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EFFECT OF DIFFERENT PRETREATMENTS ON BIO-HYDROGEN PRODUCTION FROM MARICULTURE ORGANIC WASTES (MOW)

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Abstract

In this study, S-TE pretreated mariculture organic waste (MOW) was used as substrate. Acid, alkaline, S-TE, sterilization and microwave pretreated waste sludge was used as inoculation respectively. The highest hydrogen yield of 22.02 ml H_2/g COD (chemical oxygen demand) was obtained from MOW with sterilization pretreated inoculation at mesophilic conditions in batch reactors. The impacts of different pretreatments on the changes of soluble chemical oxygen demand (SCOD), protein, carbohydrate, pH and distributions of soluble metabolite such as volatile fatty acids (VFAs) and ethanol during hydrogen fermentation were also investigated. It was concluded that the substrate hydrolysis could be affected by different pretreated sludge inoculation, and more carbohydrate could be used for hydrogen fermentation than protein. The pH value was remained stable inoculated S-TE pretreated sludge during hydrogen fermentation, and the hydrogen fermentation type could also be affected by different pretreated inoculations.

Key words: hydrogen production, mariculture organic wastes (MOW), pretreatments, S-TE, sludge

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