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THE EXISTENCE AND NATURE OF PROPIONATE-OXIDIZING BACTERIA IN SEMI BATCH ANAEROBIC DIGESTER FED BY WHOLE-MILK

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ABSTRACT: This study was objected to understand the existence of microbial community responsible for propionate oxidation in semi batch anaerobic digester fed by whole-milk, by using application of molecular biological techniques. Samples were taken from an anaerobic digester sludge fed by milk that operated in mesophilic condition. Results showed that applied molecular biological techniques can be performed successfully in order to characterize the propionate-oxidizing bacteria within anaerobic digester sludge. The community number of propionate-oxidizing bacteria in anaerobic digester fed by whole-milk sludge was smallest compared to carbohydrate-fermenting bacteria and acetate-utilizing microorganisms while the specific rate of this propionate oxidation was 5.10^{-16} mole.cell⁻¹.h⁻¹. These results showed that propionate-oxidizing bacteria community is limiting factor in anaerobic degradation.

KEYWORDS: anaerobic digester, specific rate, propionate-oxidizing bacteria.