

Accepted Manuscript

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PII: S0960-8524(17)31978-8

DOI: <https://doi.org/10.1016/j.biortech.2017.11.015>

Reference: BITE 19165

To appear in: *Bioresource Technology*

Received Date: 15 September 2017

Revised Date: 5 November 2017

Accepted Date: 6 November 2017

Please cite this article as: Yin, F., Dong, H., Zhang, W., Zhu, Z., Shang, B., Antibiotic degradation and microbial community structures during acidification and methanogenesis of swine manure containing chlortetracycline or oxytetracycline, *Bioresource Technology* (2017), doi: <https://doi.org/10.1016/j.biortech.2017.11.015>

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Antibiotic degradation and microbial community structures during acidification and methanogenesis of swine manure containing chlortetracycline or oxytetracycline

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Abstract

Anaerobic digestion (AD) has been applied to animal manure stabilization, and antibiotics is frequently found in animal manure. However, antibiotic degradation and microbial community structures during two-stage AD (acidification and methanogenesis) remain poorly understood. This experiments on two-stage anaerobic swine manure digesters were performed to investigate the degradation mechanisms and effects of chlortetracycline (CTC) and oxytetracycline (OTC) on microbial community structures. Results showed that acidification and methanogenesis showed good degradation performance for manure containing CTC and OTC at 60 and 40 mg/kg·TS, respectively. CTC and OTC were degraded by 59.8% and 41.3% in the acidogenic stage and by 76.3% and 78.3% in the methanogenic stage, respectively. CTC and OTC negatively affected bacterial community in methanogenic and acidogenic stages, respectively. They also adversely influenced the archaeal species in

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