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Short Communication

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Improving exploitation of chicken manure via two-stage anaerobic digestion with an intermediate membrane contactor to extract ammonia

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Abstract

This study describes a modified process of ammonia release through pre-hydrolysis – ammonia removal via membrane contactor – methanization for counteracting ammonia inhibition in anaerobic digestion of chicken manure. In the pre-hydrolysis step, ammonia was rapidly released within the first 3-5 days. 78%-83% of the total nitrogen was finally converted into total ammonia/ammonium (TAN) with volatile fatty acids concentration of approximately 300 g/kg·VS. In the ammonia removal process, diluting the hydrolyzed chicken manure to 1:2, the TAN could be reduced to 2 g/kg in 21 hours when pH was increased to 9. The final BMP test of chicken manure verified that lower TAN concentration (decreased to 2 g/kg) significantly reduced inhibitory effects,

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