Volatile Fatty Acid Production by Anaerobic Fermentation Using Sewage Sludge

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In Korea, Marine algae have been harvested at large quantities every year. Especially, macro algae contents about 70 ~ 90 % water, relatively high protein about 10%. So that, seaweed is considered a food source and renewable energy to balance CO_2 from the atmosphere through photosynthesis and reduce greenhouse effect, oil price crisis are global warming as well as oil spill. This means biomass from seaweeds is great source for volatile fatty acids (VFAs) and biogas production using anaerobic fermentation. In this study, the fermentations were operated at temperature 35 ℃, and pH around 7 under anaerobic condition. A set of three 1 L transparent plastic fixed-bed fermentors (F1-F3) was used for digest brown seaweed and sewage sludge was used as microorganism for F1-F3 with amount 30 mL, 60 mL and 90 mL, respectively. VFA was analyzed by Shimadzu 17A using FID at 250 ℃ and biogas including CH_4 and CO_2 as main components was analyzed by Shimadzu 9A using TCD at 140 ℃.