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Methane Gas Production from different composition of Food Waste and Chicken Manure

Absract

High carbohydrate content in food waste is one of the characteristic suitable acted as a co-substrate for fermentation to produce methane gas. In this study, co-digestion of chicken manure (CM) and food waste (FW) was used for fermentation process in methane gas production. The different effects of the independent variables (ratio, pH and temperature) is the most significant parameters of methane gas fermentation of CM and FW were investigated. Based on the analytical study showed a good fit between the experimental and the predicted data as the R2 values of 0.991 with methane yield to be 537 mL CH_4/g VS at ratio 80:20 (CM:FW); temperature 35 C; and initial pH 7.11 in 20 days of fermentation. The experiment was then performed based on optimized parameters of pH, temperature and ratio at the highest yield of methane obtained from optimum parameters. After optimization, the result showed that the pH 7.11 at 35 C temperature and the ratio of 80:20 with methane production yield of 1560.5 mL CH_4/g VS for the 21 days of digestion process.