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Enhance Biogas Production by Enzymatic Pre-Treatment from Palm Oil Mill Effluent (POME)

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Abstract : To enhance biogas production through anaerobic digestion, the application of various type of pre-treatment method has some limitations in terms of sustainable environmental management. Many studies on pretreatments especially chemical and physical processes are carried out to evaluate the anaerobic digestion for enhanced biogas production. Among the pretreatment methods acid and alkali pre-treatments gained the highest importance. Previous studies have showed that although acid and alkali pretreatment has significant effect on degradation of biomass, these methods have some negative impact on environment due to their hazard in nature while enzymatic pre-treatment is environmentally friendly. One of the constrains to use of enzyme in pretreatment process for biogas production is high cost which is currently focused to reduce cost through fermentation of waste-based media. As such palm oil mill effluent (POME) as an abundant resource generated during palm oil processing at mill is being used a potential fermentation media for enzyme production. This low cost of enzyme could be an alternative to biogas pretreatment process. This review is to focus direct application of enzyme as enzymatic pre-treatment on POME to enhanced production of biogas.

Keywords : POME, enzymatic pre-treatment, biogas, lignocellulosic biomass, anaerobic digestion
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