermentation especially the gas production. Majorly anaerobic fermentations have a large scale application in food and beverage industries. Never the less there are application of anaerobic fermentation in small scale as well as in pilot scale too.So for the simple technique which is implemented in this study is the detection of anaerobic gas by ballon method. The presence of air can be detrmined by the popping of ballon.

KEYWORDS:Anaerobic.fermentation

INTRODUCTION

Hydrogen production by anaerobic microbial communities (a process sometimes referred to as “dark fermentation”) using organic waste as the substrate such as cow dung, agro waste, poultry waste.etc has drawn attention because of its ability to produce an environmentally friendly energy source, while simultaneously stabilizing waste. Several researchers have investigated the possibility of hydrogen production by continuously operated bioreactors (Fang and Liu, 2001, Lay et al., 2000, Lin et al., 1999, Ueno et al., 1996, and Nakamura et al., 1993). Cities around the world transport large quantities of waste to landfills at a great expense to their residents, infrastructures, and environments. In America, families discard nearly 25% (by mass) of the food they purchase (Gunders, 2012), not including inedible portions, which inaddition to commercial food waste becomes a sizeable portion of total waste

Anaerobic digestion is a well-established method for breaking down solids into

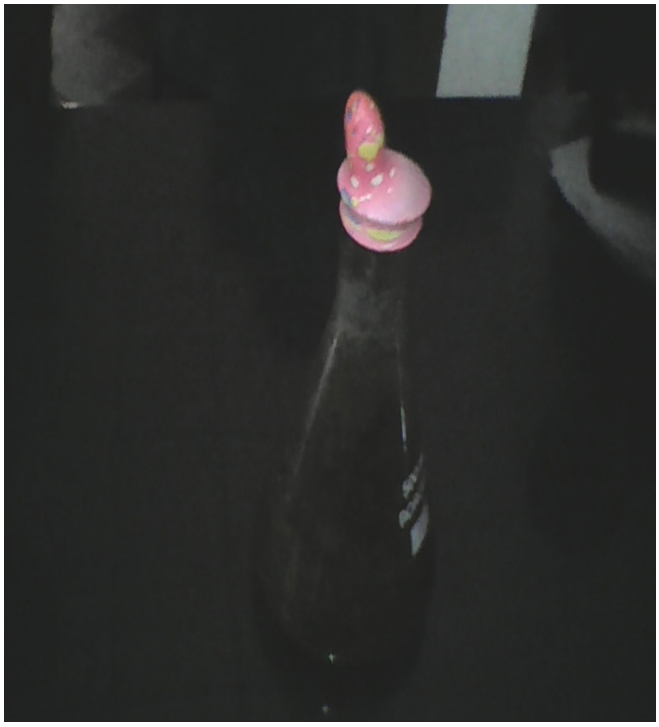
nutrientrich liquid fertilizer and methane gas (Gray etal., 2008). While methane is a powerful greenhouse gas, properly collected and stored it can be a useful fuel and therefore a source of renewable energy. While relatively uncommon in the United States, high-solids food waste digestion is becoming increasingly popular in Asia and Europe. While taking the current scenario of developing countries like india the pilot scale set up, for detection of gas production or the presence of gas can be assessed by adapting simple techniques (De Baere L., 2000). Majorly cow dung is considered as cheap copious and effective substrate,major and potential microbial species involved in four stages (Hydrolysis,Acidogenesis,Acetogenesis,Methanogenesis) of biogas production are abundant .So simple techniques should be implemented for the detection of gas production in anaerobic condition

MATERIALS AND METHODS

Prepare 70-80% cow dung solution.The mixture is taken in aconical flask.
Add 3gm of glucose into it. Tightly tie a balloon at the mouth of the conical flask at room temperature for the production of methane.

RESULT AND DISCUSSION

Methane is produced from glucose using cowdung as inoculums.Initially the circumference of the neck portion of air tied ballon was recorded,by using a thread,after thet keep the thread in a ruler and circumference were noted in cm. Then after 24-48hr of incubation the circumference were noted. At the initial stage the balloon was flat and air tight. After incubation, the popping of balloon was noted which also clerly represents the formation of gases.Thus gases in the pilot scale digester can be detected in a simple and economic way.



After 48 hrs of incubation.Gas production is determined by the rising up of ballon-Econmically viable method Of Gas Production

CONCLUSION

The production of methane and detection by ballon method from glucose is a cheap method. Hence it is more economical.Fora pilot scale study about the biogas production this is an efficient method.

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