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Effect of alkaline pretreatment on mesophilic and thermophilic anaerobic digestion of a submerged macrophyte: inhibition and recovery against dissolved lignin during semi-continuous operation

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Abstract

The long-term effect of alkaline pretreatment on semi-continuous anaerobic digestion

(AD) of the lignin-rich submerged macrophyte *Potamogeton maackianus* was

investigated using mesophilic and thermophilic conditions. In pretreated reactors,

dissolved lignin accumulated to high levels. CH₄ production under the pretreated

condition was higher than that of the untreated condition, but decreased from Days 22

(mesophilic) and 42 (thermophilic). However, CH₄ production subsequently recovered,

although dissolved lignin accumulated. Further, the change in the microbial community

was observed between conditions. These results suggest that dissolved lignin

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